Brussels, 12 May 2023

COST 065/23

DECISION

Subject: Memorandum of Understanding for the implementation of the COST Action “Network for forest by-products charcoal, resin, tar, potash” (EU-PoTaRCh) CA22155

The COST Member Countries will find attached the Memorandum of Understanding for the COST Action Network for forest by-products charcoal, resin, tar, potash approved by the Committee of Senior Officials through written procedure on 12 May 2023.

MEMORANDUM OF UNDERSTANDING

For the implementation of a COST Action designated as

COST Action CA22155
NETWORK FOR FOREST BY-PRODUCTS CHARCOAL, RESIN, TAR, POTASH (EU-PoTaRCh)

The COST Members through the present Memorandum of Understanding (MoU) wish to undertake joint activities of mutual interest and declare their common intention to participate in the COST Action, referred to above and described in the Technical Annex of this MoU.

The Action will be carried out in accordance with the set of COST Implementation Rules approved by the Committee of Senior Officials (CSO), or any document amending or replacing them.

The main aim and objective of the Action is to identify and assess current challenges and future perspectives of PoTaRCh through an understanding of its history and heritage traditions. This will be achieved through the specific objectives detailed in the Technical Annex.

The present MoU enters into force on the date of the approval of the COST Action by the CSO.

OVERVIEW

Summary
EU-PoTaRCh-establishes a network for the past, present and future of use of major non-timber forest raw materials and products in Europe. Whilst it will focus on forest by-products mainly Potash Tar Resin Charcoal (PoTaRCh)–as representatives of traditional forest exploitation heritage, it will touch upon other forest by-products (tannins, pitches). The scholarly vision is to enlighten the relevance of these products in history, especially their role in industrialization. The goal is to identify and assess production changes and their social and environmental impacts on sustainable development, and based on their heritage, to draw lessons for the future. The Action will support stakeholders who know these products and are interested in them, as they use them in the production, education, and promotion of heritage. Due to the participation of stakeholders with significantly different activity profiles (museums, state forests, associations, etc.), hence high diversity of needs will have to be answered by this Action.

The Action will put emphasis on ITCs participation, which have a rich history of producing PoTaRCh, and also special attention to Gender balance mobilizing in particular women to act as leaders of WG, STMS and workshop organizers. The Action will help to find ways to sustainable forest use and transfer knowledge to better methods and products in the bioeconomy.

Areas of Expertise Relevant for the Action	**Keywords**
● History and Archeology: Archaeology, archaeometry, landscape archaeology ● History and Archeology: Preservation of cultural heritage ● Agriculture, Forestry, and Fisheries: History and philosophy of agriculture ● Other engineering and technologies: Sustainability for other engineering and technologies ● Earth and related Environmental sciences: Environment chemistry	● (bio)cultural heritage ● history and archaeology ● forest by-products ● bio-economy ● analytics

Specific Objectives
To achieve the main objective described in this MoU, the following specific objectives shall be accomplished:

Research Coordination
● To create a new, comprehensive view of PoTaRCh's European history by compiling scattered knowledge; to uncover the underlying cultural structures of the forest by-products of interest in terms of traditions, language and identities, and bridging the gap between different disciplines but also different stakeholders.
● Producing open access resources: this will enable drawing European pictures with links beyond European borders without losing the local and subregional context. The material will be stored for the long-term at already existing open data repositories (not funded with COST Grant).
● Publication and dissemination will establish the basis for an edited book volume at the end of the Action that will represent a new standard for further research in PoTaRCh.

Capacity Building
● Mentoring and promoting YRs, especially from ITCs, where many active tradition bearers are present. YRs can connect research easily with practice.
● Establishing an interdisciplinary collaborative network covering excellence in history, archaeology, science and technology across Europe to foster joint research concerning forest by-products to enhance and exchange knowledge and expertise.

● Establishing a network dealing with future perspectives of PoTaRCh for bio-economy and forest transformation. A white paper for policy makers and international organizations will be a fundamental outcome for this objective to foster innovative capacity for European society.
● Offer interdisciplinary opportunities for cooperation between scientists, practitioners (tradition bearers), and museums, but also enterprises in the field of bio-economy, forest transformation and tourism.
● Facilitate a network of museums, associations of active tradition bearers, communities and other stakeholders resulting in the preparation of a European plan to preserve the PoTaRCh´s tangible and intangible heritage.
● Disseminate knowledge and experience resulting from this network to the general public by publications (reports and papers), workshops, conferences, an easily accessible user-friendly website, social media and other media appearances.

TECHNICAL ANNEX

1. S&T EXCELLENCE

1.1. SOUNDNESS OF THE CHALLENGE

1.1.1. DESCRIPTION OF THE STATE OF THE ART

Potash, **t**ar, **r**esin, and **c**harcoal (**PoTaRC**h) are four materials closely linked in their materiality, of extraordinary importance for societal resource use and the most important products of non-timber forest use in Europe.[1] Whilst in some cases and in some regions these definitions can be ambiguous (something that this Action will address) for the purposes of this proposal we define them as follows:

- charcoal as the product of wood pyrolysis processes;
- resin as the component of different tree species;
- tar and pitch as liquid products of wood and bark dry distillation;
- potash as alkali refined from wood ash.

Production of these products are partly overlapping and, in any case, directly linked, therefore a separation makes no sense. All these products are potentially important resources in the context of renewable materials and bio-economy. Learning about the diverse production concepts of the past, as well as their positive and negative impacts for societies and their environments in different places of Europe since prehistory will importantly support not only the current safeguarding of (bio)cultural heritage, but also future strategies towards sustainable raw material supply. The Action thus recognizes renewable forest by-products as a part of circular economy in historical perspective and today, when avoiding additional CO_2 emissions into the atmosphere forces us to minimize the usage of fossil fuels.[2]

The use of raw forest materials to produce PoTaRCh has been an industrious undertaking that has been alive on a broad scale ever since the late Iron Age, with origins back to the Stone Age. From Portugal to the Russia, from Scandinavia to the Balkans, their importance and impact on environment, international economic trade, political relations, and not least human traditions has been fundamental in that they have shaped people's everyday lives, their work, and means of sustenance.[3] A strong peak in production during the 18th and 19th centuries has been followed by a severe decrease in line with a rapid increase of easily available and cheap fossil fuels and the development of chemical industries. Only in few regions production outlasted continuously on a higher level – especially in several Inclusiveness Target Countries (ITC), involved in the EU-PoTaRCh project, where many active tradition bearers are present, who can help address a number of issues on a pan-European level.[4] The importance of PoTaRCh and intensive trade is documented all over Europe and beyond: charcoal was the main fuel and reducing agent in metal production until the large-scale introduction of fossil fuel energy, tar and resin represent the dominant chemicals used for a wide range of applications in diverse fields such as for wood preservatives, medical and technical applications, food, textiles, cosmetics, and personal care products, and potash has been an essential raw material for European glass and soap making as well as for many other industries. Not to forget other non-timber forest products such as tannins. The tanning tradition based on tannins extracted from oak, acacia and pine bark was widely known in European countries before the Industrial Revolution. This was paralleled by a heterogeneous patchwork of traditions; some were consistent over a wider spatial range, whilst others were kept on a very local level. The general increase of production starting in the late 17th century also changed the socio-economic situation of the producers and their families all across Europe. Coming from foresters´ by-products, the industry demanded specific quantities and qualities to ensure production capacities. Foresters´ traditions took place aside the industrial uses. Knowledge transfer occurred on very local levels, but also on international levels. An interesting transfer occurred due to raw material shortages (often induced by political crisis and wars) from European home countries towards the colonies abroad (Africa, North and South America).[5] Last but not least, the whole PoTaRCh production and consumption complex had an extraordinary impact on European landscapes, especially forests, as it has been one of the major driving forces of the deforestation and other environmental highly important processes since the late middle ages onwards.[6] Recognizing these settings as biocultural landscapes, where nature and

culture are inextricably linked, is necessary not only to understand the legacies of these past activities, but also to help ensure that they are managed appropriately going forward.

Besides the aspects of sustainability environmental and social history, ethnology/anthropology and economy, the archaeology of PoTaRCh is relevant. Especially charcoal and tar kilns and hearths, but also distilleries of resin and production sites for potash are preserved as tangible remnants. Their investigation requires specific techniques and a whole branch of environmental archaeology focuses on these sites. Over the last decades classical on-site methods have become accompanied by remote sensing methods. Archaeological field work is paralleled by archaeometric laboratory analyses of residues. From an analytical point of view the products charcoal, tar, resin, and potash are related. For example, kilns can deliver both charcoal and tar (the ratio depends on production type), and tar represents a wide range of products with partly different ratios of pyrolysis products and extractives like resin. Potash and charcoal production only differ in the processes´ oxygen supply.

1.1.2. DESCRIPTION OF THE CHALLENGE (MAIN AIM)

Until now, the understanding of dimension and distribution of production of PoTaRCh as the most important forest by-products used since prehistoric times as fuel and raw material lacks a comprehensive picture across Europe. Moreover, investigating PoTaRCh and its history requires inter- and transdisciplinary research and cooperation. Besides academic stakeholders, it is evident that the currently active tradition bearers play an intrinsic role for this Action, and that museums, governmental and non-governmental organizations and associations must be included to reach the public.

The main aim of the Action is to identify and assess current challenges and future perspectives of PoTaRCh through understanding of its history and heritage traditions.

1.2. PROGRESS BEYOND THE STATE-OF-THE-ART

1.2.1. APPROACH TO THE CHALLENGE AND PROGRESS BEYOND THE STATE OF THE ART

A major challenge for a comprehensive understanding of PoTaRCh is the high diversity:

- diversity in terms of different regions – especially in some ITCs there are numerous active producers, in many countries, traditions are only active on the level of heritage preservation, historically production techniques have been different across Europe and beyond and related terminology has been bounded in national/regional boundaries;
- different times – although all the traditions are rooted in prehistoric times, with their importance declining in the second half of the 20 centuries, the dynamics of PoTaRCh development has been highly uneven;
- different socio-economic patterns – the transformation from peasants´ traditions to industrial scales were accompanied with substantial changes in socio-economic patterns;
- the different products and different product qualities within these products.

This high level of diversity (and at the same time interconnectedness of the production and production impacts) explains why current knowledge a very fragmentary patchwork is. This incoherent knowledge prevents a comprehensive understanding of the situation of past patterns and dynamics and current heritage of PoTaRCh. As a result, it is currently challenging to derive practical recommendations for future perspectives in terms of bio-economy, forest transformation, heritage safeguarding or tourism.

Progress beyond the state-of-the-art is about creating a broad network – an inter- and transdisciplinary collaboration of more than 100 stakeholders in different academic fields (from natural sciences, social sciences and humanities and interdisciplinary studies), historical and scientific associations, practitioners, museums, but also enterprises (medium and big ones in the field of bio-economy, small ones in the field of digital humanities and PoTaRCh traditional production) – that will enable the Action in getting comparative knowledge of traditions and products that allows specific perspectives. Breaking up disciplinary and stakeholder boundaries will lead to an interdisciplinary community that does not yet exist. The Action will even include performative handicraft elements and a traveling exhibition compiling important results to be presented to both scholars and the public, in which the four products PoTaRCh act as role models of greater societal aspects. In combination with adjacent forest by-products (e.g. bark for tanning) the Action can achieve a European picture of renewable material outlined since prehistory.

1.2.2. OBJECTIVES

1.2.2.1. Research Coordination Objectives

RC1: Connecting disciplines, stakeholders: the Action will create a new, comprehensive view of PoTaRCh's European history by compiling scattered knowledge; to uncover the underlying cultural structures of the forest by-products of interest in terms of traditions, language and identities and bridging the gap between different disciplines but also different stakeholders.
The Action will start with one workshop for each of the four forest by-products: charcoal, resin, tar, potash; at these workshops (led by WG 1 but connecting all the WGs) different technologies will be performed by practitioners at one site. These workshops will also open minds to different perspectives on a specific product. They will focus on stakeholder networking and will be public events. They also bring together the rich active experience of practitioners, especially those in ITCs, with scholars and organizations from across Europe and beyond. Their outcomes will be starting points for following Workshops (WS), Short-term scientific missions (STSM), Training School (TS).
RC2: Producing open access resources (catalogues, maps, vocabularies, and databases about production techniques, sites, and producers): this will enable drawing European pictures with links beyond European borders without losing the local and subregional context. The material will be stored for the long-term at already existing open data repositories and will facilitate future research even after this Action.
RC3: Publication and dissemination: output of STSM, TS, WS will be published in at least 15 review and research papers and numerous conference contributions especially by YRs. They will establish the basis for an edited book volume at the end of the Action that will represent a new standard for further research in PoTaRCh.

1.2.2.2. Capacity-building Objectives

CB1: Mentoring and promoting Young Researchers (YRs), especially from ITCs, where many active tradition bearers are present. YRs can connect research easily with practice.
CB2: Establishing an interdisciplinary collaborative network covering excellence in history, archaeology, science and technology across Europe to foster joint research concerning forest by-products to enhance and exchange knowledge and expertise.
CB3: Establishing a network dealing with future perspectives of PoTaRCh for bio-economy and forest transformation. A white paper for policy makers and international organizations will be a fundamental outcome for this objective to foster innovative capacity for European society. The Action will foster heritage understanding for future perspectives in bio-economy, forest transformation, and tourism.
CB4: Offer interdisciplinary opportunities for cooperation between scientists, practitioners (tradition bearers), and museums, but also enterprises in the field of bio-economy, forest transformation and tourism.
CB5: Facilitate a network of museums, associations of active tradition bearers, communities and other stakeholders resulting in the preparation of a European plan to preserve the PoTaRCh´s tangible and intangible heritage.
CB6: Disseminate knowledge and experience resulting from this network to the general public by publications (reports and papers), workshops, conferences, an easily accessible user-friendly website, social media and other media appearances.

2. NETWORKING EXCELLENCE

2.1. ADDED VALUE OF NETWORKING IN S&T EXCELLENCE

2.1.1. ADDED VALUE IN RELATION TO EXISTING EFFORTS AT EUROPEAN AND/OR INTERNATIONAL LEVEL

PoTaRCh aims to substantially overcome the current fragmentation of research and outreach. It is ambitious and ground-breaking and surpasses any previous networking activity aiming at integrating the history and heritage of non-timber forest use in Europe. It was extremely surprising to the team preparing the Action, how many colleagues are currently dealing with the topic in various countries and in various disciplinary perspectives. And it was important to ask: How is it even possible that one of the important phenomena of European history, which spread from Portugal to Russia and from Scandinavia to the Mediterranean, has not yet been studied at European level? How is it even possible that it is know almost nothing about the pan-European dimension of knowledge transfer in the long-term perspective?

How is it even possible that regional and local knowledge about the unprecedented environmental impacts of PoTaRCh, which have changed the landscape of the whole of Europe since the Middle Ages, has not yet been compared and linked? And finally, how is it even possible that one of the phenomena, which is truly a pan-European cultural heritage and is operated in many parts of Europe in a living and authentic form, is not protected and researched at European level?

It goes without saying that the importance of PoTaRCh has not escaped the attention of research at many levels (in humanities and social sciences as well as in natural sciences) and the research of PoTaRCh, (e.g., in Scandinavia or Central Europe) can be dated back to the 19th century. However, over the 150 years or so that followed, an initiative for truly comparative, multidisciplinary and, above all, pan-European research was not developed. At present, there are a high number of scientific studies, research initiatives and networks, museum exhibits and artefacts, identified landscape transects deeply influenced by PoTaRCh and finally bearers of tradition. However, they are fully linked to local and regional contexts and disciplinary cultures and rarely cross existing European borders or aim to reach PoTaRCh in a transdisciplinary way. All these findings and networks were considered in the preparation of the EU-PoTaRCh Action and form its important foundations, while a number of Action participants (both researchers and tradition bearers) were and are involved in the recent projects and initiatives. Their results and networks have become a starting point for EU-PoTaRCh Action. However, this Action aims to substantially overcome the current fragmentation of research and outreach.

Currently, there already exist:

- research networks and initiatives with a general focus on the history of technology and material culture in Europe and beyond
- research networks and initiatives with a special focus on forest history, environmental and landscape and/or forest and wood products (COST, Horizon 2020, EU 7th framework programme)
- international academic organizations and unions focused on forest and landscape research (governmental, non-governmental ones, UN driven)
- international research and policy-making organizations dealing with heritage and heritage safeguarding (governmental, non-governmental ones, UN driven)
- networks of active tradition bearers, mainly on a national level, few international ones

The major added value of the EU-PoTaRCh Action is thus to be considered at three levels:

(1) The Action aims to approach the topic in a pan-European way regarding both research and dissemination of the results, including the very active and important position and cooperation with ITCs and NNCs. The Action will connect existing scattered networks and build a common research initiative that goes far beyond the individual/national project's scopes. EU-PoTaRCh will also take responsibility for research training that is not within the capacities of smaller projects.
(2) The Action is truly inter- and transdisciplinary and interconnects both established and YRs from various disciplines – from natural sciences (e.g. biology, chemistry, physics, material sciences, forestry, geography, medicine), social sciences (e.g. anthropology, ethnology and folklore studies, sociology, cultural sciences, social history, social economy) and humanities (e.g. archaeology, landscape and forest history, medieval and early modern history, linguistics - onomastics and dialectology) and interdisciplinary (e.g. gender, heritage and museum) studies. All project activities are planned in such a way that, on the one hand, participants can work on general data and have a wide field of view, but at the same time articles written by representatives of various countries and regions will allow to go from general to specific and vice versa. Such an approach will allow a multidimensional analysis that permits the definition and development of general schemes, procedures, and approaches, and on the other hand, with respect for the cultural heritage of a given country or area, it will allow to capture the nuances and differences that make working with raw materials unique for a given culture. Joint databases, information hubs, seminars, training schools, experiments etc. will allow everyone to approach and discuss the topic and to learn from a variety of theories and methodologies which in turn will lead to improved education and dissemination to industry. If/when related opportunities for training and participation (e.g. in aerial recording, site recording, excavations) become available within the network (for example as part of other projects), they will be promoted to YRs.
(3) The action actively involves tradition bearers (esp. charcoal and tar makers), NGOs as well as museums and cultural institutions that allow not only to disseminate the Action's activities effectively but also to improve everyday lives of individuals and communities in the various parts of Europe, especially in ITCs. Bearers of tradition and memory/cultural institutions will participate in workshops, documentary

and outreach activities and will be also involved in intended cooperation with various stakeholders aiming for centrally managed protection of EU-PoTaRCh heritage in various European countries.

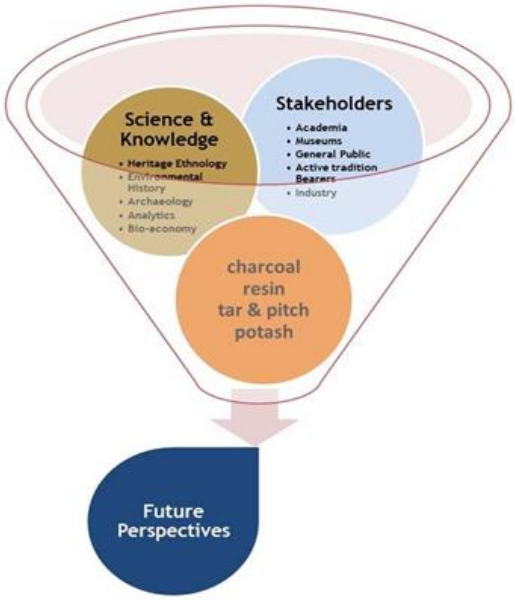
2.2. ADDED VALUE OF NETWORKING IN IMPACT

2.2.1. SECURING THE CRITICAL MASS, EXPERTISE AND GEOGRAPHICAL BALANCE WITHIN THE COST MEMBERS AND BEYOND

EU-PoTaRCh already collected in the application phase a critical mass of almost 100 people: researchers and scholars, students, curators, practitioners, and producers (tradition bearers), which are professionally based in a variety of disciplines. Thus, the EU-PoTaRCh initial Action is undoubtedly transdisciplinary. Importantly, initiative has met great interest from both young researchers and established scholars from all over Europe and beyond. As a result, it is possible to overcome existing disciplinary/local/regional/national approaches to PoTaRCh. This will make it possible to conceptualize and study it as a problem without borders, pan-European, going even beyond the borders of Europe, while taking into account its spatial and temporal variability. The Action is strongly connected through the interest in PoTaRCh, , it can work effectively both as a whole as well as on the basis of partial thematically or otherwise focused smaller teams.

The initial EU-PoTaRCh Action consists, at the time of application, of scholars from already **27 COST Full Member** countries(**14 Inclusiveness Target Countries (ITCs)** and 13 other COST full members) as well as participants from **2 Near Neighbour countries** (**NNCs)** and 2 **International Partner Countries** (IPCs**).** The Action's growth will be undertaken mainly in the first phase and, if more specialists would be necessary to achieve the WGs' challenges, it will complement the initial structure which already comprises most ITCs. This pan-European network of scholars, practitioners and stakeholders will also have the advantage offering dialogue with a wider variety of European policy-makers from a larger number of countries than previous often nation-focused networks and initiatives. EU-PoTaRCh Action connects universities, non-university research organisations, museums and institutions of social history, laboratories etc. with entrepreneurs (e.g., tradition bearers) and policy-makers, encompassing a great and non-discriminative variety of research and information outreach strategies. The overall EU-PoTaRCh Action will thus include and consider:

- diverse disciplines
- diverse stakeholders
- diverse scholarly traditions
- diverse research approaches and methodologies
- diverse academic training strategies
- diverse outreach strategies
- overall diversity and sensitivity to gender, age, ethnicity, religion, education, language skills, disability etc. in networking and management activities, research and dissemination of results



2.2.2. INVOLVEMENT OF STAKEHOLDERS

In many aspects network structures aiming at PoTaRCh heritage protection and possible future use in bio-economy are not present in all parts of Europe. To speak openly there were no such structures prior to preparing this proposal. Moreover, tradition bearers are partly missing and if existing, partly not organized (especially in ITCs). Within disciplines there are European networks, regional networks exist between specific stakeholders (e.g. archaeologists and museums, historians and archives, communities and active tradition bearers). But only EU-PoTaRCh will provide a comprehensive network that includes all the puzzle pieces needed to elaborate future perspectives for this multidimensional heritage topic. We will formally address all national UNESCO committees (some were already involved during the application phase) in COST member countries to inform them about PoTaRCh as part of the tangible and intangible European heritage.

Conferences and guest lectures are opportunities to engage new audiences and stakeholders. Involving local museums will also ensure a close contact to the interested society. The Action will actively support local tradition bearers to network and even establish associations. During the Action, such networks will be launched with particular reference to ITC, as local traditions are more closely preserved in these countries. The Action will first build on the existing network and expand PoTaRCh from them, nationally and internationally. The following strategy appears very helpful also to involve more stakeholders by making use of the different stakeholders and disciplines: knowing one stakeholder in a specific discipline and a specific country led to other colleagues in adjacent countries and/or adjacent disciplines. These personal relations support a bearing network. Moreover, also the first publicly presented outputs (e.g., webpages, workshops) will help to attract even more stakeholders especially from ITCs and possibly also NNCs and IPCs.

3. IMPACT

3.1. IMPACT TO SCIENCE, SOCIETY AND COMPETITIVENESS, AND POTENTIAL FOR INNOVATION/BREAK-THROUGHS

The understanding of dimension and distribution of production as well as its current heritage and future perspectives of PoTaRCh lacks a comprehensive picture across Europe. Thus, the Action wants to put the puzzle pieces from disciplinary approaches together; ethnological, material scientific, archaeological and historical aspects will be compiled to understand the structuring and maintenance of former societies over the longer term. It is necessary to understand the socio-economic network of forest workers and early industry, as in doing so, it will help to understand the socio-political dimension of production and consumption of forest raw materials used to produce PoTaRCh. It will be implemented through cooperation with stakeholders from state forests from the countries participating in the Action. In the long term, this understanding will foster transdisciplinary research combining forest raw materials and products such as PoTaRCh. Finally, it will allow the Action to derive future perspectives in the face of globally changing systems, especially regarding the technological and production potential of PoTaRCh for bio-economy, renewable resources use, and for general societal and economic well-being (development of educational tourism related to the production and use of PoTaRCh, creation of educational paths on cultural heritage of PoTaRCh).

3.1.1. SCIENTIFIC, TECHNOLOGICAL, AND/OR SOCIOECONOMIC IMPACTS (INCLUDING POTENTIAL INNOVATIONS AND/OR BREAKTHROUGHS)

The Action expects breakthroughs by empowering a closely established network of transdisciplinary researchers from all across Europe and beyond. Completely new, wider pictures of local to global connections will become obvious leading to new and wider research questions. Connecting natural and social sciences with the humanities bears highest potential. Currently, the different disciplinary communities are well connected on a European level, but the transdisciplinary networks in the different countries are still not connected. PoTaRCh bridges specific scientific communities having fundamental **impact on science** by focusing on the traditional technologies and its products.

A special **impact** will be gained on **YRs** in the different scientific fields as they will realize the transdisciplinary connections and the heritage of PoTaRCh as specific scientific fields. These topics overcome the traditional view on scientific approaches making it clear that research on such heritage needs to be cross-linked. YRs will learn new methods from different approaches in a very comprehensive and effective way and will get acquainted so far new epistemologies, which brings transdisciplinary research. Connecting e.g., sophisticated techniques in chemical analysis applied both on archaeological samples and samples prepared by current tradition bearers of old PoTaRCh technologies with historical sources or oral traditions will thus so far open an entirely new perspectives of conducting research.

These old traditions have inspired already lots of people on a societal level, in local associations and NGOs or as individuals, who are attracted by the handicrafts and old production technologies and its multiple heritages. PoTaRCh will connect the different players across Europe and establish a broad consciousness about the wide relevance of these heritages. It will therefore also have a great **impact**

on European society in the sense of deepening historical and cultural awareness as well as regarding appreciating the importance of learning from the past to improve current life and its future perspectives in changing ecological conditions.

A special impact attached to the general societal impact focuses on **local museums and bearers** of tradition who will be supported in demonstrating the international dimension of the local heritage (e.g., by a travelling exhibition) and local traditional crafts and industries (e.g., by workshops, media appearances, in connection to sustainable tourism). In this regard the Action wants to raise the awareness of communities and regions regarding their heritage tradition(s) and to improve social and economic position of local producers (especially in ITCs).
An important impact will be gained by evaluating future perspectives of these old traditions. Many of them will/should play an important role in bio-economy, negative carbon emissions and bio-energy. Compiling potentials and learning from negative impacts in the past will have a strong **impact on policy makers and business** in the respective fields.

3.2. MEASURES TO MAXIMISE IMPACT

3.2.1. KNOWLEDGE CREATION, TRANSFER OF KNOWLEDGE AND CAREER DEVELOPMENT

Knowledge creation will be ensured by the network itself. Despite research on PoTaRCh in many countries carried out by various specialists in the field of archaeology, anthropology, chemistry of materials science, etc., there are no studies gathering complete knowledge at the European and global level. So far, research has been conducted very narrow and specific to a given research area, country, and even regions. Very large-scale analytical studies and comparisons have not been carried out. Therefore, a comprehensive compilation of all existing work (including results published in national languages) in a database coordinated by the Action will be necessary for the creation and transfer of knowledge. This task, to which PoTaRCh will contribute, will result in the appearance of new, hitherto unknown aspects of this issue , and will force the continuation of the work of the involved people and institutions. These scientific outcomes will be framed by the overview of the status of the heritage and the practical knowledge of the active tradition bearers. The Action will gather about 100 people; therefore, a lot of knowledge creation will take place in virtual workshops that will accompany workshops with physical attendance, where lots of people can participate without high costs. Such virtual workshops can also be installed for specific questions and therefore create both types: specific and comprehensive reviews. Altogether, the Action will aim to at least 15 review and research papers (subdivision given in the deliverables). These activities will be coordinated by the Working Group leaders. To ensure future access and the durability of this access, the database and the whole project output will be transferred to an already existing data repository specifically addressing Non-Wood Forest Products.

WS and STSM will allow us to both (1) compile a comprehensive comparison of different production techniques with the subsequent description of the process technology, and (2) enable YRs to implement EU-PoTaRCh as an important scientific topic with very different perspectives in the field of environment, society, sustainable development.

Scholarly conferences will allow us to disseminate relevant research results and to involve additional YRs in the Action. The Action will take care that especially YRs get skilled in combining the different results drawing a comprehensive picture on an international level. Contributions on conferences of specific scientific fields (archaeology, archaeometry, history, ethnology, engineering, onomastics, dialectology) will feed back our network to the scientific networks of the specific branches. In doing so, EU-PoTaRCh will be embedded in the broader context. Via university lectures and practical exercises, Action will also ensure transfer of knowledge to students.

For YRs the understanding of inter- and transdisciplinary work will prepare them not only for jobs and tasks in the science itself, but also in scientific dissemination, international and national heritage associations, organizations, NGOs, EU and UN structures, museums, tourism, trade, and teaching. The ability and skill in transferring traditional knowledge into future perspectives will make them suitable for roles as strategy developers in business and policy. Workshops and STSM will give YRs ample opportunities for inter- and transdisciplinary network building. YRs will be able to highly increase their visibility and reputation in the scientific community through presenting their work as a part of the Action and through being involved in high-impact, inter- and transdisciplinary publications.

A special focus will be set on including more women in the project as the forestry and the wood-technology sectors are dominated by men. Due to gender bias among the active bearers of the traditions in the Action, the issue of gender will be important within the relevant working groups. The participation of women in the campaign will dominate, and over the years of the Action, special attention will be paid to its increase. 50% of the leadership positions of the five WGs within the EU-PoTaRCh Action will be held by women, also from the ITC. In the awarding of ITC and STSM Grants, coordinators will ensure that women from ITC have a participation of at least 50%.

3.2.2. PLAN FOR DISSEMINATION AND/OR EXPLOITATION AND DIALOGUE WITH THE GENERAL PUBLIC OR POLICY

Stakeholders	Short term effects	Long term effects
Active tradition bearers	Support by a European dialogue among them, getting aware of related traditions and their historical importance. Improvement of practical skills as well as business skills.	Self-organized networks among themselves and collaborations with scholars, museums, communities, tourist industry.
Communities, regions	Awareness about the tangible and intangible heritage aspects, incorporated in innovative touristic concepts.	European plan to preserve the heritage of PoTaRCh incl. introduction of PoTaRCh traditions on national/ international lists of intangible heritage.
Museums	Closer connection to active tradition bearers, strengthening of heritage presentation to the public, virtual and travelling exhibition with local museums involved.	Connections with other museums foster a European perspective even in local museums; virtual content stays available open access. Implementation of innovative exhibition concepts.
Industry and policy	White paper for future perspectives including industrial demands will facilitate sustainable concepts based on lessons learnt from the past.	PoTaRCh products will provide relevant raw materials on a sustainable basis within future bio-economy.
General public	Awareness through social and other media activities of the Action in collaboration with museums, active tradition bearers, communities, regions.	Active interest and support of bio-economy strategies for the products and heritage preservation; both will be important pillars of societal transformation within the next few years.

Dissemination and dialogue with the general public will happen on different levels. Specific dissemination will target the interested public in heritage and handicraft aspects of PoTaRCh. Those who are interested in (but are not active bearers of) the traditions, will be reached via the respective associations and networks, and via local museums and different media. The **virtual activity manager** will take special attention on the social media content for this group of people. The activities will culminate in a travelling exhibition about PoTaRCh at the end of the Action. Also, on-site **workshops** with demonstrations of the technologies by the active bearers will be embedded in local dissemination and communication strategies. These workshops will be the basis of the Action work, but also events for the public and will take place in collaboration with local museums and involve local tradition bearers. **Project websites, newspaper articles and information on social media** will ensure easy access to information for the broader public especially to communities and regions (esp. in ITCs) raising awareness about these often-forgotten heritage traditions. The Action will also contribute actively to the European Researcher´s **Night as an occasion of European** experience of participative science linked to the society.

Knowledge management and protection: Participants will establish and agree on the rules for the management of intellectual property rights before the Action start. These rules will address access rights granted to other participants, publications, results ownership, transfer of ownership and exploitation including during collaborations and STSMs. The Management Committee (MC) will ensure that all participants comply with the above rules.

4. IMPLEMENTATION

4.1. COHERENCE AND EFFECTIVENESS OF THE WORK PLAN

4.1.1. DESCRIPTION OF WORKING GROUPS, TASKS AND ACTIVITIES

Management structure of the PoTaRCh network: The Action will be coordinated by **the Management Committee (MC)**, composed of up to two representatives for each participating COST country in line with the COST rules. The **MC** is the decision-making body which monitors the progress of the Action in line with COST rules and procedures. Gender balance and the ITCs representatives will be essential for the overall MC and other bodies' composition. The **MC** will meet at least once a year. The MC will delegate day-to day operation of the Action to the Steering Committee. The **Steering Committee (SC)- also called Core Group-** is composed of the Action Chair, Vice-Chair, WG leaders (WGLs), and other body managers (e.g., Grant Awarding Coordinator, Virtual Networking Manager, Science Communication Coordinator, STSM Coordinator, ITC CG Coordinator). It will meet quarterly, will monitor the progress against tasks, deliverables and milestones and organize the communication among the participants. It coordinates the program of STSM and training schools. The **Grant Hol**der (GH) will put together a team responsible for the administrative and financial management of the network as well as the scientific coordination. The **WG leaders** coordinate the activities in their Working Group, report to the SC quarterly and also to the MC yearly.

Five WGs will be launched focusing on different approaches towards the past, present, and future of PoTaRCh. They are strongly linked and roofed by the heritage aspect. Therefore, WG 1 compiles the detailed definition of the traditional skills, knowledge and technologies and their current application. WGs 2, 3, and 4 represent different scientific approaches: laboratory analytics, archaeology, and environmental history. A final WG 5 evaluates the future perspectives.

WORKING GROUP 1 – HERITAGE (including the definition of production types, the current situation of heritage bearers, names, and languages …)
Objectives: To identify what is (bio)cultural heritage related to PoTaRCh.[9] To design and implement measures for safeguarding both tangible (historical productions sites) and intangible (traditional knowledge) (bio)cultural heritage related to PoTaRCh on a European level. To foster heritage understanding and keeping it for the future as well as to strengthen social and economic position of tradition bearers. To identify measures and policies related to PoTaRCh, which might be useful in tourism industry, local and regional development.
Themes: The production processes of PoTaRCh products bear both similarities and differences to each other (unfortunately still not yet identified and not described on a European level), as well as concerning the areas of their application. The production processes of PoTaRCh are not only traceable through archaeological research and in written historical sources, but their production, at least in part, continues today. Their survival is primarily maintained by local producers (especially in ITCs and outside Europe),[10] NGOs, and associations taking care of intangible cultural heritage etc.[11] This traditional knowledge of the production has a high cultural value and should therefore be preserved for posterity. This also includes the various habits and customs associated with this craft and the stories and memories that surround it. It is also important to make the people who still practice these professions visible and to identify the cultural landscapes where these activities were carried out. Moreover, the overall (bio)cultural heritage of PoTaRCh has an extraordinary potential for concrete people, local communities, tourism industry and stakeholders etc.[12] The aim of the WG will therefore be a comprehensive overview of the status of these important traditions and the development of strategies for its long-term safeguarding and promoting.
Methodologies:

- observation and standardized documentation (filming, questionnaires, observation) of current production techniques as well as customs, narratives etc.;
- evaluation of economic values and benefits of contemporary production as well as e.g. touristic and identity values and potentials of production extinct in nearby past for local communities and regions;

- identification of the current distribution of individual production sites in Europe;
- archival research and literature review of sources dealing with historical production types and technologies aiming at creation of comprehensive picture of the rise, spread, and decline of the PoTaRCh in Europe and beyond;
- comparison of traditional knowledge still in practice with material remnants of PoTaRCh and written sources (+ WG 3 and 4);
- evaluation aiming to connect production types with product qualities (+ WG 2 and 3).

Tasks: T1.1 Activation and networking of active traditions bearers with all stakeholders. **T1.2** Ensure training and career development of YRs. **T1.3** Ensure scientific progression and knowledge-sharing. **T1.4** Dissemination and communication. **T1.5** A European plan to preserve the intangible heritage.

WORKING GROUP 2 – ANALYTICAL CHARACTERIZATION (including methods, status of analytical descriptions, definitions of quality)
Objectives: To explore the origins and traditional technologies by compositional analysis of PoTaRCh materials.
Themes: The chemical characterization of PoTaRCh materials may contribute to the scientific understanding of chemical and structural composition, changes of chemical composition over time, possible products of decay, interaction with environmental parameters (e.g. soils) and the origin of the raw materials.[13] Analytical characterization is useful to explore the correlation between composition and applied production technology and finally will make possible the classification of products based on the technologies used in different historical periods. Each of PoTaRCh materials requires a different analytical approach. Little is known about charcoal production technology in terms of its physics and chemistry and correlation between technology temperature and chemical and physical structure of charcoals and guidelines for production technology will be defined.[14] There is no historical potash available, for this reason the determination of the composition of potash used in ancient times can be very difficult. Characterization of ancient potash can be only indirect, that is by (1) analysing the glass to which potash was commonly used or (2) preparing potash experimentally in the laboratory and then the final composition of the potash can be determine.[15] The production process of pitch and tar was quite advanced at that time, requiring not only selection of raw material but also the knowledge of fractionation.[16]
Methodologies:
- exploration of chemical/analytical approaches to characterize PoTaRCh materials based on analytical and archaeological chemistry as well as both organic and inorganic material characterization;
- individuating methodological approaches (incl. methods able to give information on the biological origin of natural materials, technological and possible anthropogenic modifications) and analytical protocols as well as defining new research questions based on literature review, current production and experiments (+ WG 1, 3, 5);
- microscopy, spectroscopy, chromatography, and mass spectrometry.

Tasks: T2.1 Compilation of analytical methods and existing analyses. **T2.2** Ensure training of YR and career development. **T2.3** Ensure scientific progression and knowledge-sharing. **T2.4** Dissemination and communication

WORKING GROUP 3 – ARCHAEOLOGY (including archaeology, anthropology, geodetic prospection)
Objectives: To identify archaeologically what are relicts of PoTaRCh production sites in the soil ("soil monuments"). To design and implement a comparable methodological approach for prospection, data validation and characterization for Europe as a whole. To identify and record known presence and absence of PoTaRCh sites and site ensembles in European cultural landscapes and its causes.
Themes: The production of charcoal and tar has left innumerable traces in the soil in many European cultural landscapes, while the production of potash is hard or impossible to trace archaeologically, sometimes only surviving as field names. Though many studies already exist which identify and assess the historical production sites in the field, there is a lack of studies on a European level. Thus, to know the size, extent, and intensity of production both in space and time, it is essential to get an overview about the amount of production sites.[17] This characterization necessitates archaeological prospection and targeted excavations, but also geodetic methods involving statistical methods out of the field of machine learning. Lidar Scans today provide a huge potential of assessing site occurrences and distribution patterns incl. data mining.[18] Furthermore, in most countries there are comprehensive collections of and scientific dictionaries about place names including numerous traces of former charcoal and tar production. Anthracology provides information on the wood species which were used for production. The potential of dendrochronology to improve dating of charcoals even with shorter ring series or former resin tapping must be further explored. Archaeometric approaches like chemical

characterization of charcoal as well as soil and sediment features might help to better characterize and distinguish relicts of PoTaRCh production.[19]

Methodologies:

- establishment and summarization of best-practice guide/recommendations for future archaeological research incl. archaeological as well as analytical methodology of natural sciences
- literature and other (incl. filed) sources review and compilation resulting in a database on archaeological sites and their characteristics
- assessment of impact of PoTaRCh on a landscape and regional level (e.g., pollutants, habitat diversity) together with identification of production ensembles or production regions (+ WG 4)
- improvement and development of analytic tools for archaeological practice (+ WG2)
- language analysis of respective languages and identification of place names referring directly and indirectly to PoTaRCh (+ WG 1)
- analysis of knowledge of active tradition bearers aiming at forming a body of modern analogues to better interpret the archaeological legacy (+ WG 1 and 5)

Tasks: T3.1 Compile existing knowledge in databases, and a best practice guide. **T3.2** Ensure training of YR and career development via workshops and STSMs and individual mentoring. **T3.3** Ensure scientific progression and knowledge-sharing through lively exchange with other WGs. **T3.4** Dissemination and communication.

WORKING GROUP 4 – ENVIRONMENTAL HISTORY (including ecology, sociology, legislation…)

Objectives: To reconstruct, discover and summarize the short and long-term consequences of PoTaRCh production and use on social-ecological systems around Europe and beyond. To recognize sustainable natural resource management, identify human and non-human actors, knowledge transfer among producers and different fields, discover transport and mobility, and policy and economical aspects. To compare production technologies related to the environment on different scales from local to the European level. By arranging seminars and incorporate historical lessons that relate to the relationship between PoTaRCh and the environment, it might be possible to create a new theory of the relevance of the forest by-products in brand new ways.

Themes: In the last century, the living practice and knowledge of PoTaRCh production nearly disappeared from Europe. Our experience shows that the importance of these raw materials is somehow known, but mainly in grey literature. These publications show the role of the environment to produce raw materials, and also how the environment was affected by these production types around Europe and worldwide.[20] Historical evidence highlights that there was knowledge and practice exchange between countries and even continents.[21] We would like to examine the environmental history of the PoTaRCh from three perspectives (Environment, Society, Sustainability), roughly exploring socio-ecological system and related changes from the Middle Ages to the end of the 20th century, with special regard to the 18th-19th centuries from local to global levels.

Methodologies:

- literature review of sources dealing with impacts of PoTaRCh on the landscape and general
- environment as well as other specific topics (e.g., forestry development) (+ WG 1);
- evaluation of socio-economical and sustainability aspects of historical PoTaRCh production;
- examination of different types and impacts of pre-modern knowledge transfer based on written and material evidence (+ WG 3)
- pollen analysis, dendrochronology and other science-based methods aiming at evaluation of environmental impacts of PoTaRCh on European ecosystems and its current traces (+ WG2 and 3).

Tasks: T4.1 Ensure progression towards objectives by review work in onsite and virtual workshops. **T4.2** Ensure training and career development of YRs. **T4.3** Ensure scientific progression and knowledge-sharing. **T4.4** Dissemination and communication.

WORKING GROUP 5 – FUTURE PERSPECTIVES (including definition of new products and goods, comparing production types and product qualities from old and new, indicating critical aspects of exploitation)

Objectives: To identify what is a future perspective of heritage related to PoTaRCh. To define products and methods that are or that might become relevant under the light of bio-economy.[23] To carve out potential risks and challenges that can be derived from traditions´ history and to set light on the impact of biodiversity enhancement and forestry transformation.

Themes: The WG studies how the circulation of the forest products could answer the global challenges.[24] There is a limited number of sources of renewable chemicals capable of competing with fossil ones. The metallurgical industry traditionally requires fossil coal and coke as reducing agents in

the reactions required to purify the metal ores. Carbon anodes, pyrotechnical products, or pyrogenic chemicals like pyroligneous acids can also rely on charcoal as raw material. These industries will be addressed by the WG. Biochar can improve soil quality and serve as a negative carbon emission. The study of production routines at old kiln and hearth sites will link our Action with the biochar discussion. Tar and resin have important perspectives as raw materials in the chemical industry as well. Restrictions in terms of profitability, on-site emissions, and sustainable forest management must be considered. Both products – resin and tar – are traditionally used for medical, veterinary, and cosmetic applications. Quality definitions are not available comprehensively. Turpentine (volatile part of resin distillation) has been used as a high-quality solvent for no less than two hundred years, but also in many more sophisticated products. Rosin (the solid part of resin distillation) has hundreds of uses in the chemical industry (varnishes, disinfectants, road surfacing, soaps, nylon 610, plasticizers, lubricants, hydraulic fluids, cosmetics, candles). Tannins extracted from oak, acacia and pine bark was widely known in European countries before the Industrial Revolution and were used for the tanning animal leather or for iron gall ink production. Finally, the last forest product on our list, potash, has probably the fewest applications in the modern economy. We will deliver an overview of future perspectives of using it as fertilizer or as input in the chemical industry.

Methodologies:

- assessment of the current market situation of tradition bearers (+ WG 1);
- analysis and comparison of the national bio-economy strategies, national regulations and EU directives;
- standardized description of products for future uses in bio-economy (+ WG 2) incl. niche products (e.g. medical products);
- analysis and evaluation of on-site emissions and the question of sustainable forest management (+ WG 4);
- general assessment of the overall future potential (e.g. quantity demands) of the different products incl. identification of main risks and challenges both for Europe and NNCs (global macro-economic drivers).

Tasks: T5.1 Ensure compilation of current and future product perspectives. **T5.2** Ensure training and career development of YRs. **T5.3** Ensure to bring together the stakeholders of bio-economy and other new product communities with the communities of the other WGs. **T5.4** Dissemination and communication.

4.1.2. DESCRIPTION OF DELIVERABLES AND TIMEFRAME

Deliverable	Content	Responsible WG	Objective	Timeframe for finalizing
1	European plan to preserve the intangible heritage	1	CB5	Q4/4
2	Platform sharing knowledge	1	RC1, CB2	Q3/2 Q3/3
3	3 review and research papers focusing on current distribution of production sites and producers, social situation, gender issues, market situation, impact on local and regional culinary traditions, etc.	1	RC3	Q4/4
4	Analytical protocol allowed identification of PoTaRCh materials	2, (5)	CB4	Q2/4
5	Database Specifications of PoTaRCh products and technologies	2,(1), (5)	RC2, RC3	Q4/4
6	3 review and research papers focusing on analytical description and discrimination of product qualities linked with production types	2	RC3	Q4/4
7	Best-practice guide for identifying and excavating PoTaRCh sites	3	CB3, 4	Q1/4
8	3 review and research papers focusing on site distribution and methodological comparison across Europe and beyond, special issues of tangible heritage of potash and resin (production sites and distilleries)	3,(1), (5)	RC3	Q4/4
9	3 review and research papers focusing on European PoTaRCh interrelations with links to former colonies, special issues regarding	4, (3), (5)	RC3	Q4/4

	transport, impact on forests and landscape, besides environment the comparison of social situation of the producers and their families will be targeted, the third focus is set on sustainability of PoTaRCh in history in the dimensions of the SDGs			
10	White paper for policy makers, international organizations about PoTaRCh relations to bio-economy strategy and forest transformation	5, (4)	CB3, 4	Q1/4
11	3 review and research papers focusing on current and future products, product demands of bio-economic industry, innovative ways of product use, challenges, role of PoTaRCh in the discussion about biodiversity enhancement and forestry transformation	5, (3), (4)	RC2	Q4/4
12	Catalogue of production maps, archives, photos, etc. of human and non-human actors/social-ecological systems incl. "European vocabulary of PoTaRCh (OA)	1, (3), (4)	RC2	Q3/4
13	Education trail across Europe	1, (3), (4)	CB6	Q4/3
14	Innovative touristic concepts in line with heritage preservation	5, (1)	CB4	Q4/4
15	Action webpage with ongoing updates and news	All	CB6	Q4/4

4.1.3. RISK ANALYSIS AND CONTINGENCY PLANS

Risk*	Description	Mitigation and contingency
L	Lack of specific expertise	The proposal was composed by an informal network of around 100 people covering all aspects that will be addressed by PoTaRCh; different scientific fields and relevant stakeholders from the non-academic field. Information and calls will be launched in the respective academic and non-academic networks including social media
M	Unbalanced expertise	The four forest by-products charcoal, resin, tar, and potash are different in terms of regional importance, diversity of applications, and amount of scientific research. Therefore, the Action will take special care on a balanced expertise. Keeping this risk in mind will help to specifically search for people and activities about those products that are least represented
L	Lack of ITCs	The following 14 ITCs are confirmed: Bulgaria, Czech Republic, Croatia, Estonia, Hungary, Latvia, Luxembourg, Poland, Portugal, Serbia, Slovakia, Slovenia, Romania, and Turkey. Further ITCs will be addressed explicitly after starting the Action. Active tradition bearers that might not yet be connected on a national or international level will be encouraged.
M	Lack of YRs	The Action will focus on the involvement of Young Researchers in collaboration with international student and PhD programmes, existing doctoral schools and regional university networks (e.g., ELLS: Euroleague for life sciences, Danube Rectors´ Conference, CASEE: The ICA Regional Network for Central and South Eastern Europe)
M	Language barriers	Many local people, who are active producers, feel rather uncomfortable with other languages besides mother tongue. Therefore, The Action will support these specific stakeholders. A shared database for mutual help to translate such texts will be coordinated by the Action.
L	Long-term perspective	It is important to realize that the databases coordinated by this Action can be starting points for further research projects but also deeper connection among the regional or national associations of tradition bearers. Therefore, a long-term perspective for the results will be established at an already existing data repository (specific for non-wood forest products)

M	Lack of interest from industry	Involvement of already existing partners, meetings and workshops that specifically address industry interests, where appropriate we will adjust our scope towards industry interest
L	Russia-Ukraine conflict	The escalation of the conflict between Ukraine and Russia has made cooperation with Ukraine, Russia, and Belarus difficult. These countries are particularly important in the context of the Action theme, because they are the largest PoTaRCh producers with the longest and richest history. As part of the Action, cooperation with Ukrainian specialists will be carried out. If possible, it will be extended to other countries. There may also be problems with travel in Central and Eastern Europe. Then, the solutions provided for in the event of an increase in Covid-19 will be applied

4.1.4. GANTT DIAGRAM

Activity of EU-PoTaRCh COST network	Responsable	Year 1				Year 2				Year 3				Year 4			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Organization																	
Kick-off meeting																	
MC Meetings																	
Steering Committee Meeting (quarterly)																	
Working Group Reports (quarterly)																	
Progress Reports/Final Report (yearly)																	
Training and career development of ECIs																	
STSM-short term scientific mission (min 15)																	
Training Schools (min 5)																	
Konowledge sharing																	
Thematic workshops (min 5)																	
Conferences COST																	
Dissemination and communication																	
Action webpage with ongoing updates and news																	
Presentation at specific conferences																	
Short videos																	
Edited book volume																	
Activity of Working Groups																	
Activation and networking of active traditions bearers with all stakeholders	WG1																
Platform sharing knowledge	WG1																
A European plan to preserve the intangible heritage	WG1																
Analytical protocol allowed identification of EU-PoTaRCh materials.	WG2 (WG5)																
Database of EU-PoTaRCh products and technologies	WG2 (WG5, WG1)																
Best-practice guide for identifying and excavating EU-PoTaRCh sites	WG3																
White paper for policy makers	WG5 (WG1, WG4)																
Innovative touristic concepts in line with heritage preservation	WG5 (WG1)																
Catalogue database of EU-PoTaRCh	WG1 (WG3, WG4)																
Educational trail across Europe	WG1 (WG3, WG4)																