

Brussels, 23 June 2017

COST 043/17

DECISION

Subject: **Memorandum of Understanding for the implementation of the COST Action “European Energy Poverty: Agenda Co-Creation and Knowledge Innovation” (EuropeanEnergyPovertyACTION) CA16232**

The COST Member Countries and/or the COST Cooperating State will find attached the Memorandum of Understanding for the COST Action European Energy Poverty: Agenda Co-Creation and Knowledge Innovation approved by the Committee of Senior Officials through written procedure on 23 June 2017.



MEMORANDUM OF UNDERSTANDING

For the implementation of a COST Action designated as

COST Action CA16232
EUROPEAN ENERGY POVERTY: AGENDA CO-CREATION AND KNOWLEDGE INNOVATION
(EuropeanEnergyPovertyACTION)

The COST Member Countries and/or the COST Cooperating State, accepting 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 (the 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 new document amending or replacing them:

- a. "Rules for Participation in and Implementation of COST Activities" (COST 132/14);
- b. "COST Action Proposal Submission, Evaluation, Selection and Approval" (COST 133/14);
- c. "COST Action Management, Monitoring and Final Assessment" (COST 134/14);
- d. "COST International Cooperation and Specific Organisations Participation" (COST 135/14).

The main aim and objective of the Action is to This Action aims to engender transformational change in the level of scientific knowledge on the investigation and amelioration of household-level energy poverty (EP) in Europe, while leading to the development of comprehensive, innovative and evidence-based policy frameworks.. This will be achieved through the specific objectives detailed in the Technical Annex.

The economic dimension of the activities carried out under the Action has been estimated, on the basis of information available during the planning of the Action, at EUR 84 million in 2016.

The MoU will enter into force once at least five (5) COST Member Countries and/or COST Cooperating State have accepted it, and the corresponding Management Committee Members have been appointed, as described in the CSO Decision COST 134/14.

The COST Action will start from the date of the first Management Committee meeting and shall be implemented for a period of four (4) years, unless an extension is approved by the CSO following the procedure described in the CSO Decision COST 134/14.

OVERVIEW

Summary

Energy poverty (EP) – commonly understood as a household’s inability to secure socially- and materially-necessitated levels of energy services in the home – is prevalent across Europe. More than 50 million households in the European Union are struggling to attain adequate warmth, pay their utility bills on time, and live in homes free of damp and mould. These conditions adversely affect people’s health and well-being. Recognition of EP is growing across Europe, and the issue has been identified as a policy priority by a number of EU institutions, including the Energy Union Framework. Yet there has been a chronic lack of integrated discussion and interpretation of the problem within relevant scientific and policy communities. This has prevented the development of systematic understandings and effective policy responses.

The core aim of this Action is to radically transform the extent and depth of scientific knowledge about EP in Europe. It will generate a step change in how EP is theorised, detected and addressed. This will be achieved by establishing multidisciplinary collaborations at the nexus of several domains in which EP has been treated separately to date – human geography, energy studies, economics, sociology and political science. The Action will also produce innovative methods for knowledge exchange among academics, public policy officials, civil society and representatives of vulnerable households, while fostering a new generation of scholars. It will offer a unified platform to harness the analytical insights and resources produced by the large but highly fragmented landscape of funded research projects on EP in Europe.

<p>Areas of Expertise Relevant for the Action</p> <ul style="list-style-type: none"> ● Social and economic geography: Socio-economic aspects of environmental sciences ● Environmental engineering: Energy and fuels ● Sociology: Social structure, inequalities, social mobility, social exclusion, income distribution, poverty ● Political Science: Political systems and institutions, governance 	<p>Keywords</p> <ul style="list-style-type: none"> ● Energy poverty ● Social inequality ● Housing
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Specific Objectives

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

Research Coordination

- Create a trans-disciplinary analytical approach for understanding the driving forces of EP
- Develop a common framework for determining the extent of EP
- Bring into being an active platform for European dialogues on researching and addressing EP
- Generate trans-disciplinary innovation in EP research and policy

Capacity Building

- Increase the technical and scientific competence of network participants
- Produce new partnerships, exchange opportunities, and collaborations
- Generate leadership opportunities for ECIs and participants from COST and Near Neighbour countries
- Identify and follow up specific funding avenues for new projects

1) S&T EXCELLENCE

A) CHALLENGE

I) DESCRIPTION OF THE CHALLENGE (MAIN AIM)

This Action aims to engender transformational change in the level of scientific knowledge on the investigation and amelioration of household-level energy poverty (EP) in Europe, while leading to the development of comprehensive, innovative and evidence-based policy frameworks. EP is defined by a household's inability to access or afford domestic energy services up to a socially and materially necessitated level (Bouzarovski & Petrova, 2015). The significant extent of EP in Europe means that the Action addresses a major societal challenge that impinges on three inter-related research questions:

RQ1. How can EP be understood and eradicated via multidimensional research and policy? EP is a cross-sectoral problem that stems from several sectors, including housing, public health, energy markets, climate change mitigation and social welfare provision. There is no immediately obvious decision-making home for EP, and consequently the issue often falls between the cracks, with limited policy responses by the EU and many national governments. The Action focuses on understanding how EP can be addressed and analysed via interdisciplinary and multi-agency approaches.

RQ2. What are the conceptual and methodological complexities that underpin EP? Researching EP is a challenging task for numerous reasons: i) it is private (being confined to the home); ii) it encompasses a diversity of domestic energy services (from space heating and cooling to hygiene and entertainment); iii) it is temporally and spatially dynamic (which means that causes and consequences are difficult to identify); iv) it is culturally sensitive (energy service norms are socially constructed); and iv) as noted above, it has numerous and complex drivers. The Action addresses the limited availability of adequate data at the European and national levels, while resolving the lack of consensus on how EP should be conceptualised and measured.

RQ3. What is the best way of overcoming limited knowledge on EP in Europe? There is a need to strengthen the scientific basis for alleviating EP, and identify opportunities for policy synergies between EP-orientated policies and other pressing social challenges, such as climate change mitigation, transitions to low carbon futures, housing affordability and the reduction of poverty and social exclusion more generally. For the first time, the Action will involve the compilation of a COST-wide evidence base of scientific research and case studies of best practice, in combination with policy and knowledge transfer via collaborations between universities, businesses, NGOs, the public sector, and representatives of vulnerable households.

II) RELEVANCE AND TIMELINESS

The recent inclusion of affordable energy as a key priority enshrined by the Energy Union Framework testifies to the expanding recognition of EP across Europe. Further evidence is provided by the emergence of national policy approaches in France (Plan Bâtiment Grenelle, 2009) and Ireland (Department of Communications, Energy and Natural Resources, 2011), in

addition to revised government policy and methodology in England (Department of Energy and Climate Change, 2013). At the EU scale, the problem of ‘energy poverty’ was first legally introduced in Directives 2009/72/EC and 2009/73/EC concerning the common rules for internal markets in electricity and natural gas. These documents recognise the existence of EP, its growing importance in the community, the need for action plans in all Member States, as well as enabling the protection of vulnerable consumers.

In contrast to many other aspects of EU energy policy, there is no specific policy package outlining what EP is, or what targets might reasonably be applied for reducing it. Without these, a significant tension remains between many of the EU’s diverse energy targets (such as carbon emission reduction targets), and the realities of achieving these equitably i.e. in a manner which safeguards those most vulnerable (Bouzarovski et al., 2012). Yet there is strong EU-wide support for ensuring that investments in ameliorating EP are targeted towards those who are most vulnerable. This is reflected not least of all in the activities of the EU’s Vulnerable Consumer Working Group, which has published a Guidance on Vulnerable Consumers (2014), and in the 2012/27/EU Directive on energy efficiency, which recommended linking energy efficiency financing to targeted programmes to prevent EP.

Recent years have seen the publication of a growing number of policy documents issued that focus specifically on the issue of EP, including two opinion documents from the European Economic and Social Committee (EESC) in 2011 and 2013, and one opinion document from the Committee of the Regions (CoR) in 2014. Both the EESC and CoR have called for co-ordinated European measures to prevent and combat EP, including the creation of a common general definition of EP, harmonised statistics and indicators, and a European EP Observatory. In April 2014, the European Parliament passed a resolution urging Member States declare a moratorium on winter heating disconnections and include social aims in their energy efficiency schemes. At the same time, the EU and national agencies have funded a significant number of research and practice-orientated projects on issues surrounding EP. While the total value of all these projects exceeds 30 million Euro, they lack an integrated forum to articulate the prescient methodological, scientific and policy questions surrounding the issue, as well as the development of common frameworks to address it.

The launch of the European Energy Union during 2015 means it is more pertinent than ever to build an integrated multi-disciplinary network of experts working on EP. The EU Energy Union is intended to ‘ensure that Europe has secure, affordable and climate-friendly energy’ reflected in five interlinked policy dimensions: security of supply, integrated energy market, energy efficiency, reduction of emissions and research and innovation concerning low carbon technologies. The European Commission’s communication package related to the Energy Union identifies EP as ‘a combination of low income and general poverty conditions, inefficient homes and a housing tenure system that fails to encourage energy efficiency’. This focus upon affordability and efficiency demonstrates a concern for vulnerable consumers within Europe, and the associated documentation identifies the need for a combination of measures to reduce EP. Funding will be made available to encourage a shift towards a low-carbon economy that will allow for long-term investment in the energy efficiency of buildings and empowering consumers: €38 billion over 2014-

2020. Finally, the package recognises the necessity of shielding vulnerable consumers using social policies at the national level, through the welfare system.

The major financing and policy commitments embedded in the Energy Union reflect the EU’s growing recognition of the importance of tackling EP. The lack of scientific networking efforts to support this endeavour means that EuropeanEnergyPovertyACTION is highly timely and has major practical and scientific significance in addressing an urgent societal challenge with

ramifications in multiple policy domains – including energy, environment, climate, housing, social welfare, health, regional development – at the European level.

B) SPECIFIC OBJECTIVES

I) RESEARCH COORDINATION OBJECTIVES

The Action will address the aforementioned RQs via four result-orientated research objectives:

- RO1. Create a trans-disciplinary analytical approach for understanding the driving forces of EP by integrating the state of the art in EP scholarship and moving beyond national definitions (in relation to RQs 1 and 2);
- RO2. Develop a common framework for determining the extent of EP via the formulation of harmonised pan European indicators for measuring and monitoring EP at regional, national and the COST-wide level (following from RQ3);
- RO3. Bring into being an active platform for European dialogues on researching and addressing EP among four sets of relevant stakeholders (EU institutions, advocacy groups, think tanks, academia, business). This will generate mechanisms by which EP can become fully embedded within policy, research, and practice (in response to RQ1);
- RO4. Generate multiple forms of innovation by forging direct connections between research and policy on EP, on the one hand, and activities in the domains of energy efficiency, welfare provision, utility regulation, and public health, on the other. This objective will support innovation in policy development and practical eradication of EP, whilst also encouraging processes of knowledge co-creation (addressing RQs 1 and 2).

Subsequently, outputs generated by the objectives will include breakthrough scientific developments in the form of codified knowledge (e.g. the analytical framework in RO1, and the indicator and definition frameworks in RO2), tacit knowledge (particularly via innovative results stemming from work in RO4) as well as societal applications (the platform in RO3 and applied framework in RO2).

II) CAPACITY-BUILDING OBJECTIVES

The Action will unify the currently fragmented landscape of EP researchers and practitioners into a focused and coherent international team with a clear focus on revolutionising understandings of domestic energy deprivation in Europe and beyond. Different forms of participation and engagement will be utilised so as to simultaneously address RQs 1 and 3 above. The Action will:

- CO1. Increase the technical and scientific competence of network participants through processes of knowledge co-production, allowing practical insights held by policy-makers to be cross-pollinated with researchers and practitioners. This will be achieved by means of deliberative discussion forums, training schools and Short Term Scientific Missions (STSM);
- CO2. Produce new partnerships, exchange opportunities, and collaborations between researchers and policy-makers from countries across Europe, involving a diversity of relevant stakeholders (including energy poor households themselves) via iterative learning loops and comparative feedback mechanisms;
- CO3. Generate leadership opportunities for Early Career Investigators (ECIs) and participants from COST and Near Neighbour countries hitherto under-represented, but where EP risks are greatest (especially in Southeast Europe);
- CO4. Identify and follow up specific funding avenues for new projects, while focusing on cross-cutting funding streams allocated to projects concerned with climate change, public health, housing reform, energy efficiency, social and health inequalities.

C) PROGRESS BEYOND THE STATE-OF-THE-ART AND INNOVATION POTENTIAL

I) DESCRIPTION OF THE STATE-OF-THE-ART

In research terms, knowledge about EP and related concepts in Europe has the longest history in the UK and Ireland. Isherwood and Hancock (1979) are credited with being among the first to draw attention to the issue of EP (called 'fuel poverty' in the UK), followed by Boardman's seminal monograph (1991), which provided the foundations for the present day measurement of EP. Since then a substantial number of British studies have been conducted that examine the phenomenon among specific sub-groups (Baker et al., 2003; De Haro & Koslowski, 2013; Jansz & Guertler, 2012).

EP research in the rest of Europe started to develop more recently, even if a wider range of approaches have been used. Single country studies have been conducted in, inter alia, Ireland (Healy & Clinch, 2002), France (Dubois, 2012; Legendre & Ricci, 2015), Greece (Santamouris et al., 2013), Germany (Heindl, 2013), Hungary (Bouzarovski et al., 2015), Austria (Brunner et al., 2012), Spain (Tirado Herrero, 2012), Italy (Valbonesi et al., 2014), and Denmark (Nierop, 2014). There is also an established body of comparative research, focusing on the EU specifically (Bouzarovski, 2014; EPEE Project, 2008; Healy, 2004; Pye et al., 2015; Thomson & Snell, 2013), and on Central and Eastern Europe and Central Asia (Lampietti & Meyer, 2002). EP is found to be particularly widespread in Eastern, Central, and Southern Europe, but has relatively low incidence in the Nordic countries. The latest comparative estimate of EP, based on subjective self-reported indicators from Eurostat's SILC survey indicates that in 2010 around 52.1 million households across EU27 were struggling to attain adequate warmth, pay their utility bills on time, and/or lived in homes with damp and mould (Thomson, 2015).

From the limited amount of scholarship that has been published, it is possible to conclude that EP is predicated upon high energy prices, low household incomes, inefficient buildings and appliances, and specific household energy needs, perhaps relating to chronic illness or family characteristics. Living in EP is associated with a range of adverse consequences for people's physical health. A relationship between poor mental health – and well being more generally – on the one hand, and cold housing/in EP on the other, is also evident in the literature (Brunner et al., 2012; Liddell & Guiney, 2015; Middlemiss & Gillard, 2015). Less is known about domestic vulnerability to hot weather – an issue that is likely to grow in importance given the potential effects of climate change in Europe, and is one which lends itself well to knowledge transfer from COST International Partner Countries (IPCs) in Australia, South Africa, New Zealand and the United States (Li et al., 2014).

Whilst it is evident from the range of studies listed that the recognition and analysis of EP is growing rapidly across Europe, knowledge about fuel poverty is still lacking at the European scale. Furthermore, in some instances there has been an incorrect or uncritical application of methodologies from the UK in other countries, suggesting a need to build technical and scientific capacity within the field. Many of the single country studies have used data that is at risk of becoming obsolete. There is a significant level of debate within the academic and policy community concerning the methods and approaches for measuring the extent of EP, and in particular, there is a lack of terminological agreement about the linguistic descriptors used to capture the condition: inter alia, the terms 'fuel poverty', 'domestic energy deprivation', 'energy precariousness', and 'energy poverty' have all been employed. Moving forward, the COST Action is necessary for bringing about a conceptual shift in the mainstream theorisation of domestic EP, in order to incorporate more complex and nuanced issues of household needs and energy justice (Bickerstaff et al., 2013; Walker & Day, 2012).

As far as networks of expertise are concerned, at present fragmented and informal linkages between EP scholars and practitioners exist, as evidenced by:

- The 2012 publication of a Special Issue of the peer-reviewed journal Energy Policy commemorating 25 years of research and policy in the field of fuel poverty;
- The launch of two international websites - www.fuelpoverty.eu in December 2011, and www.urban-energy.org in March 2013. Both websites offer a web platform for raising awareness of EP, and each receive between 1,500 – 2,000 visitors per month on average;
- The recent establishment of an EP Task Force by the European Policy Centre, supported by Schneider Electric Foundation and the King Baudouin Foundation;
- International conferences and workshops in Dublin, Paris, Brussels and Manchester, and ESR workshops in Sheffield, Manchester and Belfast since 2010.

However, while it is widely agreed that EP is a growing global problem, there is no European consensus concerning even the most basic of concepts, such as: how EP and related concepts are defined - at least five variants are currently being used across Europe (Thomson et al., 2016); how EP is measured and monitored, and who is most vulnerable to its impacts across space and time; and how it affects energy-related social practices in the home and other aspects of everyday life.

II) PROGRESS BEYOND THE STATE-OF-THE-ART

Because of the complexity of the topic and the fact that it has been studied from different perspectives, the Action will identify and build on the commonalities that underpin existing EP research in order to develop an inclusive framework for tackling the problem and advance a new and integrated understanding. This framework will bridge the gaps between conceptualisations prevalent in the economics community (where the focus is on affordability measures); sociology and geography – principally emphasising households needs and everyday practices; as well as housing and energy studies, with their focus on technological characteristics. Such hitherto disparate strands of research will be integrated in an incisive, reflexive and co-ordinated manner so as to engender a radical shift in the state of EP knowledge. The innovations stemming from tackling the challenge fall into three main categories:

1. Conceptual and methodological innovation, due to the Action's introduction of cutting-edge theoretical approaches (e.g. vulnerability and justice thinking), as well an emphasis on European countries where the impacts of EP are known to be greater, and where the need for action is therefore more urgent. At the same time, experience and knowledge from countries that have pioneered EP research and action (such as the UK, France and Ireland) will be brought into a dialogue with debates in the rest of Europe, where the focus has been on a wider range of energy services and societal relations (Biol, 2007; Kopatz, 2009; Petrova et al., 2013). This will encourage paradigm shifts in the conceptualisation and measurement of EP in emergent and established scientific contexts alike.

2. Public policy innovation: This Action will bring the topic of EP into the spotlight by highlighting its significance for the operation of the energy system as a whole (Heffron & McCauley, 2014), its existence a distinct form of material deprivation, and its relationship with 'smart' low carbon agendas (Darby, 2012). At the same time, this will allow understandings of EP to be embedded in more established energy-, climate- and health-related agendas at the national and European level.

3. Networking and participation innovation: The Action will nurture and encourage the engagement and mobility of a new generation of young researchers and professionals. This will produce an infrastructure for on-going innovative research and practice in the field of EP; work to promote gender balance in the network; and involve experts, policy-makers, practitioners and representatives of vulnerable groups from countries hitherto under-represented, but where EP risks are greatest (particularly in Eastern and Southern Europe).

D) ADDED VALUE OF NETWORKING

I) IN RELATION TO THE CHALLENGE

As the EESC remark in relation to EP, 'not all Member States are addressing this problem and those that are, act on their own, without seeking synergies with others' (EESC, 2011, p. 4). EP is COST-wide in nature and it also has many causes which span income, housing, lifestyle, and energy costs; these causes vary in their dominance depending on which country is being considered. When such factors are combined together, then added to the lack of any co-ordinated strategy through which EP can be defined, measured, monitored or tackled, it becomes self-evident that a pan-European network is crucial for making progress. The main added value from networking results from linking the activities and outcomes of groups and policy fields that are currently not engaged in active cross-disciplinary dialogue.

The sheer number of disparate debates and activities across Europe means that COST is currently the only mechanism that can provide for major scientific and policy advances beyond the current level of knowledge. The Action will enable researchers to learn approaches and skills from each other, and from experts located all over the continent, especially via STSMs and training schools (thus overcoming gaps in existing projects, as well as indirectly utilising the resources contained in existing initiatives). There will be an emphasis on the training of ECIs in research techniques, in conjunction with involving them in active research projects and in co-publishing. This will ensure the longevity of efforts to advance EP research after the Action has finished. Given the disparity of existing research on EP – which is concentrated in Western Europe even if recent years have seen a proliferation of policy and science activities focused on Eastern, Central and Southern Europe – the network is explicitly aimed at reducing existing knowledge and practice hierarchies via a system of regional workshops preceded by field activities, involving combined teams of scientists, policy-makers, the business sectors, practitioners, as well as representatives of tenant associations and vulnerable households. These heterogeneous communities of practice will seek to transfer experience across Europe while giving voice to and establishing trust among affected groups (more information is available in Section 3.A.I. below). A comparative feedback mechanism will function on an annual basis in order to collate the results of regional workshops and work towards a genuinely inclusive, bottom-up and decentered understanding of EP.

II) IN RELATION TO EXISTING EFFORTS AT EUROPEAN AND/OR INTERNATIONAL LEVEL

The COST Action stems from and will actively establish synergies with on-going and completed European level/funded projects such as EVALUATE (Energy Vulnerability and Urban Transitions), FIESTA (Family Intelligent Energy Saving Targeted Action), REACH (Reduce Energy use And Change Habits), COMBI (Calculating and Operationalising the Multiple Benefits of Energy Efficiency in Europe), ENACT (The Energy Action Project) as well as the European Energy Poverty Task Force, in addition to the networks created by projects that are completed but could contribute significant insights (e.g. ACHIEVE (Actions in low income Households to Improve energy efficiency through Visits and Energy diagnosis), EC-LINC (Energy Check for Low Income Households),

ELIH-MED (Energy efficiency in Low Income Housing in the Mediterranean), EPEE (European Fuel Poverty and Energy Efficiency), EVENT (Energy Vulnerability and Alternative Economies in Northern Greece), INCLUESEV (Interdisciplinary Cluster on Energy Systems, Equity and Vulnerability). EuropeanEnergyPovertyACTION incorporates an unprecedented Network of Proposers (more than 60) who have participated or currently participate in the work of this wide suite of projects, as well as the forthcoming European EP Observatory.

In the Action, the diverse sets of research data and methodologies generated by EVALUATE, EVENT, EPEE and INCLUESEV will be combined with the accumulated field knowledge and

networks developed by the REACH, EC-LINC and ELIH-MED projects towards a model of EP that incorporates multiple forms of knowledge co-creation across the science-policy interface. At the same time, the ENACT project has created innovative forms of representing and involving the plight of vulnerable people that will be actively utilised in dissemination and outreach activities. The Action will also collaborate closely with the European Energy Research Alliance (EERA) E3S Joint Programme, as addressing EP has been recognised as ‘grand challenge’ in the transformation of the European energy system. As a whole, the Action will help overcome the fragmented research landscape in which existing projects currently operate, while leveraging resources (particularly staff costs and equipment – e.g. for measuring the energy efficiency of the housing stock) that cannot be funded by COST. Collaboration among researchers from current initiatives will also drastically increase the impact and reach of scholarly and policy outputs (the Action’s plan of activities, detailed below, foresees a dedicated working group where this can happen via customised case studies, as well as specific ways of collaborating with the forthcoming European EP Observatory).

2) IMPACT

A) EXPECTED IMPACT

I) SHORT-TERM AND LONG-TERM SCIENTIFIC, TECHNOLOGICAL, AND/OR SOCIOECONOMIC IMPACTS

The transformational changes engendered by the Action will be visible at the scientific, public policy and socio-economic levels. Scientifically, the project is expected to revolutionise the state of the art in EP research, while contributing to debates on safeguarding consumers during the transition to a low carbon economy, and playing a key role in shaping understandings of vulnerability in the coming years. In terms of direct public policy impacts, this Action will raise the visibility of EP as a pressing societal challenge, and target areas of policy where EP could achieve a higher profile (likely to include energy efficiency, housing policy, climate change, low carbon transitions, and public health). The outcomes of ROs 2 and 4 in are expected to generate specific policy mechanisms and synergies that will allow EP to become embedded in these areas of activity. The comparative feedback mechanism, in particular, will offer new ways of integrating knowledge from under-represented regions and groups in mainstream European understandings of, and policy towards, EP.

Societal impacts will be principally indirect, stemming from the dissemination and engagement outcomes of the action: improved health, well-being, educational, and financial outcomes in the population. The Action will directly work with representatives of EP households, thus providing in situ advice on the amelioration of the problem and a public voice for people facing this form of hardship. If EP is reduced as a result of the Action, this will also be beneficial for national and European governments at the macroeconomic and policy level, thanks to reduced expenditure on healthcare, and policy synergies with mitigating climate change. An unintended consequence of the Action would involve improvements to the functioning of the common energy market as a result of greater corporate accountability and transparency, as well as improved levels of consumer engagement.

The long-term legacy of the Action will be ensured via:

- The existence and establishment of internationally accepted methods for conceptualising, measuring and monitoring EP (stemming from RO2);
- The continued functioning of the technical platforms created by the Action – offering knowledge exchange opportunities across the science-policy-practice-everyday life interface, alongside social media tools – as well as the impacts generated by its published outputs (particularly as a result of CO1);

- The fostering of a new generation of researchers (stemming from CO3) who will take forward the activities of the Action into follow on activities;
- The development of new funded academic research (as an outcome of CO4) as well as potential financing bids pursued by local authorities, practitioners or NGOs in the network.

B) MEASURES TO MAXIMISE IMPACT

I) PLAN FOR INVOLVING THE MOST RELEVANT STAKEHOLDERS

The network of researchers and practitioners that currently stands behind EuropeanEnergyPovertyACTION is the most comprehensive to have ever been formed in the field of EP. The Action's diverse Network of Proposers includes: academics; global, local and national decision-makers; employees in public health organisations; representatives of housing associations; energy service businesses; charitable foundations; as well as several key think tanks and advocacy groups. If funded, the Action will undertake an extensive programme of outreach and engagement activities to actively involve and empower an additional range of stakeholders relevant to EP: European institutions, social innovators, co-operative credit unions and national energy regulators. Moreover, the Management Committee (MC) will be responsible for co-producing and annually updating a stakeholder engagement strategy, in conjunction with the individual Working Groups. The strategy will include measures to involve participants in countries where EP is less known but where EP risks are greatest, and to address COST Inclusiveness Target Countries (ITCs). It will prioritise knowledge co-creation with non-academic actors (from policy-makers to households) via a series of active participation and trust-building measures. More information is available in Section 3.A.1 below.

II) DISSEMINATION AND/OR EXPLOITATION PLAN

A range of tailored dissemination and co-production strategies will be used to target a variety of audiences including academics, research centres, public health organisations, housing associations, energy service businesses, decision-makers, energy regulators, non-governmental organisations, social innovators, cooperative credit unions, charitable foundations and general lay audiences:

- Regular blog posts and updates on the interactive Action website, including updates to the depository database.
- Publications in scientific and professional journals, directed at high-impact peer-reviewed international journals. A significant proportion will be in open-access form to ensure broad dissemination;
- Production of regular policy briefs, which will offer policy recommendations and examples of good practices;
- Presentations on specific elements of the Action's work at external conferences, workshops, and other events;
- Hosting regional workshops in different COST regions, using innovative deliberative methods, including urban living labs, including, inter alia, representatives of vulnerable households;
- Video and sound clips for media use, and short media briefings - including streaming of Action Conferences;
- Integration of the Action's outcomes in the educational programmes of involved universities (currently more than 30 such partners are included in the Network);
- Regular postings on social media sites, including Twitter, YouTube, Facebook, LinkedIn;
- Hosting a high-level roundtable discussion event during the EU Sustainable Energy Week in Brussels, June 2018 and subsequent years;

- The final output will be an edited book, which will serve as the long term legacy of the Action.

The Action's website will be the main point of contact for people involved with the Action, as well as for all other interested parties. Collective expertise gained from the operation of existing research websites (detailed earlier in the application) will feed into the website design process. The website will consist of a password protected intranet, and a freely accessible extranet. The intranet will serve as a virtual meeting point and forum for discussion for Action members, enabling the internal exchange of results and ideas. This will provide a continuous point of contact among Action members and Working Groups (WGs), and in doing so it will reduce travel costs and contribute to the stability of the Action.

In terms of the freely available public-facing extranet content, each WG chair will be responsible for uploading at least one blog article about the activities of their WG each quarter, and the Chair of the Action will be responsible for uploading blog articles that summarise the overall activities of the Action biannually. A key part of the extranet will be represented by the depository database, which will contain working papers, scientific evidence, tools for the measurement and assessment of EP, and case studies of interventions (best practices). Broad dissemination strategies will be determined by the MC, whilst specific dissemination plans will be developed by each WG, and will be tailored to the relevant stakeholders in each instance. All members of each WG will be expected to contribute to at least one scientific, academic or professional publication for each year of the Action.

C) POTENTIAL FOR INNOVATION VERSUS RISK LEVEL

I) POTENTIAL FOR SCIENTIFIC, TECHNOLOGICAL AND/OR SOCIOECONOMIC INNOVATION BREAKTHROUGHS

This Action targets various aspects of EP, from initial theorisation, through to eventual alleviation. It has set itself ambitious scientific targets, which, if achieved, can lead to methodological, conceptual, public policy and socio-economic breakthroughs in how domestic energy deprivation is understood and addressed. The Action includes a number of unconventional aspects: it takes the debate about EP beyond the current emphasis on low incomes and poor residential energy efficiency by integrating a much wider range of social issues, while promoting the development of an unprecedented range of state-of-the art methods to analyse domestic energy deprivation. While this is a high risk – high gain project, the nature of the network of co-proposers and the design of the Work Programme are expected to mitigate against many of the challenges that the Action is likely to face.

EuropeanEnergyPovertyACTION will lead to comprehensive conceptualisations and assessments of EP as part of future research and policy. A key risk in this regard is that researchers from countries that have been deemed pre-eminent in addressing EP (typically the UK, France and Ireland) will dominate proceedings, thus reducing innovation. However, the Action's Work Plan involves provisions for engaging its diverse group of secondary proposers via a wide array of participatory methods (including deliberative workshops and living labs, based on the experiences of projects like ACHIEVE, ENACT and EVALUATE) so as to ensure that the voices and ideas of more marginal stakeholders are heard. These geographically-representative fora, involving equal representation of different types of policy, science and practitioner actors (described further in Section 3.A.I) will also help mitigate against the domination of a single group of stakeholders (e.g. academic researchers) in producing the results.

This Action will bring the topic of EP into the spotlight and serve as a catalyst for social innovation and judicial-legal and policy changes. This should lead to the integration of new thinking on EP in broader energy- and health-related agendas that are already established at the national and European level. Related risks concern the accessibility of key stakeholders

and decision-makers, which would impact the ability of the Action to affect change in policy and governance. However, the accumulated networks and policy experience of the network of proposers should mitigate against this possibility. The Action Plan also has mechanisms in place to address the risk that consensus may be difficult to reach due to the diverse group of participants that EuropeanEnergyPovertyACTION includes – in such a case, a common framework will be agreed at the most general level possible, with more specialised solutions being developed within specific WGs under the MC's supervision.

Innovation also lies in the network formation, which will integrate previously highly disparate disciplines to form an novel interdisciplinary network of experts while fostering a new generation of young researchers and professionals and enter into a dialogue with experts from COST IPCs where EP is approached differently. The key potential risk concerns difficulties in recruiting participants (particularly vulnerable groups) to take part in the WGs, training schools and events. But the wide range of networking and engagement tools foreseen by the Action mean that this risk is small in size relative to the potentially large benefits stemming from the connections created by the Action's network.

3) IMPLEMENTATION

A) DESCRIPTION OF THE WORK PLAN

I) DESCRIPTION OF WORKING GROUPS

To address the challenge of conceptualising and alleviating EP in Europe, the Action will establish four Working Groups (WGs). These will run in parallel so as to provide complementary explorations of different institutional, spatial and everyday aspects of insufficient energy services in the home. The WGs will provide a broad platform to engage a critical mass of academics, practitioners, policy-makers and activists at different career stages. They will be expected to creating a collective identity and purpose within the Action. A range of shared dissemination and engagement activities will ensure close links among the four WGs, alongside overlapping membership and regular cross-group communication. All WGs will regularly update the custom- built dynamic Action website (see section 2.B.II) with WG documents (reports, case studies, synthesis documents, toolkits, training manuals) in addition to its broader dissemination functions. All WGs will also jointly organise regional workshops, which will be linked to specific deliverables within each WG.

International conferences in years 1 and 4 will cut across all WGs. The conferences will feature parallel streams dedicated to each of their respective themes as well as joint plenaries and cross- group sessions. The Action's final year will see an edited book on EP in Europe, to be jointly prepared by all four WGs and submitted to a leading publisher. A comparative feedback mechanism will be established on an annual basis, co-ordinated by the Action's Core Group (CG) and integrating results from events during the given year. The mechanism will take the form of an action research-based iterative loop (Petrova et al., 2016) that will continuously synthesise all the results of the year's work throughout the project. It will take place at the annual meetings of the CG, held at the end of each project year.

Working Group 1: Integration – Transforming the state of the art

This group will be tasked with developing a common analytical framework for understanding the driving forces of the EP, while integrating and surpassing the state of the art in EP scholarship. It corresponds principally to RO1. The group will establish an interdisciplinary expert network that will focus on scoping the state of the art as well as resulting conceptual issues. It will aim to reach consensus on the elements involved in the conceptualisation of EP, while publishing a review document aimed at decision-makers and researchers in all stakeholder countries. The group will organise regional workshops with key stakeholders –

including representatives of vulnerable households - rotating around COST regions, as well as two postgraduate and ESR workshops, led by younger researchers to draw in newly emerging scholars and practitioners in relevant fields.

Milestones

- Year 1: Network formally established and WG membership agreed; initial engagement with relevant stakeholders, also via one ECI workshop and at least 1 regional workshop from month 6;
- Year 2: Completion of at least 2 regional workshops; production of review document, an academic paper and policy brief; continued engagement of key stakeholders;
- Year 3: Completion of one postgraduate/ECI workshop to draw in emerging researchers, at least 1 regional workshop; production of relevant paper and brief; continued engagement with key stakeholders;
- Year 4: Completion of at least 2 regional workshops; completion of one academic paper and state of the art briefing document.

Major deliverables

- Years 1-4: Review report on the full state of the art in EP, accompanied by at least three academic papers and three policy briefs (the last of these would focus on improvements in the state of the art);
- Years 1 and 4: Proceedings from the two postgraduate/ECI workshops;
- Years 1-4: Synthesis documents from regional stakeholder workshops.

Working Group 2: Implementation – Developing an operational European EP framework

This group corresponds to RO2. It will build on the results of WG 1 and the rest of the Action to consider the operationalisation of a common EP framework at multiple scales. The WG will examine key EP detection issues such as how existing measures capture the groups susceptible to EP in terms of energy access and needs, energy affordability, social norms, everyday practices, and technical infrastructure. The group will create an interdisciplinary expert network tasked with developing ways of monitoring at regional, national and COST-wide levels, using available data sources. The group will also produce toolkits on how to identify and measure EP with the aid of input from Eurostat and National Statistical Offices. At least three Short Term Scientific Missions (STSM) for ECIs will be organised: target hosts include research units that are using innovative methods to measure and monitor EP, the new European EP Observatory – whose aim is to provide a ‘go to’ point for statistical data and national reports on EP in the EU but can benefit from scientific input through the diverse stakeholder network created by the Action – and Eurostat, in order to gain access to new expertise and skills. The WG will also hold regular regional deliberative workshops with key stakeholders and decision-makers, rotating around COST regions. There will also be two training schools focusing on EP concepts, data, and measurement methodologies as well as a postgraduate and ECI workshop, organised by ECIs to draw in newly emerging researchers in relevant fields. The latter could involve a travelling element so as to engage participating countries and constituencies.

Milestones

- Year 1: Network formally established and WG membership agreed; initial engagement with relevant stakeholders, including via at least 1 regional workshop; completion of one STSM; production of an academic paper and policy brief;
- Year 2: Completion of one STSM, one training school, and at least 1 regional workshop; production of an academic paper and policy brief on EP methodology; continued engagement with key stakeholders, including Eurostat and statistical offices;

- Year 3: Completion of one STSM, one training school, and at least 1 regional workshop; production of a toolkit (and at least one academic paper, plus policy brief in the form of a best practice guide);
- Year 4: Completion of one ECI workshop to draw in emerging researchers, as well as at least 1 regional workshop.

Major deliverables

- Years 1-3: Report on moving beyond the 'state-of-the-art' in EP measurement, followed by at least three peer-reviewed academic papers and corresponding policy briefs;
- Years 1-3: Reports from the three STSMs;
- Years 2 and 3: Training manuals from the two training schools;
- Year 3: Methods toolkit supporting choices concerned with EP detection and measurement, as well as determining data quality and suitability;
- Year 4: Proceedings from the postgraduate/ECI workshop;
- Years 1-4: Synthesis documents from the regional workshops.

Working Group 3: Dialogues – Co-producing emancipatory research and practice

This WG addresses RO3. It will generate a hub for European dialogues between the COST Action, on the one hand, and relevant EU policy institutions, NGOs, academia, businesses and the social innovation community, on the other. These new partnerships, exchange opportunities, and collaborations will feed directly into the work of other WGs. A distinct focus of the group will be the exploration of governance practices surrounding the EP in all relevant policy areas, including low carbon transitions, energy efficiency, housing, social exclusion, and internal energy markets. The WG will identify and implement new ways of engaging key stakeholders, particularly via the use of new participatory methods: deliberative mapping, open space technology and urban living labs (thus building on existing expertise in the Network of Proposers, and finding new ways of forging trust among households affected by EP). It will also investigate policy learning processes, with a focus on policy transfer and policy mobilities. The key activity of the group will be biannual workshops with EU policy institutions, NGOs, academia, businesses and the social innovation community. These workshops will take a variety of formats and will be located throughout Europe. Their aim will be to establish inclusive engagement fora in various regions of the COST network while also engaging with representatives of vulnerable households and advocacy groups to achieve a higher profile for the rights of EP customers among energy suppliers, housing and planning agencies, and environmental groups. There will also be one training school, focusing on engaging in dialogue with stakeholders and media skills.

Milestones

- Year 1: Network formally established and WG membership agreed; initial engagement with relevant stakeholders, particularly via at least 2 regional workshops from month 6;
- Year 2: Completion of one training school resulting in an engagement manual, continued work with key stakeholders, including at least 2 regional workshops;
- Year 3: Production of a engagement toolkit, and involvement with stakeholders, including at least 2 regional workshops;
- Year 4: Completion of at least 2 regional workshops, and an academic paper submitted to a leading journal about the experiences gained through the whole dialogue process.

Major deliverables

- Years 1-4: Publication of at least four policy briefs on progress in establishing new dialogues, innovative deliberative methods, and future opportunities (these will also feed into the work of other WGs), the last of these will be associated with an academic paper;

- Years 1-4: Synthesis documents from the regional workshops;
- Year 2: Training manual from the training school;
- Year 3: Engagement toolkit about best ways of fostering trans-disciplinary and multi-agency dialogues.

Working Group 4: Innovation – Introducing path-breaking perspectives to the understanding of EP

This group will, in response to RO4, develop and consolidate best practice and knowledge around innovative solutions and co-benefits for alleviating EP, with links to emerging ‘smart’ technologies and ‘sharing cities’ in particular. In doing this, it will explore the potentially transformative power of decentralised energy technologies and practices, citizen-led initiatives for community-level energy service provision, municipal and civic ownership of energy systems, as well as informal and formal support networks around EP. It will forge direct connections with innovative research and practice in domains such as energy efficiency, welfare provision, utility regulation, and public health. The group will also explore the challenges and opportunities brought about by ground-breaking models of multi-agency involvement in addressing EP. It will feed into the work of WG1 and WG2 in suggesting improvements in the state of the art. The WG will compile an evidence base of leading edge solutions and research associated with EP alleviation. This will be made publicly available via the depository database on the Action website. It will incorporate the outcomes of completed and on-going innovative practical projects such as ACHIEVE, FinSH, and REACH, by way of case studies for each project. Such work will be accompanied by at least three STSMs so as to foster a practical exchange of knowledge (the STSMs will involve COST partner countries, which are also represented in the network). Like the other WGs, there will also be regular regional workshops with key stakeholders and decision-makers (including public health, environmental health, energy efficiency industry), rotating around COST regions. Based on the sum of these experiences the WG will produce, in the final year, an innovation toolkit involving ESRs in particular as well as researchers in relevant fields.

Milestones

- Year 1: Network formally established and WG membership agreed; initial engagement with relevant stakeholders, including via regional workshops; production of a policy brief and case studies of innovative schemes/research projects/businesses; setting up the evidence base;
- Year 2: Completion of at least 2 regional stakeholder workshops and one STSM; production of case studies, and at least one academic paper and policy brief on the impacts of EP and potential solutions; continued engagement of key stakeholders.
- Year 3: Completion of at least one STSM and at least 2 regional workshops; production of at least one paper accompanied by a policy brief, and further case studies; continued engagement of key stakeholders.
- Year 4: Completion of at least one STSM and 2 regional workshops and academic paper to establish novelties in the state-of-the-art; completion of the final policy brief.

Major deliverables

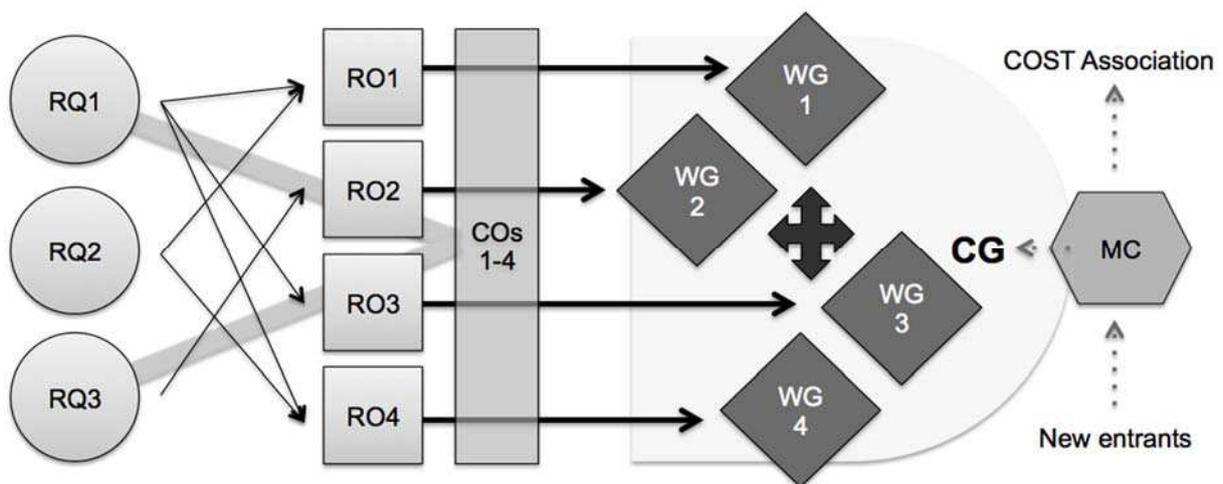
- Years 1-4: Innovation toolkit on new ways of understanding EP beyond conventional solutions, stemming from at least three peer-reviewed papers and case studies, and associated with four policy briefs. The latter will also be designed so as to feed into the work of other WGs;
- Years 1-4: Database containing information on novel approaches towards EP in trans-disciplinary and multi-agency terms.
- Years 2-4: Reports from the three STSMs and synthesis documents from regional stakeholder workshops.

II) GANTT DIAGRAM

A=Case studies B=Policy briefs C=Conference proceedings P=Peer-reviewed papers
 E=Edited book M=Training manual R=Reports S=Synthesis documents
 F=Feedback mechanism D=Database T=Toolkits

Group	Activities	Year (quarters)				Year (quarters)				Year (quarters)				Year (quarters)			
		0	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
All	Kick-off meeting	R															
	MC meetings			R				R				R				R	
	CG meetings				R/F				R/F				R/F			R/F	
	WG consolidation																
	WG meetings			R				R				R				R	
	Website		E														
	Conferences				C											C	
	Workshops		S		S		S		S		S		S		S	S	
WG1	Review						R										
	ECI events			C											C		
	Papers/briefs							P/B				P/B				P/B	
WG2	Review								R								
	STSM			R				R			R						
	Training schools				M				M								
	ECI events														C		
	Toolkit											T					
	Papers/briefs				P/B				P/B				P/B				
WG3	Training school							M									
	Toolkit											T					
	Papers/briefs			B				B			B				PB		
WG4	Database					D											
	Toolkit															T	
	Papers/briefs			B				B			B				PB		
	Case studies			A			A			A							
	STSM				R				R				R				

III) PERT CHART



IV) RISK AND CONTINGENCY PLANS

As pointed out above the key set of risks relating to the Work Plan is that it becomes dominated by a single set of stakeholders and evidence. To mitigate this risk, secondary proposers from a range of countries have been involved with the COST Action, including IPCs. Also, equal geographical representation will be ensured in both the MC and SC. At the same time, the location of events and training activities will be rotated around the regions of COST to ensure that researchers and stakeholders from underrepresented countries have the opportunity to participate.

A related risk includes difficulty in recruiting participants to take part in the WGs, training schools and events. This risk is judged to be minimal as researchers from across Europe have already shown a willingness to be involved throughout the project. However, if this risk should occur the Action would respond by vigorously networking and promoting the COST Action in order to recruit additional participants.

An additional group of risks concerns difficulty in accessing key stakeholders and decision-makers, which would impact the ability of the Action to affect change in policy and governance. However, the accumulated networks and experience of the Network of Proposers should mitigate against this risk, particularly as many of the Proposers are experienced in engaging and collaborating with policy stakeholders. While a more comprehensive list of risks will be developed at the inception of the Action, an initial assessment of key potential risks and associated mitigation strategies is highlighted below. The MC will maintain and annually update a risk register as a means of providing effective planning and management tools.

Type of risk	Management and mitigation strategies
Imbalance in the network, lack of consensus	Ensuring a wide geographical spread of activities; mobilising different sources of information available to the culturally and linguistically diverse network of co-proposers. Obligatory balanced geographical and stakeholder representation in CG, MC and network events. Establishing a comparative feedback mechanism.
Insufficient engagement, interest and participation	Early, prompt and energetic engagement of relevant government agencies and practitioner groups; use of different information channels in order to stimulate the participation and involvement of a variety of actors. Use of trust-building mechanisms (local dissemination) to include vulnerable households.
Institutional and management risks, poor delivery of Action targets	Establish tasks and expectations clearly, and set fair rules of participation and management of outputs; confront imbalances in power relations and interests in order to maintain coherent membership and participation. Address tensions among network participants and ensure that project milestones and outputs are met according to the Action Plan. Mobilise MC and CG structures to work together towards correcting any deficiencies.

B) MANAGEMENT STRUCTURES AND PROCEDURES

This Action will follow the rules and procedures for implementing COST Actions and will adapt the typical COST Action Management structure, with a Management Committee (MC), Core Group (CG), and Working Groups (WGs).

The MC of the Action will supervise and monitor scientific progress, coordinate annual reports, supervise budget allocation, and evaluate new applicants. At the kick-off meeting, the MC will set up the CG and outline initial structure of the WGs (which will need to be consolidated during the next 3 months). The MC will meet every six months and will be comprised of one member from each participating country. It will also supervise the dissemination activities led by the WGs.

The CG will harmonise and co-ordinate the methodological framework of the WGs and STSMs. This CG will be composed of the Chair and Vice Chair of this Action, and the leaders of each WG. It will meet preferably three months after CG meetings (so as to ensure a continuous stream of management activity in the Action). The CG will meet every six months either in person or via electronic means.

The WGs will be in charge of the implementation of the scientific programme outlined above. Each WG leader will be tasked with the co-ordination and harmonisation of his or her WG's activities. Specific topics to be addressed by each WG will be largely determined by the composition of the particular WG. The WGs will present their work during conferences as well as in international and local workshops. WGs will meet at least every six months, preferably soon after MC meetings. Additional electronic communication (e.g. Skype and e-mail) will be encouraged.

C) NETWORK AS A WHOLE

The Network of Proposers will allow the Action's objective to become achievable for four reasons:

1. The Network integrates people from different disciplines and professions, with a mix of representatives from academia, businesses, NGOs and advocates of vulnerable households. This diversity is necessary for addressing the multidimensionality of EP, and for moving towards blended multi-agency measures and solutions.
2. All Secondary Proposers for this Action are already involved in conducting extensive peer-reviewed research into EP and related fields (often with significant levels of funding from highly competitive sources), or work for organisations that have a long tradition of being engaged to alleviate EP across Europe. The unprecedented amount of collective expertise and knowledge contained in the Network vouches that the Action has the potential to develop a robust and inclusive framework for the amelioration of EP; it also expands opportunities for disseminating Action outputs to key stakeholders. The Network is highly committed to the Action: its members have been involved in four unsuccessful COST applications over the past 3 years, and the present draft systematically incorporates previous reviewers' comments.
3. ECIs make up two-thirds of the Network of Proposers. ECIs are at the heart of the EuropeanEnergyPovertyACTION proposal: the Action will actively encourage participation and mobility by integrating ESRs throughout the project by way of STSMs and opportunities to lead WGs, organise events, and take key author roles. This future-orientated approach is vital for the longevity and continuity of efforts to advance EP research after the Action has finished.
4. There is a significant geographical spread of Proposers from COST and International Partner countries, alongside the integration of mechanisms that will provide for broad participation, engagement and inclusiveness across Europe. 25 countries are represented in the Network of Proposers, encompassing a variety of divergent economic, political, geographical and infrastructural circumstances. The inclusiveness ratio is 52%, demonstrating a strong commitment to actively involving ITCs and addressing the imbalance of knowledge and recognition of EP. Leading researchers from four IPCs have joined the Action: their participation will facilitate the input of expertise on the wider range of energy services associated with EP, particularly in the context of low carbon transitions and smart development.