ACRONYM: HYDROPOWER-EUROPE

Proposal acronym: **HYDROPOWER-EUROPE**

Duration: 36 months

Requested EU Contribution: **€993,571**

Type of action: Coordination and Support Action

Work Programme topic addressed: LC-SC3-CC-4-2018
Building a low carbon, climate resilient future
(2) HydroPower Sector

Proposal Sections 4-5

Part. No	Participant organisation name	Type of organisation	Country
1 Coord	International Commission on Large Dams (ICOLD)	ASSOCIATION	FRANCE
2	Samui France SARL (SAMUI)	SME	FRANCE
3	European Association for Storage of Energy (EASE)	ASSOCIATION	BELGIUM
4	Association of European Renewable Energy Research Centres - EUREC EESV	ASSOCIATION	BELGIUM
5	VGB PowerTech e.V.	ASSOCIATION	GERMANY
6	ZABALA	SME	BELGIUM
7	European Renewable Energies Federation	ASSOCIATION	BELGIUM
8	International Hydropower Association	ASSOCIATION	UK

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4.1 Participants (applicants)

The HYDROPOWER-EUROPE team comprises **8** partner organisations from **4** member states as listed below. In addition, **10** Linked Third Party organisations are foreseen (drawn from **6** member states), making a total of **8** countries directly represented.

As well as the consortium of partners and link third parties, the HYDROPOWER-EUROPE project has gained **widespread support from organisations covering all aspects of the value chain and geographically across Europe**. A list of those formally supporting the project (so far), along with letters of support are appended under Section 6.

Part No.	**Participant organisation name**	**Short Name**	**Country**
1 Coord	International Commission on Large Dams (ICOLD)	ICOLD	FRANCE
2	Samui France SARL (SAMUI)	SAMUI France	FRANCE
3	European Association for Storage of Energy (EASE)	EASE	BELGIUM
4	Association of European Renewable Energy Research Centres - EUREC EESV	EUREC	BELGIUM
5	VGB PowerTech e.V.	VGB	GERMANY
6	ZABALA Belgium	ZABALA Belgium	BELGIUM
7	European Renewable Energies Federation	EREF	BELGIUM
8	International Hydropower Association	IHA	UK

Partner 1: International Commission on Large Dams (ICOLD)

Profile

The International Commission on Large Dams (or Commission Internationale des Grands Barrages – ICOLD/CIGB) is a non-governmental International Organization created in 1928, which provides a forum for the exchange of knowledge and experience in dam engineering.

ICOLD groups 100 National Committees, which are consisting of persons relevant to dams in countries wishing to become member. Any country can become a "Member Country" and constitute a National Committee. The official languages are French and English.

ICOLD is directed by the General Assembly, consisting of representatives from all the Member Countries and held during the Annual Meeting. The Commission elects the Board consisting of the President, the six Vice Presidents, the Secretary-General and the Treasurer. The President, assisted by the Secretary General and Treasurer, manages the Central Office established in Paris.

ICOLD is assisting nations to prepare to meet the challenges of the 21st century in the development and management of the world's water and hydropower resources. ICOLD wishes to be the world's leading professional organization, dedicated to advancing the art and science of dam engineering and promoting the wise and sustainable development and management of world's water and hydropower resources. ICOLD leads the profession in setting standards and guidelines to ensure that dams are built and operated safely, efficiently, economically, and are environmentally sustainable and socially equitable.

Presently, ICOLD has 31 Technical Committees that address current technical issues related to the development and management of water resources. The listing of the ICOLD Committees is given hereafter. Each Technical Committee is given a mandate by the General Assembly and works for 3 or 4 years. Its works is published as a "Technical Bulletin". 157 Technical Bulletins have been published and are available for purchase. These publications can be purchased directly on ICOLD website.

Four regional clubs are under the umbrella of ICOLD. The European Club (EURCOLD) was the first to be launched, in 1993. The objectives for launching this first regional club were the following:

1. to become the **National Committee on Large Dams of Europe**.
2. to **encourage research**.
3. to interchange of information on the legislation, standards and practices applied in respect of environmental impact, together with information on the effectiveness of the legislation.
4. To participate in public relations activities to explain the social, environmental and economic benefits of dams and reservoirs.

EURCOLD published in 2015 a Manifesto, aiming to promote an honest and transparent public debate which will hopefully facilitate actions to raise awareness of European policy to support the role of reservoirs and dams for energy generation, water supply, irrigation, and flood control, providing an effective contribution to climate change adaptation, preserving the environment, and increasing societal resilience

Currently EURCOLD includes **25 member countries of EUROPE**. The working groups were created to launch research program and compensate the loss of practice caused by the smaller rate of construction in Europe compared to the world. They are related to new techniques, new approaches of analyses or safety assessment and application of new legislations (Geomembranes and geosynthetics as facing materials, Uplift pressures under concrete dams, Sliding of concrete dams, European Water Directive, Seismic criteria, Ageing of concrete dams, Education, Floods, Public safety, Dam safety of existing dams, Task force to

develop a manifesto for smarter dams and reservoirs governance in Europe, Levees and flood defences, Dams and earthquakes, Internal Erosion &scour of embankment dams).

Specific role in HYDROPOWER-EUROPE

ICOLD will coordinate the project, leading the WP1. Emphasis will put on:

- Gathering all the relevant stakeholders and particularly all actors of value chain (WP2)
- Checking the quality and impartiality of the prioritization of needs (WP3)
- Stimulating technical and environmental innovations in the R&I Agenda (WP4)
- Facilitating a fruitful debate with the civil society for the TR of a sustainable hydropower (WP4)
- Disseminating the R&I A and TR through European and national organizations.

Key personnel involved in the project

Prof. Anton SCHLEISS (M) graduated in Civil Engineering from the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland. After having obtained a PhD on the topic of pressure tunnel design of hydropower plants (HPP), he worked for 11 years in an Int. Eng. Consulting Company in Zurich and was involved in the design of many HPP projects around the world as an expert in hydraulic engineering and project manager. In 1997, he was nominated full professor and director of the Laboratory of Hydraulic Constructions (LCH) of the Swiss Federal Institute of Technology Lausanne (EPFL). He supervised more than 50 PhD and Postdoc research projects in the field of water infrastructures. He participated also to EU research projects addressing topics of HPP under FP5 (Thematic Network on Small Hydropower), Interreg IIIB (ALPRESERV), FP7 (STREST) and H2020 (SediTrans). He was listed in 2011 among the 20 international personalities that "have made the biggest difference to the sector Water Power & Dam Construction over the last 10 years".

Specific role in ICOLD: since 2015 he is president of the International Commission on Large Dams (ICOLD). More details including publication see: http://people.epfl.ch/anton.schleiss?lang=en

Dr. Jean-Jacques FRY (M), graduated in 1974 in Hydraulics from Ecole Nationale Supérieure d'Hydraulique de Grenoble, France, obtained a PhD on Soil Mechanics at Ecole Centrale de Paris (1977). He worked in Algeria at SETI and Laboratoire National des Travaux Publics in Algiers from 1977 up to 1979 and for UNDP/OPE as consultant in Mali, Niger and Cabo Verde from 1979 up to 1982. He joined EDF, the French utility, in 1982, where he was Head of the Geotechnical Section. He has worked as consultant for more than thirty hydropower projects over the world. He was Treasurer and General Secretary of the French Committee on Large Dams from 1991 to 2002. He was Professor of Civil Engineering and Hydraulics in Ecole Centrale de Lyon from 1995 to 2016. He supervised more than 10 PhD and research projects in the field of geotechnic and water retaining structures and wrote more than 120 publications. He is the French representative in the ICOLD Technical Committee on earth dams. He was the chairman of the European Working Group on Internal Erosion and edited a book entitled: "Internal Erosion of Dams and their Foundations" with R. Fell in 2007 and published by Taylor and Francis, London, ISBN: 978-0-415-43724-0. Now he is currently the chairman of the European working group on Dams and Earthquakes and he is editing a new book entitled: "Qualification of seismic dam analysis and their equipment" with Norihisa Matsumoto which will be published by Taylor and Francis again.

Specific role in ICOLD: Since 2017, he is currently the President of the European Club of ICOLD.

Prof. Alfredo Granados Garcia (M), graduated from Ingeniero de Caminos, Canales y Puertos (MSc in Civil Engineering) of Technical University of Madrid (UPM) in 2001, obtained his PhD in 2013 in Civil Engineering at UPM. He was Project Director and Technical Director of International de Proyectos y Estudios de Ingeniería, SA (INPROES) from 2001 to 2009. Since 2009, he is Consultant, expert on dams and hydraulic engineering, and Assistant Professor up to 2014, and now Associate Professor at Escuela Técnica Superior de Ingenieros de Caminos, Canales y Puertos of the Technical University of Madrid (UPM) in Hydraulic Engineering (dams, pumping schemes, water distribution networks, irrigation), Hydropower and Water Resources and on Dam Safety and Operation. He has been member of the Spanish National Committee on Large Dams (SPANCOLD).

Specific role in ICOLD: since 2010 and General Secretary of the European Club of ICOLD since 2017.

list of up to 5 relevant publications, and/or products

Three bulletins published in the last two years:

- Bulletin 173: Integrated Operation of Hydropower Stations and reservoirs
- Bulletin 171: Multipurpose Water Storage - Essential Elements and Emerging Trends
- Bulletin 169: Global Climate Change - Dams, Reservoirs and related Ressources

Two publications presented in the last two years:

- Keynote Anton Schleiss: "Dams and hydropower for sustainable development in Asia during this century" ASIA 2018 Seventh International Conference and Exhibition on Water Resources and Renewable Energy Development in Asia, Danang, Vietnam, 13-15 March 2018
- Keynote Anton Schleiss: « The worldwide role of hydropower in sustainable multipurpose schemes development ». ASIA 2016 - Sixth International Conference and Exhibition on Water Resources and Hydropower Development in Asia National Convention Centre, Vientiane, Lao PDR, 1-3 mars 2016

list of up to 5 relevant previous projects or activities

Three events:

- 2015 The 24th ICOLD Congress in Stavanger (Norway)
- 2017 The 85th ICOLD Executive meeting in Prague (Czech Republic)
- 2018 The 25th ICOLD Congress in Vienna (Austria)

Two Research projects with international deliverables from European working groups of ICOLD:

- **The European working group on internal erosion:** this working group focuses on share of knowledge and latest research on a phenomenon causing almost half of the failures on water retaining over the world. Dr J-J Fry drives the IEEWG from 2002 to 2012. The work done leads to four deliverables and underpins the current international recommendations:
  - "Assessment of the risk of internal erosion of water retaining structures: dams, dykes and levees", Intermediate report of the European working group on internal erosion, Technical University of Munich in 2007, TUM N°114/2007,
  - "Internal erosion in embankment dams and their foundation", proceedings of the Institute of Water Structures, FCE, BUT, Brno, University of Brno 2010 editors: Jean-Jacques Fry, Jaromir Riha and Thomas Julinek,
  - The proceedings 6th International Conference on Scour and Erosion, Organized in Paris August 27-31, 2012
  - The ICOLD Technical bulletin 164
- The **European working group on Dams and Earthquakes**: created in 2015, this working group aims to qualify the seismic analysis of dams and their equipment and the seismic hazard analysis. Two European symposiums were organized: the first one in Saint-Malo (France) August 30-September 2, 2016. The second was hosted in Roma February 5-6, 2017. The proceedings of the first symposium in Saint-Malo are publishing by Taylor & Francis, edited by Dr J-J Fry.

Partner 2: Samui France sarl (Samui-Fr)

Profile

Samui France SARL is an SME which specializes in research and consultancy in flood risk analysis, flood risk management and emergency management and scientific knowledge broking and project management – helping transform research into practice. With a long history of working on National, European and International research projects, Samui-Fr has participated in a variety of roles ranging from Coordinator and project management support, to managing the communication, dissemination and outreach actions and specific technical research roles, including WP leads and participation. This combination of skills has evolved through working on many different scientific research projects since the mid 1990's and the EC Framework Programme 4.

Expertise in Project Coordination:

Through Dr Mark Morris, Samui-Fr has considerable experience of project coordination under FR4, FP5, FP6 and H2020. Project experience covers a range of different project types, from coordination and support actions, to research and innovation actions. During FP6 Mark was actively involved in management of the FLOODSITE project, which was an integrated project with 36 partners and over 250 researchers. This work helped underpin implementation of the EC Floods Directive.

Expertise in Dam & Reservoirs and Flood Risk:

Samui-Fr undertakes a range of work relating to dams and reservoirs, flood risk, and national and international research and communication. Staff at Samui-Fr have worked on a wide variety of both research and consultancy projects under EC research programmes and directly for technical associations and government agencies. Samui-Fr is an originating partner in the FLOODrisk conference series (in partnership with HR Wallingford and Deltares) which runs the FLOODrisk conference event every 4 years, with over 500 participants drawn from the research, industry and policy sectors. The next conference will be FLOODrisk2020, in Budapest, and offers an excellent opportunity to align with a FLOODSECURE event.

Dr Mark Morris has over 30 years' experience in the reservoir safety and flood risk / response sector having coordinated and / or participated in a variety of flood risk related projects including CADAM (Concerted Action on Dambreak Modeling), IMPACT (Investigation of extreme flood processes and uncertainty), FLOODSITE (Integrated flood risk analysis and management methodologies), FloodProBE (Technologies for the cost-effective flood protection of the built environment) and Urbanflood (use of smart sensors and real time monitoring for asset management and security). In addition, Mark has been active in establishing and promoting the Flood Risk Management Community of Practice (FRM-CoP), alongside facilitating national, European and International research collaboration in the flood risk sector. Mark is an active member of the UK government Reservoir Safety Advisory Group committee (RSAG), responsible for overseeing the funding and implementation of reservoir related research in the UK. Mark was also an active Committee member for the British Dam Society (~2000-2011), which is the UK branch of ICOLD.

Expertise in Knowledge Broking (Communication, Dissemination):

Samui-Fr staff expertise in communications and use of the internet and new media has developed across the past two decades through working in the field of water and flood risk analysis and management. Scientific expertise in this area continues jointly and in parallel with the communications work; for example, developing and running the FLOODrisk conference series and progressing development of the Flood Risk Management Community of Practice (FRM-CoP). Samui-Fr was event manager for the FLOODrisk2008, FLOODrisk2012 and FLOODrisk2016 conferences, planning and managing all aspects of the event promotion, marketing and implementation.

Within the field of knowledge broking, Samui-Fr also provides specific services in the design, development and integration of web-based applications / tools that directly support research project needs. For example, the provision of bespoke document management, media management, data storage, progress tracking tools and solutions. This allows online functionality to be matched directly to individual project needs.

Specific role in HYDROPOWER-EUROPE: Samui-Fr will:

- **support coordination of the project** (WP1), working with ICOLD in their role as Coordinator
- lead tasks under WP2 (HYDROPOWER-EUROPE Community support) supporting the stakeholder consultation, team communication and data management processes
- lead tasks under WP5 (Communication, Dissemination and Outreach) including project branding and website development

In these roles Samui-Fr will combine technical, coordination and knowledge management skills.

Key personnel involved in the project

Dr Mark Morris (M) is a Director for Samui-Fr and has 30 years' experience of working in the reservoir safety, flood risk and emergency response sector with extensive experience of working on national, international and European research projects and initiatives. Mark has general expertise in many aspects of flood risk analysis and management, but specific expertise (PhD) in levee and dam failure, and the associated aspects of emergency planning and response. As a professional Engineer, Mark has worked as a Coordinator / Deputy Coordinator of European research projects under FP4, FP5, FP6, FP7 and H2020 and as a team member / work package leader in a range of these and other projects. In particular, Mark has expertise at project management of remote / dispersed research teams and in the use of web-based systems to support effective communication, team management and research dissemination. The FP6 FLOODsite project required coordination of the EU research budget of €9.6M through 37 partner organisations and over 250 researchers. Now in his role as Director of an SME, Mark has the experience of working in industry undertaking research and consultancy in collaboration with academia, government and larger commercial organisations, whilst also working with small and medium sized businesses. This range of experience is particularly valuable when looking at bringing together different stakeholders into the HYDROPOWER-EUROPE Forum for consultation under this project.

Specific role in HYDROPOWER-EUROPE: Mark Morris will support **Coordination of the HYDROPOWER-EUROPE project** (WP1) and lead system design work under **WP2** and **WP5**

Estelle Morris (F) is a Director of Samui-Fr, holds both a degree in Civil Engineering and an MA in Design Management, and has over 20 years' experience of working on national, international and European research projects and initiatives. Estelle has worked on multiple European Projects under FP4, FP5, FP6, FP7 and H2020 in charge of research communication, dissemination and exploitation activities. Estelle is multilingual and has extensive experience in designing and developing web-based systems in support of team communication and dissemination of multinational scientific or technical projects. Estelle was the Samui project coordinator for the FLOODrisk 2008, 2012 and 2016 conference events, and is also responsible for driving forward plans for the FLOODrisk conference programme (FLOODrisk2020 and beyond).

Specific role in HYDROPOWER-EUROPE: Estelle will lead design and web development work under WP5 (Communication, Dissemination and Exploitation).

Richard Holmes (M) is a Principal Web Systems Developer at Samui and is directly involved in the development and maintenance of bespoke, dynamic website tools and systems supported through various underpinning database solutions. As principal web developer, he works closely with, and manages project teams to create specialized functionality (web-based tools) to meet project specific needs. Richard is also an expert in social media and project managed the FLOODrisk2012 and 2016 conference media programmes. Richard is experienced in multinational team working projects.

Specific role in HYDROPOWER-EUROPE: Richard will manage development of the various web based tools and database systems supporting coordination and implementation of the project under WP2 and WP5.

Relevant Publications, Products and Services

1. **Knowledge Broking** via development, management and application of web-based communication and dissemination tools, targeted use of social media and event facilitation and management (meetings,

workshops, conferences...) supporting programmes of communication and encouraging exploitation and uptake of research work. See www.samuifrance.com

2. **National and International Project Management and Team Support** via the development and use of bespoke web-based tools designed to facilitate team communication and support effective project management. Approaches and tools specifically designed to address national and international research / technical team working, with team members typically widely dispersed. Samui-Fr staff can offer support to project teams and managers or undertake direct project coordination.

Web based communication and dissemination tools (software) including: project websites with protected online participant areas including tools such as team contact management, document management systems, document development system, visual material library, news (online, email, eNews) and social media news management systems, meetings & events calendar and event management support (online registration, payment, promotion and dissemination). All tools are developed to meet specific project needs rather than using 'off the shelf' packages.

3. Example Publications

Research and specialist consultancy expertise in three sectors comprising (i) flood risk analysis and management; (ii) Levee and dam failure / emergency planning and response; (iii) Communications and dissemination, with a focus on bringing research into practice. Some example publications include:

Morris, M.W. (2011) Breaching of earth embankments and dams. PhD thesis. The Open University.

Samuels, P.G., Morris, M.W., Sayers, P.B., Creutin, J.-D., Kortenhaus, A., Klijn, F., van Os, A., Mosselman, E. and Schanze, J. (2010) 'A framework for integrated flood risk management', First European Division IAHR Congress, Edinburgh. 4-6th May 2010.

Morris MW, Morris EMA, Samuels PG & Van Os A (2006). WWW.FLOODSITE.NET: Using the Web for Research Dissemination, Team Building and Project Management. 7th International Conference on HydroInformatics, Nice, Sept 2007.

Previous Projects and Activities

Samui-Fr has extensive experience of working on a variety of national, European and wider International research projects – undertaking a range of roles from Coordination and management of the communication and dissemination actions, through to provision of basic support systems and tools. Examples include:

1. Supporting EU Environmental Research Projects

Samui-Fr has extensive experience of working on EU research programmes in a range of roles including as Coordinator, Work Package Leader and Team Member, with project experience covering FP4, FP5, FP6, FP7 and H2020 programmes. Tools supporting project management, team communication and research dissemination, promotion and exploitation are developed for each project and evolve according to needs and the changing work / industry environment. Examples of European research projects include:

- CADAM (Coordinator - FP4); see http://eprints.hrwallingford.co.uk/577
- IMPACT (Coordinator - FP5); see http://www.impact-project.net
- MITCH (FP5), URBEM (FP5), and ACTIF (FP5).
- CRUE (FP6, UK Government Support www.crue-eranet.net),
- FLOODsite (FP6, Dep Coordinator); see www.floodsite.net
- HYDRALABIII (see www.hydralab.eu),
- Under FP7, Samui-Fr staff have worked on FloodProBE (WP leaders - www.floodprobe.eu), UrbanFlood (www.urbanflood.eu), HYDRALABIV (Task Leaders – www.hydralab.eu),
- Also under FP7 and into Horizon 2020, Samui-Fr has developed networks and worked on strengthening links between the EU and LAC regions via the ENSOCIO-LAC Project (FP7; Coordinator, www.ensocio-la.eu), and the EULAC-FOCUS Project (H2020, Coordination support; communications: www.eulac-focus.eu) and the ALCUE NET project (website development and communication www.alcuenet.eu).

2. National Research Projects and Initiatives

Samui-Fr staff have also worked on a range of environment related National and technical projects. These include undertaking web based communication and dissemination work supporting operation of organisations such as the British Dam Society (www.britishdams.org), the British Hydrological Society (www.hydrology.org.uk), the Telford Institute (www.nationaltelfordinstitute.org.uk), the International Association of Hydrological Sciences (www.iahs.info) and the National Centre for Earth Observation (www.nceo.ac.uk). Samui-Fr has worked for UK and French national and UK local government including managing the design and dissemination activities for the UK exhibition stand at the Earth Summit in Johannesburg and was event manager for the FLOODrisk conference series FLOODrisk2008, FLOODrisk2012 and FLOODrisk2016 (www.floodrisk2012.net www.floodrisk2016.net)
This range of experience and expertise places Samui-Fr in an ideal position to support, implement and help to achieve the goals and objectives of the **HYDROPOWER-EUROPE** proposal.

3. Communities of Practice

Mark Morris has played a central role in developing concepts for the Flood Risk Management Community of Practice (FRM-CoP). Communities of Practice aim to improve access to and sharing of knowledge between members of a particular community. This combines an understanding of different actor roles and needs (e.g. Policy, Science, Industry) and aims to facilitate the flow (push & pull) of information between these different actors so helping to speed the process of research into practice – at the same time helping to ensure that the research actually fulfills the needs of the end users.

The issues and concepts learnt here will be applied within the **HYDROPOWER-EUROPE** project programme.

4. Industry research collaboration

Mark Morris promotes, facilitates and undertakes international industry research collaboration in the reservoir safety, flood risk management and emergency response sectors. Two examples of initiatives in the last few years include:

USACE Levee Breach Research Programme (2014-ongoing)

Expert participation in review of and prioritisation of research actions supporting the validation and development of improved breach modelling capabilities for dams and levees. Research programme development for collaborative EU – US research into breach erosion and model development (underpinning flood risk response, and in particular, flood risk planning for levees and dams).

A guide to risk assessment of reservoirs (2011 – 2013)

Development of a framework and recommended tiered approach for risk assessment for reservoirs in England and Wales. Undertaken for the UK Government, the project developed the methodology and produced industry guidance building upon the earlier Interim Guide and CIRIA Guide to risk assessment, including current international best practice.

5. UK Reservoir Safety Research Programme Management

Mark Morris is a member of the UK reservoir safety advisory group (RSAG) which oversees reservoir safety research in England and Wales. This committee prioritises industry needs and oversees the implementation of research to achieve reservoir safety goals. This process of identifying and prioritising industry needs, developing and managing research programmes and ensuring uptake of focused research into practice has great similarities with the challenges faced by the **HYDROPOWER-EUROPE** programme.

Website: www.samuifrance.com

Partner 3: European Association for Storage of Energy

Organisation short name	EASE
Organisation legal name	European Association for Storage of Energy
Country	Belgium
Website	www.ease-storage.eu

Description of the legal entity

The European Association for Storage of Energy (EASE) is the voice of the Energy Storage community by having over 40 members representing electric grid operators, utilities, research, academia, and industry. The association is actively promoting Energy Storage in Europe and worldwide. EASE actively supports the deployment of Energy Storage as an indispensable instrument within the framework of the European energy and climate policy to deliver services to, and improve the flexibility of, the European energy system, contributes to building a European platform for sharing and disseminating Energy Storage-related information and, finally, supports the transition towards a sustainable, flexible and reliable energy system in Europe.

EASE was associated at the elaboration of the EEGI team Roadmap delivered within the Grid+ frame, since outlining the role of energy storage at the TSO & DSO levels in two RTD&D clusters.

EASE collaborated with EERA for writing down the European Energy Storage Technology Development Roadmap Toward 2030 in 2013 that was delivered to GRID+ players in support of the EEGI team roadmap finalisation.

EASE is partners in GRID+STORAGE and is deeply involved in the monitoring of the on-going, completed and planned projects and in the organisation of regional Workshops.

Please also note that EASE is organised in 5 classes of technologies:

- Chemical Energy Storage: Hydrogen; Synthetic Natural Gas.

- Electrical Energy Storage: Capacitors; Super- conducting Magnetic ES

- Electrochemical Energy Storage: Classic Batteries; Flow batteries

- Mechanical Energy Storage: Flywheel; Diabetic Compressed air; Pumped heat Electrical storage; Adiabatic compressed air;

Pumped hydro; Cryogenic Energy Storage

- Thermal Energy Storage: Heat, hot water/ PCM (Phase change material); Packed-bed heat storage; Molten Salt

(Heat/CSP- Concentrated solar power) thermal; SET (Smart Electric Thermal Storage).

Main Role and tasks in the project

EASE will potentially support the project through its staff in Stakeholder consultation, Project Management, Communication and Dissemination and other various tasks, on the other hand, through its third parties involved in the project, EASE will address technical issues related to Research and Innovation Agenda and

Roadmap.

EASE will particularly contribute to:

- Stakeholder engagement strategy and plan
- Screening and identification of stakeholders
- Mapping and engagement
- organization, participation and follow ups of regional workshops, final event and online discussions
- Sustainability of Stakeholder engagement activity
- Deliver the final draft roadmap and agenda

Profiles of persons primarily responsible for carrying out the proposed activities (MAX 5)

Patrick Clerens (M)

In 2011 he was named Secretary General of EASE, the European Association for Storage of Energy. Patrick Clerens's expertise and strategic vision supported the association's growth, which counts today around 40 member companies, among them Europe's largest stakeholders active in the energy sector. Furthermore, he is also Clerens Consulting Managing Director since 2003. Shortly after taking over Clerens Consulting,he became Secretary General of the European Power Plants Suppliers Association (EPPSA) in 2004. Thanks to his invaluable contribution in designing and redefining the Association's strategy and communication plan, EPPSA expanded its influence in Europe and was able to launch the major European Initiative in the Energy Sector regarding Fossil Fuels, the Technology Platform ZEP, Zero Emissions Fossil Fuels Power Plants. Since 2008 he has been representing ESWET, the European Suppliers of Waste to Energy Technology Association. As he had done previously with EPPSA, he expanded ESWET's network and effectiveness in the EU. At Clerens Consulting, Patrick is responsible for advising clients in their strategy in the energy, environment and climate change sector, as well as help secure public procurement and EU-funded opportunities.

Emin Aliyev (M)

After his studies of Business and European Economic Integration in 2005 at the University of Nice Sophia Antipolis then at the College of Europe in Bruges in 2013, he is specialised in EU funding and project management thanks also to his wide experience in the field. Before joining EASE, he was involved in several projects under Horizon 2020, SME Instruments, LIFE+, Fast Track Innovation, CEF by contributing to the administrative parts, consortium building, proposal writing and submission phases. He also provided several short term expertises under EU Framework contracts (FWC) managed by DG EuropAid and DG NEAR. Currently he has been involving in the management of two EU funded projects in energy field, namely TSO 2020 Electric "Transmission and Storage Options" along TEN-E and TEN T corridors for 2020 (under CEF) and Integrated Energy System, a pathway for Europe (Intensys4EU, under Horizon 2020) at EASE.

List of up to 5 relevant publications, and/or products, services, (including widely-used datasets or software) or other achievements relevant to the call content

1. Contribution of EASE to ENTSO-E's Cost-Benefit Analysis methodology for Energy Storage.: ENTSO-E has asked EASE to provide insights on a CBA for energy storage projects, an assessment to be used for the evaluation of storage devices on transmission systems. EASE delivered the requested input commenting on the validity and suitableness of the proposed indicators for energy storage projects and developing a specific environmental indicator "social and environmental sensibility" for energy storage technology. June 2013
2. EASE/EERA Energy Storage Technology Development Roadmap towards 2030: Joint EASE/EERA recommendations for a European Energy Storage Technology Development Roadmap towards 2030. EASE and EERA have joined their knowledge to produce a comprehensive Roadmap describing the future European needs for energy storage in the period towards 2020-2030. The Roadmap also gives recommendations on the developments required to meet those needs. March 2017…recommendation for hydropower R&D

List of up to 5 relevant previous project actions or activities, connected to the subject of this proposal

GRID+STORAGE Project in consortium with TECHNOFI, ENTSO-E, EDSO for Smart Grids, VITO and RSE started in December 2014 and ending up in December 2016. The main goal of the project is to provide the European Commission and the European Electricity Grid Initiative (EEGI) teams with consolidated and balanced stakeholders views for the future RTD&D needs involving technology development and market uptake.

The INTENSYS4EU project supports the work of the European Technology and Innovation Platform for Smart Networks for the Energy Transition (ETIP SNET) gathering actors from electricity, storage and ICT but also heating, transport and gas.

The project Consortium including Zabala Innovation Consulting, TECHNOFI, the European Network of Transmission System Operators forElectricity (ENTSO-E), EDSO for Smart Grids (EDSO), the European Energy Research Alliance (EERA), Ricerca sul Sistema Energetico (RSE) and Bacher Energie AG started on the 1st of October in 2016 and will last 4 years.

TSO2020 Electric "Transmission and Storage Options" along TEN E and TEN T corridors for 2020 project contributes to the implementation of the TEN-E Project of Common Interest Denmark - Netherlands interconnection between Endrup (DK) and Eemshaven (NL) (known as COBRA cable) and of the TEN-T comprehensive network and core network on the North Sea - Baltic and Rhine - Alpine corridors. The main objective of the Action is, first, to demonstrate the technical and commercial viability of power to hydrogen solutions in the context of the Groningen region (NL), and second, to assess the replicability of the solutions to other regions. Under the coordination of the Dutch Ministry of Infrastructure and Environment, EASE – in partnership with TenneT TSO, Nederlandse Gasunie, Green Planet Real Estate, TU Delft, and Stichting Energy Valley - will assess and value the key role of energy storage in the electricity transmission system by exploiting synergies between energy storage solutions and alternative transport infrastructure needs

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work

Thanks to our more than 40 members and relying on an active network of more than 100 involved in its various working groups and task forces EASE is associated to a wider network at the EU level.

In real terms, through ETIP – SNET created by the European Commission in the framework of the new Integrated Roadmap Strategic Energy Technology Plan (SET Plan) EASE comes together with a multitude of stakeholders and experts from the energy sector in order to guide Research, Development & Innovation (RD&I) agenda of EU.

Moreover, under TSO 2020 project EASE along with partners focuses on identifying synergies between power storage solutions and alternative transport infrastructure needs, to identify new technology and market opportunities for TSOs, DSOs, transport fuel distribution companies as well as local industry. EASE is also establishing an ecosystem of stakeholders for structured dialogue between national government representatives, TSO, DSO, regional energy agencies, regional transport authorities and grid management/storage technology representatives in the framework of the project.

Partner 4: Association of European Renewable Energy Research Centres (EUREC)

Organisation short name	EUREC
Organisation legal name	EUREC EESV
Country	Belgium
Website	www.eurec.be

Description of the legal entity

EUREC, created in 1991, is the leading association of research centres and university departments active in the area of renewable energy. The purpose of the association is to promote and support the development of innovative technologies and human resources to enable a prompt transition to a more sustainable energy system. EUREC activities cover: networking to facilitate exchange of information to improve scientific knowledge and expertise on the latest technology as well as policy developments in the area of renewable energy technologies; project communication to promote and disseminate research results related to renewable energy technologies; policy inputs; education and training. EUREC supports the renewable energy research community in ensuring that scientific results are communicated to a wider audience.

EUREC is currently leading the secretariat of the European Technology and Innovation Platform on Renewable Heating and Cooling (RHC-ETIP), and is also involved as a partner in the secretariat of the Photovoltiac European Technology and Innovation Platform (PV ETIP).

EUREC is leading WP4 - Technology Roadmap and Research and Innovation Agenda.

Main Role and tasks in the project

In the project, EUREC will participate as follows:

- Leader of WP4 - Technology Roadmap and Research and Innovation Agenda
- Partner in all other Work Packages in order to present the input of the renewable energy research community.

Profiles of persons primarily responsible for carrying out the proposed activities (MAX 5)

Mr Greg Arrowsmith (M) is the Policy Advisor of EUREC. He is in charge of providing advice to the members of the association with respect to policy dossiers of interest for the renewable energy community, as well as making sure that the association's policy messages effectively reach the European institutions. He has been coordinating the definition of the association's position and strategy with respect to the Strategic Energy Technology (SET) Plan, and its follow-up initiatives. He brings expertise in coordinating the definition of research priorities, and devising models for cooperation between industry, academia and research. Greg holds a Cambridge degree in natural sciences. He will be the main contact person performing the work assigned to EUREC in supporting the activities of Hydro-Europe.

Ms Paola Mazzucchelli (F) has been EUREC's Secretary General since April 2008. She is in charge with the day-to-day management of the association, including financial and human resources management. She has extensive experience in managing European co-funded projects since she has been working on energy-research related projects since 2002. She is a member of the International Association of Facilitators, and has in-depth expertise in leading strategy meetings and workshops for the definition of research priorities in several renewable energy technologies. She will be involved in the administrative and management tasks to

ensure EUREC's performance according to the Description of Work.

List of up to 5 relevant publications, and/or products, services, (including widely-used datasets or software) or other achievements relevant to the call content

- EUREC (2017)- Renewable Energy Projects Catalogue, Brussels
- EUREC (2016)- First report on the status of the implementation of the five Roadmaps of the European Technology and Innovation Platform on Renewable Heating and Cooling
- EUREC (2016)- The future shape of European Renewable Energy Research and Innovation
- EUREC (2016)- The European PV manufacturing industry: analysis and policy guidance for 2020 and beyond- Edition I

List of up to 5 relevant previous project actions or activities, connected to the subject of this proposal

- RHC-tender (supporting the activities of the European Technology and Innovation Platform on Renewable Heating and Cooling) (2015- 2019) aims at developing a series of coordination and support activities (conferences' organisation, preparation and dissemination of studies...) to foster the contribution of renewable heating and cooling technologies in the energy mix. EUREC is the project's coordinator.
- ETIP PV-SEC (Support to all stakeholders from the Photovoltaic sector and related sectors to contribute to the SET-Plan) (2016-2018) aims at ensuring a smooth running of the operations of the ETIP PV, as well as at organising constructive and inclusive meetings, workshops and conferences on the basis of transparent and objective information.
- EUROSUNMED (2013-2017) aims at fostering cooperation between EU and Mediterranean Partner Countries (Morocco and Egypt) by devising a Roadmap for long-term cooperation in the area of solar energy.
- SOPHIA (2011-2015): aiming at the better utilisation of Europe's photovoltaic energy research infrastructure. EUREC was in charge of dissemination to the broad research community, and of organising annually visiting lectures of SOPHIA partners to the EUREC Master specialisation on photovoltaics taught at the Northumbria University.

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work

Not applicable

Partner 5: VGB PowerTech e.V. (VGB)

Organisation short name	VGB
Organisation legal name	VGB PowerTech e.V.
Country	Germany
Website	https://www.vgb.org/en/_hydro.html

Description of the legal entity

VGB PowerTech e.V. is the international technical association for generation and storage of power and heat. VGB´s 452 members located in more than 33 countries represent a power plant capacity of 433,000 MW. About 1600 experts from members are active in more than 90 technical committees to exchange operating experience. VGB also coordinates relevant activities of member companies with government institutions and additional partners in international cooperation worldwide.

The main focus of VGB's work is the compilation of technical competence and services for members and to provide operational services. Furthermore in the focus is the compilation of technical standards, the co-ordination of projects and R&D measures, publishing information and publication of technical reports and last but not least organization of congresses, symposia and conferences, technical exhibitions, seminars and workshops. VGB is well embedded in the European Network for generation and storage of Power and Heat.

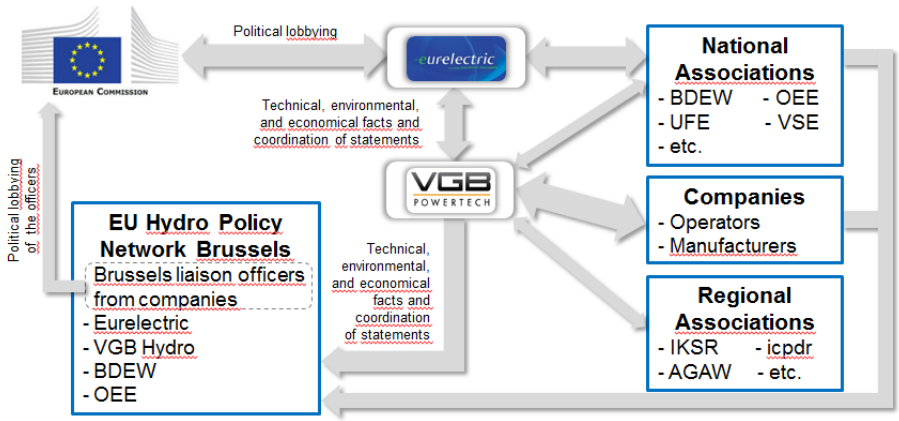
VGB is facing the challenges of the energy transition in Europe and is therefore intensifying its work predominantly in the field of hydropower. As a result an expanded focus regarding techno-economic and energy policy aspects is taken into account to manage the forthcoming challenges. VGB PowerTech|Hydro is the

- collective European platform for operators, manufacturers and suppliers of hydropower plants,
- first address for all stakeholders in techno-economic, environmental and strategic issues concerning hydropower and
- information platform for the hydropower community in Europe.

Detailed information about all hydropower activities can be found https://www.vgb.org/en/_hydro.html.

Currently, VGB PowerTech|Hydro provides a growing platform of 74 operators representing about 64,000 MW of installed capacity and 3 hydro-equipment manufacturers to share experience and knowledge at a high level of expertise. More than 100 experts are actively participating in VGB hydropower committees.

VGB PowerTech|Hydro is strengthening the cooperation with EURELECTRIC, with several national associations and with the hydro-equipment suppliers in order to promote the position of hydropower in Europe. This comprehensive expertise is the basis to represent the common interests of all hydropower stakeholders (operators, hydro-equipment manufacturers and service providers of hydroelectric facilities, hydro research institutes) on a European level. All techno-economic and environmental issues as well as aspects of energy policy are covered.



Main Role and tasks in the project

VGB and its members have a comprehensive know how on the current technic-economic and environmental challenges of hydro power plants. Currently the efforts are made to increase the generating capacity and the flexibility as well as efficiency at existing hydropower facilities, add hydroelectric generating capacity to non-powered dams, and improve the environmental compatibility of hydropower.

The main role of VGB is to analyze and prioritize the unstructured and unweighted information based on the upstream consulting process. The assignments and categorization will take place in workshops with different content-depth.

Example of a possible structure

							Addressed to								Relevance	
Priority	Main category	Topic with description	Expected Targets	Time horizon to implementation	Recommen-dations for implementing	Estimation of costs	Politicians	Authorities	Operators	Manufacturers	Developer	TSO/DSO	Science / Research	Society	.....	Relevance for national goals	Relevance for Europen goals

Profiles of persons primarily responsible for carrying out the proposed activities (MAX 5)

Dr Mario Bachhiesl (M) Within the framework of his previously acquired professional experiences in the field of hydropower his main responsibilities included, apart from the development of a profit centre hydropower, the planning and construction as well as the operation of hydropower plants and the management of hydropower companies. Further priorities were set on both the optimisation of technical and organisational processes in order to enhance profitability, to increase productivity and efficiency and to minimise risks. In addition to his operational tasks He initiated and coordinated feasibility studies and international research projects.

Now in his role as Head of Renewables and Distributed Generation he is responsible for the activities in the Strategic Forum and all Technical Groups (TG)s of VGB PowerTech | Hydro (e.g. Strategic Forum "Hydro", TG "Hydro Power Plants", TG "Operation & Maintenance of HPP", TG "Components of HPP", TG "Ecological Aspects in HPP").

He is also participating in the Working Group Hydro of EURELECTRIC and in the Project Group Hydropower of the Federal Association of the Energy and Water Industry (BDEW).

Sebastian Zimmerling (M) is responsible for the Technical Group Biomass, Technical Group Biogas, Technical Group Fire Protection and several Project Groups at VGB since 2011. Besides that his main

tasks are:

- Development and publication of technical standards
- Analysis of the market development and legal framework conditions
- Review of articles for the PowerTech Journal
- Development of excel tools for data analysis
- Organisation of VGB-Events

In addition he has been involved in several research projects:

- "Demonstration of Large Scale Biomass Co-Firing and Supply Chain Integration – DEBCO" under the 7th Framework Programme
- "Investigation of the Mixing on Grate Firing Systems" funded by the German Federal Ministry of Economics via the AiF
- "Influence of Mechanical Agitation on Heat Transfer and Thermo Chemical Processes within Particle Assemblies on Grates and Small Incineration Systems" funded by the German Federal Ministry of Economics via the AiF
- "Combustion of mechanically agitated lumpy solid fuels" funded by the German Federal Ministry of Economics via the AiF
- "Analysis and modelling of the initial self-heating in woodchip piles" funded by the German Federal Ministry of Economics via the AiF
- "Prevention of self-ignition in biomass storages (HOSEP)" funded by the VGB Forschungsstiftung
- "Biomass Storage Monitoring, Part I: Market survey and field study on continuous monitoring of large biomass storages" funded by the VGB Forschungsstiftung

Wolfgang Czolkoss (M) has 25 years of experience in operation of cooling water systems and water treatment in power plants and other industries. Since 2011 with VGB, responsible for several technical working groups and their activities in the field of cooling systems for thermal power plants and for hydro power plants.

Sabine Polenz (F) is in charge of R&D coordination at VGB PowerTech for more than 15 years. This includes management of the VGB Research Foundation that was founded in 1970 to foster joint research of the generators of power and heat. In the framework of the VGB research programme more than 400 research projects with a total budget of more than 250 Mill. Euros have already been carried out. R&D projects are spanning a broad technical field, i.e. power plant technologies, renewables and distributed generation, storage, environmental technology, chemistry, safety and health. In her position, Sabine Polenz collaborated in several large scale demonstration projects at national and European level each with a large number of industrial participants (e.g. COMTES700 with 14 partners from 6 European countries, Grant Agreement RFCP-CT-2004-00003). "Power plant flexibility by thermal energy storage", her latest joint research project, is funded with a grant of the German Ministry of Economics (support code 03ET7055B). The project is investigating technical options for the integration of thermal energy storage in both new and existing power plants. Attention is paid not only to the technical feasibility but also to the electricity and heat market conditions until 2030.

List of up to 5 relevant publications, and/or products, services, (including widely-used datasets or software) or other achievements relevant to the call content

- Operation of a platform for exchange of information of hydropower operators, hydro-equipment manufacturers and service providers
- Position papers and commentation of documents (2016 Comments on final report "Forum Fish Protection" of German Umweltbundesamt, 2015 Objection to the draft of the VDI-Richtlinie 4620 „Hydroelectric installations - Technology and design", 2013 Comparison of the status of fishpass frameworks in Europe, 2013 Comparison of the fees for hydropower facilities in European countries)

- Publication of 17 best practice Technical Standards regarding operation of hydropower plants, VGB-Standards.
- Levelized Costs of Electricity (LCOE), VGB PowerTech e.V., 978-3-86875-876-4, 2015
  (The Levelised Cost of Electricity (LCOE) method allows comparing power plants with different power generation and costing structures. The fundamental idea is to calculate yearly average costs of building and operating the plant, and to compare this with the average annual energy generated. This provides the LCOE in Euro cents per kWh.)
- Hydropower Part of the renewable, VGB PowerTech e.V., 2017
  (Promotion of the benefits of hydropower as part of the renewables in Europe.)
- Hydropower Event Calender 2018, VGB PowerTech e.V., EURELECTRIC, 2018
  (Yearly updated overview of the relevant hydropower events in Europe.)
- Hydropower Fact Sheets, VGB PowerTech e.V., EURELECTRIC, 2018
  (Six different fact sheets about the situation of hydropower in Europe and political recommendations.)

List of up to 5 relevant previous project actions or activities, connected to the subject of this proposal

- Position papers and commentation of documents (e.g. 2016 Comments on final report "Forum Fish Protection" of German Umweltbundesamt, 2015 Objection to the draft of the VDI-Richtlinie 4620 „Hydroelectric installations - Technology and design", 2013 Comparison of the status of fishpass frameworks in Europe, 2013 Comparison of the fees for hydropower facilities in European countries)
- Publication of 17 best practice Technical Standards regarding hydropower, VGB PowerTech e.V., (Practical orientated best practice technical standards regarding operation of hydropower plants. See VGB PowerTech Hydo Media Catalouge https://www.vgb.org/en/_hydro_download.html)

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work

Should not be the case in this proposal.

Partner 6: Zabala Belgium (Zabala Belgium)

Zabala Brussels is the European hub of Zabala Innovation Consulting which brings together (220+) experienced advisors located internationally across multiple offices and specialising in assisting clients with access to grant funding from a number of local, regional, national and European and International authorities. ZABALA Brussels collaborators are experienced in Innovation funding, and project management as well as managing the secretariat of several European Platforms such as the European Technology and Innovation Platform Smart Networks for Energy Transition or the European and Innovation Partnership Smartcities and Communities from 2014 until 2016.

ZABALA will lead the communication activities in WP5 in cooperation with SAMUI and will provide some administrative and legal support as regards project management. Furthermore, ZABALA will contribute in WP2 in order to streamline consultation processes with the overall H2020 and FP9 definition process.

cv of the persons

Marie Latour (F)	**BRUSSELS**	**EXPERT IN EUROPEAN GRANTS**
 **Experience: 16 years** **Education:** ***Business Management KEDGE Bordeaux Ecole de Management & European Affairs, Institut Catholique de Paris***	Marie Latour has a Master in European Affairs (Paris Catholic Institute, 2002) and a French-Spanish Academic Degree in European Business Management (Kedge Bordeaux Ecole de Management, Centro de Formacion de la Camara de Comercio e Industria de Madrid, 2001). Since 2003, Marie has experience in the management of European projects in the field of renewable energy with a focus on Solar photovoltaic integration, as well as Smartgrids and Energy Transition being the coordinator of the former European Technology Platform on Smartgrids and the current European Technology Platform on Smart Networks for the Energy Transition. She has a wide network of contacts in both renewables and utility communities at a European level and has significant experience in managing successful European campaigns and Events in both areas.	

Rémi Landau (M)	EXPERT IN ENERGY INTEGRATION AND ENERGY EFFICIENCY
 **Experience : 5 years** **Education: Master in European Studies** ***Paris III Sorbonne Nouvelle***	He has experience in EU projects in the energy, transport and environmental sectors, as well as structuring proposals, leading the preparation of EU projects and coordinating the work of large consortia. After working for 3 years for European energy utilities, he joined Zabala to work on EU projects within the H2020, LIFE and Connecting Europe Facility Programmes. He has an extensive knowledge of the European Research & Innovation environment as well as a complete view of the European stakeholders involved in energy transition such as sectorial associations, Technology platforms and PPPs. For the past 18 months, he has been involved in the H2020 INTENSYS4EU project, supporting the activities of the European Technology and Innovation Platform for Smart Networks for the Energy Transition, in particular, the cooperation with national stakeholders.

Gustavo Jacomelli (M)	COMMUNICATION EXPERT.
 **Experience : X years** **Education:**	Gustavo joined ZABALA in 2017, he currently works as a Communication Manager for the ETIP SNET platform – an EU funded initiative to promote Energy Transition in Europe, a project coordinated by ZABALA; and also for Zabala's English Communication Department. The typical tasks he carries out in these roles include: the drafting of press releases, news articles and newsletters; updating website content; monitoring upcoming events as well as assisting in the logistical preparation of events; planning social media campaigns, live tweeting, and coordinating with 3rd parties to produce online sharables and offline communication materials such as brochures, videos and other promotional material. He has experience in using the following tools: Media monitoring: Feedly, Google Alerts; CMS: Drupal, Wordpress; Social media: Twitter, Hootsuite, Buffer, Tweetdeck, Facebook, Linkedin; Mass mailing: Mailchimp, Outlook; Web editing: HTML; Graphic design: Canva, Photoshop Gustavo holds a BA in Communication Studies from the University of Leeds (UK) and a MSc in New Media and Society in Europe form Vrije Universiteit Brussel (Belgium). He has worked previously at the European Commission and several associations (Motion Picture Association, Digital Rights NGO AccessNow). He is bilingual English-Italian.

List of relevant publications

Publications not identified

List of relevant previous projects

- Market Place of the European Innovation Partnership on Smart Cities and Communities (2013–2016): ZABALA has coordinated the Market Place of the European Innovation Partnership on Smart Cities and Communities (EIP-SCC Market Place). This initiative follows a bottom-up strategy bringing together cities, industry, SMEs, banks, research and other smart city actors. In this respect, it works as a collaborative tool, enabling the creation of networks among stakeholders and the exchange of knowledge including best practices. The role of the EIP-SCC given by the European Commission is to identify and propose priorities aiming at promoting innovation in European cities. The EIP-SCC will be key in defining the thematic guidelines which will receive European funding in the future.
- SINFONIA Project - Smart INitiative of cities Fully cOmmitted to iNvest In Advanced large-scaled energy solutions - Administrative coordination and socio-economic impact expert partner.
- INTENSYS4EU Project - integrated energy system - a pathway for europe - coordinator , ETIP SNET secretariat coordinator, dissemination & communication leader.
- EFFECT Project - Creating effects through communication and engagement in Future and Emerging Technologies – Innovation expert partner
- sCO2Flex Project - Supercritical CO2 cycle for flexible and sustainable support to the electricity system - Management support, dissemination and social innovation partner
- ETP SMARTGRIDS (2006 - 2016): The European Technology Platform for Electricity Networks of the Future, also called ETP SmartGrids, is the main European forum for the crystallisation of policy and technology research and development pathways for the smart grids sector, as well as the link between EU-level related initiatives. More than 30 countries, 100 experts and 20 National Platforms have been involved in this initiative which ends in 2016 and will continue in the future ETIP Smart Grids & Storage. Since 2006 ZABALA coordinated the Consortium in charge of the Secretariat of the ETP SmartGrids.

Partner 7: European Renewable Energies Federation (EREF)

EREF
EUROPEAN RENEWABLE ENERGIES FEDERATION

Profile

EREF is the federation of national renewable energy associations from EU Member States, representing all renewable energy sectors. Its objective is to defend the interests of independent power, fuel and heat production from renewable sources and to promote non-discriminatory access to the energy market. EREF strives to create, maintain and further develop stable and reliable framework conditions for renewable energy sources.

EREF's Small Hydropower Chapter represents the interest of the European small hydropower sector by promoting the benefits and opportunities of small hydropower at EU level to secure and enhance its place as an equally important part in the EU renewable energy mix and to create business opportunities for the many small and medium-sized enterprises throughout Europe.

The Chapter campaigns on EU level for favourable and secure long-term investment conditions for the small hydropower sector, the removal of any barriers to hydropower development and an increase in hydro-electricity production in Europe and abroad. EREF focuses on the alignment of the objectives of the Renewable Energy and the Water Framework Directives. EREF informs decision-makers about the sustainable quality of modern hydropower technology which enables an entente cordial between environment and energy objectives.

EREF meets regularly with key EU decision-makers on small hydropower issues and monitors the development of the CIS (Common Implementation Strategy) working groups for the Water Framework Directive. These working groups work on shared technical challenges within the implementation process of the Water Framework Directive for Member States.

Cooperation on global political and communication issues related to small hydropower with the International Center on Small Hydro Power (ICSHP), the International Renewable Energy Agency (IRENA), and the Africa-EU Renewable Energy Cooperation Programme (RECP), complements the European activities of the EREF Small Hydropower Chapter.

EREF supports its members with political, legal and strategic advice and information on small hydropower issues. It further provides information on national, European, and international funding schemes for small hydropower as well as business and investments opportunities.

Key personnel involved in the project

Dirk Hendricks (M) is Senior Policy Advisor of EREF providing strategic planning and advice for policy activities at EU and national levels. Heading EREF's Small Hydropower Chapter which includes national hydropower associations from EU Member States, he promotes the interest of the sector in Europe and Africa (e.g. recent RECP programme).

Mr Hendricks is member in the Board of Editors at UN-ICSHP in China responsible for providing information and data on small hydropower in Europe. He is Advisory Board member of RENEXPO, an annual hydropower conference and fair in Salzburg, focussing on connecting European small hydropower project investors and developers with their counterparts from other continents.

As former Secretary General of the European Small Hydropower Association (ESHA) and Director of the EU Liaison Office of the World Future Council Foundation, Dirk Hendricks focussed on the promotion of renewables in the EU and Africa. He participated in the development of the current Renewable Energy Directive and its implementation and specialised in renewable financing schemes. Mr Hendricks is involved in the implementation of the Water Framework Directive representing the small hydropower sector at CIS meetings of the European Commission.

His previous positions in the International Union for Conservation of Nature (IUCN), International Fund for Animal Welfare (IFAW) and in the Secretariat of the UN Convention on Migratory Species (UNEP/CMS) have provided him with an in-depth knowledge of a wide range of environmental topics in Africa and Central Asia.

Mr Hendricks studied Economics, Economic History, International Relations and German Linguistics in Dublin, Fiesole, Münster, and Washington, D.C. (M.Econ.Sc.; M.A. and 1. Staatsexamen).

Dr. Dörte Fouquet (F) is EREF Director since 2000 and since 2010 partner with BBH law firm. Before joining she was since beginning of 1993 partner of the law firm Kuhbier in Brussels. She is admitted as an attorney at the Hanseatische Oberlandesgericht in Hamburg and Membre Associé du Barreau de Bruxelles. During her professional career Mrs Fouquet specialised in various legal aspects of energy, environmental, competition and administrative law. Her major focus in counseling on issues in the field of Energy Law, especially in relation to Renewable Energies, Energy Efficiency, grid regulations and competition law. She also works in the area of industrial environmental legislation especially on regulations in the field of environment, energy, trade law, competition law, as in general on standard-setting on the base of Best Available Technology Principle and the realistic planning towards approximation of EU legislation, enforcement and application. . Moreover, she works in questions related to chemicals, waste management and water policies and law. Dr. Dörte Fouquet is a trusted expert partner of civil society, of the European and international institutions as well as national administration. Competition law advice is a major part in her portfolio. Before she became an independent European lawyer, Dr. Fouquet had a longstanding career as administrative lawyer in the administration concerning energy and environment in the German state City of Hamburg. She has a thorough experience of working with national, international and in particular European institutions as well as with national and international NGOs as well as in the administrative support to major RTD projects within the EC framework programmes. Dr. Fouquet works intensively also as lecturer and author respectively co-author of numerous publications.

Relevant Publications, Products and Services

1. Global Small Hydropower Report 2014

Providing databases and information about the European small hydropower sector; based on IEE projects StreamMap and RESTOR Hydro.

2. StreamMap database (2012)

Project coordinator responsible for the collection of economic, political and technical data on small hydropower plants in the EU.

3. RESTOR Hydro database (2014)

Project coordinator responsible for the collection of economic, political and technical data on small hydropower plants in the EU. Development of a database on small hydropower sites within the EU which have a potential for refurbishment.

Previous Projects and Activities

Renewables Networking Platform (2017-2020)

EREF is co-coordinator in this EU project sponsored by the European Commission, DG Energy. The RNP project acts as a platform to promote information exchange between renewable energy stakeholders and decision-makers from local, national and EU levels involved in the current development of new EU legislation for the EU Energy Union.

EREF is the main contact point to national renewable energy associations of EU Member States and Brussels-based renewable energy and related associations. EREF acts as information hub providing information on EU policy and legislation developments with an impact on renewables to national stake-holders and passing information from national level on to decision-makers at EU level. Dissemination of information takes place via meetings, events, briefings, presentations and so-called policy chats.

Promoting the European Small Hydropower Sector in Africa (2015-2018)

As representative of the European small hydropower sector, EREF informs and connects project developers, investors and equipment producers from the European hydropower sector with their counterparts in Africa. EREF organizes information workshop and matchmaking events in Europe and Africa. It also provides legal and political advice to African governments on how to best develop (small) hydropower.

The project is sponsored by the European Commission and various EU Member States.

IEE project Keep on Track! (2012-2015)

This IEE project monitored the compliance with the trajectory of the RES market concerning the EU 2020 targets of each of EU Member State. The project identified barriers to the implementation of renewable energies in the 27 Member States and made policy recommendations to overcome these obstacles.

As sub-contractor, EREF was responsible for the coordination of national policy workshops and the organization of European events. These events promoted a dialogue between market players, such as European and national industry associations of renewable energy, energy efficiency sector, national parliaments and the EU as well as the scientific community.

EREF staff provided presentations on latest EU renewable energy policy developments and contributed significantly to the development of policy recommendations for EU Member States and EU institutions.

Partner 8: International Hydropower Association (IHA)

Organisation short name	IHA
Organisation legal name	International Hydropower Association Ltd
Country	United Kingdom
Website	*www.hydropower.org*

Description of the legal entity

IHA has been established since 1994. It is an international organization which builds and shares knowledge in the hydropower sector, with a focus on international good practice and sustainable development. It has 101 institutional members active in over 100 countries, with a third of them being based in Europe. Its work programme principally consists of knowledge and capacity building in the areas of climate resilience, sediment management, river basin development, hydropower benefits, finance and investment, clean energy systems, regional interconnections, GHG footprint, operations and maintenance, modernisation, and a hydropower sustainability work programme which includes the Hydropower Sustainability Assessment Protocol and its derivative tools. IHA's work is carried out by the non-profit companies International Hydropower Association Ltd and IHA Sustainability Ltd (registered in the United Kingdom). The association is governed by a board of 18 elected members, up to six coopted members, and the CEO. The elected members are drawn from the six regional zones of its membership. The Board is chaired by the President of the association and is supported by up to six Vice Presidents.

Main Role and tasks in the project

In the project, IHA will join the Consortium and will be part of the Project Management Team for 'Hydropower-Europe'.

IHA specialists and analysts will contribute to the work packages.

Profiles of persons primarily responsible for carrying out the proposed activities (MAX 5)

Mr Richard Taylor (M) is the CEO of the IHA group of not-for-profit companies. These carry out the work of the International Hydropower Association, which has members active in more than 100 countries. He has been involved in the water and energy sectors since 1985, and this has covered assignments in more than 50 countries worldwide. In addition to water and energy, his interests include climate change and sustainability.

Mr Taylor has been engaged in United Nations initiatives on water (WWDR and UNEP), energy (UNIDO and UNDESA) and climate change (UNESCO and IPCC).

He has also participated in the work of other international organisations, such as the World Bank Group, European Bank for Reconstruction and Development, International Renewable Energy Alliance, REN21, International Renewable Energy Agency, International Energy Agency, World Energy Council, World Water Council, Global Environment Facility, Climate Investment Funds and

the Climate Bonds Initiative.

He has written and edited numerous technical papers and periodicals on hydropower, climate change, and energy systems. He is a Fellow of the Energy Institute in the United Kingdom, and an alumnus of the University of Cambridge Institute for Sustainability Leadership.

Education

University of London, Kingston, UK: BSc. Hons. Earth Science/Water Resources (1981-1985).

Postgraduate training (1986-1994, employer sponsored): Geohydrology; Foundation Engineering; Dam Engineering (embankment, RCC and arch-dam design); Hydraulic Machinery (impulse and reaction turbine design); Earthquake Engineering; Slope Stability; Water Quality; Reservoir Hydrodynamics; Environmental Engineering; Renewable Energy Systems; Climate Change.

Postgraduate training (2012, World Bank sponsored): University of Cambridge Institute for Sustainability Leadership Programme.

List of up to 5 relevant publications, and/or products, services, (including widely-used datasets or software) or other achievements relevant to the call content

- Hydropower Status Report, 2017
- IHA Activity Report, 2017
- IHA hydropower database (covering approx. 90% of the world's hydropower capacity)
- Better Hydro (IHA/World Bank publication on good practice in the hydropower sector), 2017
- The Hydropower Sustainability Assessment Protocol, 2011, updated 2018

List of up to 5 relevant previous project actions or activities, connected to the subject of this proposal

- Convening of the Hydropower Sustainability Forum (2009 and 2011) and coordination of the Hydropower Sustainability Assessment Council (ongoing)
- Research and hosting of a sediment management information web-platform
- Research and development of the online GHG reporting tool for the hydropower sector
- Secretariat of the Hydropower Climate Resilience Guidelines testing and consultation
- Hosting of knowledge networks on: clean energy systems; regional interconnections; hydropower modernization; operations and maintenance planning; hydropower benefits; river basin planning; project preparation facilities; digitalization; and climate/green bonds.

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work

Not applicable

4.2. Third parties involved in the project (including use of third party resources)

Please complete, for each participant, the following table (or simply state "No third parties involved", if applicable):

Partner 1: ICOLD

Does the participant plan to subcontract certain tasks (please note that core tasks of the action should not be sub-contracted)	**N**
Does the participant envisage that part of its work is performed by linked third parties[1]	**Y**
If yes, please describe the third party, the link of the participant to the third party, and describe and justify the foreseen tasks to be performed by the third party ICOLD members UIBK, EPFL, UPM and TUM will be involved as linked third parties to provide relevant expertise in different work phases of the project. Their roles will be to provide specific technical expertise relating to identification, prioritization and specification of research priorities as part of the stakeholder consultation process feeding into drafting of the RIA and TR.	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	**N**
Does the participant envisage that part of the work is performed by International Partners (Article 14 of the General Model Grant Agreement)	**N**

Partner 2: SAMUI

Does the participant plan to subcontract certain tasks (please note that core tasks of the action should not be sub-contracted)	**N**
Does the participant envisage that part of its work is performed by linked third parties[2]	**N**
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	**N**
Does the participant envisage that part of the work is performed by International Partners (Article 14 of the General Model Grant Agreement)	**N**

Partner 3: EASE

[1] A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action (Article 14 of the Model Grant Agreement).

[2] A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action (Article 14 of the Model Grant Agreement).

Does the participant plan to subcontract certain tasks (please note that core tasks of the action should not be sub-contracted)	**N**
Does the participant envisage that part of its work is performed by linked third parties[3]	**Y**
If yes, please describe the third party, the link of the participant to the third party, and describe and justify the foreseen tasks to be performed by the third party EASE members Iberdrola, CENER and GE Hydro will be involved as linked third parties to provide relevant expertise in different work phases of the project. Please refer to the attached documents for more detailed information about the potential tasks that will be carried out by three EASE members as LTPs.	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	**N**
Does the participant envisage that part of the work is performed by International Partners (Article 14 of the General Model Grant Agreement)	**N**

Partner 4: EUREC

Does the participant plan to subcontract certain tasks (please note that core tasks of the action should not be sub-contracted)	**N**
Does the participant envisage that part of its work is performed by linked third parties[4]	**Y**
If yes, please describe the third party, the link of the participant to the third party, and describe and justify the foreseen tasks to be performed by the third party CRES and WIP-Renewables, which are EUREC full members, will be supporting the work of EUREC by participating in relevant expert workshops, and providing their expert feedback on the strategic documents to be prepared by the Forum. They will mainly be involved in the work of WP2 related to the overall support to the building of a strong hydropower community. CRES and WIP-Renewables have relevant expertise in hydropower research, and are well placed to contribute to the project with their specific expertise.	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	**N**

[3] A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action (Article 14 of the Model Grant Agreement).

[4] A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action (Article 14 of the Model Grant Agreement).

Does the participant envisage that part of the work is performed by International Partners (Article 14 of the General Model Grant Agreement)	**N**

Partner 5: VGB PowerTech e.V.

Does the participant plan to subcontract certain tasks (please note that core tasks of the action should not be sub-contracted)	**N**
Does the participant envisage that part of its work is performed by linked third parties[5]	**N**
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	**N**
Does the participant envisage that part of the work is performed by International Partners (Article 14 of the General Model Grant Agreement)	**N**

Partner 6: Zabala Belgium

Does the participant plan to subcontract certain tasks (please note that core tasks of the action should not be sub-contracted)	**N**
Does the participant envisage that part of its work is performed by linked third parties[6]	**Y**
If yes, please describe the third party, the link of the participant to the third party, and describe and justify the foreseen tasks to be performed by the third party Zabala Spain will support the communication activities of the project in particular media relations activities as well as social media presence. It will also provide ad hoc legal and administrative support for the management of the project.	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	**N**
Does the participant envisage that part of the work is performed by International Partners (Article 14 of the General Model Grant Agreement)	**N**

Partner 7: EREF

Does the participant plan to subcontract certain tasks (please note that core tasks of the action should not be sub-contracted)	**N**

[5] A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action (Article 14 of the Model Grant Agreement).

[6] A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action (Article 14 of the Model Grant Agreement).

Does the participant envisage that part of its work is performed by linked third parties[7]	**N**
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	**N**
Does the participant envisage that part of the work is performed by International Partners (Article 14 of the General Model Grant Agreement)	**N**

Partner 8: IHA

Does the participant plan to subcontract certain tasks (please note that core tasks of the action should not be sub-contracted)	**N**
Does the participant envisage that part of its work is performed by linked third parties[8]	**N**
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	**N**
Does the participant envisage that part of the work is performed by International Partners (Article 14 of the General Model Grant Agreement)	**N**

[7] A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action (Article 14 of the Model Grant Agreement).

[8] A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action (Article 14 of the Model Grant Agreement).

4.2.1 Details of Third parties involved in the project

Since the HYDROPOWER-EUROPE consortium comprises many partners representing significant networks of actors involved in all aspects of the supply chain, **a number of these organisations (10) will participate directly within the work as Linked Third Parties**. These organisations comprise:

Partner	Organisation name	Short Name	Country
1 Coord	**ICOLD**	**ICOLD**	**FRANCE**
i	*Universität Innsbruck*	UIBK	AUSTRIA
ii	*École polytechnique fédérale de Lausanne*	EPFL	SWITZERLAND
iii	*Universidad Politécnica de Madrid*	UPM	SPAIN
iv	*Technische Universitaet Muenchen*	TUM	GERMANY
3	**EASE**	**EASE**	**BELGIUM**
i	*Iberdrola Generación S.A*	IBERDROLA	SPAIN
ii	*Centro Nacional De Energías Renovables*	CENER	SPAIN
iii	*GE Hydro France*	GE HYDRO	FRANCE
4	**EUREC**	**EUREC**	**BELGIUM**
i	*Wirtschaft und Infrastruktur GMBH & Co Planungs KG*	WIP	Germany
ii	*Centre for Renewable Energy Sources and Saving Foundation*	CRES	Greece
6	**ZABALA Belgium**	**ZABALA**	**BELGIUM**
i	*ZABALA Spain*	ZABALA Spain	SPAIN

Linked 3rd Party (to ICOLD):
Universität Innsbruck (UIBK)

Organisation short name	UIBK
Organisation legal name	University of Innsbruck – Arbeitsbereich Wasserbau
Country	Austria
Website	*www.uibk.ac.at/wasserbau/*

Description of the legal entity

The University of Innsbruck, Austrian's biggest and most important research and education institution in the west of the country represents a legal entity as a public university. Founded in 1669 the university comprised today more than 27.500 students and about 4.500 staff and faculty members. 16 faculties provide a broad spectrum of programs in all fields of study. In order to promote international exchange in research and teaching, the University collaborates with numerous international research and education institutions. The University of Innsbruck is very experienced concerning the application for implementation and management of large scale projects. In FP7 the University participated in 103 framework projects and coordinated several of them. Among those projects were 6 ERC- Starting grants, 1 ERC- Advanced Grant, 1 ERC-proof of concept, 1 participation in an ERC- synergy grant, several ITN (participations) and one IRSES. All together 48 Mio Euros were raised out of FP7. The whole amount of funds raised at the University from funding agencies, industry, etc. was about 45 Mio in 2016.

In the Unit of Hydraulic Engineering (Department of Infrastructure) up to 25 staff members teach and work on research projects in various hydraulic engineering fields like hydropower, pumped storage, dam safety, sediment transport processes, and flood protection carried out by means of numerical simulations and physical model tests. Applied science projects belong to the main business in the field of hydraulic engineering, often with international background. Hence the scientists are used to design and implement models concerning different issues of innovation topics. Owning a large hydraulic Laboratory with attached workshops, the project tasks can be investigated on physical models in the scale 1:10 to 1:30. Often also hybrid modelling is the solution with additional numerical pre-calculations and optimizations.

Main Role and tasks in the project

In the project, UIBK will participate as follows:

- Partner in all relevant Work Packages in order to present the research potential and the research interest of public universities.

Profiles of persons primarily responsible for carrying out the proposed activities (MAX 5)

Prof. Markus Aufleger (M)Since 2007 Prof. Dr. Markus Aufleger is full professor and head of the unit of Hydraulic Engineering at the University of Innsbruck in Austria. He has got his doctorate and his postdoctoral lecture qualification from the Technische Universität München in Germany. Markus Aufleger has been manager of the Laboratory of Hydraulic and Water Resources Engineering of the Technische Universität München from 2000 to 2007. He is working in the fields of dam engineering, river engineering, hydro power and water resources engineering. Markus Aufleger is active member of several professional organizations. Among others he is member of the board of the German National Committee on Large Dams, member in the ICOLD-Committee on Dam Surveillance and expert in the Austrian Dam Safety Committee.

List of up to 5 relevant publications, and/or products, services, (including widely-used datasets or software) or other achievements relevant to the call content

1. Aufleger, Markus; Neisch, Valerie; Klar, Robert (2013): Powertower und Buoyant Energy - Energie hydraulisch und dezentral speichern. In: Busch, Wolfgang; Kaiser, Friederike: Unkonventionelle Pumpspeicher - Schlüsseltechnologie der zukünftigen Energielandschaft? Forum "Unkonventionelle Pumpspeicher", Goslar, 21. und 22. November 2013. Göttingen: Cuvillier (= Schriftenreihe des Energie-Forschungszentrums Niedersachsen, 16), ISBN 978-3-95404-538-9, pp. 49 - 52
2. Neisch, Valerie; Klar, Robert; Aufleger, Markus (2013): Development of Hydraulic Energy Storage Systems for Decentralized Applications. In: Proceedings of the International Conference and Exhibition - Hydro 2013 - Promoting the Versatile Role of Hydro. Sutton: Aqua-Media International, p. 14b.03.
3. Gabl, Roman; Achleitner, Stefan; Sendlhofer, Andreas; Höckner, Thomas; Schmitter, Max; Aufleger, Markus (2013): Optimierter Einsatz und Kombination von 3-D-Numerik und physikalischer Modellierung. In: WasserWirtschaft - Fachzeitschrift für Wasser und Umwelttechnik 2013/05, S. 128 - 131.
4. Steinbacher, Frank; Baran, Ramona; Dobler, Wolfgang; Aufleger, Markus; Christiansen, Lutz (2013): Combining Novel and Traditional Survey Technologies to Monitor Coastal Environments: Airborne Hydromapping and Sonar Data along the Baltic Sea Coastline, Schleswig-Holstein, Germany. In: Zhaoyin, W.; Hun-wei Lee, Joseph; Jizhang, G.; Shuyou, C.: Proceedings of the 35th IAHR World Congress. Beijing: Tsinghua University Press, ISBN 978-7-89414-588-8, elektronisch.
5. Böttcher, Heidi; Unfer, Günther; Zeiringer, Bernhard; Schmutz, Stefan; Aufleger, Markus (2015): Fischschutz und Fischabstieg – Kenntnisstand und aktuelle Forschungsprojekte in Österreich. In: Österreichische Wasser- und Abfallwirtschaft 67/7-8, S. 299 - 306. (DOI)

List of up to 5 relevant previous project actions or activities, connected to the subject of this proposal

POWERTOWER; Klima- und Energiefonds, Neue Energien 2020 (2011 – 2013). Development of the hydraulic pump storage technology Powertower, funded by the Austrian Research Promotion Agency (FFG)

AAHM Alpine Airborne Hydromapping – Research to Practice. Österreichische Forschungsförderungsgesellschaft mbH (FFG), COMET, Land Tirol (2013 - 2016).

Elektro-Seilrechen. Fish Protection System; Österreichischer Klima- und Energiefonds, e!MISSION (01.03.2017 - 28.02.2019)

Aufleger, Markus: FHARMOR. Fish Habitat in Alpine Rivers: Integrating Monitoring, Modelling and Remote Sensing. Autonome Provinz Bozen-Südtirol - Provincia autonoma di Bolzano - Alto Adige, Amt für Hochschulförderung, Universität und Forschung: Einzelprojekt wissenschaftl. Forschung (01.10.2016 - 30.09.2019)

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work

Not applicable

Linked 3rd Party (to ICOLD):
Ecole Polytechnique Féderale de Lausanne (EPFL)

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Organisation short name	EPFL
Organisation legal name	Ecole Polytechnique Fédérale de Lausanne
Country	Switzerland
Website	*www.epfl.ch*

Description of the legal entity

EPFL is one of the two Swiss Federal Institutes of Technology. With the status of a national school since 1969, the young engineering school has grown in many dimensions, to the extent of becoming one of the most famous European institutions of science and technology. Like its sister institution in Zurich, ETHZ, it has three core missions: training, research and technology transfer. Associated with several specialised research institutes, the two Ecoles Polytechniques (Institutes of Technology) form the EPF domain , which is directly dependent on the Federal Department of Economic Affairs, Education and Research (EAER).

Main Role and tasks in the project

In the project, EPFL will participate as third Party in the Project to provide scientific and technical expertise in the field of:

- Hydropower infrastructures;
- Hydroelectric equipment.

Profiles of persons primarily responsible for carrying out the proposed activities (MAX 5)

Prof. François Avellan, Eng. Dr. (francois.avellan@epfl.ch) (male)

Prof. François Avellan, director of the EPFL Laboratory for Hydraulic Machines, graduated in Hydraulic Engineering from Ecole nationale supérieure d'hydraulique, Institut national polytechnique de Grenoble, France, in 1977 and, in 1980, got his doctoral degree in engineering from University of Aix-Marseille II, France. Research associate at EPFL in 1980, he is director of the EPFL Laboratory for Hydraulic Machines since 1994 and, in 2003, was appointed Ordinary Professor in Hydraulic Machinery. Supervising 37 EPFL doctoral theses, he was distinguished by SHF, Société hydrotechnique de France, awarding him the "Grand Prix 2010 de l'hydrotechnique". His main research domains of interests are hydrodynamics of turbine, pump and pump-turbines including cavitation, hydro-acoustics, design, performance and operation assessments of hydraulic machines. Prof. Avellan was Chairman of the IAHR Section on Hydraulic Machinery and Systems from 2002 to 2012. He has conducted successfully several Swiss and international collaborative research projects, involving key hydropower operators and suppliers, such as:

Coordination for the FP7 European project n° 608532 "HYPERBOLE: HYdropower plants PERformance and flexiBle Operation towards Lean integration of new renewable Energies" (2013-2017);

Deputy Head of the Swiss Competence Center for Energy Research – Supply of Electricity (SCCER-SoE) to carry out innovative and sustainable research in the areas of geo-energy and hydropower for phase I (2013-2016) and Phase II (2017, 2010) to be approved.

EUREKA European research projects: N° 4150 and N° 3246, "HYDRODYNA, Harnessing the dynamic behavior of pump-turbines", (2003-2011), N° 1605, "FLINDT, Flow Investigation in Draft Tubes", http://flindt.epfl.ch/, (1997-2002). N° 2418, "SCAPIN, Stability of Operation of Francis turbines, prediction and modeling";

Swiss KTI/CTI research projects with GE Renewable Energy (anc. ALSTOM Hydro), Birr, ANDRITZ Hydro, Kriens, FMV, Sion, Groupe E, Granges-Paccot, Power Vision engineering, Ecublens and SULZER Pumps, Winterthur.

ETH Domain, HYDRONET Project for the Competence Center Energy and Mobility, PSI Villingen.

Furthermore, he is involved in scientific expertise and independent contractual experimental validations of turbines and pump turbines performances for the main hydropower plants in the world. In recognition for his

work as Convenor of the TC4 working group of experts in editing the IEC 60193 standard he received the "IEC 1906 Award" from the International Electrotechnical Commission.

Prof. François Avellan has authored or co-authored more than 250 papers published in peer-reviewed journals and international conferences proceedings.

Prof. Mario Paolone, Ph.D. (mario.paolone@epfl.ch) (male)

Prof. Mario Paolone, director of the EPFL Distributed Electrical Systems Laboratory, received the M.Sc. (with honors) and the Ph.D. degree in electrical engineering from the University of Bologna, Italy, in 1998 and 2002, respectively. In 2005, he was appointed assistant professor in power systems at the University of Bologna where he was with the Power Systems laboratory until 2011. In 2010, he received the Associate Professor eligibility from the Politecnico di Milano, Italy.

Since 2011, he is a EPFL Ordinary Professor, Chair of the Distributed Electrical Systems laboratory and Head of the Swiss Competence Center for Energy Research (SCCER) FURIES (Future Swiss Electrical infrastructure). Since 2018, he is also the Chair of the Directorate of the EPFL Energy Center. He was co-chairperson of the technical program committees of the 9th edition of the International Conference of Power Systems Transients (IPST 2009) and of the 2016 Power Systems Computation Conference (PSCC 2016). He is chair of the technical program committee of the 2018 Power Systems Computation Conference (PSCC 2018). In 2013, he was the recipient of the IEEE EMC Society Technical Achievement Award. He was co-author of several papers that received the following awards: best IEEE Transactions on EMC paper award for the year 2017, in 2014 best paper award at the 13th International Conference on Probabilistic Methods Applied to Power Systems, Durham, UK, in 2013 Basil Papadias best paper award at the 2013 IEEE PowerTech, Grenoble, France, in 2008 best paper award at the International Universities Power Engineering Conference (UPEC). He is the Editor-in-Chief of the Elsevier journal Sustainable Energy, Grids and Networks and Associate Editor of the IEEE Transactions on Industrial Informatics. His research interests are in power systems with particular reference to real-time monitoring and operation, power system protections, power systems dynamics and power system transients.

Prof. Mario Paolone is author or co-author of over 240 scientific papers published in reviewed journals and international conferences.

Prof. Drazen Dujic, Ph.D. (drazen.dujic@epfl.ch) (male)

Prof. Drazen Dujic is an Assistant Professor and Head of the EPFL Power Electronics Laboratory. He received the Dipl. Eng. and MSc degrees from the University of Novi Sad, Serbia in 2002 and 2005, respectively, and the PhD degree from Liverpool John Moores University, UK in 2008.

From 2003 to 2006, he was a Research Assistant with the Faculty of Technical Sciences at University of Novi Sad. From 2006 to 2009, he was a Research Associate with Liverpool John Moores University. After that he moved to industry and joined ABB Switzerland Ltd, where from 2009 to 2013, he was Scientist and then Principal Scientist with ABB Corporate Research Center in Baden-Dättwil, and from 2013 to 2014 he was R&D Platform Manager with ABB Medium Voltage Drives in Turgi. He is with EPFL since 2014.

His research interests include the areas of design and control of advanced high power electronic systems and high-performance drives, predominantly for the medium voltage applications related to electrical energy generation, conversion and storage.

In 2014, he received the Isao Takahashi Power Electronics Award for Outstanding Achievement in Power Electronics, presented at International Power Electronics Conference, IPEC-Hiroshima 2014, Japan. He is Senior Member of IEEE, and serves as Associate Editor for IEEE Transactions on Power Electronics, IEEE Transactions on Industrial Electronics and IET Electric Power Applications.

Prof. Drazen Dujic is author or co-author of over 100 scientific publications and has filed 12 patents.

Dr. Pedro Manso, (pedro.manso@epfl.ch) (male)

Dr Pedro Manso is a senior research associate of the Swiss Competence Centre for Energy Research where he leads research projects on hydropower jointly funded by public and private partners, in the framework of the Swiss Energy Transition, seconded to the Ecole Polytechnique Fédérale de Lausanne (EPFL, Switzerland). He is a civil engineer PhD with over 19 years of experience in the Water and Energy sectors, in research and engineering practices at global scale.

He obtained his PhD from the EPFL in 2006, following his engineering master diploma from the Instituto

Superior Técnico (IST, Portugal) in 1998 and first job experiences as design engineer in Lisbon and as research assistant at the Laboratory of Hydraulic Constructions of EPFL. He subsequently returned to engineering practice as design engineer and project manager mainly for hydraulic projects at international scale, from basic studies through engineering design and until commissioning. Further to the leader design responsibilities, he took resident roles in Georgia and Portugal and carried out field missions over four continents.

His main research focuses are on sustainable infrastructure and renewable energies, in particular hydraulic structures, dams and hybrid power mixes with hydropower. He is author of more than 80 technical and scientific publications, as well as reviewer for top international journal and guest Editor for the Sustainability journal. He is active member of the Swiss Committee on Dams, where he chairs the workgroup on Reservoir Sediment Management, as well as of the Portuguese Association for Water Resources, as member of the Water and Energy technical committee. He is active as international expert in the field of water resources, hydropower, dam safety and ecological safeguard mainly for international funding institutions (IFIs) and hydraulic infrastructure developers.

List of up to 5 relevant publications, and/or products, services, (including widely-used datasets or software) or other achievements relevant to the call content

- Vagnoni E., Andolfatto L., Guillaume R., Leroy P. and Avellan F., "*Rotating air-water ring in the vaneless gap of a pump-turbine operating in condenser mode*", International Journal of Multiphase Flow, 10.1016/j.ijmultiphaseflow.2018.03.022.
- Namor E., Sossan F., Cherkaoui R. and Paolone M., "*Control of Battery Storage Systems for the Simultaneous Provision of Multiple Services*", IEEE Transactions on Smart Grid, DOI 10.1109/TSG.2018.2810781.
- Christe A., Dujic D., "*Galvanically Isolated Modular Converter*." IET Power Electronics 9.12 (2016), pp. 2318–2328
- Manso P., Schleiss A., Staehli M., Avellan F., "*Electricity supply and hydropower development in Switzerland"*. International Journal of Hydropower & Dams, 23 (5): 41-47

List of up to 5 relevant previous project actions or activities, connected to the subject of this proposal

HYPERBOLE, "*HYdropower plants PERformance and flexiBle Operation towards Lean integration of new renewable Energies*". : FP7 European project n° 608532, (2013-2017) Coordination and Scientific Supervision by Prof. Avellan website https://hyperbole.epfl.ch, Final Report https://cordis.europa.eu/docs/results/608/608532/final1-608532-hyperbole-final-report.pdf

SCCER – FURIES, "*Swiss Competence Center for Energy Research – Future Swiss Electrical Infrastructure*", to develop, promote and deploy power grid-related innovative solutions toward the implementation of the Swiss Energy Strategy 2050. Chair by Prof. Mario Paolone, website https://sccer-furies.epfl.ch

"Real-Time Hardware-in-the-Loop Emulation Platform for Pumped Hydro Storage Power Plants", Swiss Federal Office of Energy funded research project, 2017-2019 (https://www.aramis.admin.ch/Grunddaten/?ProjectID=40235)

Flexstor, "*flexible solution for storage hydropower under changing conditions*", in particular the work packages related with hydropeaking, freeboard management, sediment routing and optimal storage management. (https://www.researchgate.net/project/FLEXSTOR-Solutions-for-flexible-operation-of-storage-hydropower-in-changing-environmental-and-market-conditions)…

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work

N/A

Linked 3rd Party (to ICOLD):
Universidad Politécnica de Madrid (UPM)

Organisation short name	UPM
Organisation legal name	Universidad Politécnica de Madrid
Country	Spain
Website	www.upm.es

Description of the legal entity

UPM is the largest Spanish technological university as well as a renowned European institution. With two recognitions as Campus of International Excellence, it is outstanding in its research activity together with its training of highly-qualified professionals, competitive at an international level. More than 2,400 researchers carry out their activity at the UPM, grouped in 216 Research Groups, 10 Research Centers and 55 Laboratories, all of them committed to transforming the knowledge generated into advances applied to the production sector.

The intense collaboration with governmental bodies and industry guarantees that research at the UPM offers real solutions to real-world problems. The dynamism of R&D&I activity at the UPM, together with the transfer of knowledge to society, is among its lines of strategy. These two commitments place it among the Spanish universities with the greatest research activity and first in the capture of external resources in a competitive regime. UPM heads the Spanish Universities' participation in the 7th European Framework Program with more than 280 projects and more than 80M€ funding. Moreover, every year, UPM applies for around 40 patents and receives a similar number of concessions demonstrating a high commitment to innovation. Regarding business creation, UPM is leader, being generated about 140 businesses. Its support and backing of the business sector is very close. It annually signs around 600 contracts with private businesses.

All this shows that UPM is an institution committed to the transfer of knowledge generated through its research structures to society, and its transformation into advances and technological developments applied to the productive sector.

Main Role and tasks in the project

In the project, UPM will participate to :

- WP3, Analysis and prioritization (existing needs and future research).
- WP4, Technology roadmap and research and innovation agenda.

UPM participates in the project as a linked third party. Its contribution will be to WP3 Analysis and prioritization (existing needs and future research) and WP4 Technology roadmap and research and innovation agenda. It would carried out via the participation of the experts of the Department of Hydraulic, Energy and Environmental Engineering in the fora, and also in the preparation and review of the project documents in their area of expertise (water resources management under climate change, hydraulic and hydrological safety of dams, and upgrading of dams and hydraulic systems).

Profiles of persons primarily responsible for carrying out the proposed activities (MAX 5)

Dr. Alfredo Granados (male) is a Professional Engineer and Assistant Professor (accredited to Associate Professor) Hydraulic Engineering and Water Resources at UPM. He is an expert in dams, hydraulic structures and water resources. He has worked in the project, site management, and safety consultancy of more than 50 dams, including the rehabilitation of the Proserpina dam (2nd Century Roman dam). He is a member of the board of the Spanish National Committee on Large Dams (SPANCOLD), where he is also Director of the Technical Committee on Hydraulics for Dams. His research is focused on the design and operation of hydraulic systems under uncertainty, with special interest in climate change impacts and adaptation measures; on the rehabilitation and upgrading of existing dams; and on the optimal design of water distribution networks.

Dr. Luis Garrote (male) is an expert in hydrology and water resources. He is Professor of Hydraulic Engineering at UPM. His research focus is on the application of hydrological and hydraulic models in water resources planning and management, including floods, droughts, environmental constraints and reservoir operation. He has a particular focus on dealing with uncertainties, particularly those connected to global change. He has been involved in several key European research projects dealing with diverse aspects of water management linked to climate change.

Dr. Ana Iglesias (female) is an expert in water resources, hydro-economics and climate change. She is Professor of Agricultural Economics at UPM. Her research focuses on the interactions between global change, agriculture, and water, with particular emphasis on economic impacts, adaptation and vulnerability. She have lead several EU projects related to adaptation policy to climate change. Her work has been published in over one hundred papers and she is a contributing author to the IPCC since 1995. She is currently Review Editor of the Economics of Climate Change for the IPCC.

Dr. Álvaro Sordo-Ward (male) is Associate Professor of Hydrology at UPM. He is an expert in stochastic hydrologic analysis, from the generation of rainfall to the generation of design hydrographs, probabilistic analysis of hydrologic dam safety, analysis of extreme events (floods and droughts), analysis of climate change effects and adaptive measures, eco-hydrology and hydro-informatics including the use of high performance computing tools.

Dr. Isabel Granados (female) is a Professional Engineer and Associate Professor of Hydrology and Hydraulic Engineering at UPM. She has been involved in the design and construction of several dams. She is specialized in dam safety, in surveillance data interpretation and in the design of measures for recovering the safety standards. Her research interest are the development of methodologies for the optimal design and operation of hydraulic systems under uncertainty. She has developed methodologies to account for uncertainty of design conditions on the performance of water distribution systems under different scenarios.

List of up to 5 relevant publications, and/or products, services, (including widely-used datasets or software) or other achievements relevant to the call content

- Granados A., Garrote L., Sordo-Ward A., Martín-Carrasco F.J. (2017): *The effect of storage under climate change scenarios in Southern European basins.* European Water 59: 1-8
- Garrote, L. (2017): *Managing Water Resources to Adapt to Climate Change: Facing Uncertainty and Scarcity in a Changing Context*. Water Resources Management Vol. 31(10) 2951-2963, DOI:10.1007/s11269-017-1714-6
- Sordo-Ward A., Granados I., Martín-Carrasco, F. Garrote L. (2016): *Impact of Hydrological Uncertainty on Water Management Decisions.* Water Resources Management, 30: 5535, doi:10.1007/s11269-016-1505-5.
- Garrote L., Granados A., Iglesias A. (2015): *Strategies to reduce water stress in Euro-Mediterranean river basins*. Science of the Total Environment Vol. 543(B), 997-1009. DOI: 10.1016/j.scitotenv.2015.04.106. 2015

- Sordo-Ward A., Bianucci, P., Garrote L., Granados, A. (2014). *How safe is hydrologic infrastructure design? Analysis of factors affecting extreme flood estimation.* Journal of Hydrologic Engineering. DOI: 10.1061/(ASCE)HE.1943-5584.0000981

List of up to 5 relevant previous project actions or activities, connected to the subject of this proposal

BASE: Bottom-up Climate Adaptation Strategies Towards a Sustainable Europe, EC, 7th Framework Programme, (2012-2016).

DRIHM: Distributed Research Network Infrastructure for Hydro-Meteorology, EC, 7th Framework Programme, (2011-2014).

VIAGUA: Vulnerability, Impacts and Adaptation to Climate Change in Latin America, funded by Science and Technology for Development (2010-2013).

WasserMed: Water availability and security in Southern Europe and the Mediterranean), EC, 7th Framework Programme (2010-2012).

CIRCE: Climate Change and Impact ResearCh: the Mediterranean Environment, EC, 6th Framework Programme, IP (2007-2011)

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work

Not applicable

Linked 3rd Party (to ICOLD):
TECHNISCHE UNIVERSITAET MUENCHEN (TUM)

Organisation short name	TUM
Organisation legal name	TECHNISCHE UNIVERSITAET MUENCHEN
Country	Germany
Website	*www.tum.de*

Description of the legal entity

Legal details
ADDRESS
Technische Universität München
Arcisstraße 21
80333 Munich, Germany
Phone: +4989289-01

AUTHORIZED
Technische Universität München is a public body. It is legally represented by the president, Prof. Dr. Dr. h.c. mult. Wolfgang A. Herrmann.

CONTROLLING AUTHORITY
Bayerisches Staatsministerium für Wissenschaft und Kunst

SALES TAX IDENTIFICATION NUMBER
DE811193231

Registration Data:
Bay. Hochschulgesetz (12/04/1868) / N/A
Legal Form:
DE_UNK
Legal Type:
Legal Person

Main Role and tasks in the project

In the project, TECHNISCHE UNIVERSITAET MUENCHEN (Chair of Hydraulic and Water Resources Engineering) will participate to:

- Support for and engagement in active dialogue with the HYDROPOWER-EUROPE project partners and the forum it will manage.
- Participating in selected events, workshops (European and regional) and / or webinars organized by the forum.
- Distributing information about activities of the HYDROPOWER-EUROPE project through our communication channels.
- Participating in stakeholder consultations and in the development of the roadmap / research and innovation agenda.
- Identify the different research gaps and needs which would feed in EUROPE HYDROPOWER as the

important topics to be put on the research agenda.
- Disseminate the activities of the project through the different channels that Chair of Hydraulic and Water Resources Engineering has and through the ongoing European projects.
- Support and participate in preparing the content for the different fora and events organized by HYDROPOWER-EUROPE.

Profiles of persons primarily responsible for carrying out the proposed activities (MAX 5)

Prof. Dr. Peter Rutschmann (male)

Prof. Dr. Peter Rutschmann, The Director of the Chair Hydraulic and Water Resources Engineering, is co-inventor of a new, innovative hydropower concepts with seven families of patents either already approved or pending. In the hydraulic outdoor Laboratory, a small 35kW pilot of this shaft power plant has been built, developed and pushed to market readiness. Just recently the first 450kW prototype has been finally accorded in a Natura 2000 resort by the Bavarian Administration Court. Furthermore, a device to protect fish during turbine passage has been invented and patented. A 3D sensor-less method to track fish over long ranges in natural rivers using ultrasonic transmitters has been applied for patenting. The chair was and currently is involved in several EU Projects. Prof. Rutschmann is the coordinator of the Horizon 2020 EU project FIThydro (www.fithydro.eu), which addresses the decision support in commissioning and operating hydropower plants (HPP) by use of existing and innovative technologies. It concentrates on mitigation measures and strategies to develop cost-efficient environmental solutions and on strategies to avoid individual fish damage and enhancing population developments. The chair is a partner of the Interreg EU project DanubeSediment (http://www.interreg-danube.eu/approved-projects/danubesediment), whose goal is to improve water and sediment management as well as the morphology of the Danube River. Other projects are related to wave and tidal energy mainly in developing suitable turbine machinery. Peter Rutschmann has conducted personally some 90 Projects, about 50% related to hydro-power. He is author or co-author of around 100 Publications, with around a dozen in peer-reviewed journals. He recently earned the Honorary Medal of the Bavarian State for environment and the Heinz Maier-Leibnitz Medal of TUM for outstanding research. Prof. Rutschmann is a member of the DFG-Senate-Commission on Water Research and a Member of the Scientific Board of the Federal Waterways Engineering and Research Institute (BAW) and an Adviser of "Deutsche Bank" in a hydropower investment fund.

POSITIONS HELD

2007-Present	**Full professor, Chair of Hydraulic and Water Resources Engineering, Technical University of Munich (TUM), Germany** Hydraulic and water resources engineering and director of the Oskar von Miller Institute and the Dieter Thoma Laboratory
2004 - 2007	**Director of Institute for Hydraulic Engineering, University of Innsbruck (IWI), Austria**
2002 - 2007	**Full professor, Institute for Hydraulic Engineering, University of Innsbruck (IWI), Austria** Hydromechanics and hydrological engineering
1980 - 2001	**Research and senior research engineer, VAW-ETHZ, Switzerland** Hydraulic and numerical modeling, lecturer and supervisor

List of up to 5 relevant publications, and/or products, services, (including widely-used datasets or software) or other achievements relevant to the call content

- Schwarzwälder K, Abo-EI-Wafa H, Rutschmann P (2017) FIThydro – neue Ansätze und Bewertungen für das Sedimentmanagement als Bestandteil der Betriebsstrategie an

Wasserkraftanlagen. / FIThydro – new approaches and evaluations for sediment management strategies as component of operational strategies for hydropower plants. Wasserwirtschaft, 107, 65-68
- Geiger F, Cuchet M, Rutschmann P (2016) Experimental investigation of fish downstream passage and turbine related fish mortality at an innovative hydro power setup. (Étude expérimentale de la dévalaison des poissons et du taux de mortalité au passage d'une centrale hydroélectrique de conception innovante.) La Houille Blanche, 44-47, DOI 10.1051/lhb/2016059
- Rutschmann P, Sepp A, Geiger F, Barbier J (2011) A new take on hydro power design. International Water Power & Dam Construction, 63, 22-25.
- Schechtl T, Hötzl S, Rutschmann P, Knapp, W (2017) Development of a Low Head Tidal Turbine. Part 2: Test Rig and Model Turbine Design. EWTEC 2017. Proceedings of the 12th European Wave and Tidal Energy Conference. Paper ID 687, pp. 687-1 – 687-7, Cork, Ireland
- Rutschmann P, Schäfer S, Rutschmann B, Geiger F, (2016) Fish behavioral and mortality study at intake and turbine. Sustainable Hydraulics in the Era of Global Change : Proc. 4th IAHR Europe Congress, (ed Erpicum Sébastien). CRC Press, pp. 242-246, E-ISBN 978-1-4987-8149-7, Liege, Belgium

List of up to 5 relevant previous project actions or activities, connected to the subject of this proposal

2016 – Present FIThydro
Horizon 2020 project, *Fishfriendly Innovative Technologies for Hydropower* (www.fithydro.eu)

2016 – 2017 Safe*Coast, EU Eurostars Eureka Project,
Investigation of tidal barriers and development of suitable tidal turbines running in reverse mode

2013 – 2014 Hydropower station Au at the Iller river [0,9 MW/ 2,3 m]
Physical model study to investigate and optimize the design of a VLH (very low head) power plant.
Contractor: Bayerische Landeskraftwerke GmbH, Germany

2012 – 2014 Dal hydropower plant at the Sudanese Nile [570 MW/ 19 m]
Physical model investigation of the spillway and the power plant. Design improvement, sediment management and vortex prevention at the power intakes.
Contractor: Dam Implementation Unit (DIU), Sudan

2011 – 2013 Shaft power plant
Invention of a new hydropower concept with several patents. Improving of the design and measurement of the flow fields and the efficiencies.
Contractor: AiF, ZIM funded research project

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work

Should not be the case in this proposal

Linked 3rd Party (to EASE):
IBERDROLA GENERACIÓN S.A. (IBERDROLA)

Organisation short name	IBGEN
Organisation legal name	IBERDROLA GENERACIÓN S.A.
Country	Spain
Website	*www.iberdrola.com*
Description of the legal entity:	
Private (big company)	
Main Role and tasks in the project	
In the project, IBERDROLA will participate to : - to evaluate properly the total market value of hydro generation - to develop synergies with multipurpose schemes - to increase flexibility - New pumped-storage power plants	
Profiles of persons primarily responsible for carrying out the proposed activities (MAX 5)	
Mr Pablo Queréndez (male): responsible for engineering activities related to hydro power plants. More than 20 years of experience in studies development and optimization systems for operation Mr. Fernando Perán (male): reponsible for O&M activities in hydro power plants Mr. Enrique Sola (male): Hydraulic technical services director	
List of up to 5 relevant publications, and/or products, services, (including widely-used datasets or software) or other achievements relevant to the call content	
N/A	
List of up to 5 relevant previous project actions or activities, connected to the subject of this proposal	
Tamega project: https://www.iberdrola.com/about-us/lines-business/flagship-projects/tamega-project San Esteban project: https://www.iberdrola.com/press-room/news/detail/iberdrola-s-board-of-directors-meet-in-galicia-at-the-san-esteban-ii-project-now-at-the-halfway-mark-2733133820100921 La Muela project: https://www.iberdrola.com/press-room/news/detail/hrh-the-prince-of-asturias-and-iberdrola-chairman-dedicate-cortes-la-muela-pumped-storage-scheme-in-valencia-spain-0230725720131014	
Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work	

Should not be the case in this proposal

https://www.iberdrola.com/press-room/news/detail/iberdrola-reinforces-commitment-to-hydroelectric-power-2974823420140306

Linked 3rd Party (to EASE):
FUNDACIÓN CENER CIEMAT (CENER)

Organisation short name	CENER
Organisation legal name	FUNDACIÓN CENER CIEMAT
Country	SPAIN
Website	*www.cener.com*

Description of the legal entity

The National Renewable Energy Centre (CENER) is a technology centre, specialised in applied research and in the development and promotion of renewable energies. It has excellent qualifications and recognised national and international prestige. The CENER-CIEMAT Foundation started its activity in 2002 and its Board of Trustees is comprised of the Ministry of Economy, Industry and Competitiveness, Ciemat, the Ministry of Energy, Tourism and the Digital Agenda and the Government of Navarra. It currently provides services and performs research work in 6 areas: Wind, Solar Thermal and Solar Photovoltaic, Biomass, Energy in Buildings and Renewable Energy Grid Integration.

Main Role and tasks in the project

In the project, CENER will participate in the stakeholder consultation and feedback process helping to identify, prioritise and draft specifications for research actions.

Profiles of persons primarily responsible for carrying out the proposed activities (MAX 5)

Dr. Raquel Garde (female)

PhD. Chemistry with more than 20 years of experience in research. Since 2002 is working in the Renewable Energy Grid Integration Department of Cener. She is responsible of the Energy Storage Group and manages activities related to Renewable Energies Grid Integration by using Energy Storage Systems (chemical, electrochemical, mechanical, etc.).

She has established the Energy Storage Area (activities, projects, staff) and has participated in the design and development of the Energy Storage Facilities (Electrochemical and Renewables Integration Labs). She has also spearheaded several private and public projects from concept to development. Moreover she takes part in other activities such as: Development and management of budgets, oversaw and training staff, liaison between staff, senior manager and clients during project cycle and meeting project milestones and deliver dates; Establishment of relationships and collaborations with international companies and organizations.

Regarding scientific activities she is author of almost one hundred of scientific publications (books, chapters and scientific journals) and international conferences. She has participated and participates in many national and international projects and is the leader of several expert groups and Committees. In addition, she is the author of two patents and participates as an expert in evaluation processes in both national and international (6th and 7th Framework Programme, Horizon 2020) and as an international expert for the European Union.

She has extensive teaching experience in the University field (national and international) where she has

overseen Ph.D and Master projects and has given classes during 4 years.

In the Renewable Energy Sector to date she has taken part in many energy storage system courses.

List of up to 5 relevant publications, and/or products, services, (including widely-used datasets or software) or other achievements relevant to the call content

1. Peaking strategies for the management of wind-H2 energy systems, C. Azcárate, R. Blanco, F. Mallor, R. Garde, M. Aguado, Renewable Energy 47 (2012) 103-111.
2. Characterisation of electrical energy storage technologies, H. L. Ferreira, R. Garde, G. Fulli, W. Kling, J. P. Lopes. Energy 53, (2013), 288-298.
3. Potential Integration of Electrical Distributed Generation in an Island Power System, K. Mentesidi, M. Aguado International Journal of Distributed Energy Resources, (2013), 341-366.
4. Power quality and stability analysis during islanded mode operation in a microgrid based on master-slave configuration" R. Garde, S. Casado, M. Santamaria, M. Aguado, 2015 Saudi Arabia Smart Grid (SASG), 1-8, Publisher IEEE, 2015. DOI: 10.1109/SASG.2015.7449288
5. Dynamic modeling of gravity energy storage coupled with a PV energy plant, A. Berrada, K. Loudiyi, R. Garde, Energy 134 (2017) 323-335.

List of up to 5 relevant previous project actions or activities, connected to the subject of this proposal

CENER has participated and currently participates in several national and European projects linked to smart grids and storage systems:

1. 2011-2014. stoRE-Facilitating energy storage to allow high penetration of intermittent renewable energy (IEE). The main objectives were to analyse the European regulation regarding energy storage systems mainly pumped hydro, and propose recommendations to overcome non-technical barriers.

2. 2014-2017. Life Factory Microgrid (Life+ 2013) (www.factorymicrogrid.com/). The main objective of the project is to demonstrate, through the implementation of a full-scale industrial smartgrid that microgrids can become one of the most suitable solutions for energy generation and management in factories that want to minimize their environmental impact.

3. 2014-2017. Life ZAESS (Life+2013) (www.zaess.eu). The main objective is to design, develop and demonstrate a Zinc-Air battery for renewable energies integration taking into account not only technical aspects but also, environmental, economic and the regulatory and market framework.

4. 2015-2020. STORY (H2020) (horizon2020-story.eu/). STORY wants to demonstrate and evaluate innovative approaches for energy storage systems. The challenge is to find solutions, which are affordable, secure and ensure an increased percentage of self-supply. The project consists of eight different demonstration cases each with different local / small-scale storage concepts and technologies, covering industrial and residential environments.

5. 2016-2019. CryoHub (H2020) (www.cryohub.eu). Developing Cryogenic Energy Storage at Refrigerated Warehouses as an Interactive Hub to Integrate Renewable Energy in Industrial Food Refrigeration and to Enhance PowerGrid Sustainability.

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work

Should not be the case in this proposal

Linked 3rd Party (to EASE):
GE HYDRO FRANCE (GE HYDRO)

Organisation short name	GE Hydro
Organisation legal name	GE Hydro France
Country	France
Website	www.gerenewableenergy.com
Description of the legal entity	
Simplified joint stock company with a sole shareholder	
Main Role and tasks in the project	
In the project, your organization will participate to: - The creation and validation of a R&D Roadmap concerning hydropower	
Profiles of persons primarily responsible for carrying out the proposed activities (MAX 5)	
Mr Guillaume Rudelle (male) Mr David Havard (male) Mrs Julie Cournut (female) Mr Thomas Kunz (male) Mr Pierre-Yves Lowys (male)	
List of up to 5 relevant publications, and/or products, services, (including widely-used datasets or software) or other achievements relevant to the call content	
– New hydropower generation equipment, for large, small and storage applications – Retro-fit and Service of hydropower generation equipment, for large, small and storage applications	
List of up to 5 relevant previous project actions or activities, connected to the subject of this proposal	
– 'Hyperbole' EU project – 'eStorage' EU project	
Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work	
-	

Linked 3rd Party (to EUREC):
WIRTSCHAFT UND INFRASTRUKTUR GMBH & CO PLANUNGS KG (WIP)

Organisation short name	WIP-Renewable Energies
Organisation legal name	WIRTSCHAFT UND INFRASTRUKTUR GMBH & CO PLANUNGS KG
Country	Germany
Website	www.wip-munich.de

Description of the legal entity

WIP Renewable Energies (WIRTSCHAFT UND INFRASTRUKTUR GMBH & CO PLANUNGS KG) is a private company founded in 1968. The multi-disciplinary, international staff team of WIP involves more than 30 employees. WIP has been active in the fields of renewable energy technologies (biomass, solar, PV, wind, hydro) for over four decades, providing a range of technical expert and non-technical services to both industrial and public-sector clients at the international level. WIP's mission is to bridge the gap between research and implementation of renewable energy systems. WIP's key business is the organisation of small- to large-scale international renewable energy events, as well as the management of international research, demonstration and market support projects for renewable energies. WIP offers project development, project management, technical supervision and realisation of projects, which involve the co-ordination of international consortia. For more than 20 years, WIP has been the organizer of the European Photovoltaic Solar Energy Conference and Exhibition (EU PV SEC; www.photovoltaic-conference.com), the world's largest annual event dedicated to PV research, technologies and industries. WIP is also co-organizer of the annual series of the European Biomass Conference and Exhibition (EU BC&E; www.conference-biomass.com). WIP is member of the European Biomass, Photovoltaic and Wind Energy Associations, EUBIA, EPIA and WindEurope, as well as founding member of EUREC, the European Association of Renewable Energy Research Centres. It is furthermore member of the European Technology and Innovation Platforms (ETIP): on Renewable Heating & Cooling (RHC-ETIP), on Bioenergy (ETIP Bioenergy), on Photovoltaics (ETIP PV) and on Smart Networks for Energy Transition (ETIP SNET).

Main Role and tasks in the project

In the project, WIP- Renewable Energies will participate to:

- WP2- Hydropower Community Support

Profiles of persons primarily responsible for carrying out the proposed activities (MAX 5)

Dr. Rainer Janssen (male) Dr. Rainer Janssen is Managing Director Projects at WIP Renewable Energies and Senior Expert in Biomass. He specialises in the production, distribution and market penetration of biomass energy (solid biomass, biogas) and biofuels for transport (bioethanol, biodiesel, vegetable oil) with special emphasis on innovative technologies, research and innovation policies, market research, public awareness as well as the development of supportive framework conditions and policy regulations in the EU and emerging and developing economies. He graduated in Physics (Dr. rer. nat.) at the Technical University of Munich, Walter Schottky Institute, Germany and performed studies at the University of Toronto, Canada. Dr. Janssen coordinated a variety of international and European bioenergy projects and is invited expert for the European Commission (DG RTD, DG ENER), IEA (International Energy Agency) Bioenergy, and GIZ (German

Development Cooperation).

Since 2009, he is member of the Steering Committee of the Biomass Panel of the European Technology and Innovation Platforms on Renewable Heating & Cooling (RHC-ETIP) and member of working group 4 on "Policy and Sustainability" of the ETIP Bioenergy. Finally, since 2012 Dr. Janssen is biomass expert for the GIZ on national and international developments in the area of biomass and biofuels and Vice-President of EUREC, the Association of European Renewable Energy Research Centres. Dr. Janssen also has experience in the organization of events in Africa (i.e. workshops for small hydropower in Africa), self-coordinated or as partner for GIZ.

Mr. Ingo Rutz (male) is full-time staff member at WIP since 2005. At WIP he is Head of Unit Bioenergy & Bioeconomy. He graduated in Environmental Science (Dipl.-Ing.) at the Technical University Munich (Germany) and at the Institut National d'Horticulture in Angers (France), as well as in Consumer Science (M.Sc.) at the Technical University Munich. His main field of experience includes the technical and non-technical analysis of the bioeconomy and its supporting policies in developing countries and emerging economies worldwide, as well as at local level in Germany. Mr. Rutz has long-term experience in international biomass cooperation projects and coordinated several EU projects (e.g. BioTop, Global-Bio-Pact, SRCplus, BiG>East, UrbanBiogas, Carbon Labelling, CoolHeating). Furthermore, he is scientific partner in various research and market support projects funded by the European Union (e.g. Bin2Grid, BioTrade2020plus, BiogasIN, BiogasHeat, SWEETFUEL, COMPETE, HYRESS, CORE-JetFuel, SAHYOG, EARTH, BioVill). He is editor of two books published by Springer: "Socio-Economic Impacts of Bioenergy Production" and "Bioenergy for Sustainable Development in Africa". He is author of many publications and handbooks: "Biogas Handbook" (BiG>East project), "Sustainable Heat Use of Biogas Plants – A Handbook" (BiogasHeat project) and "Small Modular Renewable Heating and Cooling Grids – A Handbook" (CoolHeating project). He is also co-author of the IEA Biogas Handbook and author of two handbooks on biomass heating systems and on biofuels. He was lecturer in several training courses on bioenergy in Europe and overseas. Mr Rutz is involved in the European Technology and Innovation Platforms on Renewable Heating & Cooling (RHC-ETIP) and on Smart Networks for Energy Transition (ETIP SNET). He is member of the German Biogas Association and an expert adviser of the German Agency for International Cooperation (GIZ) for which he also organized renewable energy tours in Germany for high-level African delegations.

Mr. Ingo Ball (male) is a Project Manager at WIP in the Unit Biomass & Bioenergy. He has worked in the RESTOR Hydro project and gained experience in the European small hydropower sector. He was involved in the communication work for the project and contributed for Germany more than 5,000 historic potential hydropower sites to a European database. Moreover, Ingo Ball has written his B.Sc. thesis about hydropower in Germany (Hydropower – background and perspectives). Mr. Ball also is involved in other EC co-funded projects focusing on techno-economic feasibility studies communication and dissemination activities as well as the organisation of international workshops.

List of up to 5 relevant publications, and/or products, services, (including widely-used datasets or software) or other achievements relevant to the call content

Within the project RESTOR Hydro, WIP was involved in the elaboration (funding schemes) of the "*Guidebook for potential investors describing the "all-inclusive model" for developing and refurbishing water wheels, mills, weirs and other lateral structures to generate micro hydropower*."

WIP coordinated the project *Management of events in Africa*, for the Africa-EU Energy Partnership (AEEP) and the associated Renewable Energy Cooperation Programme (RECP) and organized 6 workshops

For EREF and GIZ, WIP organized *three workshops in sub-Saharan Africa and* Europe.

Janssen R., Rutz D. (eds.) (2012) *Bioenergy for sustainable development in Africa*. – Springer Science+Business Media B.V.; Dordrecht Heidelberg London New York; DOI 10.1007/978-94-007-2181-4;

ISBN 978-94-007-2180-7

Janssen R., Rutz D. (2011) *Sustainability of biofuels in Latin America: Risks and opportunities*. – Energy Policy 39 (2011) 5717-5725, doi:10.1016/j.enpol.2011.01.047

List of up to 5 relevant previous project actions or activities, connected to the subject of this proposal

RESTOR Hydro - Unleash microhydro potential in Europe! - Renewable Energy Sources Transforming Our Regions (RESTOR) Hydro was a European project aiming at increasing renewable energy production from small and micro hydropower, by identifying and restoring suitable historical sites, mills and hydropower stations that are currently inoperative. Website: http://www.restor-hydro.eu/

AfriCAN Climate. The main aim of the AfriCAN Climate project was the development, operation and promotion of a web-based Knowledge Platform for efficient dissemination of climate change research results and good practices, to encourage users for uptake of success stories and research knowledge in new projects. Thereby, the project contributed to mitigate climate change impacts on African regions. Website: http://www.africanclimate.net/

CO-POWER - Community power: enabling legislation to increase community ownership for RES projects across Europe - CO-POWER supported the development of community owned projects on Renewable Energy (RES) and Energy Efficiency across Europe. It has addressed legislative issues and facilitates financing of community RES projects by EU funds. Website: http://www.africanclimate.net/

CrowdFundRES - Unleashing the potential of Crowdfunding for Financing Renewable Energy Projects - The overall objective of CrowdFundRES is to contribute to the acceleration of the renewable energy growth in Europe by unleashing the potential of crowdfunding for financing renewable energy projects. Website: http://www.crowdfundres.eu

HYDROACTION - Development and laboratory testing of improved action and Matrix hydro turbines designed by advanced analysis and optimisation tools - The overall concept of the proposed project is to develop a methodology (along with the associated tools) for the low-cost design-optimization of tailor-made small hydro turbines (up to 5 MW), with regard to productivity and costs. Website: http://www.hydroaction.org

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work

WIP offers equipment and logistics for large scale dissemination events with more than 5,000 participants. Furthermore, WIP has available knowledge and tools for a large variety of efficient and effective dissemination and communication activities.

Linked 3rd Party (to EUREC):
Centre for Renewable Energy Sources and Saving Foundation (CRES)

Organisation short name	CRES
Organisation legal name	Centre for Renewable Energy Sources and Saving Foundation
Country	Greece
Website	www.cres.gr

Description of the legal entity

CRES is the Greek national centre for Renewable Energy Sources (RES), Rational Use of Energy (RUE) and Energy Saving (ES). CRES was founded in September 1987 by the Presidential Decree 375. It is a public entity, supervised by the Ministry of Environment Energy and Climate Change, and has financial and administrative independence. CRES has been appointed as the national coordination centre in its areas of activity by Law 2244/94 and Law 2702/99. CRES has an overall staff of approximately 178 people. A number of 144 out of the overall staff are highly qualified engineers (most of them holding a PhD Degree) and other scientists. Its main goal is the promotion of RES/RUE/ES applications at a national and international level, as well as the support of related activities taking into consideration the environmental impacts on energy supply and use. Since 1992, CRES is located on its wholly owned premises, which apart from the offices they also include experimental outdoor installations, a wind energy park, specialized laboratories (biomass, photovoltaics, passive solar systems, fuel cells, wind energy), mechanical shop, conference rooms, a library and a strong computing infrastructure. Its main goal is the promotion of RES/RUE/ES applications at a national and international level, as well as the support of related activities taking into consideration the environmental impacts, on energy supply and use. CRES' funding is provided mainly by the European Union, through the Centre's participation in competitive EU programmes, by the Ministry of Development and other Ministries, through CRES' participation in national projects, as well as from work carried out on behalf of third parties (industry, investors, etc.). CRES co-operates with other institutes, organisations, universities, consultants, international organisations (such as the IEA, UNESCO, ISES, PLEA, IEC, CEN, etc), while it is an active member of various European and international networks, such as the EnR, MEDENER, EUFORES, EAWE, DYNASTEE, MEASNET, EUREC Agency, etc. It also participates in and provides support for the promotion of the activities of various professional/scientific societies, such as the Greek Solar Industries Association, the Greek Small Hydro Association, ESIF, the Greek CHP Association, the Greek Renewable Energies Forum (ELFORES), etc. CRES has all these years developed significant activities in countries of Balkans, Middle East, Black Sea and South Mediterranean area, acting as consultant in the fields of its activities (RES, ES and EE planning and transfer of know how), and supporting some of them towards their accession in the EU. In this framework CRES developed energy investment guides for Bulgaria and Romania just few years after their democratisation, as well as for most of the South Mediterranean Countries.

Main Role and tasks in the project

In the project, CRES will participate to:

- WP2- Hydropower Community Support

Profiles of persons primarily responsible for carrying out the proposed activities (MAX 5)

Michael Panagiotopoulos (male) has been Senior Hydro Mechanical Engineer, Head of Hydro Sector at CRES since 1998. A senior Hydro Mechanical Engineer specialized on Hydro projects studies and construction, with 30 years extensive experience. Michael has in-depth knowledge of:

- Estimating the hydro potential in specific sites.
- Carrying out feasibility studies for new small hydro projects.
- Outdoor measurements for estimating the hydro potential and field measurements for assessing the installed equipment
- Coordinating and/or participating as a member of multidisciplinary scheme for design and implementation of hydro projects.

Michael holds a Ph.D. Diploma, Laboratory of Hydraulic Turbomachines (L.H.T.), Fluid Section, Department of Mechanical Engineering (D.M.E), from the National Technical University of Athens (N.T.U.A.).

List of up to 5 relevant publications, and/or products, services, (including widely-used datasets or software) or other achievements relevant to the call content

Papantonis D. Panagiotopoulos M. Govatsos P. "Technical and economic study of the hydro-power of Crete" 5th National Conference of Solar Technology Institute, Athens 1996, pp. 99-108.
M. Panagiotopoulos, D. Papantonis. Contribution in a new specification of the Small Hydroelectric Plants 'Energy Exploitation Level', 3rd National Conference on the Application of Renewable Energy Sources (RENES), Athens 2005.
Panagiotopoulos M. 'Multipurpose reservoirs and Small Hydro Plants', 1st Symposium of Institute of Energy for South East Europe (IESEU) for RES, Delphi 27-28 May 2005.
Panagiotopoulos M. Panagiotopoulos A, 'Design and construction of a 150kW Pelton turbine, using numerical optimization of the bucket design' 4th Energy Week, IESEU, Athens, 24-26 November 2010
Kontoyannis H, Soukissian T, Panagiotopoulos M, 'The Euripus Tidal Stream at Halkida and the Perspective for Renewable Energy Extraction' Hellenic 10th Hellenic Symposium on Oceanography and Fisheries, 7-11 May 2012, Athens.

List of up to 5 relevant previous project actions or activities, connected to the subject of this proposal

"Variospeed hydroelectric plants". Funded by the E.U. Laboratory of Hydraulic Turbomachines N.T.U.A in collaboration with the universities of Grenoble and Darmstad, the power corporations RWE and SEO and Sulzer Hydro. (1995-1996).

Assignment of the technically and economically exploitable Small Hydro Potential of Greece (E.U., Greek Ministry of Development), (1998-2000).

Study of Lake Kerkini level fluctuation for optimization its anti-flooding capacity in accordance to its irrigation and energy production capacity, (2004.)

Audit for licensing the 'Avlaki' Hydro plant, Acheloos River, 83.6MW, Dam height 77m, Nominal flow rate 130m3/s, equipped with three Francis turbines, Aitoloakarnania region. (2011).

Technical support to 'Gilbert Gilkes & Gordon Ltd', Hydro turbine Manufacturers, Kendal, UK, for manufacturing a model Pelton turbine and experimental verification of the novel design, (2013-14).

Description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work

NOT APPLICABLE

Linked 3rd Party (to ZABALA Belgium):
ZABALA SPAIN (ZABALA SPAIN)

ZABALA is a Spanish SME (over 200 employees) having a wide experience in supporting entities in the management of their RTD and innovation activities, as well as in technology transfer projects and activities. It is a consolidated RTD and Innovation consultancy firm working across Europe on these fields since 1986. Its headquarters are located in Spain (Mutilva, next to Pamplona), having offices in Madrid, Barcelona, Sevilla, Valencia and Vigo. In Europe, ZABALA also has its own offices in Brussels (Belgium) with about 10 employees, London (UK) with 3 employees, and recently opened in 2016 in Paris (France) with 4 people staff. Outside Europe, ZABALA has recently open a new office in Bogotá (Colombia). It currently provides, on a contract basis, consultancy services related to RTD and innovation management to a portfolio of 600 organisations (including SMEs, big companies, RTD centres, universities and public organizations). As part of its services, ZABALA is specialized in providing service to public administrations in the definition of new support innovation tools (definition of new rules related with public procurement as a relevant tool to support the innovation - CPi and PPI) and in supporting the exploitation of R&D results in regional, national and European projects.

Its international project department, the one actively linked to this project, is comprised by a remarkable team of specialists (technical staff, lawyers, economists) with a big experience on the management of projects and tenders and in supporting the companies in the participation process. The core tasks of the international team comprise the preparation, negotiation and management of R&D and innovation projects, the establishment of big consortia, the communication with EC and other public administration authorities as well as the development of studies for public bodies. ZABALA currently provides this kind of services to coordinators of around 60 projects, being also involved in ten different projects whether as partner or as coordinator.

ZABALA is a founding member of Greenovate! Europe, an expert European grouping gathering created to promote respectful environmental innovation culture and participate actively as partners in eco innovation projects as ECO PRO (FP7 project directed to accelerate market take up by maximising the potential use of R&D results through an e-dissemination process addressing their usefulness, usability and applicability), INNOWATER and REMAKE (CIP projects directed to develop new tools for supporting the eco-innovation in SMEs). Since 2006, ZABALA is the coordinator of the Secretariat of the European Technology Platform for Electricity Network of the Future (ETP SmartGrids), and coordinator of the Market Place of the European Innovation Partnership on Smart Cities and Communities since 2014 till 2016.

During the last five years ZABALA has defined, together with the public authorities, open calls inside different European projects, such as INNOWATER[9], REMAKE[10] and the ERA-Net Smart Grids[11], or FP7-ICT-FINODEX project with calls launched within it. The project has already published 2 calls for proposals to fund business focused initiatives which use Future Internet PPP technologies plus open data.

ZABALA has strong knowledge in different areas which are relevant to the EU SYSFLEX project implementation:

- Coordination of European Stakeholders platforms, like ETP Smart Grids Secretariat and Market Place of the European Innovation Partnership on Smart Cities and Communities.

[9] INNOWATER vouchers in cooperation with the Regional Government in Navarra (Spain) http://www.navarra.es/home_es/Actualidad/Sala+de+prensa/Noticias/2012/03/05/bonos+innowater.htm
[10] REMake regional call funded by the Regional Government of Navarra thanks to the assessment by ZABALA http://www.navarra.es/home_es/Servicios/ficha/4307/Ayudas-del-programa-REMake-2011-2012
[11] ERANET Smartgrids http://www.eranet-smartgrids.eu

- Smart grids networks:
  - **Secretariat of the ICT4SmartGrids thematic network (2010-2012)** managed by the European Utilities and Telecommunications Council (EUTC).
  - **Secretariat of the SmartGrids ERA-NET (2010-2013).** Leader: SENTER NOVEM.
  - **Secretariat of the project OPEN meter** (Open Public Extended Network metering – FP7-Energy – SmartGrids): 18 partners. Leader: IBERDROLA.
  - **Support to the management of large demonstration EU-Funded projects** related to Transport and Distribution Smart Grids within FP7 and H2020 (**the 3 biggest ones involve the management of a combined budget of 135.1 Mill € and 87 partners**).
- Working with energy stakeholders at municipal /community level: Zabala has among its client city authorities and has worked with them in several EU projects. ZABALA participates in smart cities projects with specific tasks related with management, financial aspects and socioeconomic impact. As examples, ECOCITY PROJECT in the city of TUDELA (Spain), EU-GUGLE leaded by CENER (Spain) and SINFONIA leaded by SP (Sweden).
- Knowledge of energy, transport, ICT, water and waste management, and socio-economic topics and managing stakeholder contacts in these fields: During 30 years of experience, Zabala has assisted more than 1000 industrial firms on the planning, management and finance of their RTD and innovation activities both at national and European level. Zabala has profound knowledge and understanding on the fields of energy, transport, ICT, and water & waste management through its collaborations with clients from the sectors in the day to day management of European innovation projects and its participation in a number of studies in the sectors.

List of relevant publication

Publications not identified

List of relevant previous projects

- **ETP SMARTGRIDS (2006 - 2016):** The European Technology Platform for Electricity Networks of the Future, also called ETP SmartGrids, is the main European forum for the crystallisation of policy and technology research and development pathways for the smart grids sector, as well as the link between EU-level related initiatives. More than 30 countries, 100 experts and 20 National Platforms have been involved in this initiative which ends in 2016 and will continue in the future ETIP Smart Grids & Storage. Since 2006 ZABALA coordinates the Consortium in charge of the Secretariat of the ETP SmartGrids.
- **SUNROAD (2013-2015):** The main objective of the SUNROAD project (Strategic Roadmap for a Solar Europe) is to elaborate and implement a Strategic Roadmap of Demand-Side Policy measures to promote the European and global market uptake of European Photovoltaic Innovations. The main goal is helping the EC to establish priorities in Photovoltaic Energy sector and the results will be considered for implementation phase of the prioritised measures. Coordinated by ZABALA Innovation Consulting, a survey has been launched to prioritize the current barriers of the photovoltaic sector and identify policy measures that would promote innovative products and services in the European photovoltaic market. The survey is available to all those involved in the field of photovoltaic (companies, research centers, government, investors, media, and general public interested) where you can also find the policy measures that have been previously identified according to surveys and workshops with experts in the sector. Along with ZABALA, the project is being delivered by the Technological Corporation of

Andalusia (CTA,Spain), the Commissariat à l'Energie Atomique et aux Energies Alternatives (CEA, France) and PROJEKTkompetenz.eu GmbH (PROKO,Austria).

- **WASTE4THINK (2016-2019):** The main objective of this WASTE4THINKS is to move forward the current waste management practices into a circular economy motto, demonstrating the value of integrating and validating a set of 20 eco-innovative solutions that cover all the waste value chain. The benefits of these solutions will be enhanced by a holistic waste data management methodology, and will be demonstrated in 4 complementary urban areas in Europe. The project includes a consortium of 19 partners with 4 public agencies and administrations, 3 research centers and universities, 8 SMEs, 2 LEs, 1 cluster and 1 NGO, that will work together during 36 months with an overall contribution from the EC of €9M.The most relevant expected impacts are: a 20% increase in waste sorting, 10% saving of management costs, and 10% reduction of GHG emissions. The experience gained, and the synergies among the partners describe the best possible scenario to launch new governance and business models.
- **Market Place of the European Innovation Partnership on Smart Cities and Communities (2013–2016):** ZABALA has coordinated the Market Place of the European Innovation Partnership on Smart Cities and Communities (EIP-SCC Market Place). This initiative follows a bottom-up strategy bringing together cities, industry, SMEs, banks, research and other smart city actors. In this respect, it works as a collaborative tool, enabling the creation of networks among stakeholders and the exchange of knowledge including best practices. The role of the EIP-SCC given by the European Commission is to identify and propose priorities aiming at promoting innovation in European cities. The EIP-SCC will be key in defining the thematic guidelines which will receive European funding in the future.
- **INNEON (2014-2016):** The INNEON (Eco-Innovation Network for Investment) network for eco-innovation investment aims to extend public and private funding sources available for eco-innovation and social innovation in Europe, and provide a unique forum dedicated to the interaction between a selected cohort of innovators and relevant investors. Eco-innovation is a fast and growing market in EU and globally. Since 2014 ZABALA is the coordinator of this European project embedded in the Competitiveness and Innovation Framework Programme (CIP).

ZABALA Spain (The headquarters of ZABALA are located in Pamplona) will support Zabala Belgium with communication and management related tasks on punctual basis.

cv of the persons

Camino Correia (female) BEng in Industrial Engineering. During the past 10 years she has been the Director of the International department at ZIC. She holds over 16 years of experience in the design, preparation and management of R&D&I projects. She has been a member of the Spanish national workgroups (CDTI) developing the strategy of the future European R&D programmes (Horizon 2020, PPPs, EIPs, joint programming, etc.). She has prepared over 200 proposals during her career obtaining over 170M€ in return. She currently holds a position in the Secretariat of the SmartGrids European Technology Platform.

Francisco de Arístegui (male). Graduated in Law at the University of Navarre (1985). Diploma in Études Supérieures de Droit Européen et Droit International, University of Louvain and University of Liège (1987). Business General Management I.E.S.E. 1991. He has been working in ZIC since 1988 as Business Innovation Consultant. He was actively involved for a decade in the European SPRINT Technology Transfer Brokerage Network, and he has been behind the organisation of all the TT Days and Agri-food VALUE Days in which the company has been involved. During the last seven years he has regularly served as external evaluator of Community RTD and

Demonstration projects within the Innovation Programme. He is an expert in legal issues related to European Programmes. From 2000 to 2003 he has participated in the socio-economic impact assessment of finished FP4 Community RTD projects, for DG Research at the European Commission (EC contracts No G0MA-CT-2000-02010 and G0MA-CT-2000-02011).

Susana Garayoa (female), communication manager. Susana is graduated in Audiovisual Communication from the University of Navarre (2000) and has reputed experience as specialised journalist in R&D, innovation and environment for more than 15 years. She works at the Communication Department of ZABALA and is also associated professor of Scientific Journalism at the University of Navarre. She has managed the Dissemination and Communication Plan and organised events of numerous European projects and has postgraduate specialization in Digital Marketing, Corporate Communication, and PR with Media. Previously worked as Media editor for television and agencies of news.

Laura Ezcurra (female), Bachelor in Economics at University of Navarre (2000); and Master in Business Administration (MBA) by the Vrije Universiteit Brussel (2003) in Brussels. She worked as financial officer for the European Commission (DG Research) for 6 years. Afterwards, she started working in ZABALA passing from the financial department to the European area. She is specialised in management, financial and legal issues of FP7 and H2020 projects. She has experience with FP4, FP5, FP6, FP7 and H2020 projects with more than 10 years of experience in the Management of EU projects.

Javier González (male) MSc in Environmental Sciences (Autonomous University of Madrid, 2003) and Master in International Business Management, working at Zabala since 2008. He is a RTD consultant specialized in Environment, Energy and Industrial technological issues. Since 2008, he has provided diverse RTD consultancy services, focusing on multinational companies, including the support for the preparation, application and management of projects in Horizon 2020, 7th Framework Programme, and other EU, national and regional programmes. He combines the provision of consultancy services with project management tasks, coordinating the European Projects management support services provided by the organization. He is also part of the working team of various European projects linked to the energy sector in which Zabala plays an active role, working as WP leader.

4.3 Confirmed support from additional organisations and experts

As detailed in Section 1.3.2 a considerable number of organisations drawn from across Europe and spanning the whole hydropower value chain, have confirmed their interest and support for the HYDROPOWER-EUROPE project. The table below lists the organisations who have confirmed their support for the project and copies of their letters of support are appended at the end of this document (Section 6).

Following the table of organisations supporting the project is a table of technical experts. These **83 individual technical experts** have been identified so far and have confirmed their availability to participate in the project technical reviews and research specification development activities.

The table below lists the **57 organisations and initiatives** have expressed their support for the project by means of a letter of support, copies of which are included here.

	Company	Type of Organisation	Country
1	Eurelectric	International association	Belgium
2	International Commission on Irrigation and Drainage (ICID)	International association	India
3	World Water Forum (WWF)	International association	France
4	Ministry of Infrastructure and transport of GREECE	Ministry	Greece
5	Albania energy Association	National Hydro association	Albania
6	BDW (German Hydropower Association)	National Hydro association	Germany
7	Towarzystwo Elektrowni Wodnych (Polish Hydropower Association)	National Hydro association	Poland
8	Austrian Small Hydropower Association	National small hydro association	Austria
9	Small Hydro in Finland	National small hydro association	Finland
10	France HYDRO ELECTRICITE	National small hydro association	France
11	TRMEW (Polish association for small Hydro)	National small hydro association	Poland
12	Wasserkraft	Regional hydro association	Germany
13	VWB (Bayern hydropower Association)	Regional hydro association	Germany
14	EYDAP Athenes Water facility	Regional water facility	Greece
15	ATCOLD	National Committee of Large Dams	Austria
16	BDS (The British Dam Society)	National Committee of Large Dams	UK
17	BECOLD	National Committee of Large Dams	Belgium
18	CzCOLD	National Committee of Large Dams	Czech Republic
19	DTKOLD	National Committee of Large Dams	Germany
20	FRCOLD	National Committee of Large Dams	France
21	GCOLD	National Committee of Large Dams	Greece
22	IRCOLD	National Committee of Large Dams	Ireland
23	ISCOLD	National Committee of Large Dams	Iceland
24	ITCOLD	National Committee of Large Dams	Italy
25	MACOLD	National Committee of Large Dams	Macedonia
26	NNCOLD	National Committee of Large Dams	Norway
27	POCOLD	National Committee of Large Dams	Poland
28	PTCOLD	National Committee of Large Dams	Portugal
29	ROCOLD	National Committee of Large Dams	Romanian
30	SLOvaCOLD	National Committee of Large Dams	Slovakia
31	SLOvenCOLD	National Committee of Large Dams	Slovenia
32	SPANCOLD	National Committee of Large Dams	Spain
33	SwedCOLD	National Committee of Large Dams	Sweden
34	SWISSCOLD	National Committee of Large Dams	Switzerland
35	Andritz	Equipment manufacturer	Austria
36	ENERGIE AG	Equipment manufacturer	Austria
37	Voith Hydro	Equipment manufacturer	Germany
38	Alpiq AG	Operator	Switzerland
39	EDF-CIH	Operator	France
40	EDP	Operator	Portugal
41	ENEL	Operator	Italy
42	FORTUM	Operator	Finland

43	PPC-DHP	Operator	Greece
44	STATKRAFT	Operator	Norway
45	VATTENFALL	Operator	Sweden
46	VATTENFALL Vattenkraft	Operator	Germany
47	VERBUND Hydropower	Operator	Austria
48	INNOGY	Operator	Germany
49	CIRCE	Research Center	Spain
50	RSE	Research Centre	Italy
51	EPFL	University	Switzerland
52	IHE Delft	University	(United Nations)
53	LULLEA	University	Sweden
54	TUM	University	Germany
55	UIBK	University	Austria
56	UPM	University	Spain
57	European Technology and Innovation Platform for Smart Networks and Energy Transition **(ETIP SNET)**	ETIP SNET Initiative	EU

This table shows the initial list of Technical Experts who have confirmed their interest to participate

	First name	Family Name	Country	Sector	Value Chain	Work topics
1	Fredrik	JOHANSSON	Sweden	Other	Research	Civil Engineering
2	Jan	LAUE	Germany	Other	Research	Civil Engineering
3	Richard	MALM	Sweden	Other	Research	Civil Engineering
4	Stefan	LARSSON	Sweden	Other	Research	Civil Engineering
5	Domingos	SILVA MATOS	Portugal	Private	Energy	Civil Engineering
6	Massimo	MEGHELLA	Italy	Private	Research	Civil Engineering
7	Mario	BERRA	Italy	Private	Research	Civil Engineering
8	Holger	ECKE	Sweden	Private	Energy	Civil Engineering
9	Mattias	NÄSSELQVIST	Sweden	Private	Energy	Civil Engineering
10	Peter	VIKLANDER	Sweden	Private	Energy	Civil Engineering
11	Jean-Robert	COURIVAUD	France	Private	Energy	Civil Engineering
12	Jean-Jacques	FRY	France	Private	Energy	Civil Engineering
13	Philippe	KOLMAYER	France	Private	Energy	Civil Engineering
14	Andre	KOELEWIJN	Netherlands	Private	Research	Civil Engineering
15	Andreas	BLAUHUT	Austria	Private	Energy	Civil Engineering
16	Roman	KOHLER	Austria	Private	Energy	Civil Engineering
17	Christian	VILADRICH	France	Private	Energy	Economic
18	Christos	DIMOU	Greece	Private	Energy	Economy
19	Markus	PFLEGER	Austria	Private	Energy	Economy
20	Urban	LUNDIN	Sweden	Other	Research	Electrical System
21	Antonella	FRIGERIO	Italy	Private	Research	Electrical System
22	Jonas	FUNKQUIST	Sweden	Private	Energy	Electrical System
23	Johan	BLADH	Sweden	Private	Energy	Electrical System
24	Jean-François	BALMITGERE	France	Private	Energy	Electrical System
25	Mario	PAOLONE	Switzerland	Other	Research	Electrical System
26	Drazen	DUJIC	Switzerland	Other	Research	Electrical System
27	Peter	RUTSCHMANN	Germany	Public	Research	Environment
28	Ana Paula	MOREIRA	Portugal	Private	Energy	Environment
29	Michele	DENIGRIS	Italy	Private	Research	Environment
30	Navinder	SINGH	Sweden	Other	Research	Environment
31	David	ALDVEN	Sweden	Private	Energy	Environment
32	Erik	SPARREVIK	Sweden	Private	Energy	Environment
33	Agnès	BARILLIER	France	Private	Energy	Environment
34	Jean-René	MALAVOI	France	Private	Energy	Environment
35	Walter	RECKENDORFER	Austria	Private	Energy	Environment
36	Miroslav	MARENCE	Netherlands	Other	Research	Environment
37	Hany	ABO EL WAFA	Germany	Other	Research	Environment
38	Ghislain	WEISROCK	France	Other	Energy	Global
39	Raphael	LEROY	Switzerland	Private	Energy	Global
40	Markus	AUFLEGER	Austria	Other	Research	Global
41	Giuseppe	DONGHI	Italy	Private	Energy	Global
42	Vitor	RIBEIRO	Portugal	Private	Energy	Global
43	Giovanni	RUGGERI	Italy	Private	Energy	Global
44	Mario	SCIOLLA	Italy	Private	Energy	Global
45	Hans	BJERHAG	Sweden	Private	Energy	Global
46	Jukka	MUOTKA	Finland	Private	Energy	Global
47	Guido	MAZZA'	Italy	Private	Research	Global
48	Fredrik	ENGSTRÖM	Sweden	Private	Energy	Global
49	Mats	BILLSTEIN	Sweden	Private	Energy	Global
50	Denis	AELBRECHT	France	Private	Energy	Global
51	Alfredo	GRANADOS	Spain	Other	Research	Global
52	Håkan	NILSSON	Sweden	Other	Research	H-M Equipment
53	Filipe	DUARTE	Portugal	Private	Energy	H-M Equipment
54	Jan Olov	AIDANPAA	Sweden	Other	Research	H-M Equipment
55	Kim	BERGLUND	Sweden	Other	Research	H-M Equipment
56	Carl-Maikel	HÖGSTRÖM	Sweden	Private	Energy	H-M Equipment
57	Rolf	GUSTAVSSON	Sweden	Private	Energy	H-M Equipment
58	Jean-Louis	DROMMI	France	Private	Energy	H-M Equipment
59	Patrick	GRILLOT	France	Private	Energy	H-M Equipment
60	David	GRAVELEINE	France	Private	Energy	H-M Equipment
61	François	AVELLAN	Switzerland	Other	Research	H-M Equipment
62	Martin	SCHROTT	Austria	Private	Energy	H-M Equipment
63	Florian	SENN	Austria	Private	Energy	H-M Equipment
64	Christian	WEICHSELBRAUN	Austria	Private	Energy	H-M Equipment
65	Gunnar	HELLSTRÖM	Sweden	Other	Research	Hydraulic
66	Michel	CERVANTES	Sweden	Other	Research	Hydraulic
67	Staffan	LUNDSTRÖM	Sweden	Other	Research	Hydraulic
68	Eric	LILLBERG	Sweden	Private	Energy	Hydraulic
69	James	YANG	Sweden	Private	Energy	Hydraulic
70	Patrik	ANDREASSON	Sweden	Private	Energy	Hydraulic
71	Romanas	ASCILA	Sweden	Private	Energy	Hydraulic
72	Florence	LAFON	France	Private	Energy	Hydraulic
73	Pedro	MANSO	Switzerland	Other	Research	Hydraulic
74	Willibald	KERSCHBAUMSTEINER	Austria	Private	Energy	Hydraulic
75	Anton	SCHLEISS	Switzerland	Other	Research	Hydraulic
76	Álvaro	SORDO-WARD	Spain	Other	Research	Hydraulic
77	Isabel	GRANADOS	Spain	Other	Research	Hydraulic
78	Gundula	KONRAD	Austria	Private	Energy	Legislation
79	Lars	HAMMAR	Sweden	Private	Energy	Safety
80	Frederic	LAUGIER	France	Private	Energy	Safety
81	Eric	WAGNER	Austria	Private	Energy	Safety
82	Johan	ENGLUND	Sweden	Private	Energy	Society
83	Ana	IGLESIAS	Spain	Other	Research	Society

Section 5: Ethics and security

5.1 Ethics

In order to follow the H2020 ethical guidelines on data protection and privacy, the ethical issues that could appear during the development of the project have been analysed. HYDROPOWER-EUROPE confirms that it has taken into account all ethics issues described in form 4 "Ethics issues table" (1. Human embryos & foetuses, 2. Human beings, 3. Human cells or tissues, 4. Personal data, 5. Animals, 6. Non-EU countries, 7. Environment, health & safety, 8. Dual use, 9. Exclusive focus on civil applications, 10. Potential misuse of research results, 11. Other ethics issues) and only ethical issues related with personal data have been detected, and are thus developed in the following parragraphs. If any other ethics issues apply, HYDROPOWER-EUROPE will complete the ethics self-assessment and attach the required documents.

PROTECTION OF PERSONAL DATA

The project implementation will involve the recording and processing of personal data, which will be processed pursuant to EU Regulation 2016/679 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data. (We are aware that these set of Directives are currently under revision. The new General Data Protection Regulation No 2016/679 will apply from 25 May 2018).

- **Does your research involve personal data collection and/or processing? Yes**
  - Does it involve the collection or processing of sensitive personal data (e.g. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)? No.
  - Does it involve processing of genetic information? No
  - Does it involve tracking or observation of participants (e.g. surveillance or localization data, and Wan data, such as IP address, MACs, cookies etc.)? No.

- **Does your research involve further processing of previously collected personal data ('secondary use') (including use of pre-existing data sets or sources, merging existing data sets, sharing data with non-EU member states)? Yes**

DESCRIPTION OF PERSONAL DATA INVOLVED:

Data from workshops, events participants and online consultation: Data protection and privacy play a vital role in the project. Consequently, the data processed have to be treated with confidentiality. No personal data will be processed without authorisation. Sensitive personal data (e.g. health, sexual lifestyle, and ethnicity, and political opinion, religious or philosophical conviction) cannot be obtained from data collected in HYDROPOWER-EUROPE project.

PARTNERS' ROLES AND RESPONSIBILITIES

Data from stakeholders collected in the mapping process (WP2): EASE as WP leader will process as indicated in the section below.

Data from stakeholders during workshops, and online consultations (WP2 / WP3): EASE as Leader of WP2 and VGB as Leader of WP3 will both organise stakeholder consultation and review workshops throughout the 3-year programme. Within this programme they will process personal data as indicated in the section below.

Data from stakeholders for sending newsletters and mailings (WP5): ZABALA as Leader of WPs will process personal data as indicated in the section below.

PROCEDURES

The partners in the HYDROPOWER-EUROPE project will agree the following procedures for data collection, storage, protection, retention, transfer, destruction or re-use (including, collection methodology (digital recording, picture, etc.), methods of storage and exchange (lan, cloud, etc.), data structure and preservation (**encryption, anonymization**, etc.), data-merging or exchange plan, commercial exploitation of data sets, etc.) in the Grant Agreement:

- All the partners involved in the project commit themselves not to misuse the data collected during the project.
- **Webpages or journals publishing scientific results will only refer to aggregated and raw data**.
- **An informed consent will be sought and signed by any participants invited to provide contributions and feedback**. The informed consent form will be written in an accessible and comprehensive language, being understandable by all the participants before their consent is given. An explanation of the project goals will be given, and a description as to how the participants contributions may be used towards achieving the project objectives.
- **Participants will be the owners of their data and will have the right to access them whenever they want**. When applicable, data from underage people will only be used with the consent of the persons having their custody (e.g. parents).
- A contact person within the project will be identified to the participants. A mail address or a telephone number will also be provided.

EUROPEAN LEGAL FRAMEWORK

The consortium partners are well aware of the fact that management of personal data raises various ethical questions. Issues to consider include correct protection of the privacy of the individual. Personal data protection is a fundamental right in Europe, enshrined in Article 8 of the Charter of Fundamental Rights of the European Union, as well as in Article 16(1) of the Treaty on the Functioning of the European Union (TFEU) and in the European Human Rights Convention, especially with regard to privacy and autonomy.

Partners shall guarantee the accomplishment of existing EU legislation related to data protection as follows:

- **Directive (EU) 2016/680** on the protection of natural persons with regard to the processing of personal data by competent authorities for the purposes of the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, and on the free movement of such data.
  - **Directive 2009/136 EC** amending Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector.
  - **Directive 2002/58/EC** concerning the processing of personal data and the protection of privacy in the electronic communication sector extends the privacy directive rights and obligations to smart metering which processes personal data, in particular in the use of publicly available electronic communication services for contractual and commercial relations with customers.
- **Regulation (EU) 2016/679** on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC.
  - **Directive 95/46/EC** is the milestone in the history of personal data protection, adopted to harmonise national provisions on protection of individuals in processing and free movement of personal data.
  - **Regulation (EC) No 45/2001** on the protection of individuals with regard to the processing of personal data by the institutions and bodies of the Community and on the free movement of such data.
  - **Directive 2008/597/EC** adopting implementing rules concerning the Data Protection Officer

- **EU Recommendations 2012/148/EU** on the preparation for the roll out of smart metering systems envisage.
- **EU Recommendation 2014/724/EU** on data protection impact assessment.
- **Article 9.2 c) of the Directive 2012/27/EU** foresees the need to ensure security and data privacy in a smart environment: "Where, and to the extent that, Member States implement intelligent metering systems and roll out smart meters for natural gas and/or electricity in accordance with Directives 2009/72/EC and 2009/73/EC they shall ensure the security of the smart meters and data communication, and the privacy of final customers, in compliance with relevant Union data protection and privacy legislation".

5.2 Security[12]

Please indicate if your project will involve:

- activities or results raising security issues: **NO**
- 'EU-classified information' as background or results: **NO**

[12] Article 37.1 of Model Grant Agreement. *Before disclosing results of activities raising security issues to a third party (including affiliated entities), a beneficiary must inform the coordinator — which must request written approval from the Commission/Agency;* Article 37. *Activities related to 'classified deliverables' must comply with the 'security requirements' until they are declassified; Action tasks related to classified deliverables may not be subcontracted without prior explicit written approval from the Commission/Agency.; The beneficiaries must inform the coordinator — which must immediately inform the Commission/Agency — of any changes in the security context and — if necessary —request for Annex 1 to be amended (see Article 55)*

Section 6: Letters of Support

The following **57 letters of support** have been collated demonstrating the widespread support across Europe, and the whole hydropower value chain, for the HYDROPOWER-EUROPE project.