



Convocatoria Conjunta 2016 ERANET COFUND WaterWorks 2015

**Búsqueda de socios/consorcios
recibidas en CDTI para su difusión a
entidades españolas**

West Pomeranian University of Technology. Poland. 1/3

Prof. **Artur Bartkowiak**

e-mail: abartkowiak@zut.edu.pl

Center of Bioimmobilisation and Innovative Packaging Materials

Faculty of Food Sciences and Fisheries

West Pomeranian University of Technology, Szczecin

ul. Klemensa Janickiego 35

71-270 Szczecin, Poland

ph. 48+91+449-6592 / -6594

<http://www.cbimo.zut.edu.pl/en>

West Pomeranian University of Technology. Poland. 2/3

Project proposal: **Water purification by innovative recovery processes of phosphorus and metals in selected aqueous environments „BIOAQUASORB"**

Our interest is in following topics of **ERA-NET WaterWorks2015 call**:

- Increasing the efficiency and resilience of water uses;
- Monitoring and reducing soil and water pollution;

For more information about ERA-NET WaterWorks2015 call please see following link:
http://www.waterjpi.eu/index.php?option=com_content&view=article&id=440&Itemid=1008

We are looking for potential partners both academia and industrial from following countries:

BELGIUM (French Speaking Community), BELGIUM (Flanders), CANADA, CYPRUS, DENMARK, EGYPT, FINLAND, FRANCE, GERMANY, IRELAND, ITALY , MOLDOVA (REPUBLIC OF) , NORWAY, PORTUGAL, ROMANIA, SOUTH AFRICA, SPAIN, SWEDEN, TAIWAN, THE NETHERLANDS, TUNISIA TURKEY

Our goal is to propose, evaluate and test the novel methods and innovative recovery processes of phosphorus and metals in selected aqueous environments both in lab and industrial scale.

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ABSTRACT

Water purification by innovative recovery processes of phosphorus and metals in selected aqueous environments „BIOAQUASORB”

There is a group of elements such as phosphorus or metals that after the "consumption" are not susceptible to bioconversion processes like for example hydrocarbons into water and CO₂ but may be almost indefinitely recycled. These elements are scattered at every stage of their application, which raises concerns about the depletion of their resources in the future and their pollution of water and soil. According to the principles of sustainable development and the circular economy we should seek opportunities to recover phosphorus and metals and closing their cycle of transformation. Phosphorus is an element essential to life and nothing can replace it. Its resources are limited and rapidly depleted, thus becoming ever more important alternative methods of recovery this element from environment. Currently available technologies for recovery of phosphorus and recycling it to the circuit have a low yield and are not economical profitable. The most important alternative sources of phosphorus include municipal sewage (including 2.5 gP / d per 1 inhabitant) and industrial waste products and final products of their processing. Currently implemented are pilot programs and demonstration of technology precipitation of magnesium ammonium phosphate (struvite) from wastewater and sewage sludge and the recovery of phosphorus from the ashes of the burning of sewage sludge. Due to the high investment costs and the diversity of methods and processes of the proposed wastewater treatment technologies can not be recommended for use on industrial scale.

The proposed design will concern the development of innovative and unique systems and methods of binding phosphorus and metals in the aqueous medium with the potential for re-use of such system in further applications as a part of circular economy principals. Poland will carry out research on novel hybrid systems for the purification of water from metal cations and phosphorus. Systems will be received on the basis of natural polymers in form of hydrogels with specific adsorbers and microorganisms have the ability to accumulate elements recycled. Novel developed systems by Polish partners based on iron compounds are active under reducing conditions, removing phosphate ions in a wide pH range that found both in natural and industrial waters (from 4 to 10) and can be easily industrially applicable in transport and dispensing. The second part will be a design study the possibility of using systems developed for recovery of selected metals and phosphorus in water and its re-use. Efforts will be trying to recover phosphorus and metals from wastewater and products of their processing. By using the proposed hybrid systems will have deposition of deposits in pipes, pumps and the tanks, which occurs when recovering phosphorus by chemical and biological agents, often disqualify these methods due to the very high operating costs. Another object of the research will be the natural reservoirs where the application of the tested systems can bring economic and environmental impact by recovering valuable elements and the reduction of pollution of aquatic ecosystems and slowing down or even fully reverse the process of eutrophication. The resulting products enriched with phosphorus or metals are fully biodegradable and could be used as raw materials for production of phosphate fertilizers or direct application capsules saturated with phosphorus, as the phosphorus fertilizer with slow release, as well as the ability to act as hydrogels and thus improving retention capacity of the soil for water and its availability for plants in a more stabilized conditions.

University Politehnica Timisoara. ROMANIA. 1/1

Prof. Ioan Grozescu from University Politehnica Timisoara

ioangrozescu@gmail.com

[+40 745505422](tel:+40745505422)

- specialities synthesis of new advanced materials for energy, health, environmental protection, agriculture, etc.
- We intend to submit a project on WaterWorks2015 ERA-NET COFUND programm.
- We are looking for a partner from this competition.

- Please send my request to any partner suitable from research institute/ universities and private company (SME).

Arab Academy for Science, Technology and Maritime Transport (AASTMT). Egypt. 1/1

Mohamed Youssef Omar, PhD

Head of Projects Management Department

Environmental Consultant

Deanery of Scientific Research

Arab Academy for Science, Technology and Maritime Transport (AASTMT)

P.O. BOX 1029, Alexandria, Egypt.

Tel.: (+2) 03 561 1818

Cell: (+2) 0100163 6224

Website: www.aast.edu

e-mail: mohamed.youssef@aast.edu

omarmy70@gmail.com

omarmy70@yahoo.com

Research point:

1. Water Quality Assessment of Mahmoudiyah Canal: their impact on the ecosystem, purification and desalination using nanoparticles.
2. Biosorption of Heavy Metals from Waste Water by Aquatic Plants Biomass

Research Institute for Rural Engineering, Water and Forestry (INRGREF). Tunis . 1/1

Salia Hanafi, Mrs, PhD

Rural Engineering - water management.

Resear. Inst. for Rural Eng. Water and Forestry Box 10, 2080 Ariana, Tunisia

Ph: +216 71 70 90 33 /+216 71 23 00,39 (ext 437)

salia.hanafi@yahoo.fr

Our research team have just finished a project (European Union and African Union cooperative research to increase Food production in irrigated farming systems in Africa) dealing with improving agricultural production and achieve sustainable use of irrigation water, conserve soil fertility and reduce pollution of fresh water reserves. The originality of this project consists of its multidisciplinary and transdisciplinary approach involving all stakeholders. Considering the enabled data base during this project, our experience in group facilitation and built stakeholders network we would like to continue in the same vein and built on previous results within the waterworks2015 project and consider the resilience of the water use (climate change and change of economic context).

We would like to seek collaboration and we hope that you are interested to this call

Institute of Research and Development for Viticulture and Enology Valea Calugareasca. Romania 1/1

Florin-Dumitru BORA, Ph.D

Research Scientist

Research Station for Viticulture and Enology Targu Bujor, Galati – Branch of National Institute of Research and Development for Viticulture and Enology Valea Calugareasca,

Department of Agrochemistry; ICP-MS; LC/MS/MS; Gas-Chromatography

0040743 487 928

borafiorindumitru@gmail.com

They conduct systematic research in the area of conventional and organic viticulture, but also in monitoring the pollution and its effects on groundwater, water and soil (soil biodiversity) from vineyards and environment. Our teams are expertise on analysis of soil (micro,- macroelements, heavy metals and N, P, K), groundwater analysis and we also studies the effects of pollution (heavy metals pollution Pb, Cd, Zn, Co) on the environment.

BEIA CONSULT INTERNATIONAL. ROMANIA. 1/1

Dr. Ing. Ec. George SUCIU Jr.

IT & C Solutions Manager

BEIA CONSULT INTERNATIONAL

SIEMENS SYSTEM PARTNER

Mobile : 0040-744-91.47.98

Tel : 0040-21-332.30.06

Fax : 0040-21-332.30.05

E-mail : george@beia.ro

Skype: george_suciu

Web : <http://www.beia.ro>

Web : <http://www.beiaro.eu>

Web : <http://www.beia-telemetrie.ro>

BEIA CONSULT INTERNATIONAL, an innovative SME, is one of the main suppliers for telecommunication equipment and ITC business services in Romania, with an experience of over 25 years, in more than 10000 B2B projects. BEIA is also involved in FP7 / Eureka / H2020 research projects in ITC domain, for more details please have a look on our R&D projects website : www.beiaro.eu

Arab Foundation of Young Scientists. Egypt . 1/1

Prof. Dr. Alaa Abdallah El-Sadek

President

Board of Trustees

Arab Foundation of Young Scientists

4 AlAhram Street, Nafoura Square

Almokattam, Egypt

Tel : (+202) 01000020489

alaa El-Sadek <alaaelsadek@msn.com>

ECRI National Water Research Center. Egypt . 1/1

Dr Ayman Batisha

Head of Environmental Studies Department
Environment and Climate Change Research Institute,

ECRI National Water Research Center

www.nwrc-egypt.org

Egypt

Environment and Climate Change Research Institute, **ECRI**, National Water Research Center, **Egypt** needs to build a consortium that collectively able to participate/submit in the new international program “Waterworks 2015” which is open to Egyptian research institutions and universities, private companies and non-profit organisations. All proposals are expected to include research and innovation activities. The main topics of the call (where applicants will have to address at least one of them) are "**Sustainable management of water resources in agriculture, forestry and freshwater aquaculture sectors**".

ECRI needs to build a consortium that collectively able to assess the validity of the proposed topics. Therefore, there is a need for partners with experience in **Sustainable management of water resources**. **ECRI** has seen you as a National Contact Point, **Spain** and so **ECRI** believe that you may be interested to be involved in such consortium, and needs your assistant to nominate a qualified partner/s.

IPA SA, Bucharest, . ROMANIA. 1/2

Gheorghe Mincu Săndulescu

University Professor Dr. Eng, Principal Research Scientist,
Director for Advanced Researches,

IPA SA, Bucharest, Romania,

169 Calea Floreasca, RO 014459

Phone: + 4021 318 00 51

Mobile: + 40722 636 048

Fax: + 4021 316 16 20

Email: san@ipa.ro

Web: www.ipa.ro

IPA SA, Bucharest, Romania. 2/2

We, IPA SA, have already developed hundreds of important works in the fields of water:

Recently (end of 2015):

One complex system for the Danube water monitoring,

The elaboration of the Handbook: Innovative Irrigations for All, present at the web address: web2.ipa.ro/i4all.

We are interested to add our contributions as Partner, inside projects which approach the following fields:

“ Challenge- 1) Increasing the efficiency and resilience of water uses

Sub-topic-1.a.

Efficiency issues include the development of: Innovative water use systems and practices, including precision irrigation technologies (e.g. models, sensors, ICT);

<field in which we have developed many works, for instance researches and lessons presented at web2.ipa.ro/i4all , Lessons 26/1 to 26 /6>

iii. Water reuse and water recycling technologies in the agriculture and freshwater aquaculture sectors; and
<field in which we have developed works, for instance researches presented in web2.ipa.ro/i4all>

1, Optimisation of the Water – Energy nexus in these sectors (e.g. improving energy efficiency).

<field in which we have developed many works, for instance researches and lessons presented at web2.ipa.ro/i4all , Lessons 23> .

We have worked intensive at the water preparation for irrigation and special procedures and processes so to achieve the conversion of calcite to vaterite and in the precise irrigation, inclusive equipment, sensors, wireless, IT & C and many others.

For above topics I, III, IV we are interested to add our contributions and to discuss our involvement.