



TECO JOINT WORKSHOP 2017

New Delhi, 2-3 November 2017



A milestone along the exciting pathway of the Indo-European Research and Innovation partnership!



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Thanks to the participation of Institutional authorities (EU Delegation, DST, DBT), relevant research centers and universities, private companies and more than 200 participants, TECO Joint Workshop 2017 was a remarkable opportunity for a multifaceted dialogue and networking among the principal actors of the Indo-European water and soil policy!

DAY 1

The event was opened with the inauguration ceremony by lighting the lamp of knowledge by guests of honor and TECO Team.

In the opening session of the first day of the workshop **Massimo Zacchini** and **Paras Pujari**, TECO project manager and project officer, agreed in recognizing that during this third year of TECO Project a lot of hard work was done to strengthen the cooperation between EU and India, to create new partnership between public and private Institutions, to disseminate in national and international context all the activities carried out and all the opportunities offered by the project. Moreover, it was underlined how TECO exchange programme is enhancing the sharing of ideas, the exchanging of competences and know-how and the acquisition of new knowledge. New energies to reinforce the Europe-India partnership in order to face new project opportunities and challenges will be devoted during the next year, the last one of the TECO project activity.

Tania Friederichs, Head of Research and Innovation Division of the EU Delegation to India, emphasized the need for further investment in research and cooperation in the water sector highlighting the EU efforts in sustaining the research activity through the launch of the H2020 Water cooperation call, officially presented on Day 2 of the workshop. **Massimo Spadoni**, Scientific Attaché of Embassy of Italy in New Delhi, stressed the importance of collaborative projects as they bring different culture, experience and expertise together to solve the common problems.

International cooperation and investment has been envisaged by **Fabio Trincardi**, Director of Department of Earth System Science and Environmental Technologies CNR Italy, to face the environmental challenges posed by the Anthropocene and addressed in the Department within four strategic research areas: climate change, environmental risk assessment, ecosystem and sustainable development and new technologies for earth observations. **Angelo Massacci**, Director of Institute of Agro-environmental Forestry and Biology CNR Italy, highlighting that the technologies are already

"Today pure water, good earth, fresh air are unknown to us. We do not know the inestimable value of ether and the sun. If we make wise use of these five powers... we shall have done the work of the ages!"

Mahatma Gandhi

mature, stressed on the need of educating people about the impacts caused on the environment by the uncontrolled anthropogenic activities and adopting sustainable processes and **Rakesh Kumar**, Director of National Environmental Engineering Research Institute CSIR India, highlighted the importance to improving present technology for achieving the required degree of decontamination. **Arvind Kumar** from the Department of Science and Technology of Government of India underlined the strategic role of active collaboration among scientists and policy makers.

Under these wishes, the technical sessions started.

Session 1 – TECO: Results so far

Dr. M. Zacchini and Dr. P. Pujari opened the first morning session, during which the TECO project has been presented along with the results achieved during the last three years of CSIR-CNR Indo-Italian joint collaboration. Laura Passatore, from the Italian side of the TECO team, presented the pillars and the main actions undertaken within the project. Next, some of the projects supported by TECO mobility grants have been presented. Prof. Elango Lakshmanan described the projects hosted by Anna University, a very active Institution for joint collaborations. After his talk, three EU experts (Gordana Medunic from Croatia, Pablo Souza-Alonso from Spain and Robert Popek from Poland) presented the projects they are currently leading in India with the support of TECO Project, respectively on bioremediation of ash polluted soil, on bioactive amendments for agriculture and soil restoration in urban orchards and on phytoremediation techniques.

Session 2 – TECO: Private Companies Network

Introduced by the two chairpersons, Roberto Pilloton and Pradeep Kumar, representatives of private sector in the field of environmental remediation and monitoring presented the vision and the services of their own groups. Multinational (Maccaferri SpA and ERM Inc.), Indian (Symbio Greentech Ltd and Greenenvironment Ltd) and European (Autarcon GmbH, Biosfera Foundation, TCM & Devices Foundation) organisations gave an overview on the potentiality of an European-Indian joint market, on the available technologies for water and soil reclamation and on smart solutions for ecosystem monitoring and control.

Session 3 – TECO: EU-India Joint Initiatives

The chairpersons Patrizio Arrigo and Prof. Elango introduced the eight speakers of this session, each of them presenting a different and complementary approach to face the common challenge of water and soil pollution. Among most relevant themes, “circular economy”, “smart system”, “cost effective”, “renewable energies” and “eco-solutions” have been highlighted as keywords of the session. The presentations demonstrated how collaboration between different countries and Institutions can amplify the results, also providing

“We are aware that the destruction or the contamination of our natural resources, water and soils, and their strong impact on human health pose an urgent request for a reversal of this trend”

Massimo Zacchini

interesting cues to be developed through joint initiatives: a good starting point for the second day of the Workshop!

The session activity was closed with a lively discussion that opened interesting perspectives, among which gathering all the presentations in a special Issue of a scientific Journal, hopefully to be published before the TECO Project Final Conference that will be held in Italy in September 2018.

DAY 2

The second day of TECO Joint Workshop 2017 has been entirely dedicated to the presentation of the new H2020 call “EU-India water co-operation”, jointly founded by the European Commission, the Indian Department of Science and Technology (DST) and the Indian Department of Biotechnology (DBT). Just a few days after the launch of the call, the Representatives of the European Delegation to India described the framework of this research funding initiative with a total amount of 30 million euros (15 ME by EU side + 15 ME by Indian side) available for addressing India’s water challenges. In this frame, the Ambassador of the European Union to India, H.E. **Tomasz Kozlowski**, gave his blessing, underlining the high relevance of improving the research connections between EU countries and India to solve the main problems affecting the environment and its implications for human health. In this regard, H.E. pointed out how TECO project should be considered as a starting point for new fruitful relationships among all the actors dealing with these issues.

Sadhana Relia, from Ministry of Science and Technology Government of India, pointed out the need to relate the proposed technological solutions to the Indian local context. The main scope of the call is to face this challenge, integrating in the proposals the re-use of wastes, the decentralized options and improved sensing systems to minimize the loss of water.

A detailed presentation of the technical aspects of the call and the discussion of guidelines for participation were given by **Tania Friederichs** and **Vivek Dham**, Research and Innovation Division of the EU Delegation to India.

Afterwards, following the three focus areas of the call, a selection of Indian and European speakers presented their own project ideas, along with the description of their Institutions and the potential partners sought for joint proposals.

Thematic Session 1 – Drinking water purification with focus on emerging pollutants

The session was opened with an overview on the main quality issues affecting groundwater and surface water in India, given by Dr. Gupta from the Malaviya National Institute of Technology, which highlighted Arsenic, Fluoride, Iron and Nitrate as main pollutants reducing safe water supply.

“We are looking for common solutions for the common challenges”

Tomasz Kozlowski

Additional multiple and emerging contaminants have been considered in the following presentations, along with proposals for a deeper understanding of the dynamic relationships among them and their fate during conventional water treatment. An important discussion raised among the participants: which quality target should be considered for emerging pollutants? A clear-cut answer to this question is still not available but several interesting solutions for sustainable and safe water supply have been presented.

Thematic session 2 – Wastewater treatment with scope for resource/energy recovery, reuse, recycle and rainwater harvesting, as well as bioremediation technologies

Experts from India, Greece, Belgium and Croatia presented their partnerships and proposals. The presented techniques were all based on the research of sustainable systems. Several solutions have been proposed for energy savings and waste recovery: sludge treatment and reuse, disinfection of water through photocatalysis, nutrient recovery, biogas production from water organic load and water treatment by phytoremediation.

Thematic session 3 – Real time monitoring and control systems in distribution and treatment systems

In this session, dedicated to the monitoring stage, representatives from the public and the private sector described technologies to monitor both water quality and energy flow. The presented sensing systems are efficient at different levels, from the single contaminant control, to the smartness of the whole ecosystem.

The two days of workshop closed with lively debates, the presentation of each participant and proposals of partnership for consortium building.

TECO Team



“The good technologies to face environmental challenges are already mature. We just need a strong will to make them affordable and executive”

Angelo Massacci

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