

**Review and Planning Workshop Meeting for Water4Crop**  
15-17 June 2016, New Delhi

**Wastewater Treatment and Recycling - Dissemination Workshop**  
16 June 2016; 13:30 – 15:30 hrs

The session started with presentations on some of the technologies researched under the Water4Crops project. A presentation on technologies researched by the EU consortium was made by the consortium lead Dr Antoni Lopez. The presentations from Indian side included the following:

- Constructed Wetlands as green business model for Decentralized Waste Management System (DEWATS) in villages – ICRISAT
- Enhancing quality of sugar effluent (SE) through hybrid model of vertical and horizontal flow constructed wetland and its reuse in an integrated aqua-agro farming system- MSSRF
- Waste water treatment and recycling for crop production using Constructed Wetlands- UAS Dharwad
- High Rate Transpiration System (HRTS) as a low cost method for treating industrial wastewater and improving its quality for potential reuse: NEERI

Following these technical presentation, a Panel Discussion was organised on “Low cost bio-treatment technologies for improving sanitation and water reuse for irrigation in India”. The following panellists, who are well known in their areas of work, were present in the session:

- Dr. Manoranjan Hota: Additional Director, MoEF&CC
- Mr. Chandra Bhushan: Deputy Director General, Centre for Science & Environment (CSE)
- Mr. Siddhartha Das: Policy Manager, WaterAid
- Mr. Dhruva Kumar Singh: Director, MGNREGA
- Dr. Priyanie Amerasinghe: Senior Researcher, International Water Management Institute (IWMI)
- Mr. Dirk Walther: Director, Sanitation Programme, GIZ-India

Mr. Raghu Babu Nukala from GIZ started the panel discussion posing the following three questions:

- What is the relevance of the technologies for India?
- Which existing policies/programmes provide platform for launching these technologies?
- Applicability/commercial availability of technologies – what is the way forward?

The main points that came up from the views of the panellist are summarized below:

- A number of technologies exist today in India. A lot of pilots have also been undertaken. Rules and regulations do exist to support application of some of those technologies. However, their upscaling and wider application has always been an issue.
- For adoption of these technologies beyond pilot research projects, the multiple co-benefits must be highlighted and not just costs, especially those that are congruent with current government priorities such as sanitation and public health.
- Selling point for technologies cannot be low cost alone. Costs have to be looked into comprehensively, both on costs due to negative or cross media effects or life cycle perspective. Industries and municipalities may look for more robust technologies and not just cheap technologies. For example, low water foot print, low carbon etc. aspects have to

be considered. However, economic viability and costs would still play an important role. Bankability is important as otherwise banks may not come forward for financing the technologies.

- For widespread adoption of treated wastewater for irrigation, reality and interests of farmers should be taken into account. Instead of very strict rules & regulations, it may be better to have generally applicable guidelines. For example, standards for irrigation reuse can be made variable depending on the type of crop/end use.
- Some concerns are lack of awareness amongst the technology users, industries are sceptical about the results from the new technologies, and also many times there is lacking clarity on full scale field application of pilot scale results.
- New technologies often fail in the field because of inadequate expertise in the field. The government is embracing cleaner technologies with various programmes, however technologies should be commercially viable and not too dependent on subsidies. “Zero liquid discharge” standards set by government is gradually leading industry to adopt innovative technologies, but more capacity development is needed.
- Enabling environment is needed so that the need for application of technologies becomes clear for problem solving. For example, MGNREGA scheme of the Ministry of Rural Development facilitated setting up of a million vermi compost plants, which can substitute gainfully the chemical fertilisers.
- To actually deploy decentralized wastewater treatment with constructed wetlands, obstacles need to be removed. First, standards for treated wastewater need to be clarified. Second, life cycle costs of centralized (including cost of sewer network) vs decentralized options need to be considered, so that the clear advantage of decentralized option becomes obvious. Third, due to historic bias towards centralized wastewater treatment, the CPHEEO Manual only contains such technologies and local governments would not experiment with any technology that is not in that Manual. Therefore, there is an urgent need to develop detailed technical specifications for these decentralized technologies and pursue efforts for inclusion in the Manual. State Pollution Control Boards need confidence in these technologies to permit their use. Inclusion of these new technologies in the Manual would help in this regard. Also, guidelines are needed for the contractors that will implement these technologies.
- The Swachh Bharat Mission has significant budgetary resources, however during implementation on the ground there is often inadequate capacity for follow up after construction phase. This is critically important for technologies like constructed wetlands to determine whether they are actually working properly. Therefore, buy-in and involvement of local communities is needed to develop capacity at the local level to ensure successful implementation and civil society organizations can play a vital role in this regard.
- The MGNREGA Programme of the Indian government has been creating rural employment as well as simultaneously building beneficial assets and infrastructure. Other government agencies can collaborate with MGNREGA to implement projects under permissible categories. Constructed wetlands technology can be considered permissible under rural infrastructure and sanitation category.

- The minor irrigation schemes of the Ministry of Irrigation should be consulted for application of these new technologies that have potential for reuse of treated wastewater for agriculture use.
- A well laid out strategy is needed before bringing technologies to the market. Technologies must be market driven. Technologies must be acceptable.
- Providing awareness on the technologies to the (potential) users and to an extent hand holding them is important for arriving at decisions to apply technologies and to implement them. For example, as a first step, sector-wise awareness workshops could be organised for industries such as sugar where the technologies were demonstrated on pilot scale.
- Usually the information on Water4Crops technologies is “pushed” by the researchers. There is a need to find ways to “pull” stakeholders to the developed technologies.

### **Recommendations:**

Based on the discussion and comments/views from the participants, Mr. Raghu Babu from GIZ that moderated the session, summarised the recommendations as below:

- Detailed documentation of the Water4Crops technologies is need to facilitate dissemination to the potential users. Information to include description of the technology, operation & management aspects, costs & economic viability aspects, benefits – economic/environmental/social, applicability (replication) etc.
- Existing government policies/plans/programmes/schemes should be mapped and reviewed for entry points for the developed technology sunder the Water4Crops project. Efforts are needed to explore the possibilities of promoting these technologies through various government schemes and Ministries, wherever appropriate.
- The successfully developed technologies should be got included in the compendium of wastewater treatment technologies in the CPHEEO Manual.
- Widespread dissemination efforts are needed on the successfully developed technologies and their application.
  - Distribution of documents on Water4Crops technologies to the stakeholders (public agencies, private agencies, decision makers, policy makers, regulators, contractors, technology suppliers etc.).
  - Workshops may be held with industry sectors and urban local bodies where there is a potential for application of the Water4Crops technologies.
  - Workshops may be held with technology suppliers and service providers for bringing in the Water4Crops technologies to the market.
  - Workshops are needed with relevant stakeholders for development of policy instruments such as guidelines for application of decentralised wastewater treatment technologies, standards for treated wastewater reuse for agriculture use etc.
  - Training programmes may be conducted and hand-holding support provided where decisions are taken for implementation of the successfully demonstrated technologies.