



Training Program on Sustainable Natural and Advance Technologies
and Business Partnerships for Water & Wastewater Treatment,
Monitoring and Safe Water Reuse in India

Training Session Plan

Title of the training session

Horizontal Flow Constructed Wetland

Author(s) of the training session

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Short description of the session

The session covers the Horizontal Flow Constructed Wetland, with a general description, the key dimensioning methods and design principles. Furthermore, the construction phases will be illustrated, and finally the main operation and maintenance activities will be shown.

Learning objectives

At the end of the sessions, participants will:

1. have more familiarity with Horizontal Flow wetlands, their functioning and the involved biological processes
2. have the preliminary skills for a first assessment and sizing of Horizontal Flow wetlands
3. know the preliminary basis for their construction and operation

Trainer's required profile

The trainer should have a background on Sanitary Engineering and experience with constructed wetland design, construction and operation

Expected duration of the training session

3 hours, with a break of 15 minutes

Methodology and key contents of the session

Time	Topic	Key contents	Slides Numbers
5 min	Introduction to the session	Introduction to the authors and to the organization Learning objectives	5
25 min	Introduction to the technology (background overview, principles, performance expected, appropriateness)	Description Functioning Removal mechanisms Plants role	12
60 min	Design of the technology (key considerations, basic calculations, key formulas, etc.)	General CW design HF design Design criteria Sizing methods Checks	37
15 min	Break		
15 min	Construction and/or implementation	Implementation phases Construction details	20
15 min	Operation and maintenance	O&M requirements Malfunctioning in the system Strat-up and commissioning Vegetation start-up Sludge management O&M plan example	5
30 min	Example: the PAVITR pilot	Introduction Materials and methods Monitoring Key messages	17
12 min	Homework: exercise to design/implement the technology for a case study	Case introduction Key data Solution	4
13 min	Final remarks		

Credits: this training has been created in the framework of the EU-Indian Joint Project “PAVITR-Potential and Validation of Sustainable Natural & Advance Technologies for Water & Wastewater Treatment, Monitoring and Safe Water Reuse in India”. This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No821410 and the Department of Sciences and Technology of India under the Grant DST/IMRCD/India-EU/Water Call2/PAVITR/2018 (G). For more information, please visit: <https://pavitr.net>