

PROJECT PERIODIC REPORT

Grant Agreement number: 308336

Project acronym: NaWaTech

Project title: Natural Water Systems and treatment technologies to cope with water shortages in urbanised areas in India

Funding Scheme: Collaborative project

Date of latest version of Annex I against which the assessment will be made: 15.02.2012

Periodic report: 1st 2nd 3rd 4th

Period covered: from 01.01.2014 to 31.12.2015

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ANNEX TO THE FINAL REPORT – FIGURES AND TABLES**Table 1: NaWaTech work plan for WP3 (part 1, until implementation of the systems) [updated after Pune-Nagpur Meeting in November, 2015]**

Step	Nagpur			Pune		
	Dayanand Park	Ordnance Factory	Amanora Park Town	College of Engineering Pune (COEP)	MJP office (vertical garden)	Rainbow museum
Obtaining consent			✓	✓		✓
Signing MoU	✓	✓	30/04/2013	✓	✓	-
Data collection finalised	✓	✓	✓ 30/04/2013	✓		✓
Design (Task 3.1)						
Design of treatment plant						
- Preliminary design			✓ 31/05/2013	✓ 30/09/2013		✓ 31/05/2014
- Detailed design	✓		✓ 31/07/2013	✓ 31/10/2013		✓ 18/04/2015
- Short Crop Rotation Plantation design	n/a	✓	n/a	n/a	n/a	n/a
- Landscape design			n/a	✓ 31/10/2013		
Cost Assessments	✓ 31/10/2014	✓	✓ 31/07/2013	✓ 31/10/2013		✓ 20/04/2015
Implementation and start-up (Task 3.3)						
Tender document preparation finalised	15/11/2015	✓ 31/05/2014	-	✓ 30/11/2013		✓ 20/04/2015
Procurements			✓	✓		
Transport to India (technical treatment system)	n/a	n/a	✓	n/a	n/a	n/a
Implementation of treatment system finalised	should starting January 2016	30/11/2015	✓ 31/05/2014	✓ 31/08/2015 (excl. pumps)	✓ 01/02/2014	30/11/2015
Commissioning of treatment plant	-	31/01/2016	✓ 05/06/2014	31/12/2015	n/a	31/12/2015

Table 2: NaWaTech work plan for WP3 (part 2, until implementation of the systems) [updated after Pune-Nagpur Meeting in November, 2015]

Step	Nagpur			Pune		
	Dayanand Park	Ordnance Factory	Amanora Park Town	College of Engineering Pune (COEP)	MJP office (vertical garden)	Rainbow museum
Development of O&M scheme (Task 3.3) (as discussed at meeting in Vienna 11/2014)						
Responsible person in Indian team	Achal	Neelesh	Ajith	Sagar	Sagar	Pallavi
Development of monitoring / research programme (frequency of sampling, parameters to be analysed, etc.)*	31/10/2015	30/06/2015	✓ 31/12/2014	31/05/2015	✓ 31/05/2015	31/05/2015
Development of O&M scheme (to be ready before start-up of systems)*	??	??	✓ 31/08/2014	partly available	available	??
Development of NaWaTech Safety and O&M Plan (version 1, incl. O&M materials for operators)*	Not available yet	Not available yet	Not available yet	Not available yet	Not available yet	Not available yet
Operation	not before 04/2016	from 01/02/2016	from 01/07/2014	from 01/01/2016	from 01/02/2015	from 01/01/2016
Monitoring, sampling and analysing	not before 04/2016	from 01/02/2016	from 01/07/2014	from 01/01/2016	from 01/02/2015	from 01/01/2016
Implementation of 1st components of NaWaTech Safety Plan		01/02/2016				
Evaluation (Task 3.4)						
Evaluation of system performance						
Evaluation of NaWaTech Safety Plan						
Adaptation (Task 3.5)						
Adaptation of treatment system						
Adaptation of NaWaTech Safety Plan						
Ensuring sustainability of the implementation sites (Task 3.6)						
Finalisation of NaWaTech Safety Plan						
Hand-over to end user	30/06/2016	30/06/2016	30/06/2016	30/06/2016	30/06/2016	30/06/2016

Table 3: Overview of European and Indian deliverables in WP2 and WP3 and their content

Del.#	Date	Title	Content
✓ EU-D3.1	M31 (Jan 2015)	Design and drawings for 2 NaWaTech implementation sites	<p>Detailed design for all field sites</p> <ul style="list-style-type: none"> - Calculations for sizing the plants - Cost calculations - Design drawings
IN-D3.1	Dec 2015	Pune sites (COEP Site)	Completion of Pune sites
IN-D2.3	Dec 2015	Nullah treatment	Completion of Nullah treatment site
IN-D3.2	Jun 2016	Nagpur sites (OFAJ & NIT Park Sites)	Completion of Nagpur sites
EU-D2.5	Nov 2015	Enhancement of the potential of natural water treatment systems to cope with water shortage in urban strategy for NaWaTech systems in urbanised areas in Maharashtra	<p>Final results and conclusions from all field sites</p> <ul style="list-style-type: none"> - (Operational) experiences from all sites (from Technical Notes and Case studies) - NaWaTech Safety and O&M Plans implementation and lessons learnt from all sites - Planned handing over to stakeholders - Etc. <p>Research results from MSc and PhD theses = basis for NaWaTech Publications I+II</p>
IN-D2.5 + EU-D5.11	Dec 2015 (Jun 2016 for IN-D2.5)	<p>Recommendations Paper: Implementation of NaWaTech approaches in India considering the financial, environmental, social, institutional and technical aspects (Publication 1)</p> <p>EU: NaWaTech Publication I</p>	<p>Recommendations Paper: Implementation of NaWaTech approaches in India considering the financial, environmental, social, institutional and technical aspects (Publication 1) combined with EU D5.11 "NaWaTech Publication I" EU prepares draft, Indian partners prepare final version for their deliverable later</p> <ul style="list-style-type: none"> • Target audience: practitioners, authorities, municipalities • Should be a publication that is referred to when making new standards • NEERI publication with ISBN number
IN-D3.3	Jun 2016	Technically viable and cost-effective Operation and Monitoring scheme for the application in urbanised areas of India	Technically viable and cost-effective Operation and Monitoring scheme for the application in urbanised areas of India
IN-D3.4 +	Dec 2015 (Jun 2016 for IN-	Recommendation Paper: Ensuring Sustainability of NaWaTech systems in India (Publication 2)	Recommendation Paper: Ensuring Sustainability of NaWaTech systems in India (Publication 2)

EU-D5.12	D3.4)	EU: NaWaTech Publication II	<p>combined with EU D5.12 "NaWaTech Publication II" EU prepares draft, Indian partners prepare final version for their deliverable later</p> <ul style="list-style-type: none"> • To be merged with "NaWaTech Publication I", i.e. one publication with 2 main parts
EU-D5.13	→ Dec 2015	NaWaTech Publication III	<p>EU D5.13 "NaWaTech Publication III" = Special issue of SSP journal</p> <p>Draft ToC</p> <ol style="list-style-type: none"> 1. Introduction and general approach [NEERI + TTZ] 2. *OF site (main+ FRB + SRP) [NEERI + IRIDRA + TTZ] 3. *Dayanand Park [IRIDRA + NEERI + KRE_TA] 4. *COEP [ESF + IRIDRA] 5. *Vertical garden [IRIDRA + ESF] 6. *Amanora [ESF + BIOAZUL] 7. *Rainbow museum [SEERI + KRE_TA] 8. *Landscaping aspects [KRE_TA] 9. Safety and O&M planning [BOKU] 10. *Pilot-scale experiments [UPC] 11. *LCA [UPC] 12. NaWaKit [SEECON] 13. Business development trainings [SEECON] 14. COP [ESF + NEERI] 15. Summary and Outlook [NEERI + TTZ] <p>* also for conference</p>



Fig. 1: Construction works of the wastewater treatment system at Amanora Park Town in Pune



Fig. 2: Construction works of the wastewater treatment system at Amanora Park Town in Pune



Fig. 3: Wastewater treatment system at Amanora Park Town in Pune – installed MBR and SBR systems



Fig. 4: Wastewater treatment system at Amanora Park Town in Pune – detailed of control panel and connection pipes



Fig. 5: Construction works for VF constructed wetland and anaerobic treatment at COEP in Pune



Fig. 6: Construction works for VF constructed wetland and anaerobic treatment at COEP in Pune



Fig. 7: Construction works for VF constructed wetland



Fig. 8: Construction works for VF constructed wetland and

and anaerobic treatment at COEP in Pune



Fig. 9: Excavation works for anaerobic treatment at COEP in Pune

anaerobic treatment at COEP in Pune



Fig. 10: Excavation works for anaerobic treatment at COEP in Pune



Fig. 11: Preparation of reinforced concrete foundation for anaerobic treatment at COEP in Pune



Fig. 12: Preparation of reinforced concrete foundation for anaerobic treatment at COEP in Pune



Fig. 13: Construction works for anaerobic treatment (left) and constructed wetland (right) at COEP in Pune



Fig. 14: Construction works for anaerobic treatment (left) and constructed wetland (right) at COEP in Pune



Fig. 15: Suspended works during monsoon period at COEP in Pune



Fig. 16: Suspended works during monsoon period at COEP in Pune



Fig. 17: Continuation of construction work under better climate conditions at COEP in Pune



Fig. 18: Continuation of construction work under better climate conditions at COEP in Pune



Fig. 19: Flooded digs affected by monsoon period at COEP in Pune



Fig. 20: Flooded digs affected by monsoon period at COEP in Pune



Fig. 21: State of anaerobic treatment (left) and constructed wetland (right) at COEP in Pune



Fig. 22: State of anaerobic treatment (left) and constructed wetland (right) at COEP in Pune



Fig. 23: Water proofing of wetland basins at COEP in Pune



Fig. 24: Water proofing of wetland basins at COEP in Pune



Fig. 25: Greywater system almost completed at COEP in Pune during the EU partners' visit on October 30th, 2015



Fig. 26: One of the 3 tertiary treatment VF CW systems at COEP in Pune in December 2015

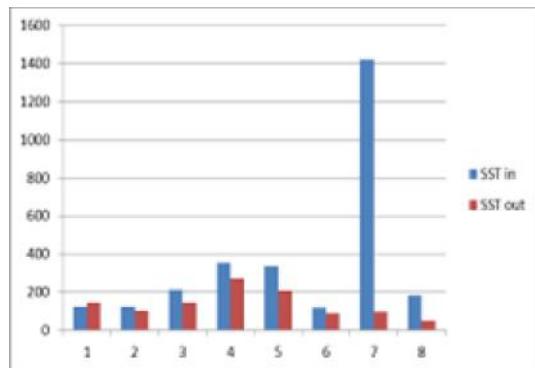


Fig. 27: Monitoring results

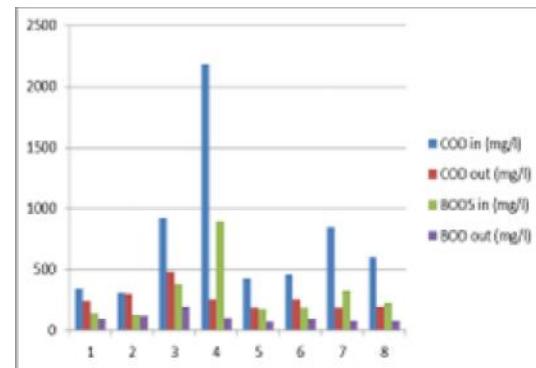


Fig. 28: Monitoring results



Fig. 29: Discussion of safety and O&M planning with COEP representatives



Fig. 30: Assignment of safety and O&M planning roles and responsibilities at COEP campus



Fig. 31: Construction process of vertical garden at MJP in Pune



Fig. 32: Construction process of vertical garden at MJP in Pune



Fig. 33: Construction process of vertical garden at MJP in Pune



Fig. 34: Construction process of vertical garden at MJP in Pune



Fig. 35: Vertical garden completed at MJP in Pune (October 2015)



Fig. 36: Fabio Masi is presenting the results of the research during IWA Development Congress Conference in Jordan on 21th October 2015



Fig. 37: Aerial photo of the Indradhanushya Museum site in Pune and measuring



Fig. 38: Aerial photo of the Indradhanushya Museum site in Pune and measuring



Fig. 39: Inventory photos of the Indradhanushya Museum site in Pune



Fig. 40: Inventory photo of the Indradhanushya Museum site in Pune

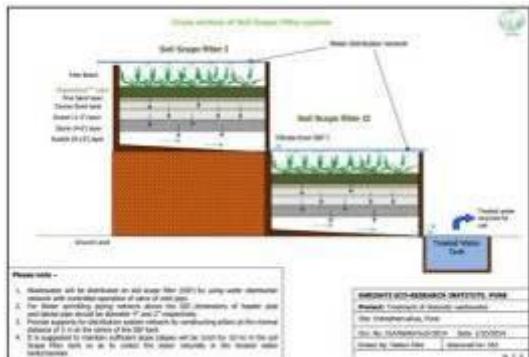


Fig. 41: Cross section of Soil Scape Filter system

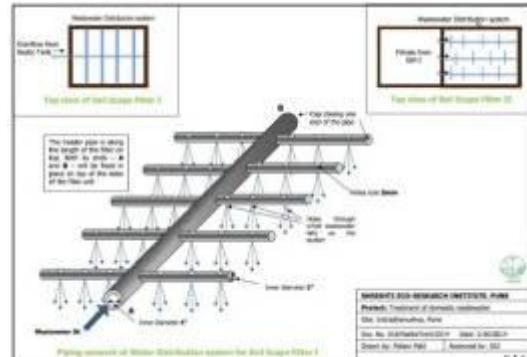


Fig. 42: Schematic views of Soil Scape Filter system



Fig. 43: Pictures of the garden and implementation at the Indradhanushya Museum site



Fig. 44: Pictures of the garden and implementation at the Indradhanushya Museum site



Fig. 45: Pictures of the garden and implementation at the Indradhanushya Museum site



Fig. 46: Pictures of the garden and implementation at the Indradhanushya Museum site



Fig. 47: Scenario 1 for the Indradhanushya Museum site, May 9th 2014



Fig. 48: Scenario 2 for the Indradhanushya Museum site, May 9th 2014



Fig. 49: Scenario 1 for the Indradhanushya Museum site, June 24th 2014



Fig. 50: Scenario 2 for the Indradhanushya Museum site, June 24th 2014

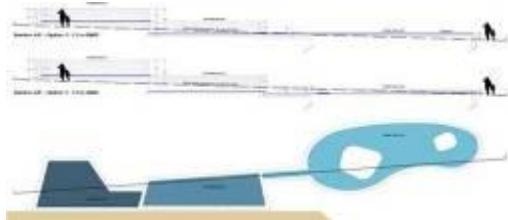


Fig. 51: Section of the chosen scenario for the Indradhanushya Museum site, October 20th 2014



Fig. 52: Final proposition for the Indradhanushya Museum site, December 12th 2014



Fig. 53: Plan of the new location at the Indradhanushya Museum site

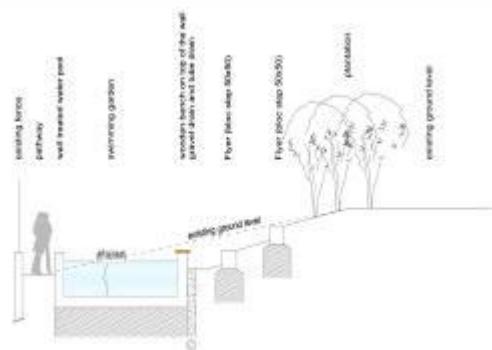


Fig. 54: Section between the treated water pool and the existing garden at the Indradhanushya Museum site



Fig. 55: The intake well under construction at the Indradhanushya Museum site



Fig. 56: The intake well under construction at the Indradhanushya Museum site



Fig. 57: Mr. Winkelmeier from Kre_Ta updating the project partners at the Indradhanushya Museum site



Fig. 58: The treatment system under construction at the Indradhanushya Museum site



Fig. 59: The treatment system under construction at the Indradhanushya Museum site



Fig. 60: Quarries visits at OFAJ site

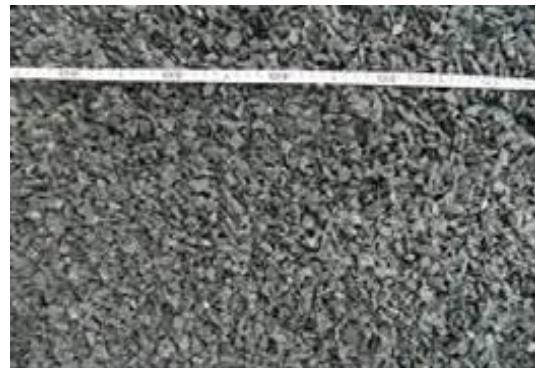


Fig. 61: Quarries visits at OFAJ site



Fig. 62: Work-site overview at OFAJ site: technical building, SRP (October 13th, 2014)



Fig. 63: Work-site overview at OFAJ site: technical building, SRP (October 13th, 2014)



Fig. 64: Pictures of the almost finalised treatment at the OFAJ site in December 2015



Fig. 65: Pictures of the almost finalised treatment at the OFAJ site in December 2015



Fig. 66: Pictures of the almost finalized treatment at the OFAJ site in December 2015



Fig. 67: Pictures of the almost finalized treatment at the OFAJ site in December 2015



Fig. 68: Treatment schematic diagram at Dayanand Park site

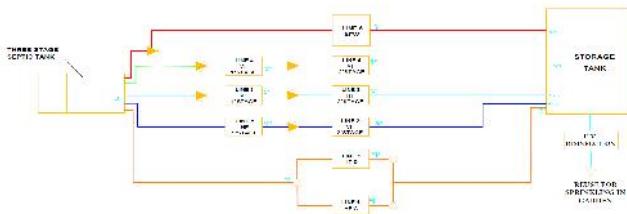


Fig. 69: Schematic diagram of the 5 treatment lines at Dayanand Park site



Fig. 70: Landscaping at Dayanand Park site



Fig. 71: Stakeholder interviews for hazard identification at Dayanand Park

NaWaTech - Natural Water Systems and Treatment Technologies to cope up with water shortages in urbanized India

Did you know?

- The percentage of total wastewater which is treated in Urban India: 21%
- The percentage of total surface water resources in India which are polluted: 70%
- The percentage of total water which is recycled in Pune: 7%

Innovative and unconventional technology solutions are required to improve this situation. Adoption of these would be impossible without research, pilot implementations, policy interventions and the support of society at large.

About the Project

NaWaTech is an India-EU research project, funded by Department of Science and Technology (Govt. of India) and supported by the European Commission. The project aims to provide solutions for dealing with water storage problems in urban India by wastewater treatment and reuse through natural technologies.

The main goal of the project are:

- to research and develop natural water treatment technologies as alternatives to conventional systems
- to implement pilot projects in cities of Pune and Nagpur for wastewater treatment and reuse in different urban scenarios (dams/overflows)
- to raise awareness about the potential of natural treatment technologies and wastewater recycling and reuse
- to develop long term scientific Indo-European collaboration

NaWaTech Community of Practice (CoP)

NaWaTech project aims to bring all parts of the society together for knowledge exchange to enable maximum replication of natural treatment technologies. The vision is to bring these technologies to the masses and also encourage similar innovative approaches to ensure sustainability.

NaWaTech CoP is an initiative for fulfilling this objective. The CoP invites that academics, research, industry, end users, decision makers, investors, NGOs, SMEs, entrepreneurs and citizens to join the CoP. This will help in sharing knowledge and experiences on the technologies and their implementation. This goal can only be achieved when the citizens are interested and have a sense of ownership for such treatment systems. By becoming a part of the NaWaTech Community of Practice you can participate in activities which encourage the same and contribute towards a sustainable future.

To find out more ... see details overleaf

NaWaTech - Pune Chapter

NaWaTech research implementation Sites @ Pune

- Maharashtra Jeevan Pradhikaran**: MP is a non-governmental organization for water supply and storage management in the state of Maharashtra. As a NaWaTech research partner for grey water treatment has installed a grey water treatment system of 500-600 liter per day. The aim is to demonstrate how aesthetically pleasing grey water can be, and to reuse water at office spaces.
- College of Engineering, Pune**: COEP, Home Campus will have installed a low energy, low cost grey water treatment system combining anaerobic treatment and membrane filtration developed by NaWaTech. Serving a population of 2000 per a 1000 m² capacity, treated water will be used for reuse and irrigation for the overall water management.
- IndiraBhushanpura**: IndiraBhushan is a non-governmental organization. University Campus under PMU. A natural treatment technology (Soil-Slope Filter) along with a natural constructed wetland pilot plant will be implemented for reuse some water from the treated grey water of NaWaTech. The treated water is then used for irrigation in the environment cell is treated as an addition to the system.
- Assonara Park, Town**: Assonara Park is an emerging township spread over 400 acres. It comprises 1800 HUF and MHS systems. NaWaTech is a research partner for NaWaTech project with a low foot print area and potential treatment of up to 40 liters per second. The treated grey water will be used for flushing and gardening in one of Assonara's houses serving 400 per

Join the CoP ride!

Join us @ www.nawatech.eu and like NaWaTech Community of Practice Facebook page.

Do visit the NaWaTech CoP website: www.nawatech.eu and the NaWaTech CoP house: www.nawatech.eu

The main funders are: Gates Foundation, www.gatesfoundation.org, IDB/IDBTP.

Get inspired & Spread the Word! Your actions today can secure water for a better tomorrow!

Fig. 72: NaWaTech CoP dissemination material



Fig. 73: Novel MoUs with the Engineering College Vishwakarma Institute of Technology



Fig. 74: Novel MoUs with the MIT College of Engineering Vishwakarma Institute of Technology



Fig. 75: Impressions of Pune CoP activities



Fig. 76: Impressions of Pune CoP activities



Fig. 77: Impressions of Pune CoP activities



Fig. 78: CoP meeting with Stakeholders at Dayanand Park



Fig. 79: CoP meeting with Stakeholders at Dayanand Park



Fig. 80: CoP meeting with Stakeholders at MPCB Regional Office

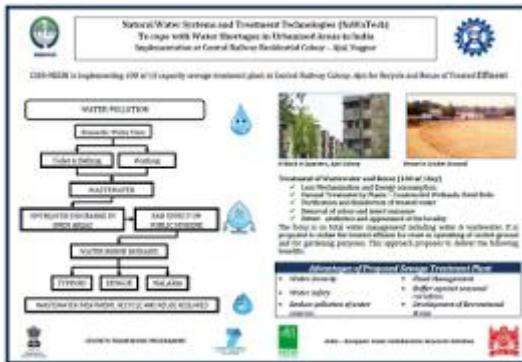


Fig. 82: NaWaTech CoP dissemination material, bilingual leaflet

Table 4: Twinning calendar of UPC in 2014 and 2015

2014											
Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Two MSc students from UPC to NEERI (Ms. Anna Cullell and Mr. Steven Haba, characterisation of new sites and social aspects)			One MSc student from UPC to NEERI (Ms. Laura Flores, design and implementation)								
		Two MSc students + one PhD student from BOKU to NEERI and ESF (Ms. Eva Staribacher, Ms. Diana Hewitt and Ms. Sandra Nicolics, safety planning)									
		Project Meeting in India Participation of students							Project meeting in Vienna Planning of next activities		
One MSc student from ESF to UPC (Mr. Vinay Kulkarni, modelling VF CW)								One PhD student from ESF to BOKU (Mr. Ajith Edathoot, safety planning)			
							One PhD student from NEERI to UPC (Ms. Harkirat Kaur, emerging contaminants and CWs)				
2015											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
					Two MSc students from UPC to NEERI (Ms. Maria Vidiella and Ms. Olivia Cantons, economic viability of SRP)						
			Project Meeting in India Planning of final activities						Project Final meeting in India		
				One PhD student from NEERI to BOKU (Mr. Achal Khilnani, modelling CWs)							

Fig. 81: CoP meeting with Stakeholders at MPCB Regional Office



Fig. 83: NaWaTech CoP dissemination material, bilingual leaflet

								One MSc student from NEERI to UPC (Mr. Neelesh Sahu, CIVs)		
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Table 5: Planned MSc and PhD theses

MSc Theses			
Host	#	Topic (name of student)	Timing
UPC	1	Influence of hydraulic loading on treatment efficiency and water quality for reuse in a three stage hybrid constructed wetland system (Natalia Amigó Chaparro)	Finalised September 2013
	2	Effect of climatic conditions and primary treatment on the performance of a three-stage hybrid constructed wetland system (Blanca Marin Esteve)	Finalised July 2014
	3	Natural systems for wastewater treatment in warm climate regions. Influence of heavy rain episodes on removal efficiency in three stage hybrid treatment wetlands (Livia García Gil)	Finalised July 2014
	4	Comparing conventional and natural wastewater treatment with Life Cycle Assessment methodology. A case study in Nagpur, India (Anna Maria Cullell Oriols)	Finalised July 2015
	5	Life cycle assessment of a constructed wetland system for wastewater treatment and reuse in Nagpur, India (Laura Flores Rosell)	Finalised July 2015
BOKU	1	Adaptation of the approach to Sanitation Safety Planning to optimise operation and maintenance of sanitation systems in Pune, India (Eva Staribacher)	Finalised October 2015
	2	Adaptation of the approach to Sanitation Safety Planning to optimise operation and maintenance of sanitation systems in Nagpur, India (Diana Hewitt)	Finalised November 2015
TTZ	1	Concept for a short rotation plantation as a wastewater treatment system in a residential area in Nagpur, India (Christoph Knauer)	Finalised January 2014
NEERI	1	Development of techno-economical sewage treatment system for small communities in urban setups (Ordnance Factory Ambajhari) (Neelesh Sahu)	On-going (planned to finalised by June 2016)
	2	Domestic wastewater treatment using combinations of full scale horizontal and vertical flow engineered wetlands (Achal Khilnani)	On-going (planned to finalised by June 2016)
	3	Development of operation, maintenance and safety guidelines for decentralised wastewater treatment plants (Shubhankar Khare)	Finalised June 2015
	4	Development of greywater treatment & rain water harvesting system for a swimming pool in Nagpur, India (Minakshi Bagde)	On-going (planned to finalise bdy June 2016)
ESF	1	Comparative assessment of domestic wastewater treatment systems and design of the appropriate system for urban India (Vinay Kulkarni)	Finalised June 2014
	2	Treatment performance of SBR & MBR system at Amanora Park Town and vertical gardens at MJP, Pune (Sharvari Oak)	Finalised June 2015
PhD Theses			
Host	#	Topic (name of student)	
UPC	1	Effect of design and operational factors on the removal efficiency of emerging organic contaminants in constructed wetlands for wastewater treatment (Chapter related to NaWaTech: 'Three stage hybrid constructed wetland system for wastewater treatment and reuse in warm climate regions') (Cristina Avila Martín) – thesis defence on 9 December 2013	
	1	NaWaTech Safety and O&M Plans (Sandra Nicolics)	
NEERI	1	Identification and removal of Pharmaceutical and Personal Care Products (PPCPs) based priority pollutants from domestic wastewater (Harkirat Kaur)	
ESF	1	Appropriate decentralisation in wastewater treatment for urban growth trends in India (Ajith Edathoot)	

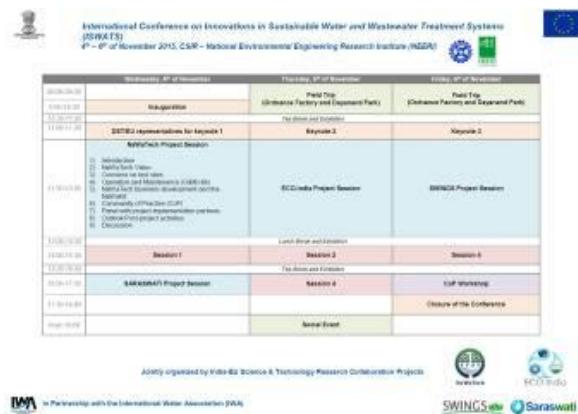


Fig. 84: Draft ISWATS Conference programme



Fig. 85: Updated ISWATS Conference Leaflet



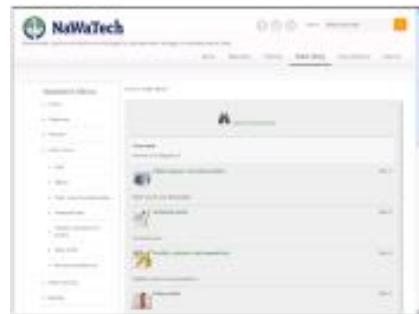
Fig. 87: Impressions of the alternative event (November 4th Nagpur)



Fig. 88: Impressions of the alternative event (November 4th, Nagpur)



Fig. 89: Impressions of the alternative event (November 4th, Nagpur)



Figs. 91 – 93: NaWaTech website

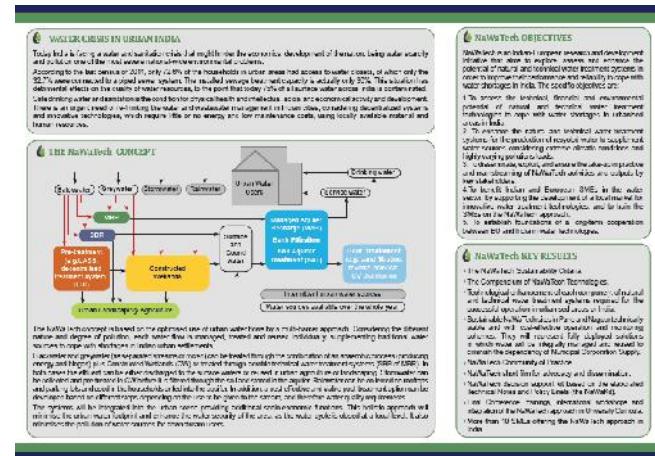


Fig. 94: NaWaTech leaflet #1

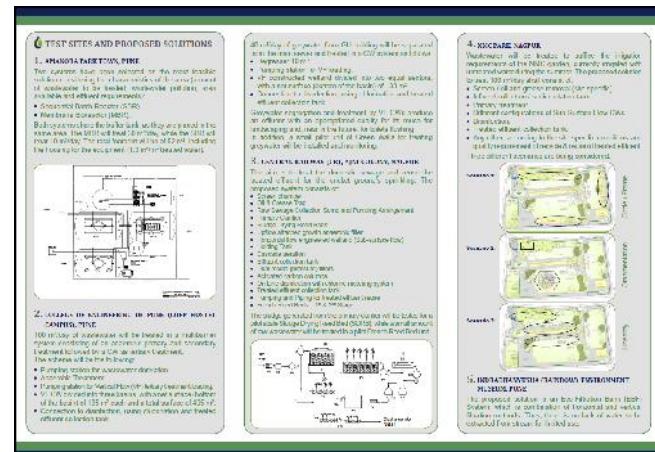


Fig. 96: NaWaTech leaflet # 2

Fig. 97: NaWaTech leaflet # 2



Fig. 98: NaWaTech leaflet #3



Fig. 99: NaWaTech leaflet #3

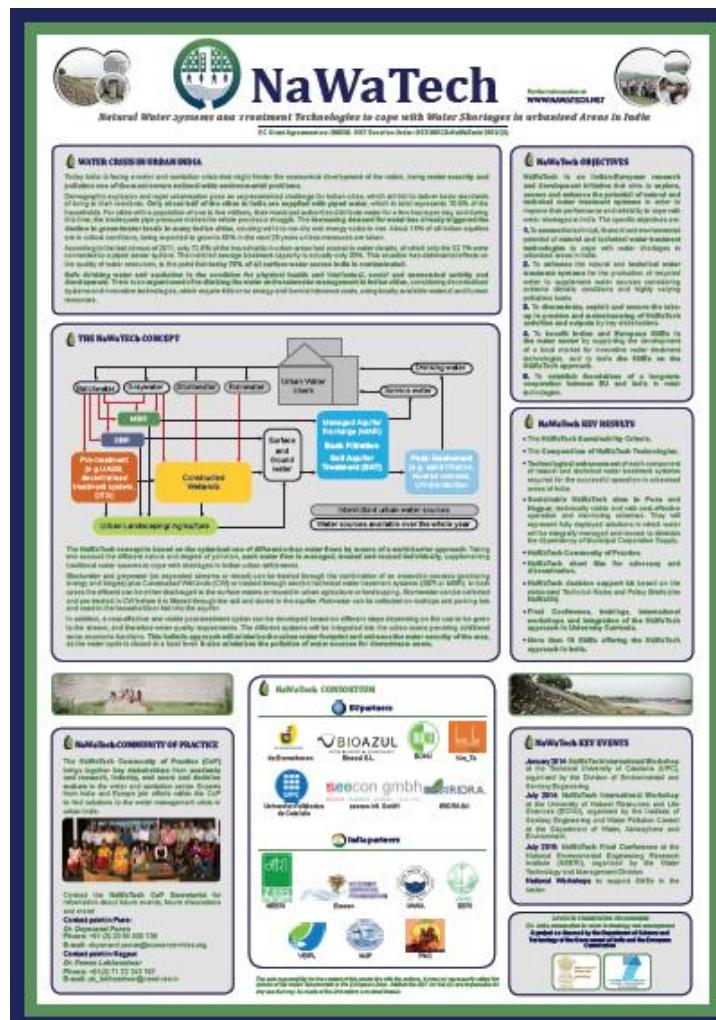


Fig. 100: NaWaTech poster



Fig. 101: NaWaTech presentation

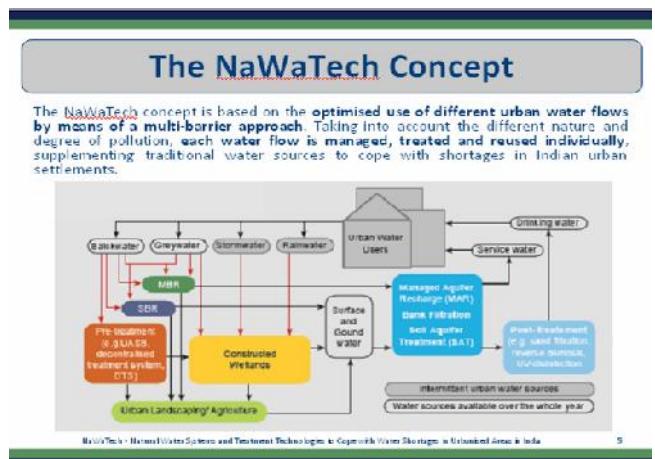
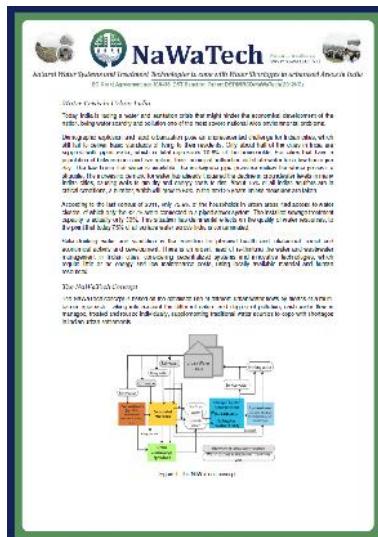


Fig. 102: NaWaTech presentation



Figs. 103 – 106: NaWaTech newsletter #1



Figs. 107 – 112: NaWaTech newsletter #2





Figs. 113 – 123: NaWaTech newsletter #3

The following table summarizes the projects shown in the images:

Image	Project Description	Location
Fig. 1	1000 m ² rainwater harvesting system with infiltration basin	Colombo
Fig. 2	1000 m ² rainwater harvesting system with infiltration basin	Colombo
Fig. 3	1000 m ² rainwater harvesting system with infiltration basin	Colombo
Fig. 4	1000 m ² rainwater harvesting system with infiltration basin	Colombo
Fig. 5	1000 m ² rainwater harvesting system with infiltration basin	Colombo
Fig. 6	1000 m ² rainwater harvesting system with infiltration basin	Colombo
Fig. 7	1000 m ² rainwater harvesting system with infiltration basin	Colombo
Fig. 8	1000 m ² rainwater harvesting system with infiltration basin	Colombo
Fig. 9	1000 m ² rainwater harvesting system with infiltration basin	Colombo
Fig. 10	1000 m ² rainwater harvesting system with infiltration basin	Colombo
Fig. 11	1000 m ² rainwater harvesting system with infiltration basin	Colombo
Fig. 12	1000 m ² rainwater harvesting system with infiltration basin	Colombo



Figs. 124 – 133: NaWaTech newsletter #4



Figs. 134 and 135: NaWaTech leaflet for Training Programme

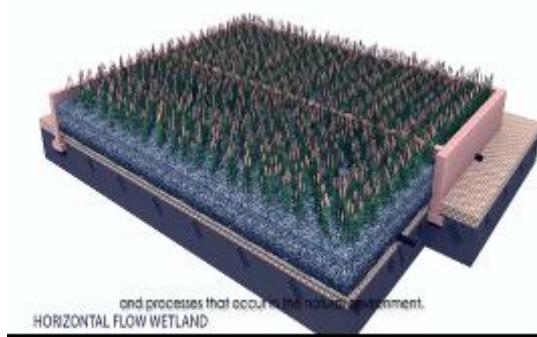
Table 6: Papers of the SSP Journal

Title / Author(s)	Pages
1 Introduction to the NaWaTech Project Katie Meinhold, Pawan K. Labhasetwar	5-11
2 Domestic Wastewater Treatment and Reuse in Ordnance Factory Ambajhari, Nagpur Girish R. Pophali, Neelesh Sahu, Achal Khilnani, Harkirat Kaur, Sandeep Yadav, Pawan K. Labhasetwar, Riccardo Bresciani, Fabio Masi, Katie Meinhold	12-16
3 Wastewater Treatment and Reuse for Irrigation in an Urban Park: the Dayanand Park Treatment Wetland System in Nagpur Fabio Masi, Riccardo Bresciani, Philip Winkelmeier, Girish R. Pophali, Achal Khilnani, Neelesh Sahu, Harkirat Kaur, Pawan K. Labhasetwar, Sandeep Yadav, Pranav Nagamaik	17-20
4 Natural and Cost Effective Way of Treating Domestic Wastewater with Reuse in Non-Potable Purposes: The College of Engineering Pune (COEP) Hostel Campus Case Study Sagar Patil, Ajith Edathoot, Neha Patwardhan, Riccardo Bresciani, Dayanand Panse, Fabio Masi	21-27
5 Greywater Treatment and Reuse in a Municipal Office in Pune by Vertical Gardens Fabio Masi, Anacleto Rizzo, Riccardo Bresciani, Ajith Edathoot, Neha Patwardhan, Dayanand Panse	28-33
6 Wastewater Treatment and Reuse in Amanora Park Town, Pune Pilar Zapata, José Luis Brián, Alejandro Caballero, Antonia Lorenzo	34-41
7 Treatment of Contaminated Ambil Stream Water and Reuse in Indradhanushya Environment Education and Citizenship Centre, Pune Sayali Joshi, Pallavi Patil	42-47

8	Landscape Architecture and Wastewater Management in the Indian Context <i>Philip Winkelmeier, Marlen Kretschmer, Andreas Tauscher</i>	48-51
9	Safety and O&M Planning <i>Sandra Nicolics, Guenter Langergraber</i>	52-59
10	Nature-Based Solutions for Wastewater Treatment in Peri-Urban Areas of India: Pilot-Scale Experiments <i>Cristina Ávila, Catiane Pelissari, Pablo Heleno Sezerino, Joan García, Marianna Garfi</i>	60-66
11	Understanding the Market Opportunities of New Indian Based SMEs in the Wastewater Sector <i>Leonellha Barreto Dillon</i>	67-75
12	Supporting NaWaTech Entrepreneurs and SMEs Tapping the Indian Wastewater Market <i>Leonellha Barreto Dillon</i>	76-83
13	NaWaTech Community of Practice (CoP) <i>Saurabh Kale, Pranav Nagamaik</i>	84-90
14	NaWaTech: Summary and Outlook <i>Katie Meinhold, Pawan K. Labhasetwar</i>	91-95



Natural water sources and treatment technologies to cope with water shortages in urbanized areas in India





Figs. 136 – 143: Selected snapshots of the NaWaTech Video



Fig. 144: Entry page to the NaWaKit



Fig. 145: Entry page to the NaWaKit



Fig. 146: NaWaTech 1st International Workshop at UPC, Barcelona, Spain



Fig. 147: NaWaTech 1st International Workshop at UPC, Barcelona, Spain



Fig. 148: Group Picture of the 2nd NaWaTech International Workshop (Pune)



Fig. 149: Presentations at the 3rd International Workshop in Vienna



Fig. 150: Presentations at the 3rd International Workshop in Vienna



Fig. 151: Impressions from the field visit of the 3rd International Workshop: Vienna main WWTP



Fig. 152: Impressions from the field visit of the 3rd International Workshop: Kaiserbrunn spring, Vienna



Fig. 153: Impressions from the field visit of the 3rd International Workshop: Multistage constructed wetland for winery in Chianti, Italy

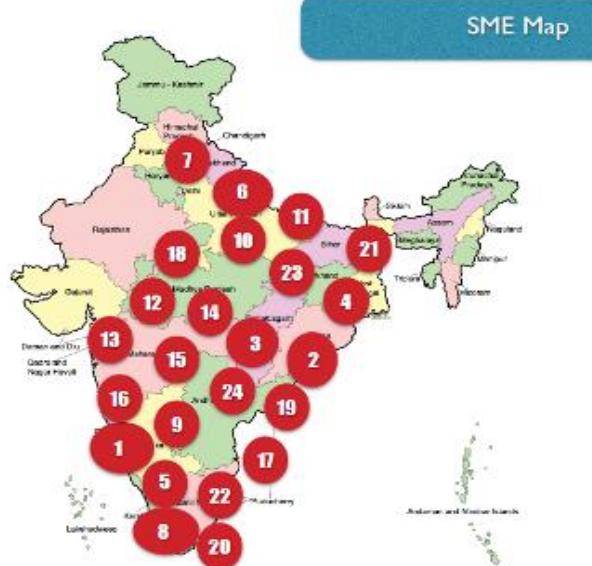


Figure 154: Map of SMEs in the water and sanitation sector in India



Fig. 155: NaWaTech consortium and the training programme participants in Pune



Fig. 156: Field visit during the training programme to the EFB site in Pune



Fig. 157: SBR and MBR systems session during the training programme in Pune



Fig. 158: Business model development session during the training programme in Pune



Fig. 159: NaWaTech consortium and the training programme participants in Nagpur



Fig. 160: Field visit during the training programme to the OF site in Nagpur



Fig. 161: Anaerobic treatment technologies (ABR and AF) session during the training programme in Nagpur



Fig. 162: NaWaTech O&M and Safety Plans session during the training programme in Nagpur

