

# **Case Studies: Pakistani Organizations Cared for their Used-Water for Re-use**



**NBS**

**Proceedings with partners to  
Conserve Clean Water and  
Biologically Reclaim Used-water**

# **Nano Bio Solutions (NBS) and Sardar Memorial Ecological Solutions Trust (SMET)**



**at the service of  
the greatest blessing,  
'Water'**

More than two hundred organization worked with NBS and its Corporate Social Responsibility Wing SMET to prepare feasibility plans, executed and completed the projects. Most organizations prefer to have operation and maintenance contracts for three to five years.



**NBS Inc.**  
**Pioneer to Reclaim  
Used-water Biologically**



**Water Sensitive Organizations  
Care their used-water for reuse  
to save clean water from  
contamination with NBS**



# delight in empowering others live better

*A man filled up with the patience to learn, train, tolerate, discover, and innovate to improve living.*

## Dr. Asif Riaz, CEO, NBS Inc. Islamabad

The establishment of Nano Bio-Solution was not accidental; it was laid by a person who has comprehensive knowledge about the subject, having a PhD in Analytical Laser Chemistry, Post Docs in Bio-engineering, StemCells, and Nano Technology. He, accompanied by his elder brothers Mr Yousaf Riaz being an economist, applied the concept of Bio-remediation first time in Pakistan, and his younger brother Mr Munsif Riaz having the capabilities to work in the field and market. The financial constraints, tough and the least preference for the wastewater treatment market situations did not allow other colleagues to move along.

### Commitment to Keep Water Clean

- **enhanced capacities:** Being a specialist in natural sciences, he learned and applied best governing practices in financial management and administrating NBS.
- **urban bio-remediatoin model:** Under the leadership of Dr Asif Riaz, the NBS team designed, executed, developed and operationalized Bio-remediation facilities for used-water treatment.
- **bio-remediation of produced water:** Dr Asif Riaz, CEO, NBS, designed with the association of the researchers from national universities and NBS people involved in R&D. The project executed resolving the issue to manage the produced water of petroleum industry with the Bio-remediation applications.

“Let’s invent tomorrow rather than worrying about what happened yesterday”  
Steve Jobs

My case study of serving in the public sector organization showed that it will not help to serve the sick waters



NBS will always remember Mr Munsif's contribution in projects planning, execution and management.



# shielded his brothers to execute projects for the survival of sick waters

The human contribution is the essential ingredient. It is only in the giving of oneself to others that we truly live.

**Mr. Munsif Riaz, Integration Manager, NBS**

*A person who stood up with his brothers, family and friends till the last day of his life, supporting biological helpers (microbes, aquatic plants, biological engineering, etc.) to rehabilitate the health of sick waters.*

## **NBS, Family and Friends'** **Bio-remediation Hero & Martyr**

**Mr. Munsif Riaz (1973-2020)**

When the financial resources dried up during the local business dynamics learning phase, Mr Munsif gave his best to survive NBS. He did not notice or get worried when the financial prosperity partners left NBS in the middle of the road.

- He spent a lot of time in the field managing workers to complete the project in time—most of the clients pushing NBS to complete the project as early as possible, but some of them could not pay in time.
- He managed with Dr Asif Riaz to face the disgraceful pressures of private short term lenders. Sometimes the money borrowed from private lenders on high-interest rates to manage the projects completions.

*nBS  
history or  
profile can never  
be explained or  
written without  
mentioning Mr  
Munsif Riaz's great  
efforts to lay the  
foundation of  
nBS.*



Ethel Percy Andrus

**We are thankful to God for his life and time with us to save many people from the harmful effects of contaminated waters.**

**A hero is someone who has given his / her life to something bigger than oneself.**

Joseph Campbell





*NBS (Pvt) Ltd. is registered under Section 2(68) of Companies Act, 2013.*

*NBS earns normal financial profits but maximizes its social satisfaction through reclaiming more and more contaminated waters.*



*NBS is registered with Engineering Council of Pakistan to execute civil engineering works. NBS trains its engineers to integrate civil engineering to bio-engineering to treat used-water for re-use.*



*NBS associated with various national and international research organizations to move forward discovering nature's ways and guidance to rehabilitate human polluted waters. NBS has a small water quality testing lab. NBS has treatment facilities in different climatic zones of Pakistan and carries out research with local researchers.*



**NBS**  
Nano Bio-Solutions

R & D Based Company

*NBS provides Nature-based Solutions to its clients for managing used-waters. NBS also facilitates water-sensitive organizations with cost-effective and customized solutions according to the availability of land.*

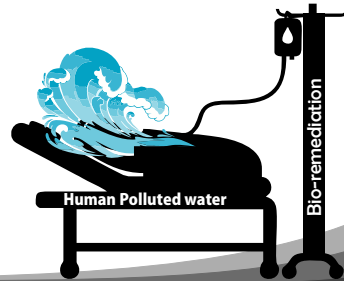
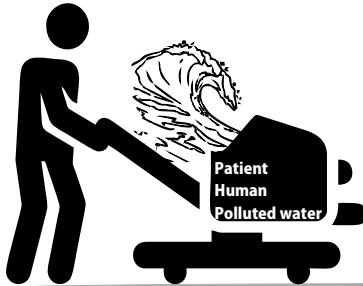


*about 200 projects completed*



# NBS Sick-Waters' Hospital

Domestic Used-water, Industrial Used-water, Saline water



NBS developed its staff's capacities to care for and treat used-water professionally. NBS provides services to its clients, establishing treatment facilities efficient and cost-effective to reclaim their used-water for reuse.

## Pre-assessment

NBS provides the pre-assessment options for the establishment of used-water treatment facilities. The pre-assessment includes to checking the suggested site, availability of land for the facility and contamination level of used-water. It is free of cost for the clients in Islamabad/Rawalpindi. In case of availing these services in other cities, the clients have to bear the expenses of the visits.

## Treatment Options

After the pre-assessment of the site, NBS technical team proposes viable options to establish used-water treatment facilities. NBS prefers to select all facilities with Nature Based-Solutions, e.g., Bio-remediation. If there is less land, then hybrid solutions are sorted out using **bio-remediation applications and mechanical solutions**.



Sick-Waters' Hospital, Islamabad.



## in Water Reclamation

*NBS is a pioneer company investing in used-water rehabilitation through Nature-based Solutions for re-use. The step taken in this arena was risky without a lucrative demand for the services of contaminated water treatment. The credit goes to the founders of the organization, which is more objective-oriented and less profit-motivated.*

### **NBS Marketed Bio-remediation, Nature-based Solution**



*NBS invested significant financial resources and human energies to introduce the economical and sustainable solution to treat human polluted water for re-use. It took about seven years of painstaking efforts to achieve acceptance of the concept. The first few projects could not raise any financial reserves rather mounted debt on NBS. NBS governance remained loyal to the cause and did not lose the consistency. NBS has a good reputation in the market to have many small, medium, and large projects.*



### **NBS Builds Civil Engineers' Capacities in Bio-remediation Engineering**

*NBS conducts on-the-job training events for civil engineers to build their capacities to design and execute and monitor the construction process of Bio-remediation Facilities. It also includes imparting training to potential contractors to be part of NBS constructions.*



### **NBS Creates Investment Opportunities**

*NBS creates business opportunities for the investors to get benefits with NBS medium and large projects. NBS aims at setting the trend to enhance invest in the water business sector.*

### **NBS Franchise Facilitatoin Centers**

*NBS plans in the near future to open franchise facilitation centers in provinces and divisions with the cooperation of qualified and trained organizations about the Bio-remediation Concept..*







## Non-Profit Investment in Water Reclamation





### Volunteer activities to harvest water for Re-use

 *NBS Corporate Social Responsibility (CSR) wing works for the neglected communities having issues of used-water management. SMET gets financial mobilization from NBS dedicated funds. SMET also raises financial resources and technical support from individuals, organizations, and public sector institutes.*

**Most of the issues of water use and used-water management relate to wrong information or inadequate information.**

 *SMET facilitates local and international Bio-remediation researchers to work on NBS Bio-remediation facilities to improve and discover more cost-effective Biological applications.*

 *SMET management focuses on the social issues of water use and management.*

 *SMET organizes awareness events to inform people about the reality of the natural water cycle and humans' responsibilities to keep sustainable availability of clean water for all. It also includes the production of awareness publications, short video clips, and public talks.*

*SMET raises funds to construct Bio-remediation treatment facilities for the neglected communities having a negative impact of polluted water on their living.*



**SMET Supports the people of low-lying areas to work with SMET technical team to raise funds for keeping their places healthy to live.**



**SMET encourages individuals and organizations to dedicate some resources for the marginalized communities to live better.**



“ **Pure Water is the World's First and Foremost Medicine.**

*Slovakian Proverb*



# ZARAJ Housing Scheme

*ZARAJ Housing Scheme played a vital role in the corporate sector to work patiently with NBS to introduce the concept of Bio-remediation for the rehabilitation of used-water produced from their housing scheme. Mr Iftikhar Ahmed (MD Zaraj Group), Mr Rehan Ahmed (Managing Partner), Col. Rtrrd Hanif Ahmed (designation ) and Mr Shahnawz Ali (Designation) took it as their interest and complying their social obligation to keep safe the people living downstream beyond the legal requirement.*



*The land allocated for the construction of the Bio-remediation facility was not naturally compact; it was refilled, and NBS has to consume more financial resources to stabilize earthen ponds. As a result, NBS could not generate resources for its economic sustenance, but this project took it as a demonstration/display centre for others to follow.*



*As a result, NBS could not generate financial resources for its economic sustenance, but this project took it as a demonstration/display center for others to follow.*

*NBS and ZARAJ management made three years contract to operate, maintain, sampling and water quality monitoring reports (third party) to the concerned authorities and the ZARAJ management.*

**Bio-remediation Facility**  
**Treatment Capacity (0.5 Cusec)**



# River Gardens Housing Scheme

Renaissance Developers preferred to initiate Nature's ways to treat the used-water of River Gardens Society through Bio-remediation.



The project concept was shared with the River Gardens Society Members; Dr. Muhammad Ashraf, Chairman, PCRWR, as a society member, also participated in the meeting and gave his views about the Bio-remediation application.

Mr. Rizwan Major (Retd), Managing Director, Renaissance Developers, and Retired Brigadier Javeed (Technical Director RD) and Chief Engineer Mr. Shahid Ahmed visited the under-construction Bio-remediation site for monitoring and supporting the venture.

## Development (NGOs & INGOs)

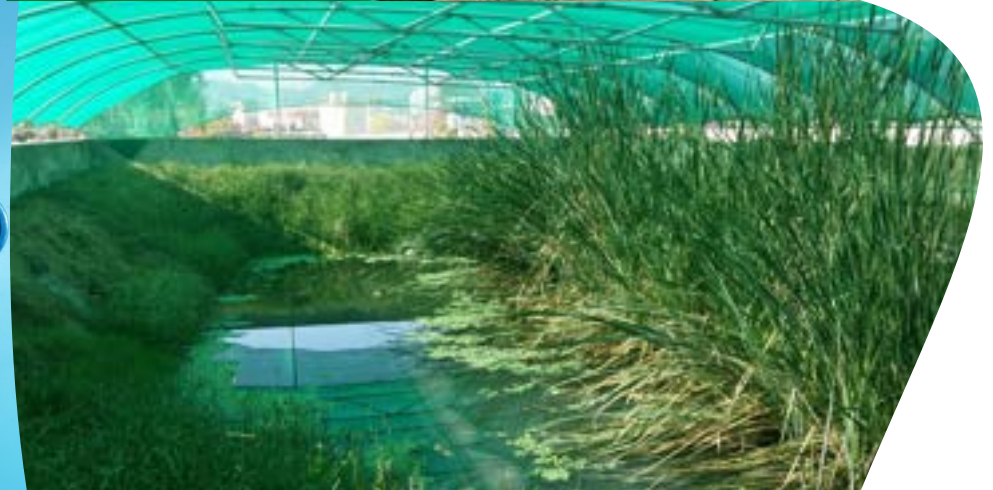
NBS facilitated the development organizations to achieve their community uplift programs by improving water quality and trained people in sustainable agricultural practices.



Corporate Sector  
Water Sensitive Organizations



# Petroleum Industry



Water Sensitive Organizations

Oil & Gas Sector

*NBS has a close collaboration with the companies working for oil and gas exploration. NBS designed Bio-remediation facilities to treat effluents according to their suitability. Dr. Asif Riaz, CEO, NBS, capitalized on his strong chemistry and bio-engineering side to develop customized Bio-remediation design to treat effluents under NQES.*



“  
**Everything comes to us  
that belong to us if we  
create the capacity  
to receive it.**

**Rabindranath Tagore**

*NBS has a liaison with national and international organizations working in the field and involved in R&D of oil and gas.*

*Currently, NBS has executed and completed two projects with MOL Pakistan to treat the used water of the residential areas and offices.*

*One Bio-remediation application facility developed at Tulang Processing Facility (TFP) of MOL Pakistan at village Tulang, district Kohat. This facility treats (???) gallons per day), and the Bio-remediated water under NEQS is used to irrigate the green areas of the Tulang Processing Facility of MOL.*

*The second MOL Pakistan effluent treatment facility through Bio-remediation application developed at Central Processing Facility (CPF), Karak. This Bio-remediation facility treats (???) per day). The treated water under NEQS is used for irrigation of green areas.*

*NBS is also working with Polish Oil and Gas company and executed Bio-remediation project to treat used water for re-use at their plant at the district Dadu.*

*This facility is also completed and handed over to POG the plant management.*

## **Biological Ways to Treat & Manage Produced Water**

*Produced water is a term used in the oil industry to describe water that is produced as a byproduct during the extraction of oil and natural gas.*

*NBS executed an R&D project with MOL Pakistan to find natural ways to treat and manage produced water through the combination of microbial consortia and salt-tolerant plants; it includes both Aquatic & Terrestrial Plants. Dr. Asif Riaz, CEO, NBS, designed the project and executed it with senior researchers and students from national universities and experienced practitioners.*



**Oil & Gas Sector**

**Water Sensitive Organizations**

Water Sensitive Organizations

Corporate Sector



## Multi Professional Cooperative Housing Society



The MPCHS governance and management showed great responsibility and interest in looking after the treatment of the used-water produced their housing schemes. The concern shared with NBS about the used-water management. As a result, NBS designed Bio-remediation Facilities according to the contamination level and availability of land for the sewerage treatment plants. MPCHS community has good synchronization with Nature's ways of living and chose biological applications to rehabilitate their used-water for re-use. NBS has executed three projects for MPCHS, and all are in the final phases of completion. The two Bio-remediation projects are for B-17 (Multi-Gardens), and one is for F-17 (Tele-Gardens). Unfortunately, the projects went through various technical difficulties due to seasonal variations and the Corona Virus pandemic.

### Bio-remediation Facilities

Treatment Capacity B-17 (2 Cusecs)

Treatment Capacity F-17 (1 Cusec)

MPCHS governance and management took good care of the NBS team to treat used-water for re-use and avoid contamination of surface and groundwater. Choudry Naseer Ahmed (Chief Engineer, MPCHS) and Mr. Rafique Amed (???) gave special attention to the biological used-water treatment project.

MPCHS concerned authorities paid their visits to NBS Bio-remediation under construction facilities to support and monitor the progress. MPCHS concerned authorities paid their visits to NBS Bio-remediation under construction facilities to support and monitor the progress. On March 16, 2021, the MPCHS governance board and management team, under the leadership of Mr. Rao Aslam (President, MPCHS), visited Bio-STP construction sites. Dr. Asif Riaz, the CEO, NBS, hosted and facilitated the honorable representatives of MPCHS to observe the ongoing progress of the projects. Dr. Asif Riaz gave a comprehensive presentation about the technical aspects of the projects; it also included elaborating the positive impact of the venture on the natural environment. The participants appreciated NBS efforts, and the MPCHS President, Mr. Rao Aslam, planted a tree on the site to open the spring plantation 2021. The other four members, Ch. Zafar Ali (V. President), Ch. Nadeem Saewar (General Secretary), Mr. Mussadiq Shahid (Finance Secretary), and Col. Saleem Sahib (Executive Member), also planted trees on this memorable occasion.



Corporate Sector

Water Sensitive Organizations

# Water Sensitive Beck

## Defense Sector

### Pakistan Army

*Dr. Asif Riaz, the CEO, NBS, shared with various institutes and organizations to realize the sensitivity of water scarcity of clean water. The issue of freshwater scarcity and contamination was also shared with Pak-Army by NBS, and it responded very well. Various cantonment areas visited, and the impact of wastewater discharge on aquatic life, humans, and the overall natural environment observed. The officials showed great concern to manage the situation for minimizing the damage to freshwater*

*resources and harm to any life form due to the discharge of human polluted waters.*

*Nano Bio-Solutions supported Bahawalpur and Kharian Cantonment areas management to fulfil their institutional responsibility to treat their used-water through Bio-remediation, defending the lives of the people living downstream. There are several projects in discussion to finalize for the recovery of use-water.*

