The Responsibility IGNORED

Water and Wastewater Economy of Pakistan

Agro-Industrial Prosperity Through Water Conservation

Yousaf Riaz

Every DROP counts

“Thousands Lived without Love Not One Lived without Water."

W.H. Auden

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Executive Summary

"The Responsibility Ignored", a book with a subtitle "Water and Wastewater Economy of Pakistan" gives the historical overview of the water situation in Pakistan spread over decades. Since independence (1947), it realized that Pakistan is a highly vulnerable country regarding clean water availability. The pure water availability could not manage according to acute water scarcity situation. The flow of freshwater from another country made a complex concern with high population growth. These two factors had a negative influence on the economic growth and development of the country.

The ongoing situation of ignorance, especially, about underutilization of water resources may lead to an extraordinary disastrous situation, compromising various variables that would further slow down economic development. The ongoing status of ignorance, especially, about underutilization of water resources may lead to an extraordinary disastrous situation, compromising various variables that would further slow down economic development.

Water is transparent; it requires transparency in all matters to manage its abundance. These management or governance matters can be political, social or ethical.

The first three decades after the creation of the country showed a great deal of water importance on the part of the governments and two big water storage dams constructed. Afterwards, there was a sharp decline in the establishment of big and medium-sized water reservoirs and other techniques to optimally utilize water. Even today, a large amount of freshwater worth seventy billion dollars threw into the sea. This negligence could not manage for many years. In addition to freshwater, the other primary source of water reclamation is the domestic and industrial used-water, which can improve water availability for agricultural uses after the treatment, but it remained neglected. The domestic and industrial used-water, when utilized untreated causes human health hazards, damage to natural environment and loss of aquatic bio-diversity. The waste of used-water is a significant economic loss which further damages the economy of the country by polluting clean water. I wrote this book for technical and non-technical people to be sensitive about the water scarcity issues. The economics of water is simple to understand for maintaining a healthy society. The right information flow regarding the ongoing water situation and upcoming challenges should be available

to journalists, economists, planners, the general public, etc. So that they can deliberate and mobilize other people to help in managing the situation and generating pressure on the government to divert their priorities to solving water issues at the earliest.

The extreme dependency on technical people alone to resolve the situation could not bring fruitful results so far; the main issue remained technically hidden. The waste of used-water is a significant economic loss and further damaging the economy of the country by polluting freshwater.

The water dealing jobs are highly sensitive, and in case the government ignores one's technical recommendations. There is a probability of the whole of the nation can get into a dangerous situation, one should resign and be part of the public campaign to manage the cases as per standard procedures to maintain sustainable availability of water. The lives of more than 200 million people cannot restrict to working hours from 9:00 am to 5:00 pm or to be driven according to the availability of funds.

The book describes the impact of the availability or scarcity of water and its direct influence on the socio-economic development of Pakistan. The UN-Water Development Report (2016) explains that three out of four jobs in the world are water-related, emphasizing the importance the world gives to water and its storage and management. The scarcity impact of water should be viewed from different angles to assess its significance and to manage it sensitively.

It also talks about various water myths which influence peoples' water use habits. Generally, these misunderstandings make people use water extravagantly. The document also shares thoughts about conservation of freshwater, use of biological and other hybrid ways to treat used-water for irrigation and to save freshwater. It also shows some facts about the violation of human rights of the sanitary workers and emphasizes on their care as they perform the hard duty to keep the areas clean and livable.

The last part of the book gives some well-thought-out suggestions for the way forward to manage freshwater through storage, rainwater harvest, soil recharge, etc. It also includes innovative ways of financing and monitoring the projects with the encouragement of the private sector to participate in the venture. Sadly, the private sector hesitates to invest in this venture due to long-term investments and red tape factors, which block the circulation of the investment.

Brief about the Book Sections

The book contains five sections.

The Chapters under each section describes the specific topics in detail.

Section One **About Water**

Chapter 01 Water

Chapter 02 Valuing Water

Chapter 03 Global Water Situation

This section describes the natural cycle of water; it correlates social obligations towards maintaining the closed-loop of the natural water cycle so that water sustainability can keep on Planet Earth. The water value cannot be assessed until it is lost, but it is important to value it before its scarce or non-availability. The section also provides knowledge about the global water situation, analytical information on global water security regarding different countries and regions of the world.

Section Two **Water Economy of Pakistan**

Chapter 04 FreshWater Security

Chapter 05 WasteWater Challenges

This section is the main section of the book; it provides information about the water economy of Pakistan, the glorious water prosperity era and the ignorance of water management according to population growth and climate change factors. The analysis shows that the ignorance of used-water (polluted) management, ultimately, insecure freshwater resources by adding contamination. The impact directly hits the efficiency of the people due to using contaminated water and having related diseases. Both the sectors need priority attention to secure freshwater resources and manage used-water as the resource for reuse after treatment. The economic development positively correlates with the water demand; it requires more water with people developing economically.

Section Three — Institutional Responsibilities

Chapter 06 Research and Development

Chapter 07 Institutes Set Examples

This section emphasizes the role of research and development institutes in maintaining, improving, or making other efforts on the conservation of freshwater and management of used-water after treatment as a resource for economic benefits. It also shares the possible exemplary role of various institutes like; education, health, judiciary, military /defense, etc., to contribute in conserving water and manage used-water at the institutional levels to show responsibility.

Section Four — Water Economics

Chapter 08 Water & Economic Development

Water and Economic Development section share the wisdom of water management and its impact on economic development. Some of the countries showed greatest achievements through the efficient use of water for economic development. At the same time, some could not prioritize this sector and faced the consequence of slow economic growth, even with the abundance of water resources.

Section Five — Movement

Chapter 09 Journey Bio-remediation

Chapter 10 Way Forward

The last section is about the formulation of a “Movement” to participate all for managing the water scarcity situation. It will help to address the problems with different angles for viable solutions. I wrote these chapters with the background information about the people, who “developed a nuclear weapon with limited resources”. This time, the Pakistani people will transform themselves as Nation to bring freshwater abundance for high-speed socio-economic development ignition for poverty reduction.

UNDER
Nature's Guidance

FOR
Water Care

Water Economist

Yousaf Riaz

JB

Since 1995

Journey Bio-remediation

Life Dedication in Love & Care of Sick Waters

An Economist's vision to transform the economic loses of used-water into economic gains through observing, experimenting and learning of Nature's highly cost effective Ways to rehab used-water for reuse.

The efforts will contribute in reduction of the health bill cost of $5.7 Billion in PKR 343.7 Billion, it is 3.94% of GDP due to contaminated water diseases

-to contribute in reduction and elimination of annual child death rate of 250,000 due to the use of polluted water and having diseases

-to contribute in providing additional needs of agriculture water of 12 MAF to the provision of treated used-water about 06-08 MAF in 2025.

-to contribute in developing decentralized used-water treatment facilities to provide treated used-water for horticulture uses

-to restore the water quality of 1947, one drink can water directly from tap...

- to contribute in sanitization of the country and manage to have vibrant home land soil with healthy organic resources...

- to contribute to rehabilitate Aquatic Bio-diversity,

-to maintain Healthy Natural Environment...

Journey Bio-remediation

The destination is water prosperity.
The people are safe from wastewater related
diseases and clean water is flowing in streams and rivers.

...towards Sustainable Consumption & Production...

Two Projects
Unicef, ATMI, IBADAT
Reclaimed 1.5 Cusec Water
1995-2001

Worked on the Concept and Wrote
a book on ISFS Bio-remediation entitled "Sustainability through Optimum Utilization of Existing Resources"
2001-2007

Director NIB, NARC
Designed & Developed 3 Bio-remediation facilities
Feasibilities Developed 20
Reclaimed 2.3 Cusec Water
2008-2010

Work with other Organizations
with NBS Inc., Unicef, Plan Int., QAU, SMET
Country wide introduction & Replication of Bio-remdiation as per Local Climate Conditions Projects Designed & Developed 86
Feasibilities Developed 115
Reclaimed 45 Cusec Water
2011-2012

Director NIB, NARC
Projects Designed & Completed
Research work at Bio-remediation Facilities,
PhD 4, M. Phil 37, M.Sc., B.Sc 114
Research Papers Published 24
About 2400 people visited Sites
23 awareness brochures published
Feasibilities Developed 36
Reclaimed 35 Cusec Water
2012 - 2018

Way Forward
There is a long way to go. Billion gallons of wastewater needs to be recovered for irrigation to decrease pressure on fresh water. Carry on research work to improve the technologies for serving national & international water resources.

"Nothing happens until something moves." Albert Einstein

The living is easy with eyes closed, but I made my decision to serve sick water for its rehabilitation to maintain the closed loop of the natural water cycle. The ignorance of sick or used-water health has a negative economic impact on all human activities. It learned that this ignorance cost so much to Gross Domestic Production (GDP) of the country. I tried being an economist to contribute to my best to resolve the situation. I am grateful to my friends to enhance my knowledge in this field to serve better. I traveled to various countries to study natural ways to reclaim used-water. I blessed with a small but a good team of scientists, journalists, scholars, students, business people, and some politicians to keep the Bio-remediation Movement going on to serve people and bio-diversity.

"Life requires movement."
Aristotle

"Not all those who wander are lost."

J.R.R. Tolkien,
The Fellowship of the Ring

The Journey must go on.....

"If we are growing, we are always going to be out of our comfortable zone."
Johne Maxwell

Journey Bio-remediation

The destination is water prosperity.
The people are safe from wastewater related diseases and clean water is flowing in streams and rivers.

Appreciations & Blessings by the Head of the State, President of Pakistan to Mr Yousaf Riaz for his Bio-remediation Services

International recognition of Pakistan Bio-remediation Model 57 OIC Countries, 2014-2016

Bio-remediation Orchard Inaugurated by the President of Pakistan Mr. Mamnoon Hussain

Part time volunteered to establish Bio-remediation Orchard

03 Bio-remediation projects, NARC/PARC/NUST 2012-2014

SAC SAARC Countries Board of Governance Appreciated and Awarded Mr. Yousaf Riaz for his Services in Bio-remediation.

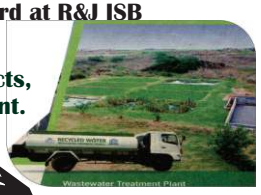
Presented Pakistan Bio-remediation Model

SACOSAN, SAARC Conference Colombo, Sri Lanka, 2012

Resigned from NBS Inc. Established BF at Fatah Jang Research Bio-remediation Facility at NUST Bio-remediation Orchard at R&I ISB

Bio-remediation Facilities Developed in Rural Areas

86 Bio-remediation projects, NBS Inc. - Unicef - Plan Int. 2011-2012



Designed and facilitated to develop Bio-remediation for NUST "National University of Science & Technology to treat used-waterand to initiate further research.

Founded NIB, 02 Bio-remediation projects, NARC/PARC 2010-2011

Established NBS Inc. 86 projects developed countrywide Bio-remediation research facility at QAU 115 Feasibilties developed

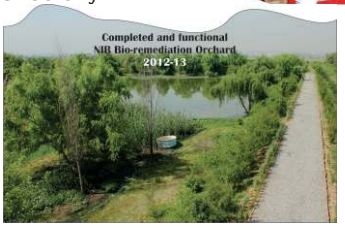
01 Bio-remediation projects, NARC/PARC 2008-2009

July 2009 - July 2010 (One year Contract) March 2010 (Joined regular, Director, NIB) Establish Bio-remediation Orchard Officers' Colony BF

02 Bio-remediation projects, Texila & Lahore 1996-1998

Part time volunteered to establish Bio-remediation Garden

Research Paper Published



Signed MoU with Vice Chancellor QAU for donation to establish Bio-remediation facility, as Chairman, NBS Inc.

Founded NIB at NARC as Founding Director in 2009 and recruited 32 scientists and staff members.

Local Level Local NGOs + UNICEF

Technically evaluated by UNICEF + Third Party Recommended for Replication 2001-2002

My first Bio-remediation project for used-water treatment was completed in a very short time period with the cooperation of Unicef in 2001 and my mother was honored to inaugurate the project in presence of Unicef officials and the honorable people from the village.

The second Bio-remediation project was also developed with the cooperation of Unicef and it was inaugurated by former Chief Justice of Pakistan Mr. Naseem Hassan Shah.

Journey Bio-remediation

Research & Development Impact Sincere efforts with a small team gave great incitement to serve and contribute

- -contributed to improve 3.8 million peoples' lives
- -founded National Institute of Bio-remediation (NIB) at NARC
- -93 people have jobs to rehab water
- -05 students sent abroad for advanced research studies
- -More than 100 bio-remediation facilities across the country
- -Ravi River commission independently evaluated the bio-remediation technology and found it viable for replication
- -After several legal procedures the Green Courts Lahore advised the commission to reclaim 10 cusec of used-water entering into the river Ravi.
- -Developed an entrepreneur Nano Bio Solutions Inc. (NBS)