Chapter 16
Industrial Wastewater Management in the Context of Climate Change Adaptation in Selected Cities of India:
A Business Approach

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ABSTRACT

Climate change and wastewater control are one of the foremost demanding situations for Indian cities. Urbanization and unparalleled growth of cities across India continue to create immense pressure on land and water resources. This uncontrolled growth continues to produce growing volumes of wastewater. Climate change, impacts inclusive of, intense storm events in summer time or extended moist periods in wintry weather are quite visible in India. In urban and peri-urban areas, wastewater use for agriculture is an emerging precedence. Due to susceptible enforcement of regulatory, most of the wastewater generated is permitted off untreated/ partially treated. While many previous studies have checked out the global modifications and associated impacts of climatic variations on water resources, few have targeted at the evaluation of the particular effects and adaptation priorities for water systems in towns. Proper reuse of wastewater for irrigation will significantly lessen the shortage, offer a sustainable water source, improving farming productiveness, lessen pollution, generate livelihood potential for low earnings city households along with contributing to their each day food needs. There are tradeoffs which need to understand which includes problems to individual's health, and surroundings. Through suitable treatment methods, water users' cooperatives, policy shift and the introduction of market based approaches, treated wastewater use in agriculture can be enhanced and all associated risks can also be curtailed. This chapter focuses on use of treated urban wastewater and its management for agriculture in selected Indian cities.

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INTRODUCTION

Urban wastewater management is a challenge for many developing countries including India. Rapid urbanization and unparalleled growth of cities across India continue to create immense pressure on land and water resources. This uncontrolled growth continues to produce growing volumes of wastewater. Due to weak enforcement of regulatory measures, most of the wastewater generated let off untreated/ partially treated. While many preceding research have checked out the global modifications and climate related variability on water sources, few have targeted at the assessment of the specific consequences and version priorities for water systems in cities. Proper reuse of wastewater in irrigation can significantly lessen water shortage, offer a sustainable source of water, improving agricultural productivity, lessen pollution, create livelihood potential for low earnings city households, put in to their each day food needs. Hence a needed focus to understand and review the wastewater supply and treatment for Indian cities is required. The variety of challenges associated with climate, water and cities are very pressing, which depends on its demography, economics and administrative potential. The urban wastewater use for irrigation is a growing global phenomenon. Such irrigation method can build livelihood opportunities and strengthen food security. But the major hurdle is to come up with the sensible, low-cost safeguards that do not hamper farmer's livelihoods and thus providing a useful resource in meeting food needs and supplying cheap produce to expanding towns. Through suitable treatment methods, water users' cooperatives, policy shift and the introduction of market based approaches, treated wastewater use in agriculture can be enhanced and all associated risks can also be curtailed. This chapter focuses on use of treated urban wastewater and its management for agriculture in selected Indian cities.

CHANGE IN CLIMATE AND ITS EFFECT ON WATER RESOURCES AND AGRICULTURE

Climate change as per the United Nations Framework Convention on Climate Change (UNFCCC) has been defined as, "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods". Increased emission from industrial sectors along with changed agricultural pattern combined with widespread deforestation has effected a change in the gaseous composition of earth's atmosphere (Table 1).

Table 1. Greenhouse gases in surroundings

Elements	CO_2	CFCs	CH_4	N_2O
Avg. concentration 100 years ago (ppbV)	290×10^3	0	900	270
Present concentration (ppbV) (2007)	380×10^3	3 to 5	1774	319
Proposed concentration in the year 2030 (ppbV)	400×10^3 500×10^3	3 to 6	2,800 to 3000	400 to 500
Atmospheric life (years)	5 to 200	75	9 to 15	114
Global warming ability years relative to CO_2	1	4750 to 10900	25	298

Source: IPCC (2007)