

CHAPTER - I

Introduction

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1.1 Introduction

*“Water is life’s matter and matrix, mother and medium. There is no life without water.”*¹ Goal 6 of United Nations’s Sustainable Development Goals (SDG) acknowledged that access to safe water, sanitation and hygiene is the most basic human need for health and well-being. Demand for water is rising owing to rapid population growth, urbanisation and increasing water needs from agriculture, industry, and energy sectors.

Large-scale water abstraction and discharge of untreated/partially treated wastewater into water bodies has substantially contributed to water pollution. Water pollution poses a significant challenge to human health and ecological balance of water bodies, thereby reducing productivity of aquatic environment.

1.2 Water Budget of the State

Water Budget is a hydrological tool used to quantify the flow of water in and out of a system. According to the available data² for 2015, total water availability for the State of West Bengal was about 160.35 billion cubic metre (BCM), out of which surface water was approximately 132.77 BCM and ground water 27.58 BCM. The total demand was 90.54 BCM, thus leaving a positive gap of 69.81 BCM in the State.

West Bengal, as per 2011 census, had a population of approximately nine crores with a decadal growth rate of 13.93 *per cent* (2001-11). With rise in population, the availability of water including for food production, may worsen unless an effective system of management of water is put in place.

1.3 Water pollution in West Bengal

The main causes of river water pollution in West Bengal are:

- (i) discharge of municipal wastewater,
- (ii) discharge of industrial wastewater,
- (iii) insufficient solid waste management,
- (iv) pollution from non-point sources³.

Central Pollution Control Board (CPCB), in 2018, identified 17 Polluted River Stretches (PRS)⁴ in West Bengal categorised under five Priority⁵

¹ Quoted by Albert Szent - Gyorgyi, a Hungarian Nobel Lauret (Physiology 1937).

² Paper published by Indian Council of Agricultural Research in February 2022.

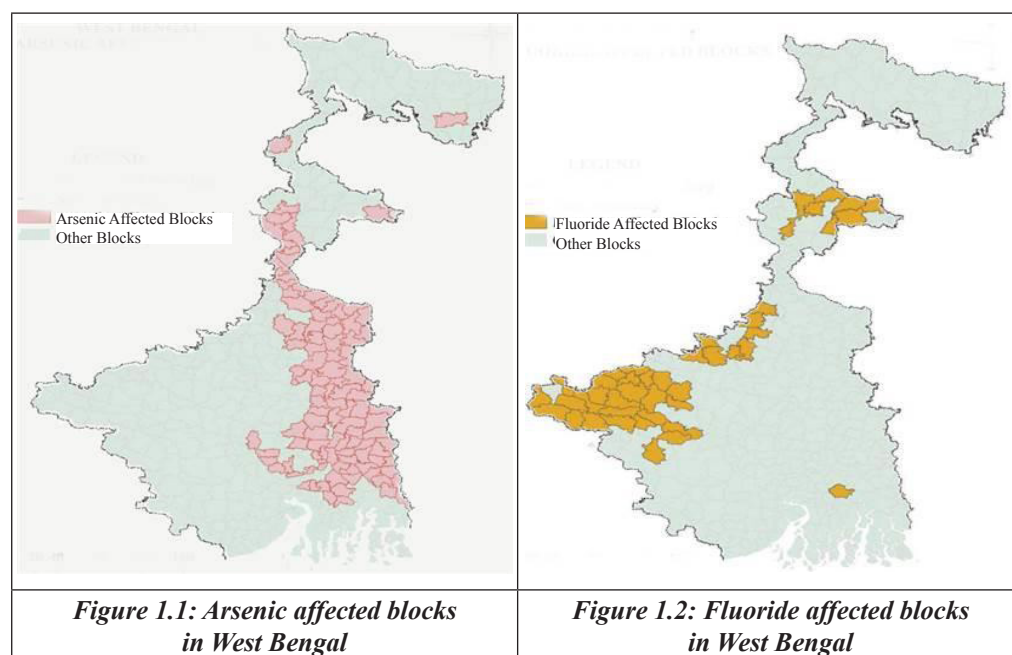
³ Pollution that originates from many diffuse sources, rather than a single, identifiable point, like a factory pipe, and is often carried into waterways by runoff or precipitation.

⁴ Ganga, Barakar, Churni, Damodar, Darakeswar, Dwaraka, Jalangi, Kaljani, Kansai, Karala, Mathabhanga, Mahananda, Mayurakshi, Rupnarayan, Silabati, Teesta and Vidyadhari.

⁵ The polluted locations in a continuous sequence are defined as polluted river stretches and categorised in five priority classes based on BOD concentration.

Classes (I to V)⁶ based on maximum Biological Oxygen Demand⁷ (BOD) level. Four rivers⁸ which were in the list of 17 PRS under Priority V, have since been excluded (2022) from the list of PRS.

In respect of ground water, 83 blocks in eight districts of the State, having a population of about 109.26 lakh were identified as arsenic affected, and 43 blocks with a population of 6.15 lakh in seven districts were identified as affected by fluoride, as shown in **Figure 1.1** and **1.2**.



(Source: State Environment Report-I, West Bengal 2021, WBPCB)

1.4 Budget Provision

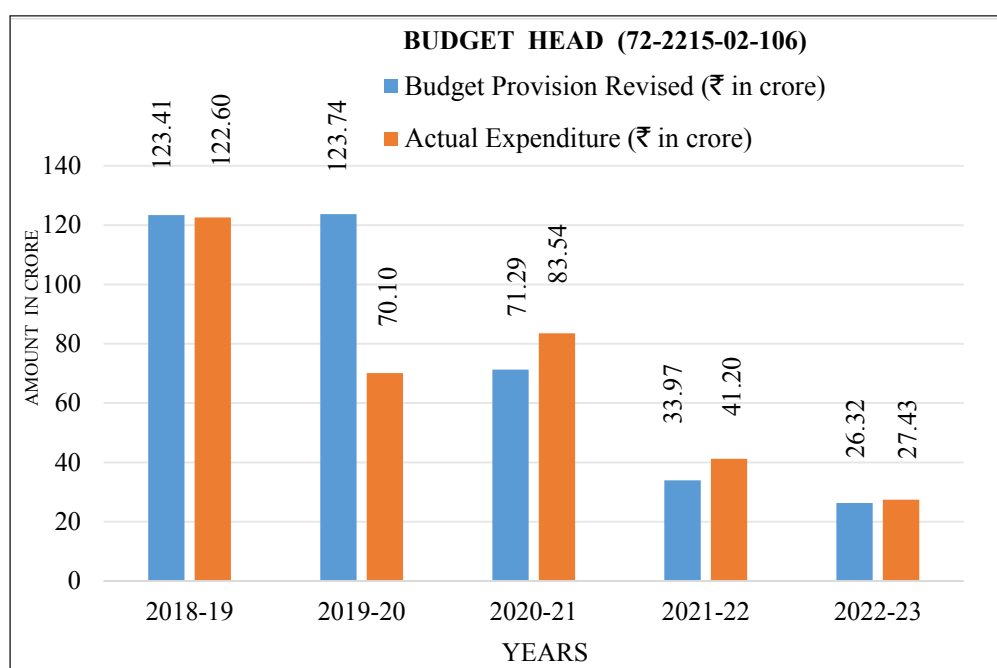
The Urban Development and Municipal Affairs (UD&MA) Department, Government of West Bengal (GoWB) was charged with management of municipal wastewater. For this purpose, the Department under State Plan made budget provisions for the Major Head ‘Water Supply and Sanitation’ for prevention of air and water pollution (Budget Head: 2215-02-106) under Revenue Head. The Budget provision *vis-a-vis* the actual expenditure incurred for prevention of air & water pollution during the period from 2018-19 to 2022-23 is shown in **Chart 1.1**.

⁶ Priority I - Monitoring locations exceeding BOD concentration 30.0 mg/l, Priority II - BOD between 20.0 – 30.0 mg/l, Priority III - BOD between 10.0 – 20.0 mg/l, Priority IV - BOD between 6.0 – 10.0 mg/l, Priority V - BOD between 3.0 – 6.0 mg/l.

⁷ Amount of dissolved oxygen needed by aerobic biological organisms to break down organic material present in a given water.

⁸ Kaljani, Karola, Mayurakshi and Silabati.

Chart 1.1: Budget provision vis-a-vis the actual expenditure incurred for prevention of Air and Water Pollution during the period from 2018-19 to 2022-23.



(Source: Budget Publications, GoWB)

Further, UD&MA made provisions under the budget head ‘Capital Outlay on Urban Development’ (Major head: 4217) for State Development Schemes which, *inter alia*, included projects for rejuvenation and augmentation of Sewage Treatment Plants (STPs) and the expansion of sewerage and drainage services.

Besides above budget provisions, the West Bengal State National Ganga River Basin Authority (NGRBA) Program Management Group (SPMG) during 2018-23 received an aggregate Central Share of ₹ 577.38 crore⁹ from National Mission for Clean Ganga (NMCG) under the *Namami Gange* scheme and also received State Share of ₹ 315.74 crore. Against the total receipt of ₹ 893.12 crore, total expenditure of ₹ 896.47 crore was incurred as of March 2023. The excess expenditure against fund received was sourced from additional State share and interest income of SPMG.

1.5 Water Pollution prevention and control mechanism

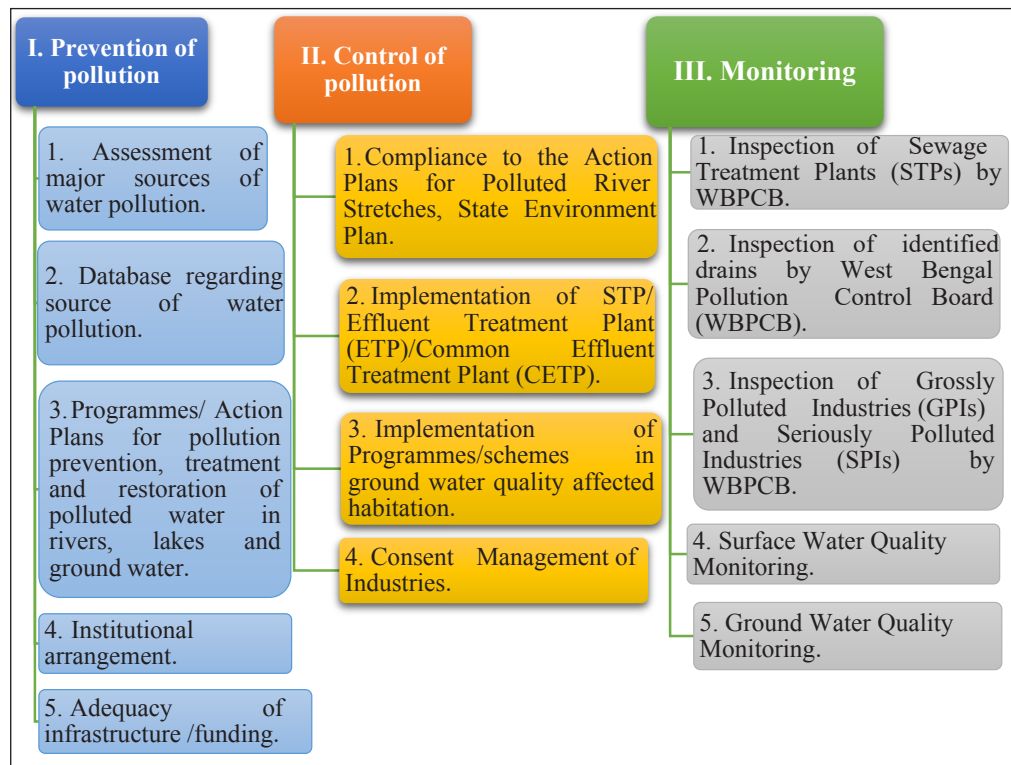
The Water (Prevention and Control of Pollution) Act, 1974, mandates setting up of a Pollution Control Board, both at Central and State levels, to restore and maintain the wholesomeness of water bodies; to plan a nation-wide programme for the prevention, control and abatement of water pollution; and to collect, compile and publish technical and statistical data related to water pollution. Protection and improvement of environment was also regulated under Government of India’s Environment Act, 1986.

⁹ Including an opening balance of ₹ 64.60 crore.

Control of water pollution may be reviewed through initiatives of:

- prevention (*control of pollution before it happens*),
- control (*measures to mitigate pollution once it occurs*), and
- monitoring, as mapped in **Chart 1.2**:

Chart 1.2: Water Pollution



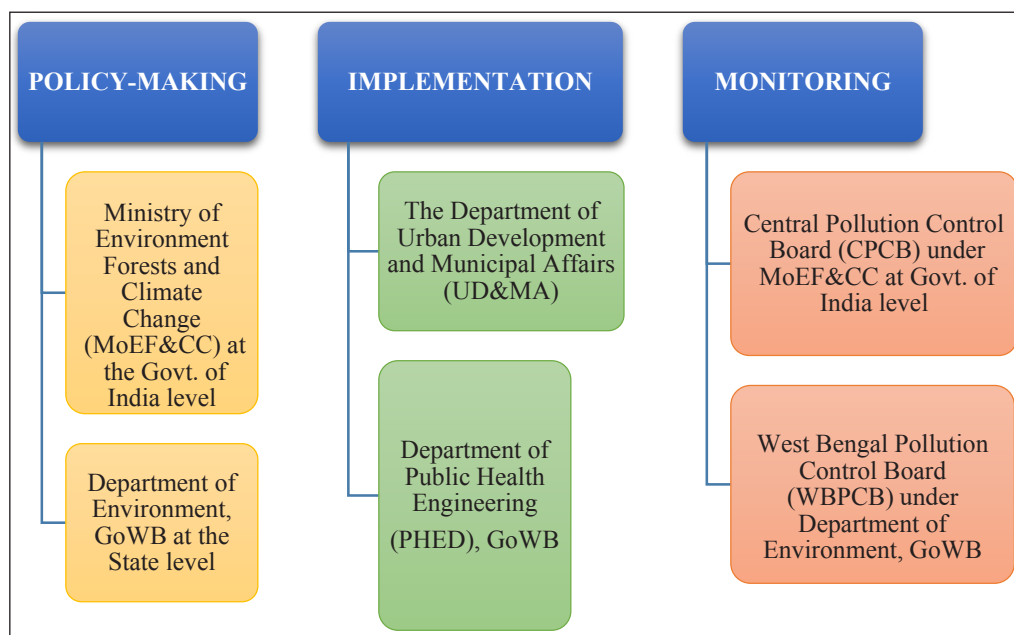
(Source: Action plans for Rejuvenation of Polluted River Stretches, State Environment Plan, Water (Prevention and Control of Pollution), Act, 1974).

1.6 Institutional arrangement for management of water pollution

Effective abatement of water pollution requires co-ordinated efforts across multiple institutional levels, ensuring that policies are not only framed but also effectively implemented and monitored for achieving the desired results. While policies for abatement of water pollution were prepared by Ministry of Environment Forests and Climate Change (MoEF&CC) and the Environment Department of West Bengal at National and State level respectively, the implementation was done by UD&MA and Public Health Engineering Departments (PHED). Both CPCB and WBPCB were responsible for the monitoring part.

Institutional arrangements based on functions for abatement of water pollution are shown in **Chart 1.3**:

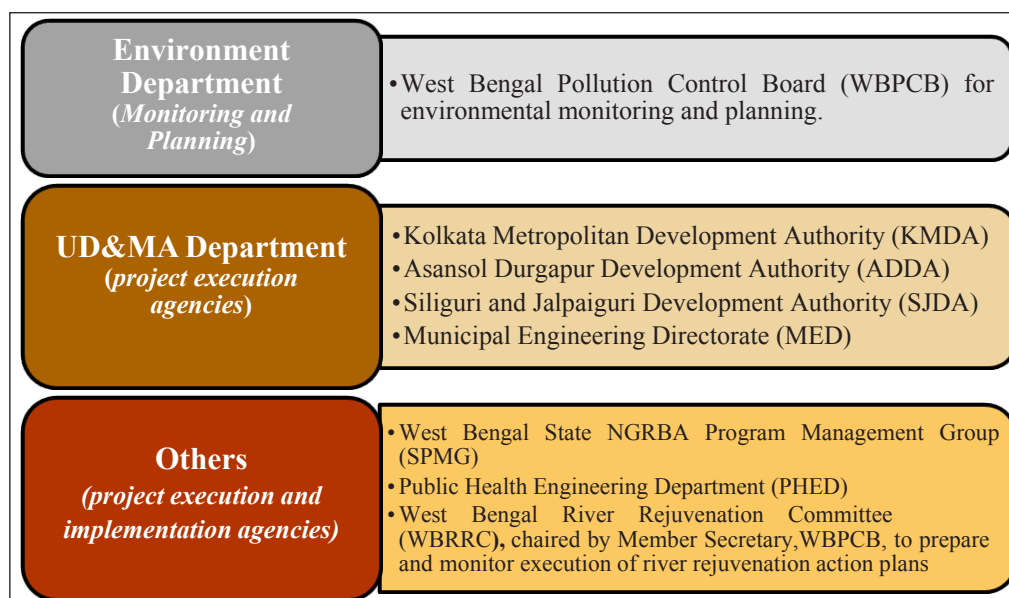
Chart 1.3: Institutional arrangement



(Source: *Water (Prevention and Control of Pollution), Act, 1974 and minutes of River Rejuvenation Committee*)

While the responsibility for monitoring and controlling pollution in West Bengal rests with the WBPCB, various other Authorities/ Departments also play a significant role in prevention of water pollution in the State. The role of these authorities in planning, execution and monitoring of various programmes for prevention of water pollution in the State are as depicted in **Chart 1.4**.

Chart 1.4: Role of various authorities in planning, execution and monitoring of the programmes for prevention of water pollution



1.7 Reasons for conduct of Audit

The National Green Tribunal (NGT) order against the Original Application (OA) No. 673/2018 dated 06 December 2018, directed States to revise, prepare

and implement Action Plans to restore polluted river stretches and to ensure 100 *per cent* treatment of sewage by 31 March 2020. The timeline for completion of all steps in the Action Plans including setting up of STPs and their commissioning was 31 March 2021.

NGT passed another order on 26 September 2019, in the matter of the OA No. 360/2018 to check compliance with several statutory requirements related to waste and environment management and advisories issued to the States. This was in response to the growing concerns regarding non-compliance with the provisions of Waste Management Rules and Regulations of 2016, and other relevant rules and regulations related to water quality and conservation, and air and noise pollution management in the States.

CPCB had identified (2017) 17 polluted river stretches where River rejuvenation programme was to be implemented.

Goal 6 of the Sustainable Development Goals (SDGs) call for access to safe and affordable drinking water, sanitation facilities, and hygiene for all by 2030. According to SDG index - 2020 of NITI Aayog, as regard the performance of West Bengal in SDG-6 (Clean water and sanitation), it was observed that the score of the State declined to 81 from 83 in 2019.

Further, research studies showed impact of water pollution on agricultural produce and aquatic animals in the State as well as risks to human health from water contamination such as *Diarrhoea, Enteric Fever, Vibrio cholera etc. and prevalence of Arsenicosis and Fluorosis*.

Thus, Audit decided to study the issue of water pollution through a Performance Audit.