# Pollution Control and Remediation of Rural Water Resource Based on Urbanization Perspective

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ABSTRACT: *Traditional water management pollution management approaches in rural regions are characterized by low water resource usage rates and high control costs. As a result, from the viewpoint of urbanization, this research presents techniques for controlling and remediating water resource contamination in rural regions. The marginal analysis approach is utilized to calculate the excess water management demand in Anhui province's urbanisation process, a dynamic connection model of urbanisation and water needs is built, and the model is used to achieve pollution control and rehabilitation of rural water resources. A comparison experiment is aimed to verify the efficiency of the given approach. The findings demonstrate that after the remedial work, the degree of pollution of rural groundwater sources was significantly decreased, and the utilisation cost of water resource base was highly improved, indicating that perhaps the presented approach had a better environmental protection and correction effect, and could advertise the sustained growth of urbanisation.*

KEYWORDS: *Economic, Environment, Pollution, Resource, Urbanisation.*

## 1. INTRODUCTION

Urbanization is an essential step in the modernization process. It's also a crucial symbol of contemporary society. Our urbanisation is currently accelerating. However, while pushing fast economic growth, we must be mindful of the ecological impact. People in

China prefer to concentrate on water pollution remediation in industrial and crowded cities while ignoring rural regions. In terms of modernity, Anhui Governorate has taken the lead. How to deal with water contamination throughout the urbanisation process has a driving relevance for the places that will be urbanised(Behera et al., 2012).

The availability of water is critical to the proper growth of cities. The 18th Congress of the Communist Party advocated a significant strategic deployment: accelerating the building of new-type urbanisation. Meanwhile, the federal government proposes the most restrictive water resources regulations. The key to solving the issue of urbanisation is to figure out how to limit pollution problems in the urban growth, achieve sustainable water resource consumption, and accurately quantify the shortage of water resource in urbanisation(R. Sharma et al., 2020).

In the twenty-first century, the majority of the world's inhabitants will live in cities. Using a multi-pollutant method, we investigate the effects of urbanisation on future river pollution. We illustrate how pollutants are associated by quantifying cumulative point-source imports of micronutrients, micro plastic particles, a chemical (triclosan), and a disease (Cryptosporidium) to 10,226 streams in 2010, 2050, and 2100. Our scenarios take into account socioeconomic changes as well as different rates of urbanisation and waste management(The Phan et al., 2021). River contamination is a serious problem in Europe, Southeast Asia, and North America today. In our high urbanisation scenarios, nearly 80% of the world population would reside in thread with multi-pollutant concerns in the future. Future river pollutants in Africa is expected to be 11–18 times worse than in 2010, making meeting the Sustainable Development Goals challenging. In many areas, improved sewage treatment makes it theoretically viable to avoid future contamination. Nevertheless, potable water supply in Africa is expected to remain a challenge. Our multi-pollutant technique might help cities analyse water contamination more effectively(Singh et al., 2018).

Urban regions now house upwards of half of the planet's population and create more than two-thirds of world's gross domestic product (GDP). More than couple of the world's

populace will live in big cities by 2050. Rapid urbanisation brings economic possibilities, but it may also expand the quantity of freshwater resources(Sinha et al., 2012). Cities and agriculture will face increased competition for water as a result of this. Increased urban garbage is likely to pollute water with a variety of contaminants, including nutrients and diseases from human excrement, plastics, and compounds from care products goods. River contamination threatens the supply of clean water in many regions of the globe, putting the Sustainable Development Goals at risk(T. K. Sharma & Prakash, 2020).

The author has investigated the effects of urbanisation on pollutants in the twenty-first century from a multi-pollutant viewpoint in this work. Multi-pollutant concerns are defined as rising levels of far more than one pollution in rivers in the coming decades. We investigate the following categories of contaminants at the same time: nutrients (N and P), and pathogens(Hu, 2020). These contaminants were chosen because of their rising levels of contamination in numerous rivers throughout the globe. Nonetheless, these pollutants come from ubiquitous urban sources including sewage systems (all around the globe) and open defecation. For 2010, 2050, and 2100, we calculate point-source pollution inputs to rivers linked with urbanisation: sewage systems and open dumping(Jungmeier, 2017; Wongsawat, 2017).

1.1 Anhui province's urbanisation trend, there is a demand for marginal water sources:

The term "margin" refers to an economy notion. The final unit of consumer items or items is referred to as this. The impact that a unit is raised or diminished in each time while other circumstances stay the same is known as marginal theory. In the subject of resources and the environment, the economic marginal analysis approach has been extensively used(Hu, 2020; J. Wang et al., 2012). When the economical marginal theory is applied to the study of water management demand in the urbanisation process, the demand for aquatic resources can be calculated for every 1% rise in urbanisation level. The study technique of negligible effect is utilised as a reference to create the marginal

modeling of water management demand and urbanisation level in Anhui Province, according the interpretation of negligible water resource demand(Long et al., 2021; Mwinyihija, 2012).

### 1.2 Modeling of the urbanisation and water resource systems in conjunction:

The notion of coupling has its origins in physics. It is the phenomena in which two (or more) scheme of equations with one another. Because the urbanisation and water needs systems are both dynamic and variable, with a two-way interaction between them, a simple linear connection cannot adequately describe them. This paper investigates the coupling condition of urbanisation water resource composite ecosystem from the standpoint of continuous advancement using the evolution notion of dynamical systems("Phytoremediation: An Environmentally Sound Technology for Pollution Prevention, Control and Remediation in Developing Countries.," 2007; Zhang et al., 2018).

### 1.3 Data processing and Index construction:

Because the proportion of urbanisation and the hydrological system is complicated, one such article structures an ids model of urbanisation from population urbanisation, economic urbanisation, social urbanisation, and spatial urbanisation, based on Xia Fuqiang's scientific data, in order to analyse the coupling based in developed systems from multiple viewpoints. In related to resource foundation circumstances, water resource planning and promotion, water resource consumption efficiency, and water resource emission reduction, the following database of river basin system is built(Bernoth et al., 2000; Song & Park, 2017; L. Wang et al., 2020).

## 2. DISCUSSION

It is a unique form of urbanisation pilot province that is leading the way in modernization. This study uses the link between urbanisation development and the Anhui Province's water management system as an example to conduct a series of

statistics analyses in order to verify the impact of water resources on urbanisation development.

To begin, this study explores the peripheral water management demand of urbanisation in Anhui Province, concluding that the province's urbanisation process is always going ahead, and the request for urbanization's aquatic resources is growing day by day. Per the calculations, Anhui Province's water management requirement for urbanisation will exceed 12.732 billion cubic metres by 2020. The state has set a red threshold for storm water use in 2020 of 9.986 billion cubic metres. The demand for water is significantly larger than the president's red threshold for usage. There is a significant conflict between urbanisation and water availability.

Due to financial and other constraints, there is only an international environment agency in the legislature in places below the council level. With the progressive development of urbanisation throughout the nation, it is clear that the allotment of international environmental agencies would not be sufficient to address the growing issue of water degradation in rural regions. We may basically adopt the idea of preventive first by supporting government organisation restructuring as soon as feasible and establishing specific international environmental offices.

## 3.  CONCLUSION

The optimal analysis approach of economics is utilised in this paper to create a reasonable dynamical connection model of urbanisation and water resource system. The river basin demand of urbanisation growth in Southeastern China is explored using a rationally constructed index assessment system and a dynamic connection model. The degree of cooperation between urbanisation and the expansion of water resource systems in Anhui Province is investigated experimentally. However, in Anhui Province, the urbanisation system is not in sync with the growth of the hydrological system.

The management of water resources systems is gradual and unstable in the progress of sustainable urbanisation, and the demand for water resources is growing year by year.

To address the issue of water demand, we must first address the utilisation rate of water resources, after which we must regulate and repair contamination of rural groundwater sources in order to enhance the utilisation percentage of water resource base and promote urbanisation.

This study examines the control and rehabilitation of rural hydrological pollutants from the viewpoint of urbanisation in order to increase the technical resource of rural water management pollution and the usage rate of water resource. The following findings were reached as a result of the investigation.

- After remediation, the contamination degree of this technique is only 17%, and the contamination degrees of this method is clearly decreased, indicating that this approach has a superior pollution clean - up impact.
- This technique's water resource utilisation rate may reach 94 percent after rehabilitation, and this technique's water resource utilisation rate has clearly grown, indicating that this approach has a superior water resource utilisation rate.

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