

A New Direction in Urban Water Management to Build Sustainable Cities in Iran

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ABSTRACT

This paper aims to highlight a new direction in urban water management to build sustainable cities in Iran by increasing the adaptability and resilience of urban communities dealing with climatic variability and change and anthropocentric pressures. A new direction in urban water management: (1) should encompass a strategy for institutional strengthening may be based on an alliance of sound and open interdisciplinary research based on Earth system and sustainability sciences and socio-economic and political developmental needs; (2) to consider the impact of climate change and other drivers on cities which is multifaceted using integrated assessment approach; (3) to implement water demand management and adaptive practices to create resilient urban societies; and (4) to enhance the ethical aspects of water supply and sanitation by considering societal values and cultural element. Iran will experience a great deal of difficulty in supply water and sanitation services to an increasing urban population in future. Without good urban water and sanitation services, we can not build sustainable cities. Administrative institutions need to be adapted and respond to two main drivers for change: population growth and urbanization by (1) integrated information management system, (2) Strengthening Legal Authority, (3) involving public participation and (4) land and water policy integration. Water ethics form the basis of building sustainable cities. The ethical and cultural context should be considered in any institutional reforms

Keywords: urban water supply and sanitation, sustainable cities, ethics, institutional reforms, city-scale integrated assessment tool, Iran

1. INTRODUCTION

Iran's water resources system has been affected by major driving forces including: population growth, urbanisation, climatic variability and change, land use and agricultural self-sufficiency and modernisation policies as well as short term developmental plans. These drivers have placed a remarkable pressure on the water resources system [1]. The demand for water has increased due to rapid population growth and some sectors have experienced water shortage. Iran is approaching water stress conditions. The climatic variability of arid-semi arid Iran has necessitated the implementation of many development projects and irrigation networks to provide food security and self-sufficiency as well as an adaptation policy to droughts [1].

Cities in the developing world including Iran are engines for growth and the world trend is that by year 2020, urban dwellers will outnumber the rural population [2]. There has been an almost three-fold increase in population since 1956; reaching 76 million people in 2015. Much of the population lives in urban centres (about 49 million or 68%) and there are 8 mega-cities [1]. Thus, there are two main characteristics of the increase in population: (1) a faster rate of growth in urban areas, and (2) immigration from rural to urban areas in search of employment which resulted in enlargement of existing cities and the creation of new ones [1].

As a semi-arid and arid country, Iran is characterised by high climatic variability; thus historically experienced low spells of rainfall or meteorological droughts which have affected natural runoff i.e. caused hydrological droughts. Droughts usually have longer term impacts including (1) socioeconomic (immigration, poverty famine) and (2) agricultural (i.e. shortage of foods) impacts. *Provision and access of safe drinking water and improved sanitation are part of Millennium Development Goals (MDGs) which were set in 1992 in Johannesburg. However, providing a safe and reliable source of drinking water for increasing urban population is one of the main global challenges of the 21st century.*

Inadequate supply of water and proper sanitation are more of a problem for the disadvantaged or disfranchised section of the society. Poverty eradication policy has been an official aim of successive Iranian governments in modern times. Since the 1906 Constitutional Revolution in the early 20th century, social reform and poverty eradication have been on the political agenda and part of demands for social justice as an attribute of the community's Islamic ethical principle [1]. Poverty is a multi-dimensional phenomenon and hence cannot be eradicated with only economic plans (e.g. land reforms and agricultural developments). Thus, Access to education, health service, drinking water and sanitation, political empowerment and employment are among the key factors that affect the degree