

The Importance of Water in Development¹

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SUMMARY

As it is known water is not only a vital source for all natural life but also a natural resource that is at the core of sustainable development. It is critical for socio-economic development, healthy ecosystems and for human survival itself. It is also central to the production and preservation of a host of benefits and services for people. Therefore we should always be aware of that water is a finite and irreplaceable resource in time and space and it is only available if well managed. Where water is reliably available, economic opportunities are enhanced. Where water is unreliable or of inadequate quality, or where water-related hazards are present, there will be drags on growth.

Water can pose a serious challenge to sustainable development but if it is managed efficiently and equitably, water can play a key enabling role in strengthening the resilience of social, economic and environmental systems in the light of rapid and unpredictable changes. In this article ,it is aimed to make this importance clearer and more understandable .

Keywords: Water ,development, growth, water management .adaptive water management

1. INTRODUCTION

Many countries particularly those experiencing the impacts of climate change ,have started to make projections on their own water security. The most important reason that requires having a projection on water security being directly linked to social stability, economic growth and development of a country

Therefore in order to better understand the importance of water security concepts such as growth, progress, development and sustainability should be considered. Every country aims

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for social and economic development .Development of the country is usually considered as the total increase in income in the country. Development actually refers to the welfare level achieved. Social development covers not only economical growth but also social progress and upward changes in the social life of the country

2.CONCEPTS OF GROWTH

It will be useful first to look at the concepts of growth, progress, and development that often create confusion. Growth refers to the continuous increase in the basic data on economic life to provide more income per capita every year. Progress refers to the positive change in the economic wealth and its structure .Progress also covers growth. Development,on the other hand ,is used to refer to a concept more comprehensive than growth and is used synonymously with progress. Although the annual increase in the real income per capita in a country is referred to as development rate ,concepts of economic progress and development actually mean developments in economic,social and cultural areas accompanied by increase in national income in the long term.

In fact ,development is the increase in social welfare triggered by the change in economic social and political structures in the country.In this respect ,development covers economic and social changes besides economic growth . Now let us look at its relation with water resources.

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3. THE RELATIONSHIP BETWEEN ECONOMIC GROWTH AND SOCIAL DEVELOPMENT AND WATER RESOURCES

The social dimension of development is addressed under the title "Social Development" .The most important factor distinguishing development from economic growth is that it covers entire society .

Water resources management and ensuring water security should be the primary target of a social development that will embrace the entire society. Therefore ,a vulnerability that may be faced in water security will prevent social development greatly and also periodically lead to large problems triggering social issues. For a social and sustainable development ,water management must also be sustainable .

A sustainable water management policy requires the consideration of socio -economic ,technical and institutional aspects together. This approach led to the development of "integrated water resources management" concept. This concept has been turning into an "adaptive integrated water resources management" concept lately.

Development is not possible without ensuring sustainable water security .Water security ,in the most general sense ,is known as the provision of adequate quantity and quality of water for vital needs and economic consumption in order to alleviate the social and economic impacts of unpredictable drought and floods at an acceptable risk level.

To describe it briefly, we can say that natural disasters such as drought and flood will not create major economic impacts if water security is guaranteed.

If it is not, they can meet relative economic impact of water insecurity² as shown in Figure 1.

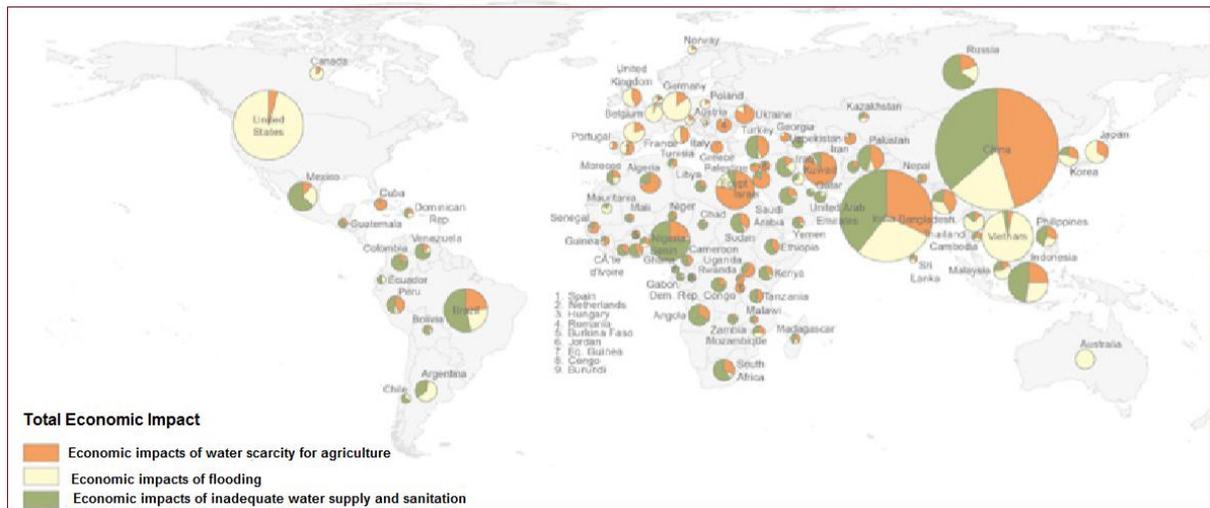


Figure1. Relative economic impact of water insecurity (5)

An econometric analysis³ (a fixed-effects panel regression) was performed by Sadoff et al.(5) across 113 countries, to determine whether there is empirical evidence of a statistically significant impact of hydro-climatic variables, including hazards, on countries' per capita GDP growth.

From this perspective on water security, countries whose economic performance is resilient to water security-related variables - such as runoff, floods, and droughts - are relatively water secure. Countries where growth is strongly correlated with these factors are relatively water insecure(5).

The findings confirm that water insecurity acts as a drag on global economic growth. Both our empirical and theoretical analyses demonstrates the importance of investment in water security for development - and the importance of development for investment in water security(5).

It is indicated in the same report(5) that "Water and water-related hazards have a statistically significant effect on economic growth that historically has been at least as important, and likely more important, than temperature effects".

Inadequate water supply and sanitation can causes serious economic losses as shown in Fig2.

² Three economic risks have been standardized to the same total economic impact globally: (1) Water scarcity to agriculture; (2) Flood damage to property; and (3) Inadequate water supply and sanitation

³ This econometric analysis focused upon the effects of hydrological variability on growth in GDP.

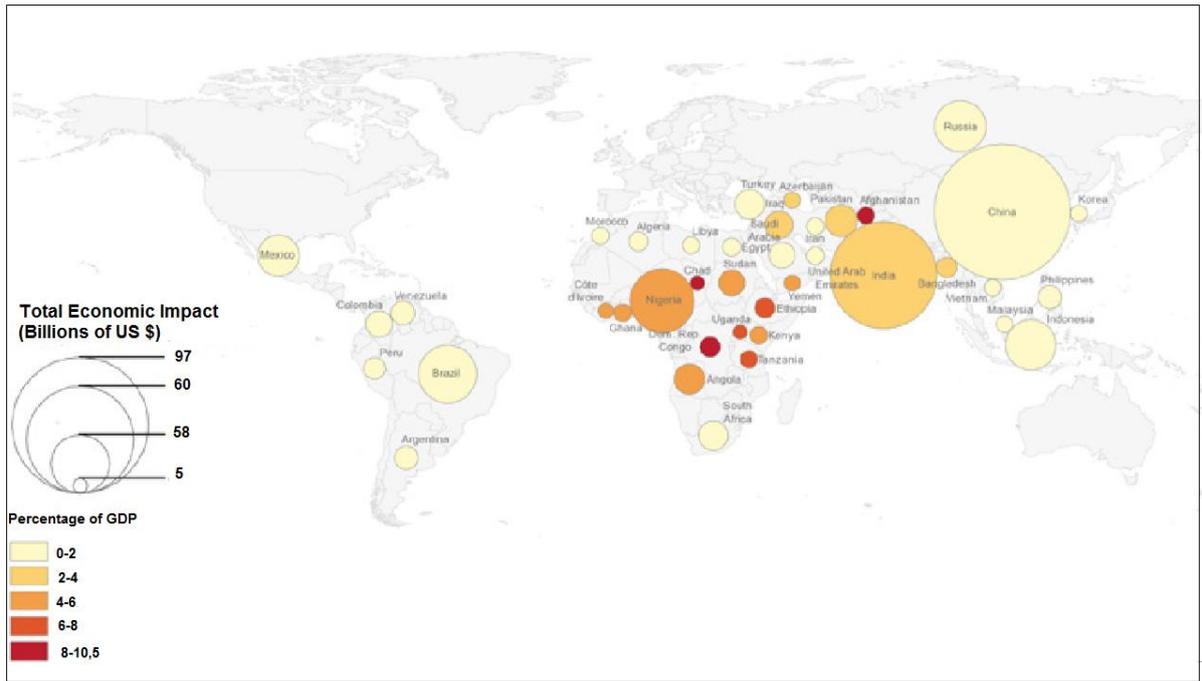


Figure 2. Economic losses from inadequate water supply and sanitation(5).

Water security requires financial management and functional management infrastructure and projects that don't force the natural limits. Infrastructure and projects required for this would both benefit the production areas where there is water demand and prevent economic and social problems that may originate from water.

The study made by Sadoff et al (5) includes a simulation of reduced drought effect on economic growth. In order to demonstrate the growth effects of the economic drag caused by drought, a simulation was performed assuming reduced drought effects. The results for Malawi is shown in Figure 3.

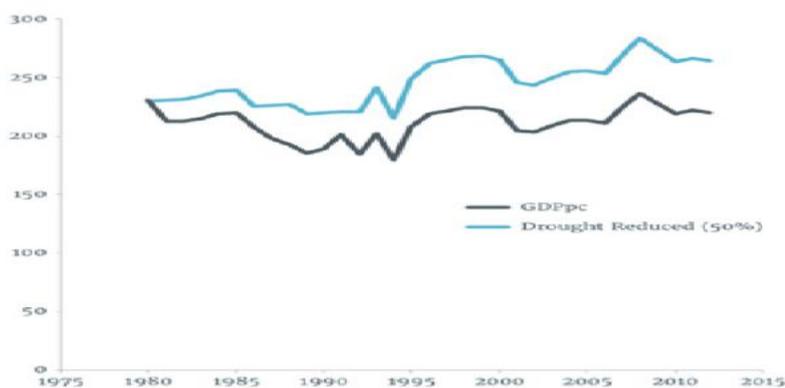


Figure 3. Malawi economic growth with drought reduced (5).

The growth rates in drought years were replaced with growth rates calculated assuming a 50% reduction of the drought effect (i.e., the difference between growth in drought and non-drought years, divided by 2). The new series of growth rates was used to simulate economic growth for a 30-year period, beginning in 1980 (5).

Malawi shows highly variable economic growth, which often reflects the variability of runoff as shown in Figure 4.

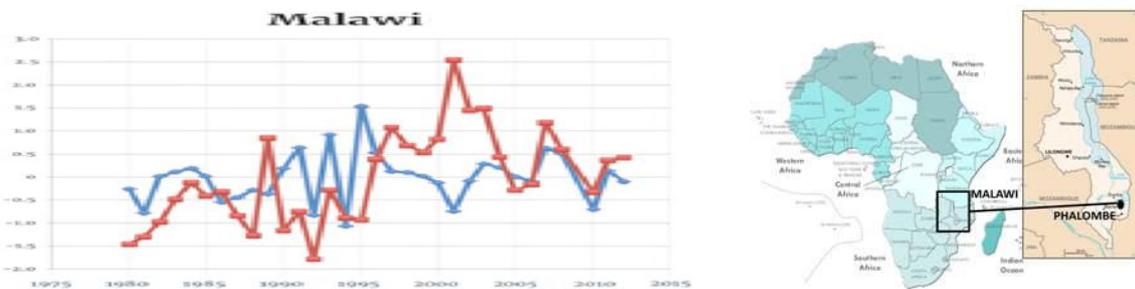


Figure 4. Malawi's economic growth and run off relationship (5).

For all these reasons ,water oriented regional development models ,if planned well could be the driving force for regional and national economy.

4.WATER AND ENERGY

Water resources also play an important role in the utilisation of different energy resources such as oil,shale oil,shale gas. Production of shale gas and shale oil in site highly depend on water use . For instance water has been very important role in USA energy independency to be used to extract shale gas and shale oil which will make USA Energy Game Changer in the World in soon. This demonstrates that water plays a significant role in the maintaining of welfare in developed countries in many respects.

Profitability of additional investments in agriculture and energy sector also increase greatly in areas where water and thus energy security is ensured.This also demonstrates the positive impact of ensuring water security on the creation of an investment environment and development.

5.CONCLUSIONS

Importance of water in development increased in 21st Century when compared to the 20th Century.This increase is related to the growing population ,developing industry and polluted water resources. However ,in this increase ,the most important factor has been water, energy , food and environment nexus and negative impact of climate change on water resources.

In other words, climate change started to affect water resources adversely and energy generation has become more water dependent in the 21st Century. All plants used for electricity generation excluding wind energy plants are dependent on water resources with different amount .Impacts of climate change and the growing importance of water in energy generation has increased the importance of water resources and its management. The importance of water resources and water management further increased because of the climate change threat . Water and energy are the basic need for development and both of them are more interrelated and under the threat of climate change in this century.

In other words ,water resources development projects enable developments in a wide range of areas from agriculture to tourism, energy to health sector. Thus they can be considered as an engine for a country's development. Keeping on in operation of this engine ,especially under the changing climate conditions is directly related to ensuring water security.

It has been revealed that the importance of water for a country's development will increase further during the 21st Century. It is also seen that water desalination /production of artificial water will not be a sustainable solution in a wide range. Hence we should remember that water is very important not only for meeting the vital needs of all living -beings but also for the dissemination and continuation of sustainable development and social welfare. Because a more economical and renewable natural resource to fulfill the same functions in the development process has not been discovered yet. It seems that no source can be replaced to natural renewable water for a long time .

It is for sure that water is the "development driving force " of a country. But in order to use this force in a sustainable way ,we should be aware of that we must be respectful to natural cycles that has produced natural water as well as natural life in the world since the beginning of the world.On the other hand it should be noted that current development paradigm needs to be re- examined and modified as such that national development strategies consider more explicitly the multifaceted role that water resources management plays in the economic development, social wellbeing and environmental sustainability(4).

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Biography

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He is a hydro politics expert and Director of the Hydro politics Academy Association located in Ankara-Turkey .He is a civil engineer and used to be Deputy Director at State Hydraulic Works in Turkey;completed hydroinformatics post graduate course at the IHE in Delft,Technical training programme in USBR -USA and a master degree in Hydro politics at the Hacettepe University-Turkey. He has over 5 years of teaching experiences in some Turkish Universities and now works as head of his own Hydro Energy & Strategy consulting company located in Ankara. He has published several international articles and 15 books. He received Most Successful Researcher Award on International Water Issues from Turkish Agricultural Association in 2008.He was also awarded continuously success on water research prize of 2016 by Central Union of Irrigation Cooperatives of Turkey.He has been the director of Hydro politics Association of Turkey since 2015.

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