

Investigating Water Crisis in Iran

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Contents:

Abstract

Chapter 1: Introduction

1.1. What is the Problem?	5
1.2. Method	7
1.3. Drought, a Definition and Types	8
1.4. Iran, How Vulnerable?	9

Chapter 2: Man-made Contributors to Drought

2.1. General Ideas	10
2.1.1 Unbalanced Population Distribution	10
2.1.2. Deforestation	11
2.1.3. Dams	12
2.2. Possible Objections	12
2.2.1. A Discussion on Development	12
2.2.2. Skeptical Environmentalists	13

Chapter 3: Drought Implications

3.1. Socio-economic, Psychological Implications	16
3.2. Possible Measures	17

Chapter 4: Theory and Analysis

4.1. General Ideas	19
4.2. Water, A basic need?	20
4.3. Normative Approach	20

4.4. Theory Connotation	22
4.5. How Does Theory Work?	22
4.6. What Distinguishes Nussbaum Theory?	24
4.7. Capability, Utilitarianism, Neoliberalism, an Analogy	26
4.8. The Challengeable Side of Approach	28
4.9. Conclusion	29

Abstract

Though some have the opportunity to access water conveniently, getting a small amount of water may be tough and exhausting for others.

In this paper, I will discuss on the right to water, which is explicitly expressed by a UN resolution as a human right. Sever water crisis, or drought, has been far beyond a lack of precipitation, but a phenomenon, occurring through a set of human activities, and interferences. My initial aim is to find out how and in what ways some human activities in Iran, interfered environment in a way that affected precipitation level and led to water crisis. And the second, is to show how unethical these activities may be, as they have been simply avoidable. Therefore, the Iranian governmental organizations (like municipalities) are ethically responsible to provide the required water, since the right to water is called a basic human right by UN, These facts obliges them to hinder these activities to secure this basic need.

On this way, I make use of Nussbaum's capability approach to show, depriving the citizens from one of their basic rights, (the right to water), through influencing climatic order, (in a way that decreases precipitation level or depletes water resources), is considered a moral issue, therefore, it is binding for the state to take measures responsively to stop and control it in the future.

Key words: water crisis, drought, Iran, water access, precipitation, basic right, need, rainfall, development, human right.

Chapter 1

Introduction

The children who have no clean water to drink, the women who fear for their safety, the young people who have no chance to receive a decent education, have a right to better, and we have a responsibility to do better. All people have the right to safe drinking water, sanitation, shelter and basic services.

Ban Ki-moon, UN Secretary General

1.1. What is the problem?

The United Nations General Assembly, on July 2010, released the resolution 64/292 concerning the human right to water. According to the resolution, the right to water and sanitation is recognized as a crucial human right, so the clean water accessibility to human, is regarded as a must in realization of human right. The resolution further, mandates governments, as well as global organizations to provide affordable and accessible, drinking and sanitation water for all, by transferring technology, building capacity and providing financial aides, especially for the developing countries.

The World Health Organization necessitates, 50-100 liters per day for each person to fulfill the minimum daily needs. Besides, the water source shouldn't be farther than 1000 meters away, and should not take more than thirty minutes to collect, and not to value more than three percent of the household revenue. In addition, the committee on Economic, Social and Cultural Rights, adopted a general comment in which it emphasized: “ The human right to water is indispensable for leading a life in human dignity. It is a prerequisite for the realization of other human rights” (UNDESA, 2010).

Water, has been recognized as one of the human's most urgent needs, sometimes restricted in accessibility. In this paper, I focus on water restrictions that emerged from some human activities or

water mismanagements. The typical synergies between soil and air in the atmosphere, which is done through interactions between factors like temperature, emissions,, makes the rainfall possible. However, some human effects, disarranging the climatic order, can result in deformities like lack precipitation.

Normally, human interferences can cause water crisis in two ways: some activities indirectly *cause lack of precipitation* and some *deplete water resources*, however both series result in water crisis. Environmentalists recognize a set of human activities in Iran, contributed to the incident. Practices like centralizing and over-populating urban areas, resulted to depleting both surface and ground water resources (as in dried rivers and wells), which in turn led to hydrological drought (see ch1, drought, definition and types). While the factors like excessive dams and deforestation, disarranging climatic order, has indirectly led to decrease precipitation level and caused meteorological drought. When access to water has been recognized as a fundamental human right by the United Nations General Assembly, the need for sufficient precipitation, becomes significance. The facts ascribe the responsibility to “Iranian municipalities” which permitted the cities to expand and over populate. (by granting excessive construction permissions), and the “Iranian Organization of Forest, Range and Watershed, and the Environment Protection” for granting construction permissions for exceeded dams, as well as failing to protect forests effectively. However, the general responsibility holds with states. (as the so-called organizations work under the direct supervision of the states.) By omitting the causes to drought, the corresponding authorities could manage to avoid it.

In the first chapter, defining different types of drought, helps to recognize what type of drought is produced by each causing factor. Further, the country’s geographical and population specifications are described to see the vulnerability of the country. The information can produce an environmental awareness to anticipate and avoid this type of disasters. During the second, the contributing elements to water crisis in Iran were described, to give a notion that how each element corresponds to one or more types of drought. Throughout the third chapter, inspecting on various harms of water scarcity, I illustrate water crisis in rural Iran and its negative environmental, economic, social and psychological impacts, to show the depth of the disaster. In fact, showing the emotional side of these negative impacts, can approve the ethical necessity of preventing the issue, afterwards several methods are suggested to exit or to mitigate the challenge. In the fourth, I make use of Martha Nussbaum’s Capability theory to demonstrate on the ethical responsibility of the authorities to fulfill the nation’s right to water as a basic human right. The theory articulates each individual’s

basic rights by ten articles, which should be fulfilled by the governments. Capability approach, entitles the nations to enjoy a physically, socially and emotionally secured life, and simultaneously necessitates the states to fulfill their basic rights and needs. The capability theory regards the water as a human's basic and physiological need, and necessitates the states to fulfill that. It can be inferred by the theory that any failure by the governments in fulfilling this right can be equal to depriving people from a basic right. On this way, the theory challenges the corresponding authorities and statesmen in general, as they fail to firstly, dis-centralize large cities, as the overpopulated cities deplete water resources inducing hydrological drought (as shown on page 6,15 in detail). And then, the capability approach also can question the relevant authorities who allowed activities like deforestation and building excessive dams, as these activities endanger the ecosystem order and lead to lack of precipitation (as proved on pages 6,15,16). Consequently, The theory necessitates the states, as a responsible party, to control, manage and restrict these interactions to avoid an environmental disaster like drought.

1-2. Method

To elaborate on my claim about the impacts of human interferences on environment and on precipitation level, I need the empirical data on those human activities which are believed to effect environment, and analyze them to see how and in what ways these activities might affect water availability. To fulfill this aim, I made use of qualitative methods such as text analysis provided by the adequate scientific researches implemented on the field, as well as the interview conducted by Fars Research Center of Agriculture and Natural Resources on a rural areas to observe the situation empirically. To analyze the data, I follow the deductive method to test a previously defined hypothesis of preventability of the incident and then immorality of affecting water accessibility.

In addition, the text is implemented in descriptive structure within initial sections, while it applies cause and effect and normative one in the latter parts.

1.3. Drought, Definition and Types

Initially, to acquire a broader recognition of the subject, it is needed to have a professional definition of the incident as well as different types of that. Although, in pluvial areas, a medium reduction in the rainfall may not necessarily lead to water crisis, in drier climates, any level of decline in precipitation can lead to a water shortage and drought accordingly. Each drought causing factor, induce one or more type of drought. So, recognizing various types of drought can give us a notion to the corresponding manmade factors and will help to quit them.

Generally, the water crisis is a result of persistent deficiency in precipitation level and recognized with the word “drought”. It is defined as an enduring decrease in humidity, which drastically affects environmental functionings, animals, vegetations and even people. However, “a sever, abnormal and temporary water deficiency” is a definition which is vastly agreed upon. The phenomenon is totally relative, While in a desert two consecutive years without rain is called drought, in a humid rain forest, this period can squeeze to only two weeks. So, it is specified due to the geographical conditions of the area, and the humidity need of the vegetation. (Heathcote R.L. 2016, p13,14)

Drought is categorized by four types: **Meteorological, Hydrological, Agricultural and Socioeconomic**. Meteorological (climatological), is a deficiency in precipitation and based on two main characteristics: the level or the intensity of rainfall shortage and the duration of a dry period. Agricultural drought happens when the incident affects agriculture and is defined by some factors such as rainfall deficit, lack of soil humidity. Agriculture is usually the first sector which is affected economically. However, when the water deficiency affects on water supplies such as ground water and lake levels hydrological drought has happened. To summarize, when meteorological drought associates with precipitation failure, and agricultural is connected to soil moisture decrease, hydrological drought is identified with underground and reservoir water level and appears on a longer duration of time. Socioeconomic drought, include the impact of these conditions (meteorological, agricultural and hydrological droughts) to supply and demand of agricultural products, occurs when the demand for some crops exceeds supply, as a result of deficiency in water supply. (Wilhite D. 2000)

1.4. Iran, how vulnerable?

Geographical, climatic and population specifications of the territory, determines the level and domain of the risk as well as the probability of the incident. Conclusively, this will give us a better recognition on the area to foresee the hazard.

Iran expands 1.648.195km² in area, ranking the second largest in Middle East, and 18th among the world. (OCHA 2018). With an estimated population of 81.700.000, it grades 17th in population among all countries and the second in the Middle East. The country's annual precipitation ranges from 680mm in Eastern to 1700mm Western parts. Holding eleven, out of the total thirteen climatic conditions, reveals the country's diverse climatic conditions. Except the mountainous northern and western areas, it mainly holds arid and semi-arid climate, which provides the ground for the precipitation shortages.

Moreover, a United Nations mission reported the water crisis in Iran as chaotic in arid and semi-arid areas of the country which affected life in those areas drastically. (UN Mission Report, 2000). Additionally, the United Nations Resident Coordinator for Iran believed that the toughest human security challenge occurred due to water scarcity in this country. (WorldAtlas, 2019) However, despite the mentioned international warnings on the country's situation, during the past years, the country encountered all different types of drought in various levels. Thought, the whole territory was affected by a dramatic decrease in precipitations or meteorological crisis, the phenomenon occurred more drastically across the domain of the central plateau, with arid and semi-arid climatic situation.

In addition, our knowledge on the country's high population and the average low precipitation level could have created an awareness of the vulnerability to water deficiency. Moreover, inhabitability of most of areas due to mountains and deserts, could have given us a good reason to decentralize cities for a better water management, to prevent such disasters.

Chapter 2.

Man-made Contributors to Water Crisis

We make guilty of our disasters, the sun, the moon, and stars, as if were villains by necessity, fools by heavenly compulsion.

Shakespeare, King Lear

2.1. General Ideas

Having investigated the legal significance of the human right to water in the international sphere, I presented an overarching view on the water crisis by describing different types of drought. Based on the environmental researches by Natural Resources Defense Council, Water crisis, emerges from both natural and man made factors. (NRDC, 2018). While natural causes are beyond the scope of this paper, I will investigate on the man made factors. These human activities, can cause water crisis in two ways. They either lead to lack of precipitation by manipulating climate orders. (dams and deforestation), or can lead to deplete water resources. Over populating cities or unbalanced population distribution belong to the latter strand. Recognizing these causes, will help to understand to what extent the issue has been preventable. In the proceeding section, I will scrutiny on these causes.

2.1.1 Un-balanced Population Distribution

As previously described, socio-economic drought is embodied by imbalance in water supply and demand. Regional population blast in two ways may lead to drought: Firstly, the speeded-up water consumption, can deplete ground water resources, which is called hydrological drought. When Less water is remained for agricultural purposes, this shortage will be compensated by lake waters. So, as the second adverse impact, over population can dry lakes which took years to fill. (NRDC, 2018).

Iran has faced a dramatic population growth during last decades, regarding the fact that the population has raised by more than double since 1979 (Islamic revolution). In over-populated provinces, there is an imbalance between the regional water supply and demand. As a result of fast and increased urbanization and migration from rural to the large cities, urban areas hold 70% of the

whole population. (Madani, K, 2014) The river Zayande Rud (Isfahan province, central Iran), once the country's largest river, dried out through continues and accelerated water removal, to meet the urban and agricultural requirements of some neighboring provinces (Murray, R.H. et al, 2002), and it currently remains dried during long hot seasons.

Recognizing the fact that an extensive portion of the country is either mountainous or desert, reveals that these areas are not habitable. This will necessitate us to be cautious about the population distribution in the remaining habitable areas, and avoid centralization. Contrastively, more than two third are centralized within the large cities and not still evenly through the whole habitable areas.

Seemingly, the role of the big cities municipality is well recognized, granting a construction permit to the increasing number of public and residential units, these organizations induced the cities over-population and centralization, leading to deplete the regional water resources and water crisis accordingly.

2.1.2 Deforestation

Deforestation, is recognized as another contributing factor to the incident. Altering the ecosystem structure, it acts as a reducing factor for precipitation. Normally clouds are formed through the released moisture from vegetation and trees to atmosphere. On the absence of forests and vegetations, there will be less humidity to form the clouds and rain, and consequently the precipitation decrease will be more probable (Meteorological drought). Simultaneously, deforestation may degrade soil and reduce its ability to absorb water, so it dries faster and can induce agricultural drought. Meanwhile, less water is restored in underground resources (hydrological drought). (NRDC, 2018) (Hajjabbasi, M.A. et al, 1997) Geophysical researches detect an enormous impact of land use change practices such as deforestation on precipitation level, as it affects evaporation and cloud formation. The climate modeling based research, approves this impact even to the remote regions. (Werth D., et al, 2002, p2,5,6)

The country has undergone several cases of deforestation in northern and western parts. However, an authentic report shows that the forest coverage in Iran currently holds for 14.2m hectares, which

shows a great reduction comparing to 19.5m hectare in 1942. the report shows the majority of the trees are logged illegally, and some belong to the rare species. (TehranTimes, 2018)

2.1.3 Dams

Dams as the blocking tools to water, change the river's flow and can cause environmental impacts. They change amphibious life and disarrange the river's ecological system. They some times sink the forests in to water and consequently accelerate desertification. (Zafarnejad, 2009) Iran ranks the third in the world on the number of dams. According to Iranian water management organization, the total number of non-border dams of Iran reaches 1041. (Daminfo, 2019). Dams are normally built to compensate the water shortage, however, not only it has not helped to resolve that, but has deteriorated the issue due to deforestation, and ecological transformations.

For instance, the lakes Urmia and Bakhtegan dried due to dam construction. The dam built on the rivers flowing to the Lake Urmia in the north western Iran, and the former the largest lake in middle east and sixth largest saltwater lake on earth, caused it to diminish to 10% of its original size. (Stone, 2015). Additionally, the dam on Kor river significantly reduced water flow into the lake Bakhtegan, once the country's second largest lake, beside increasing its salinity and endangering the wildlife habitat, caused the lake to dry. (Iran Daily, 2007) .

Admittedly, dried lakes affect climate negatively. Due to the reduced water surface less water is evaporated to form the cloud and consequently the rainfall level drops (meteorological drought). Hence, dams when constructed unstudiedly can affect precipitation level and cause water crisis. In this part, the main causes of boosting water crisis in Iran are discovered. Obviously, the contributing factors have been manmade and subject to avoid.

2.2. POSSIBLE OBJECTIONS:

2.2.1 A Discussion on Development

In this paper, elements such as over-populated cities, as a result of urbanization, deforestation and exceeded dams, are recognized as contributing factors to the incident. However, Some may argue

and recognize them as symbols of development. It may be argued that the increasing the number of constructed dams, centralized cities are features of development, as the industry flourishes economy. It is also discussed that in order to attain development, we require to grow features of modern civilization like roads, skyscrapers, malls, etc. as much as possible, and some times it is needed to substitute more forests and natural habitats by these features.

Generally, development in its superficial form, means economic growth, and economic growth in many cases disregarding environmental concerns, inflict harms to the natural climatic orders. For some, manufacturing excessive number of cars, building more skyscrapers, apartments, shopping malls and even dams might seem symbols of development due to economic growth they entail. However, as these ventures (discussed in chapter 3), are done mostly through destroying green areas, deforestation, stopping rivers and making them to dams, they endanger human basic needs and may be counted as the counter-development factors. In other words, human true development comes through a set of cases which produce his well-being (the ten capabilities), while the features of modern development, in contrast, endangering environment and human wellbeing, jeopardizes development.

Here, it is needed to further explain the deviated and misleading concept of development in modern world. In this respect, Callicut and Mumford have a helpful argumentation on development: they assume that “development” has shifted from “subsistent-oriented” to “ money-oriented” progress. They further emphasize that the word encompasses urbanization and industrialization, which is equal to replace forests, wild life and natural reservoirs by roads, malls and buildings, which are constructed by lifeless materials such as concrete, asphalt and glass, to the expense of minimizing the green areas and forests. (Callicut et al cites on O’Neal et al. 1997), However, Costanza and Daly try to distinguish the concept of development from economic growth, to their account, growth means getting more matter and energy through the economy, while development consists of obtaining human satisfaction out of each unit of matter and energy. (Callicut, Mumford, cite on Costanza et al, 1997) (Costanza and Daly 1992)

2.2.2 Skeptical Environmentalists

Environmental debates and issues can often be controversial. While the world’s environmental scholars speak out on the human activities interfering the natural climatic order, and insist on the disrupting role of human on the the current climatic issues few others, counter arguably, have a

skeptical account on accusing human as the main culprit. Bjorn Lomborg, the founder of Skeptical environmentalism, and the author of *Skeptical Environmentalist: The True State of the World*, (Lomborg, B. 2001) maintaining a cost-benefit approach toward environmental issues, agrees that there are not enough supported statistical analysis to connect the issues like declining energy resources and deforestation, species extinctions, water crisis and global warming to human activities. Moreover, he claims the environmentalists diverted potentially beneficial resources to less deserving environmental issues in ways that are economically damaging. Moreover, he argues that the economic costs of legislative restrictions that aim to slow or reverse environmental issues, are far higher than the alternative of international coordination.

To confute Lomborg's point of view, suffice to say that his analysis is cost benefit based, as employed in economics and social sciences and governmental policies. The cost benefit analysis seems to be an unfitting touchstone to be used in environmental issues. When these issues endanger human health, and human health is priceless, they need to be eradicated in any cost, no matter high or low. In fact, he is setting an economic value on a priceless item which is human life.

Skeptical environmentalists argue that the majority of environmental problems like pollution, water shortages, deforestation and species loss, population growth are area-specific and highly correlated with poverty and can be solved via economic and social development.

To counter his arguments, I have to add that economic growth is far away from compensating environmental losses, for example no economic profit will be able to mitigate the harms of a lost forest. According to a UN Report, the water cycle is affected by deforestation. Trees extract groundwater through their roots and release it to the atmosphere. When part of a forest is removed, the trees no longer release this water, resulting in a much drier climate. It reduces the soil humidity, groundwater as well as atmospheric moisture and leads to lower water intake for trees to extract. (UN Report, 2001). Further, There is a worldwide consensus on the impact of deforestation in releasing carbon to environment, resulting to harmful effects. As Deforestation is a contributor to global warming, it is cited as one of the major causes of greenhouse effect enhancement. (Fearnside, P. 2004).

To sum up, in this chapter, the manmade contributors to water crisis in Iran were investigated. As mentioned, a set of human actions or influences to the environment, contribute to the incident. They

either manipulate the climatic order and reduce the level of precipitation, (contributing to meteorological drought, or deplete water resources (contributing to hydrological and agricultural drought). Admittedly, stopping these human actions can be helpful in preventing the incident. So, drought has not been a simple lack of rainfall occurring due only to natural causes, but a rather foreseeable incident.

Chapter 3

Drought Implications

I will not leave my country, nor will I surrender. Only through hardship, sacrifice and militant action can freedom be won. The struggle is my life, I will continue fighting for freedom, until the end of my day. *Nelson Mandela*

3.1. Socio-economic, Psychological Implications

As far, throughout the previous chapters, the significance of access to water and therefore enjoying enough precipitation to human and various types and levels of the crisis, as well as the country's vulnerability to the incident are investigated. Furthermore, those human interferences to the environment whether reducing the precipitation amount or depleting water resources, were discussed.

In the current chapter, I will draw on the multi-dimensional effects of water shortage on various aspects of people's life, to illuminate implications people are challenging with and depth of it, also to make these harms tangible to the reader. Scoping the emotional side of the incident's impact, will make the ethical essentiality of the access to water perceivable.

The incident drawbacks which occurred in the distinguished dimensions of economic, social and psychological aspects of life, although may seem separate, they are intertwined and overlapped. In fact, the environmental effects, produce economic one as it affects agriculture, and the economic impacts cause social and consequently psychological impacts. Undoubtedly, drought has not been the sole contributing factor to the social and economic implications like migration to cities or ill-health, and the issues are raised through a set of interacting reasons embedded in the country's managerial structure, but it has been able to deteriorate them.

A research by Fars Research Center of Agriculture and Natural Resources on the socio-economic impact of the incident on rural areas, (Keshavarz M. Et al, 2011), reveals the vulnerability of the residents. Applying the direct interview method, it clarifies how the ruralists have been experiencing the economic, social and psychological effects of the incident, in a broader extent,

comparing to urban residents. Lack of precipitation made a great deficit to the farmers income, due to huge reduction in yielded crops, insufficient and low quality water and reduced cultivating area. In addition, the water crisis affected both the livestock and the income out of them, affecting the dairy products. An interview by united nations technical mission to households in Hormozgan province, reported a loss of the majority of live stocks. (OCHA ,2000). The research demonstrates that in many cases, they had to sell their agricultural machineries and livestock to subsist. However, having not supported by bank loans, some, had to borrow individuals, paying very high interest rates, and some others had to let their lands. Moreover, economic issues entail social and psychological harms. Health problems and migration to large cities, were among the social implications emerged out of the crisis, or were deteriorated by it. Consequently, feeling anxiety, anger and despair due to economic pressures and its social outcomes, placed a huge psychological burden on them. (Keshavarz M. Et al, 2011)

3.2. Possible Measures

In the similar situations, the mitigation and adaptation strategies recommended by the United Nations water development program, are of great help. Based on the united nations world water development report, (WWDR4, 2003, p293-296), the crisis can be handled through couples of pragmatic adaptive procedures. The measures include computer-based climate modeling methods to virtually anticipate the prevalence and probability of the incident. It is also applied to assess the residents vulnerability to minimize risks through preparedness plans strategies. This include anticipating the induced water crisis due to incompatibility of water supply and demand. Efficient irrigating methods and avoiding leakage can preserve the ground water and avoid hydrological and agricultural drought as well. Moreover, Desalination, and water reuse could be the effective alternatives to preserve agricultural water and to prevent agricultural drought as well. Adopting the mentioned water management measures by The Iranian Water and Waste water Organization, accompanied by the relevant Municipalities could prevent or reduce crisis effects, and the harm affecting people, to a large degree.

However, presenting a plausible solutions to the incident, initially requires to remove the contributing factors which are recognized as human interferences. Evenly distribution of population within the habitable area, and limiting the urban population, can preserve the ground water resources and prevent water depletion within reservoirs and rivers. Rebounding some of dams by restoring wetlands and rivers can have the similar effect. By expanding water surfaces, more water is exposed to evaporation to form the clouds. Forests affect precipitation similarly. Reforestation can be a proper way to boost the vaped water from leaves. Hence, Forests, restored rivers, (from dams) and lakes, can rearrange the climate order to a normal level of precipitation, and avoid meteorological drought. As United Nations water development program reports: Forest, grasslands and wetlands, as parts of ecosystem, are the core to water cycle. The right performance of ecosystem, guarantees the global freshwater. So, a sustainable water management is obtained through recognizing water cycles, and realization of forests and wetlands as the key components of it. (WWDR4, 2003, p69)

The Iranian Environment Protection Organization, for permitting the exceeding number of dams, and the relevant municipalities for imbalanced distribution of population, and Iranian Organization of Forest, Range and Watershed, and the Environment Protection, for neglecting forests and all the deforestation practices are responsible.

Chapter 4.

Theory and Analysis

Knowledge is power, information is liberating, education is the premise of progress, in every society, in every family.

Kofi Annan

4.1 General Ideas

Having inspected the contributory factors to water crisis in Iran, also examined the adverse impacts stemming from this incident to the people's life, I presented the possible measures the authorities could take to prevent or exit the incident. Through this section, I will proceed on the normative approach, to see, how the authorities failure to avoid or exit the incident can be counted as depriving the people from their basic rights, and is considered a moral issue, and requires them to take necessary measures to stop and control it.

The first and foremost example of drought being a moral issue, is a belief among some traditional and western societies, which regard it as a punishment for the past human misdeeds, an act of God, to remind us of the need for moral vigilance. (Heathcote, R.L. 2016, p171)

The case might seem true depending on our definition of the misdeeds. According to what are discussed and investigated upon on the previous chapter on causes of drought, the word misdeed in the environment arena, consists of what human has done to the nature intentionally, including unharnessed development, immense population growth and uneven distribution and, fossil fuels over-consumption, all of which produced drought. Misdeed is also applicable when a disaster like drought is preventable, foreseeable and manageable and authorities neglect to do enough, also when the people's vulnerability and harm to drought consequences, is easy to mitigate by the statesmen through some managerial procedures, but they still refuse to do that. Therefore, the above sin-based approach to drought is not acceptable unless an explicit, well-explained definition of the sin or the misdeed is presented.

4.2. Water, a basic need?

Here, I come closer to the corresponding component of drought: water. Human being's dependence on water has a long antiquity. From the very beginning of our creation as a germ cell, then as an embryo, till our last moments, it is considered as a significant element for subsistence. The vast domain of its application varies from physical growing of body to food cultivation, and from electricity generation to sanitary purposes. It also helps the human economy to develop, and industry to flourish, and physical health to persist and societies and cultures are established based on it. (WWDR, 2015)

As stated earlier (in introduction), the United Nations General Assembly issued a resolution in which, recognized it as a human right and necessitated the states to provide clean drinking water and sanitation for all. Hence, this basic need and a human right, plays a significant role in human evolution and supplying life.

4.3. Normative Approach

Investigating from a social and political perspective, we can provide a more sophisticated analysis out of Martha Nussbaum's capability approach on the matter (Nussbaum, M. 2000). Though, the theory is somehow rooted to Aristotle's works, and was revised and complemented by Amartya Sen during modern times, the philosopher Martha Nussbaum and a number of other scholars further developed it. Here is a brief presentation of the theory:

1. *Life. Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living.*
2. *Bodily health. Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter.*

3. *Bodily integrity. Being able to move freely from place to place; to be secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction.*
4. *Senses, imagination, and thought. Being able to use the senses, to imagine, think, and reason—and to do these things in a “truly human” way, a way informed and cultivated by an adequate education, but by no means limited to, literacy and basic mathematical and scientific training.*
5. *Emotions. Being able to have attachments to things and people, to grieve at them to experience longing, gratitude, and justified anger. Not having one’s emotional development, obliged by fear and anxiety.*
6. *Practical reason. Being able to form a conception of the good and to engage in critical reflection about the planning of one’s life. (This entails protection for the liberty of conscience and religious observance.)*
7. *Affiliation. (A) Being able to live with and toward others, to recognize and show concern for other human beings, to engage in various forms of social interaction; to be able to imagine the situation of another. This capability entails freedom of speech and nondiscrimination and non-humiliation in terms of one’s sex, race, religion, national origin,*
8. *Other species. Being able to live with concern for and in relation to animals, plants, and the world of nature.*
9. *Play. Being able to laugh, to play, to enjoy recreational activities.*
10. *Control over one’s environment. (A) Political. Being able to participate effectively in political choices that govern one’s life; having the right of political participation, protections of free speech and association. (B) Material. Being able to hold property (both land and movable goods).*

4.4. The Theory Connotation

As it is well understood, the capability approach holds a multi-dimensional attitude toward human and his needs. It begins with the human immediate physiological demands like the nourishing, drinking, shelter and sexual needs, in order to be physically secured. Then it spreads to human's mental essentials, his need to develop his imaginations and thoughts, fulfilling his logic and rationality, in order to grow intellectually and mentally. Of course, the mental flourishing she aims, is far beyond the education and not limited by that. Then the theory is evolved to emotions, the need to grow and show emotions from happiness to sadness or anger without fear of violence and negatively judged, also the need to grow attachments toward anything they choose. The next set of needs are the need to decide upon ones life independently. Human is free to recognize his goods and decide upon them, also he needs to be protected and secured in his beliefs and religion and can liberally choose them. As it is recognized the needs are developing from the basic to more additional and extra ones. Then he needs to grow affiliation and social interaction toward others, or to grow both mutual understanding toward others and respect and concern toward them, also to work in favor of others just for the sake of humanity. The need to respect and be respected regardless of the other's origin, sex, race and religion, etc. Afterwards, human needs to love the animals and plants, and grow emotions toward the world of nature. He has always been dependent upon his environment, whether emotionally or physically, so he has the right to relate and unite to nature and enjoy it. After the need to recreational activities, he requires to have control upon his surroundings, whether in the political arena, in form of free association in political affairs and political participation, or a dominance in his personal belongings. A concept of control over the natural environment can be derived here as well.

4-5. How Does The Theory Work?

In capability approach theory, the discussion on functionings and capabilities are central. Amartya Sen in "Inequality Reexamined" clarifies the distinction between them. He considers the functionings as "being and doing", while capabilities as "opportunity to choose". For instance, he regards "being healthy, secured, happy, or having a good job," as different functionings, while our selections out of different functionings are regarded as the capabilities. In fact, capability is the freedom to obtain a valuable functioning. However, he regards "capabilities", as a combination of different functionings and the freedom to achieve them.(Sen A., 1992)

Nussbaum, considers a political system as authentic, only if it provides the minimum of ten capabilities to all. Furthermore, the theory holds a comparative method to evaluate the quality of life. It assumes that in comparing societies and evaluating them for a minimum justice, the question is: “what is each person able to do or to be?” The theory assesses not only the society’s well being, but the accessible and applicable opportunities to each individual as well. Hence, to enjoy a decent life, nations are entitled to hold a threshold of all the cases. (Nussbaum, M., 2011, p18) It is understood that the people require to hold the functioning of being healthy, have a decent life, to be secured economically and socially. In this respect, they also need to maintain some other functionings like self-improvement in any way they prefer, also the opportunity to apply these functionings in accordance with their preferences in life.

However, when the theory is patterned to our case study, it is observed that people lack not only some of very basic functionings, but the opportunity or freedom to use them either. On the other hand, if the basic question of capability approach is based on “what is each person able to do or to be”, the question is what do people *can* do or *can* be in water crisis situation? In other words, if one aspect of the capability approach is to respect people’s choice upon their preferences, would there be enough choice or any preference for people over their affairs in an urgent crisis especially when (as earlier discussed) various harmful impacts of water crisis affects all aspects of the individual’s lives including social, economic, psychological and health?

Conclusively, when a physiological demand like water, is regarded as an immediate or basic need human cannot tolerate its deficiency, then any kind of shortage, necessitates the authorities to urgently compensate and fulfill it. Physiological needs, due to priority, have to be fulfilled predominantly over other needs. Correspondingly, it makes a duty for the state to satisfy the nation’s basic need, and ban the so-called institutions practices which led to water crisis. Also, it entitles citizens to claim for their endangered natural right, since, according to what is discussed earlier, some organizations including Municipalities and Environmental Protection organization, etc, made decisions and permitted practices which contributed to water crisis.

In this respect, the so-called institutions plans and practices are assessed according to their influence on people’s quality of life. For instance, does a practice like centralizing population and over-urbanization, is in favor of people’s health and welfare or it imposes effects on environment including water resources? Will modernizing and development to the price of ruining wild habitats, wetlands and forests in form of more buildings, dams, etc., benefit the people’s physical, mental and

emotional wellbeing (as stated in the theory), or do they diminish quality of life? Do the activities of these governmental organization aid people to access enough food, water and other wellbeing necessities and capabilities or do they limit this right by not to prevent the institutions to negatively affect the environment?

To fulfill some of these capabilities, the main factor would be the financial resources, but for others (like the right to water), water management measures is required. If the policy makings are altered to be environmentally friendly, and less nature-manipulating ones, then, the nation would enjoy the capabilities they are entitled for.

The discussed facts have well clarified the ethical issue, concerning the water crisis in Iran. As it has been induced, and detonated by the mentioned practices, it has been avoidable. So the incident has produced an ethical concern for the relevant organizations which made those practices possible.

4.6. What Distinguishes Nussbaum's Theory?

The Nussbaum's capability approach possesses specifications justifying my choice of theory. The most differentiating attribute of the theory is that it pays attention to various aspects of human, it regards physical, mental and social dimensions of human at the same time with the emotional, political and cultural features, presenting a multi dimensional, inclusive criteria for a decent life. therefore, it can be applied as a proper pattern to assess the different types of harms water crisis has imposed on the resident's life.

Furthermore, as Nussbaum (2011) assumes, the theory provides a comparable pattern of basic social justice to assess life quality. Capability approach can be applied as a potent criteria for a decent, normal life. Additionally, as Robeyn (2005, p94) clarifies, The theory is defined for human's both individual and social aspects of development. It helps us to understand that the incident not only harms the individual capabilities, but the social ones as well. Admittedly, there is a correlation between the two aspects. As shown through the previous chapter, the individual's economic losses, led to social and psychological losses either. It harmed social interactions, and caused them to migrate and so on. The theory guides us to recognize both individual and societal aspects of harm equally and in a parallel way, as they possess an equal significance.

Both Nussbaum and Sen, believe in the enabling and authorizing aspect of theory, as it gives the opportunity and freedom to choose the preferable life. The theory, entitles human to choose and apply the opportunities to the extent they choose. In other words, it is the multiplicity of the capabilities which provides people with autonomy. However, In this case study, the human's autonomy and freedom in enjoying a decent life (as defined in theory) is restricted due to crisis situation. Beyond freedom and autonomy, the permissive nature of the theory, grants a sort of "dignity" to humanity, as the concept dignity is embedded in and accompanied by Freedom and autonomy.

To Nussbaum, human growth and development is the ultimate goal possessing an intrinsic value while, and anything which supports him to reach this ultimate goal possess the instrumental value. _Robeyn (2005) refers to them as means and ends of human development. Hence, Functionings and the capabilities which are the essential means to reach human to that ultimate goal, are instrumentally valuable. In this respect, the theory helps us to demonstrate the significance of fulfilling the physiological needs, enjoying a minimum of basic needs, including the need to water as the instrumental functionings of the ultimate goal of human growth and prosperity.

A very intriguing point on the theory is that it signifies all the human needs rather equally, although they are expressed through numbers. Nussbaum puts a rather same value to the mental, ethical, emotional, recreational, social and political needs as to the physiological ones. Seemingly, the mental and spiritual requirements are almost equally valued as the bodily needs. It holds that having a decent life, requires that the political order, considers all the individual's needs in a parallel way, and not only the physical ones. So, it ascribes a heavy responsibility on the countries managerial systems. It can be understood that water management, in a way that fulfills all the physical needs, is a very tiny responsibility comparing to the fulfillment of the whole human requirements pointed out in the theory.

A justice concept is derived out of the theory as well. It entitles all the individuals equally to enjoy the basic needs, as well as the public goods. Robeyns (2005) in this respect, emphasizes on the theory's challenge toward the social injustices as well. As shown, in water crisis situation the rural residents and farmers, whose only source of income is agriculture, are the most vulnerable and prone to risks. The theory ascribes the urgent task to government or public policy to promote the

quality of life for all, as they are capable for them equally, especially in acute conditions when the basic rights of some society groups are jeopardized.

However, Comparing Sen's and Nussbaum's definitions of the approach, it is realized that Sen believes that the assessment of a political order, have to be based on the people's quality of life, what are they able to be or to do? How has it been successful to clear obstacles in a way that people have the opportunity to choose their way of life? But the theory to some extent has been defined differently by Nussbaum. She uses the theory as a scale or a criterion to measure justice and equality between all the members of society. Ingrid Robeyns also approves: "Nussbaum uses the capability approach as a foundation for partial theory of justice, as it presents a formula for the basic social justice, and an assessment for quality of life." (Robeyns, I, 2005, p 94).

4.7. Capability, Utilitarianism, Neoliberalism, an Analogy

Obviously, the choice of development policy, makes a profound difference in ideological hypothesizing. (Nussbaum, 2000, p53) On a comparison between the capability approach and the Utilitarian point of view, the superiority of capability approach is well understood. The utilitarianism seeks for human maximum pleasure, while capability approach theory, stresses on valuable achievements, which are not specifically corporal. Sen (1979) argues that the maximum pleasure demonstrated by utilitarianism, may not be of great value, as some people may be pleased and satisfied with some thing "thoroughly vague" or by "doing nothing", while, due to utilitarianism, they have reached to maximum utility as the maximum pleasure is achieved. However, in capability approach, the scale are the accessible functionings to people and the autonomy to use them, it suggests a decent life, in which, not only basic needs are met, but the people are capable to achieve and develop mentally, emotionally and spiritually.

Additionally, the utilitarianism demonstrates on the average of a nation's satisfaction. The satisfaction level within a society may be high due to the majority's high level of satisfaction, while the minority's low level of satisfaction is not counted. In this respect, Kymlicka (2002, P44) questions "equal treatment" in utilitarianism as well. He believes that this school of thought fails to present the equality, as it neglects the differences in satisfaction, and considers the society's satisfaction in an aggregative form, looking for high level of average satisfaction. According to

utilitarian point of view, the sound of those who are living in harsh situation as a result of drought, the farmers who challenge the situation in rural, might not be heard, as long as many others in urban areas, are well provided with the facilities and are satisfied, while the capability approach regards each and every individual's satisfaction based on the presented model. Due to this theory, no one's preferences and improvements are missed.

Robeyns (2006, p357) expresses the implications to Utilitarians satisfaction in a different way. She also believes utilitarians have used the term satisfaction aggregatively, while within every individual's life, there are multiple aspects of satisfaction. Meanwhile, there are many dimensions in our lives which we may or may not be satisfied with, or we may be satisfied with some, and not satisfied with other aspects. However, (she quotes Nussbaum, that) in capability approach, since we measure each life aspect or dimension separately, no aspect is sacrificed for other or outweighs it, so the term satisfaction or pleasure can not be calculated aggregatively.

Based on the capability approach, we can investigate on the impact of the incident on each and every aspect of people's life: it assesses whether do they subsist in an acceptable form? are they provided with enough physical, social, and mental essentials for a decent life during the water crisis? Are they in a good psychological and emotional balance in such circumstances? The approach investigates all aspects separately.

Another distinguishing factor for capability over utility, is stated by Sen. As Nussbaum (2011, p54) quotes, Sen calls this as "adaptive preference" and believes, people choose the functionalities or preferences according to their social and personal situation. They learn not to ask or follow what the society has banned them. Similarly, they only seek what the society has made available to them. It seems that the life conditions can block people's minds from wanting some goods. So, the people's preferences are formed and affected by their life conditions. However, the capability approach counts for each and every individual's necessity for a developing, and decent life, regardless of the barriers or stereotypes any society can impose on their individual's minds, regardless of their life conditions and the circumstances such as gender, race, origin, and culture. It treats human equally regardless of any boundary, the situation imposes.

In the case for water crisis, some, might presuppose that the amount of precipitation and climate changes are something beyond human reach and control, and we cannot do anything to prevent, on this way they might admit it as a fate or pre-determined destiny and be completely satisfied with

that. In this respect, Amartya Sen has an argumentation confuting welfarist theories which is valuable to mention. According to him the utilitarian's over emphasis on utility and satisfaction, may oppose to justice and morality. He takes the example of unequal wages between men and women, based on utilitarian's approach, this might be completely acceptable so long as women are satisfied with that, while he calls it as "counter-intuitive and immoral" (Robeyns, I, 2005, p: 96.97). While capability approach, considers all as equal, regardless of their presuppositions and conditions, which should be considered with the same entitlements.

However, neoliberalism, as associated with the liberal School of thought, demonstrates on free market and economy. It supports the policies such as privatization and free trade, and encourages capitalism. It also believes in reducing governmental spendings to increase private sector role in social, economic affairs. Neoliberalism in this way, somehow minimizes the role of states. This will omit the responsive party from the country's management system, resulting to limit states responsibilities toward nation. Here the transcendence of capability approach is better illustrated. The approach never disregards or neglects the state role. Contrastively, it necessitates state to fulfill the nation's rights which are pre-defined through its articles. Furthermore, as Robeyn (2005, p95) discusses, unlike neoliberalism, which supports wealth and capitalism, capability approach advocates justice and equality, without any bias to any political right or left. Consequently, there will be a big discrepancy between the two philosophies in terms of policy makings and outcomes. While economy might form the basis of neoliberalism school of thought, capability is based upon human prosperity and growth in every aspect of life and of course on what humanity necessitates.

4-8. The Challengeable Side of the Approach

Although, capability approach has been noticed as a normative basis and fascinated politicians and philosophers as a model for policy makings, some, question the practical application of the capability approach to politics and empirical domain. Robert Sugden, for example, argues: "Given the extent of disagreement among reasonable people about the nature of the good life and given the unresolved problem of how to set values, it is natural to ask how far the framework is operational." (Sugden, 1993)

To counter this argument, it should be noted that although "good life" is experienced in a number of diverse ways between individuals and groups depending on values, there are a number of basic needs, and tendencies which are common between all, and are set as human rights in general, the

predefined necessities for human development. The theory's mission is to present a criterion for these human rights and entitlements on one side, and the states strategies and decision makings from another. So the theory aims to common and general ideas between human and does not go through the detailed differences between them.

Another criticism Robeyn (2005, p107, quotes Gore 1997, Deneulin et al 2002) concerns about, is that the capability approach, is too individualistic and does not consider individuals as a part of their social environment, connected to others and embedded in social contexts.

To scrutinize this criticism, firstly, it is good to remind that the society is built up by the units of individuals and is dependent on the quality of these units (or individuals). In other words, the quality of individuals life, not only in physical term, but in mental, intellectual and emotional dimensions as well (as specified on the approach), determines the quality of society. So the theory's emphasis on individuals and their needs as basic units of society, seems thoroughly reasonable.

Secondly, many of the provisions of the theory are defined in relation to others. For instance, the provision number five, which emphasizes on "the capability to show emotions", and provision seven on "affiliation to others" and number ten on "control over one's environment", consider individuals corresponding and connections to others.

In this chapter, after examining the significance of enough water and precipitation in human life, I demonstrated on the capability approach and presented a broad and detailed explanation to that, to base my claim. Then I patterned the theory to the issue to resolve it.

4.9 Conclusion

In the current article, the water crisis was particularly discussed within the territory of Iran, furthermore, the interfering factors as well as a devastating aftermaths were inspected. My argumentation in this research apart from the necessity of access to water, was based on two main strands: 1- the human role and responsibility in water crisis. 2- and the ethical issue raised due to that.

The first strand, is based on the human role in creating the issue. As broadly explained, several human made elements were interfering in projection of the incident in Iran, which have been avoidable and mitigable. As examined, population booms in large cities and uneven distribution of that, deforestation in the various parts of the country and outnumbered dams are recognized as the contributing factors. Since they have been manmade and a result of human manipulation to the nature or interference to the environment, they are avoidable or mitigable.

On the second, based on the availability of the incident, it raises an ethical concern. Basically, I argued for the United Nations General Assembly declaration which recognizes the access to water and precipitation as a basic right for the nations to be secured by the states. However, more importantly, I instrumented the capability approach development theory as a normative base to illuminate the necessity of water in human growth and development. As the need to water is considered as a basic need by the capability approach, (also a basic right by the UN), and it is regarded as one of the most crucial means to human development and growth, any shortage endangers his growth. This makes the government morally responsible to provide this right to the nation, therefore any failure in providing this right is considered as unethical. In this respect, since this right is endangered through the human practices, which were supported and permitted by governmental organizations, they must be stopped.

Seemingly, removing the causes of the water crisis, can relieve the incident in a wide range. First and foremost, the municipalities need to dis-centralize large cities to have the population evenly distributed in provinces and resist population booms in large cities. The Iranian Environment Protection Organization is required to have a more strict surveillance and control on forests as the national capitals, the organization should stop permitting dam constructions as well. Furthermore, the Ministry of Agriculture is required to implement a sophisticated water management program, and make a more efficient use of water in agriculture. (Madani, K. 2014) As the agriculture has been the largest consumer of the available water, definitely a more accurate water management in this sector, results to an increased water efficiency and reduced consumption.

Having harnessed the devastating water crisis in Iran, the governmental organizations and authorities can fulfill the nation's ethical right to water. As an ethics and environment advocate, I investigated on water crisis in my country, hoping to present a wider scope to authorities in dealing the dilemma.

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