

MINI- REVIEW PAPER

A brief overview on current environmental issues in Iran

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Highlights

- Environmental problems make human beings vulnerable to natural disasters.
- The current global and Iranian environmental situation greatly needs urgent considerations.
- Community awareness can help to create a more friendly environment for survival.

Graphical Abstract



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Abstract

The environment of Iran is constantly changing in recent years and this issue cannot be ignored. Of the critical environmental crisis should refer to global warming, overcrowding, decreasing natural resources, garbage disposal, ozone layer destruction, deforestation, rainfalls, water pollution, public health issues, and genetic engineering. Men around the Iran are experiencing new and challenging environmental problems daily. Some of these problems are likely to affect the health of the ecosystem, but somehow they change the recent landscapes. The planet is on the verge of a massive environmental crisis. Environmental problems in Iran also make human beings vulnerable to natural disasters occurs currently and in the future, as well. So due to the growing problems of the environment in Iran, this is an emergency situation. Therefore, the current environmental situation greatly needs urgent considerations and many factors to be addressed. By increasing community awareness and concern about issues, it can help to create a more friendly environment conscious for survival.

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1. Introduction

The environment is constantly changing and this issue cannot be ignored. So, the current environmental situation greatly needs urgent considerations. Due to the severe invasion of natural disasters, heat and cold periods, a variety of weather patterns and many more reasons, Earth inhabitants need to be aware of the various environmental problems (Salehi et al., 2018).

In addition, Global warming is now an irregular reality about the present living. Earth Planet is hotter than ever and the inhabitants are at the centre of the crisis. On this basis, Environmental problems make human beings vulnerable to natural disasters occurs currently and in the future, as well. So that, some of these problems are likely to affect the health of the ecosystem, but somehow they change the recent landscapes. So, due to the growing problems of the environment, this is an emergency situation. In case of ignoring these difficulties, then the life end up in disaster and doomed to destruction.

Of the critical environmental issues should refer to Global warming which is now an irregular reality about the present living. Earth Planet is hotter than ever and the inhabitants are at the centre of the crisis. However, the status is not the sole environment issues should be concerned (Farahani and Bayazidi, 2018).

1.1. Major environmental difficulties in Iran

1.1.1. Pollution

To compensate air pollution, water and soil may need millions of years to reconstruct. Exhausted gases from industrial and vehicles are always in the first ranking. Heavy metals, nitrates and plastics are toxic and cause pollution mostly in Iran. Water pollution occurs due to oil leakage, acidic rain, and urban canals and streams. While, air pollution (Table 1) is caused by variable gases and poisons emitted by industries and factories and combined of fossil fuels (Yousefi et al., 2018). Soil contamination is also essentially due to industrial pollutants that deprive the soil of nutrients (Table 2).

Table 1. Air Pollution Mortality in Iran (2012).

Type of disease	%
Heart disease	63
Chronic Obstructive Pulmonary Disease	2
Stroke	28
Acute respiratory failure	2
Lung cancer	5

Table 2. Number of unhealthy days in Tehran between 2012 – 2020.

Year	Days
2012	164
2013	90
2014	98
2015	75
2016	72
2017	49
2018	61
2019	42
2020	55

1.1.2. Global warming

Ecological changes like as global warming are attributed to the human activities lead to greenhouse gas emissions. Global warming increases the temperature of the oceans and the Earth surface and as a result, the higher polar ices melt and increase the level of the sea (Ebadi and Hisoriev, 2018). Besides, Abnormal patterns of the environment also cause power foods, heavy snowfall and Desertification, as well (Figs. 1 & 2).

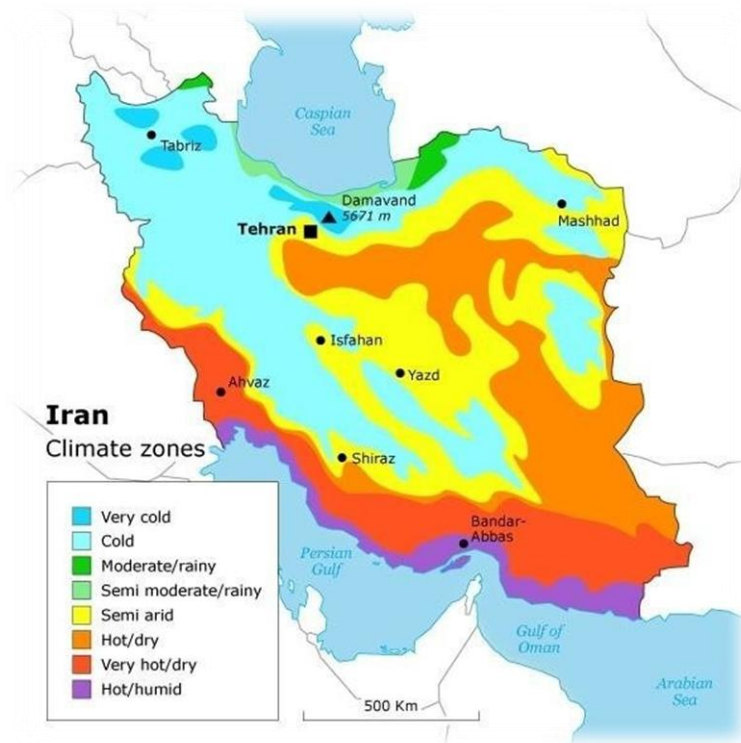


Fig. 1. Climatic map of Iran (Yousefi et al., 2019).

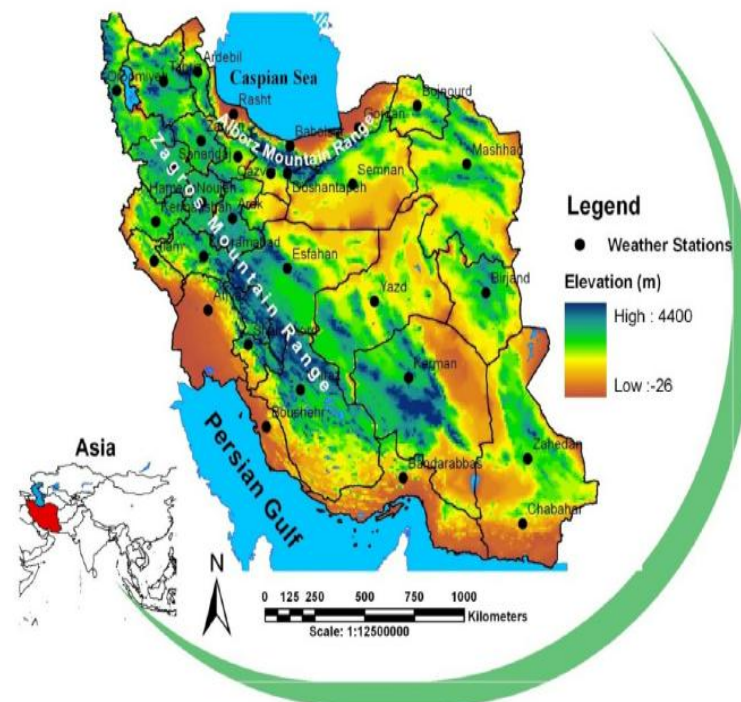


Fig. 2. The overall Topography map of Iran (Yousefi et al., 2019).

1.1.3. Overcrowding

The population of the Iran as well as the world is on a steady rise, which leads to a lack of natural resources such as food and shelter. Currently, the shortage of natural resources in the not developed and developing countries is creating tension. In concentrated agriculture; the use of chemical fertilizers, pesticides, and insecticides to produce more nutrients, damages the environment. On this basis, Overcrowding is the main currently an environmental issue in Iran (Tavakol et al., 2017).

1.1.4. Decreasing of Natural Resources

Decreasing of natural resources is of great concern of life in Iran. consumption of fossil fuels stimulates greenhouse gas emissions and as a result global warming. men all over the world are trying to adapt renewable resources into the solar, wind, biogases and Geothermal energies (Ebadi and Hisoriev, 2018). cost of infrastructure and maintenance of these resources decreased by the recent years (Fig. 3).

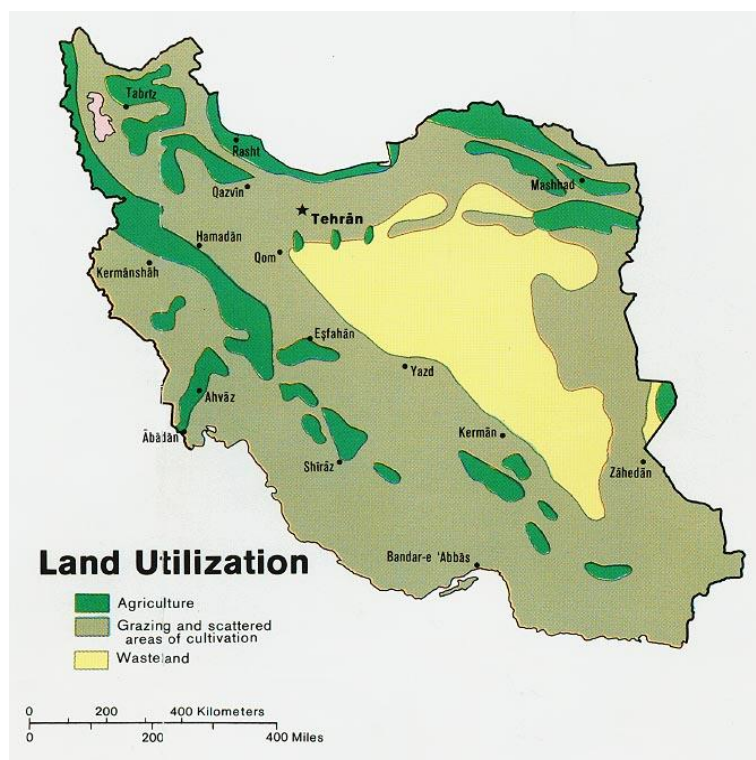


Fig. 3. The Land Utilization map of Iran.

1.1.5. Garbage Disposal

Excessive consumption of resources and plastic productions generates global waste crisis. developing Countries are usually known for excessive wastes and exporting them in oceans and less developed countries (Mohammadiha et al., 2018). Nuclear waste disposal has many health risks, that developed recently in Iran based on nuclear activities. Also, plastic, fast-food, packaging and worthless electronic devices threat human health (Table 3).

Table 3. Components of municipal waste in Iran.

Kind of Waste	%
Biodegradable waste	79.5
Paper and cardboard	9.38
Plastic	2.5
Wood	2.5
Glass and pottery	3.33
Textiles	1.43

1.1.6. Deforestation

The forests are of essential resources of natural cleanage of carbon dioxide and produces fresh oxygen. Most northern part sof Iran and currently about 30% of the earth is covered by the forests. They also regulate temperature and rain. However, in recent times, for instance, in Panama, as the increase in population, the creation of shelter, food and clothes was in shortage in forests (Ebadi et al., 2019). Deforestation means removing green cover for commercial, industrial and residential purposes (Figs. 4 & 5).

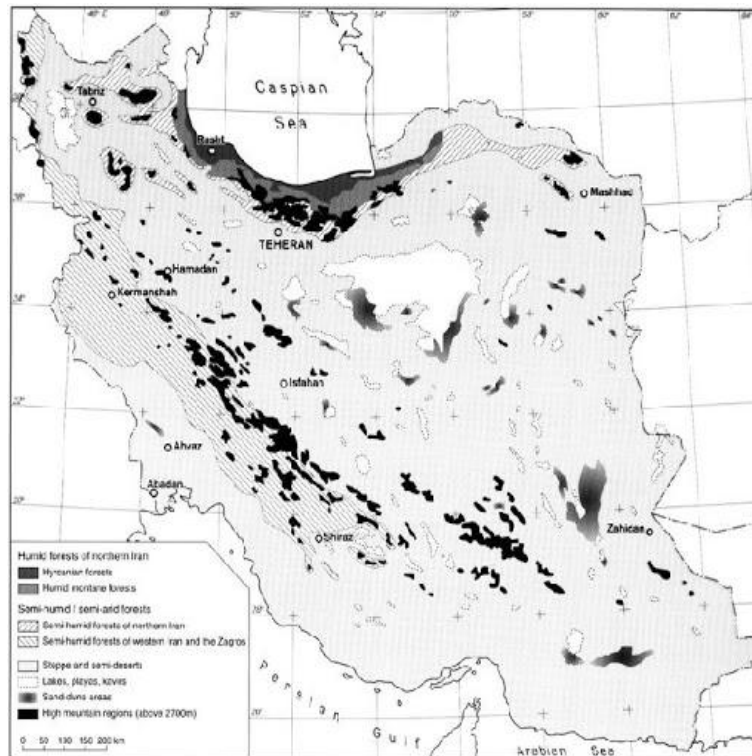


Fig. 4. The Forest distribution map of Iran (Ebadi et al., 2019).

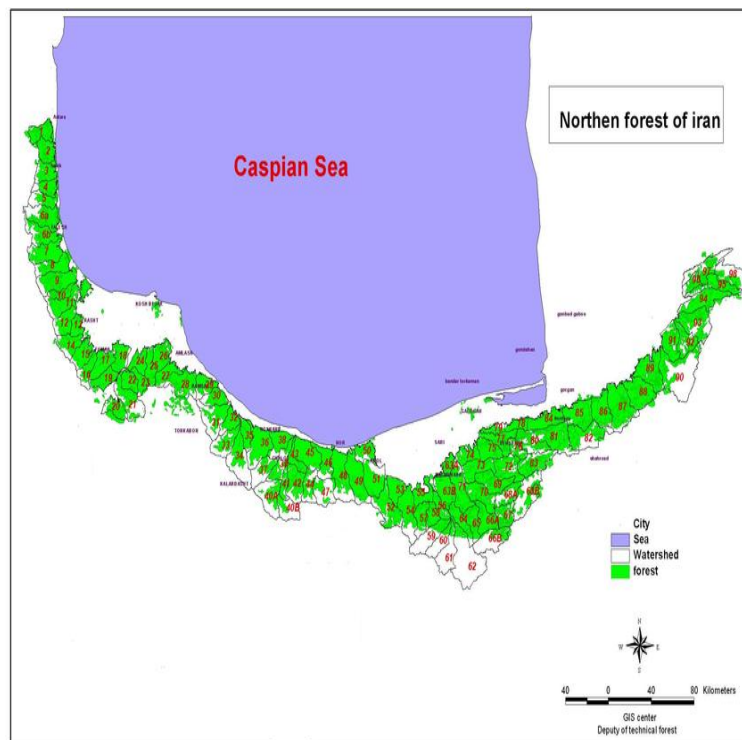


Fig. 5. The Hyrcanian Forests coverage of Iran (Ebadi et al., 2019).

1.1.7. Acidifying the Oceans

Excessive Production of CO₂ affect directly on Acidifying the Oceans. 25% of CO₂ is produced by humans. During recent 250 years, this amount increased and may reach to 150% until 2100 and had a primary effect on Hodgson and Plankton, which is similar to that of Anbarpocia, that in Iran resulted for technical activities by many factories (Ebadi and Hisoriev, 2019).

1.1.8. Ozone Layer destruction

An invisible protective Layer is a layer of metal that protects the surface of the earth towards harmful radiation. The chloroform bromide contamination in chlorofluorocarbons (CFC's) affects principal layers of Ozone. Reaching to the top of the atmosphere, they create a hole in the Ozone. The biggest hole was recognized in top of South Pole. CFCs are widely abandoned in many industries and services. Because the ozone layer emits harmful UV radiation and diffuses to the earth surface, it is of great value. One of the most important environmental issues now is the Ozone layer destruction (Mohammadiha et al., 2018).

1.1.9. Rainfalls

Rainfalls can occur due to special contamination at atmosphere. Burning of fossil fuels or the eruption of volcanoes or plants that release carbon dioxide and nitrogen oxides into the atmosphere also leads to Rainfalls. Acid rain is a known environmental problem that could adversely affect animals, aquatic species and the human beings as well. Shortage of rainfalls caused the main environmental problems in Iran (Yousefi et al., 2019).

1.1.10. Water Pollution

Pure Drinking water is poorly rare. The water is now a considerable economic and politic item so that human population struggles to achieve the water resources. One of the recommended alternatives is the use of sweetening process. Industrial progress Enhanced increasingly contamination in sea, river and oceans that is potentially great threat for human health. Algae biomass production techniques are nowadays used in special ponds for wastewater treatment (Figs. 6 & 7).



Fig. 6. The Schematic map of Agricultural pollution for water sources of Iran.

1.1.10.1. Overview of Algae Wastewater Treatment

Algae play a very important role in wastewater treatment, for a symbiotic relationship with bacteria. The algae, in the presence of sunlight and minerals, has begun photosynthetic activity, resulting in the production of new algae and dissolved oxygen. Existing bacteria can use dissolved oxygen to oxidize the organic matter in the sewage (Diagomanolin et al., 2004).

1.1.10.2. Key notes in prevent of water pollution in Iran

Urban dispersal refers to population migration from densely populated areas to low-rural areas that make cities more populated in rural areas. Population dispersal causes erosion, increased traffic, environmental and health issues. The growing demand for land acquisition causes replacement of the natural environment

including a variety of plant and animal species. It is true that water pollution cannot be completely prevented, but the following key points can greatly slow its progress:

1. Prevent wastewater from entering the rivers.
2. Educate people, especially farmers.
3. Wastewater treatment.
4. Save water, which no longer requires contaminated water treatment.
5. Lack of use of fertilizers and agricultural insecticides.
6. Applying a Green Infrastructure Approach to Improve Runoff Management Capacity throughout the System, and Reduce Oil Overheads in Refineries (Figs. 8 & 9).
7. Repair and replacement of faulty equipment.
8. Increase the hydraulic capacity of the sewage collection system.
9. Burying manure in the soil for six months (Ostad-Ali-Askari et al., 2017).



Fig. 7. Use of Algae pounds for water purification.

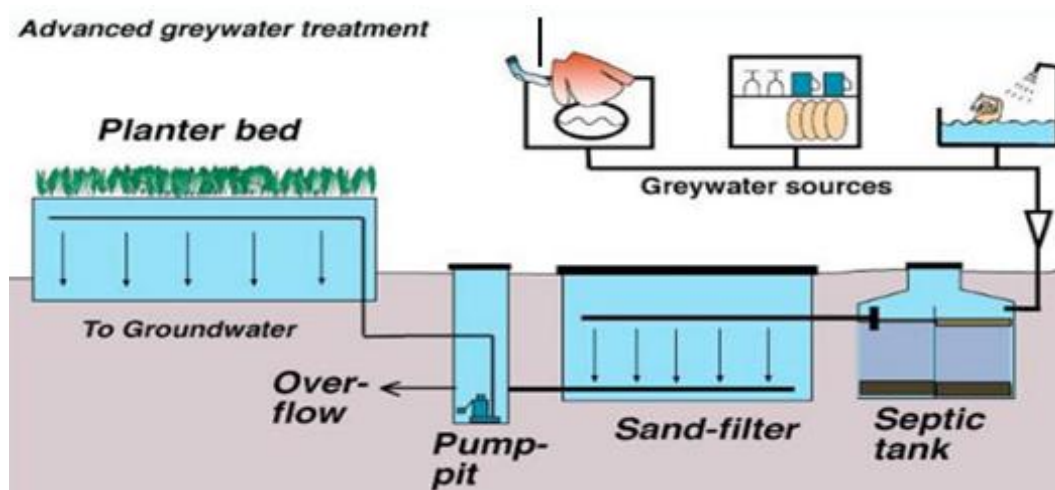


Fig. 8. General and schematic system of waste water treatment complex in Iran.

1.1.10.3. The most important water crisis in Iran

✓ *Water shortage* : According to the trend of controlling water resources, it is estimated that two-thirds of the world's population will face water shortages by 2025.

✓ *Lack of access to clean and hygienic drinking water*: Despite international efforts, it is estimated that 2 billion people lack access to clean drinking water and 4.9 billion lack access to clean water.

✓ *Water quality control*: Industrialization, urbanization, metropolitan growth, and intensive agriculture have all caused pollution of waterways, groundwater, and decrease of water quality.

✓ *Interruption of Water Resources Management Network*: National and international water resources management plots a disruption path. Instead of focusing on water constraints and the intrinsic relevance of the components of the water cycle in nature, it focuses solely on providing immediate needs.

✓ *Dedication of dedicated funds*: Water supply, irrigation, drainage, flood control, treatment and watershed protection systems are currently facing financial difficulties due to lack of investment.

✓ *Lack of awareness in decision-makers and people*: The illusion of abundance of water and quality without changing water sources has caused public confusion. This illusion can go on for so long that the scarcity of water resources becomes a reality and reduces quality to an unusable level.

✓ *Endangering the Peace and Security of Communities*: Water is an essential element in the socio-economic life of the community and its surroundings. Declining access to water is increasingly threatening peace and security in many parts of the globe (Tavakol et al., 2017). Many countries facing water shortages are suffering from political unrest, social tensions and public unrest (Fig. 10).

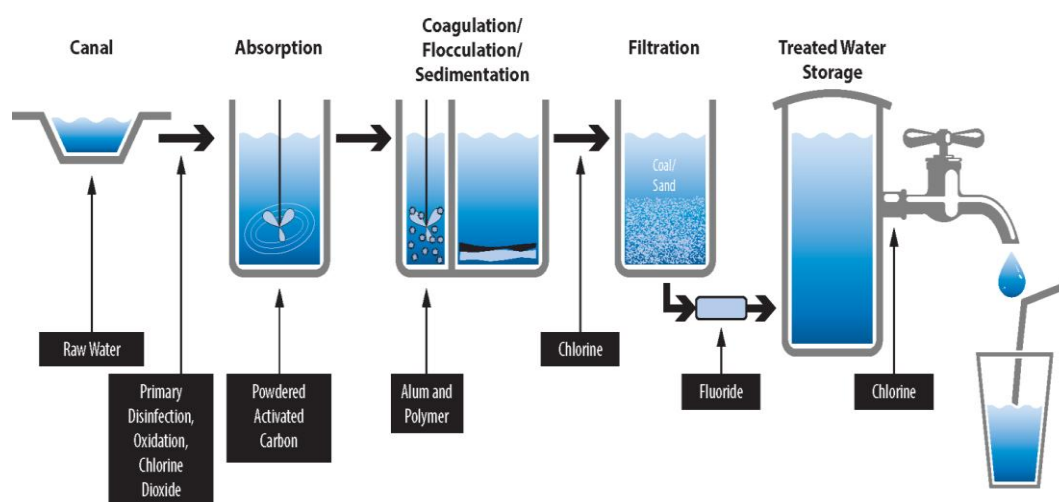


Fig. 9. Common process of raw water treatment for drinking in Iran.

1.1.11. Urban dispersal

Urban dispersal refers to population migration from densely populated areas to low-rural areas that make cities more populated in rural areas. Population dispersal causes erosion, increased traffic, environmental and health issues. The growing demand for land acquisition causes replacement of the natural environment including a variety of plant and animal species (Farahani and Bayazidi, 2018; Hosseini and Shahbazi, 2016).

1.1.12. Public Health Issue

Currently, environmental problems created lots of risks for humans and animals. The biggest risk to human health is contaminated water. Rivers contain a large amount of toxins, chemicals, and diseases. Contaminants cause respiratory infections such as asthma and cardiovascular problems. Rising temperatures cause infectious diseases such as dengue fever (Salehi et al., 2018).

1.1.13. Genetic Engineering

Genetic modification of nutritional material using biotechnology is Genetic Engineering. Since genes can be transferred from an antigenic plant to the final plant, therefore, genetic modification of nutritional material enhanced poisons and diseases. Genetically modified crops can create serious environmental problems that can be proven to be genetically engineered for toxic wildlife. Another disadvantage is the increasing use of pesticides, which can make plant insects resistant, and as a result makes organisms more resistant to antibiotics. The need for change in daily life as well as governmental actions are to be increased. There are many factors, such as voting, governmental issues, and the tendency to keep going daily that prevent important actions to be addressed. People are ignorant by their work on future generations. If human beings move forward with such

destructive methods, there will be no other future to consider. Although the issues that it could not physically avoid thinning of Ozone Layer (And scientists are still struggling to find exactly out what causes it), is an authentic but already with current knowledge, there exist lots of actions assist in prevent the thinning of Ozone. By increasing community awareness and concern about issues, it can help to create a more friendly environmental conscious for survival (Ebadi and Hisoriev, 2018).

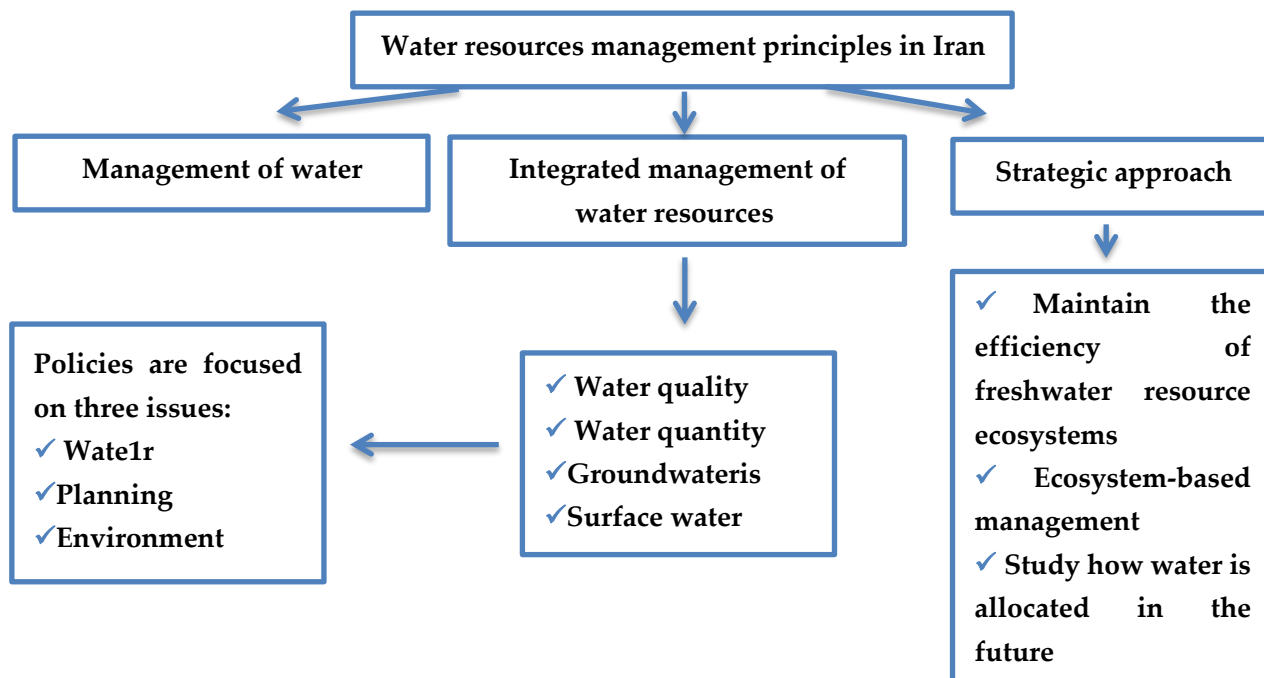


Fig. 10. Water resources management principles in Iran (Yousefi et al., 2019).

Although the Article 45 and 50 of the constitution of Iran, Emphasize on the environmental protection and related subjects, it is not enough for encompass everything. For example The Article 50 states that "It shall be considered a public duty in Iran to protect the Environment in which the present as well as future generations shall have a developing social life. Therefore, economic activities or otherwise which cause pollution or an irreparable damage to the environment shall be prohibited". The Impressions from this Article, can be following items:

1. Of essential necessity of growing human generation is healthy environment.
2. Environmental protection is the duty of whole true and legal individuals in Iran.
3. Creation of pollution in natural, artificial and social environment is prohibited.
4. Irrecoverable destruction of the environment is prohibited.
5. All economic, social, politic and cultural activities caused environmental pollution is prohibited.
6. All activities cause irreversible environmental destruction is prohibited.
7. Continuous education and awareness of true and legal individuals regarding environmental issues is essentially obligated for environmental protection.
8. Making an introduction for growing social life for future generations is the responsibility of the government, policy makers, and managers.
9. The principal prerequisite is organized intersection activity to implement the above mentioned and preparing environmental standards and regulation. ALSO preparing the appropriately reply to ex-generation, ex-sectional and ex-boundary referent is all in central concentration.

Besides, environmental impact assessment rules was compared in developed countries and Iran. Results demonstrate that the established regulations as well as pollutant management was not comprehensive in Iran. While, in EU countries including Germany, France, and Canada, a comprehensive environmental regulations

dominated. Also, in the mentioned countries protection of the environmental rules and the EIA (Environmental impact assessment) studies is inevitably essential (Farahani and Bayazidi, 2018).

2. Conclusions

Men around the world are experiencing new and challenging environmental problems daily. Some of these problems are likely to affect the health of the ecosystem, but somehow they change the recent landscapes. The planet is on the verge of a massive environmental crisis. Environmental problems make human beings vulnerable to natural disasters occurs currently and in the future, as well. So due to the growing problems of the environment, this is an emergency situation. In case of ignoring these difficulties, then the life end up in disaster and doomed to destruction. Of the critical environmental crisis should refer to Global warming, Overcrowding, Decreasing Natural Resources, Garbage Disposal, Ozone Layer Destruction, Deforestation, Rainfalls; Water Pollution; Public Health Issues; Genetic Engineering, etc. So due to the growing problems of the environment, this is an emergency situation. In case of ignoring these difficulties, then the life end up in disaster and doomed to destruction. Therefore, the current environmental situation greatly needs urgent considerations. There are many factors to be addressed. By increasing community awareness and concern about issues, it can help to create a more friendly environment conscious for survival.

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