

Ecological limitations and sustainable regional development in khorassan province

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Abstract

Severe shortage of water resources resulted from unauthorized and excessive exploitations, population growth, and increase of demand in different sectors have made the role of this vital material in regional development more significant. On the other hand, inadaptability of potentials and capacities and the restriction of water resources as well as the exploitation procedure have increased the development challenges of the province due to inappropriate settlement of the population and activities. For decreasing the imbalance and providing the grounds for stable regional growth and development and preserving the basic resources of development, the environment should be reconstructed and the spatial structures and population and activity settlement to be reviewed. These attributes, as well as improper settlement of the population and inappropriate activity and exploitation of the regional resources, have caused severe shortage of water resources (15 critical plains, 44 prohibited plains and 17 free plains). The low rate of rainfall and its unsuitable distribution have resulted in a higher degree of evaporation, transpiration and natural isolation as well as severe dispersion of habitats and spatial disorders. The natural environment, population settlement policy, production activity and infrastructures affect the spatial structure of the Khorassan province and are together causing severe imbalance in the region and destroying basic resources of development. Therefore, establishing a balance in rate of water consumption and revived water in the region in tandem with the land use(land preparation) policies is one of the most important measures which are necessary to be taken in the later phases of optimal exploitation of water resources(increase of the irrigation yield).

Key- words :, sustainable development , environmental challenges, Khorasan, water, Ecological, limitations

1 Introduction

Development means the increasing of human abilities in well exploiting of his environment. Rational exploiting depends on economical, social and cultural properties. Therefore, every condition that is effective in increasing the abilities in regions, prepares the way for development. Migration, poverty, low production and exploiting, unemployment, etc. in different regions of the country are the result of

inefficient operations of economical, social and cultural organizations, overpopulation and discriminatory policies for cities and villages and lack of welfare, producing and fundamental facilities. Although the term development has different meanings and definitions, it focuses on production increase, efficiency increase, promoting the level of life, removing poverty and deprivation, promoting the level of educational and health

facilities, reducing unemployment and providing economical and social requirements [1]

2 Environmental instability in khorassan province

In the last two decades, two groups of factors have been responsible for environmental instability in Iran: inside factors and outside factors. With respect to the former, the existence of limitations have prevented reconstruction of the environment. These limitations have been mostly in natural, economic and social matters. Some of these limitations are as follows: lack of appropriate land for agricultural, lack of water resources, lack of wise policies of land use, lack of necessary infrastructure such as installations needed to keep and store runoff, lack of accesses, lack of appropriate technology, lack of correct policies of pricing, legal problems of the ownership of agricultural lands, etc[2]

The rise of environmental problems and the necessity to deal with the economic problems of the people, forced the authorities to remove the above-mentioned limitations. The constitution and the development plans also place a great stress on the necessity of preservation and revival of resources. In the general policies of the third development plan (1999-2004), the questions of regional balances, the environment, revival of natural resources, removal of depravity in rural areas, and appropriate use of repeatable resources have been underlined.

The land preparation policies whose aims are using land wisely and changing the geographical space and the quality of life of the people, have been in line with the policies of optimal use of resources, reducing poverty and creating regional balances. Since the use of natural resources resulted in scarcity, the management of natural resources has found a great significance for constant preservation of raw materials for business and industry. Even before the Revolution, there was a plan for correcting methods of production and the ownership of resources (Land Reform in 1962). But with the sudden increase of oil price in 1971 the development strategies of the country changed.

Geographic factors including the natural environment, economics, and human characteristics have intervened in forming the major centers of population and activity in the Iran. Poles, axes, and major centers of activity conform with the capacity of the natural environment to some extent, however the measures taken and investments made in

establishing economic and social infrastructures as well as political and security considerations have influenced this matter. In the last 50 years, the growth of population on the one hand and the advancement of technology for exploitation of resources on the other hand have aggravated the process of destruction of natural resources. In previous periods, man has treated its surrounding environment variously to meet his needs. Man's behavior toward the environment creates a certain geographical space and results in changes in the natural environment. His behavior, formed under the influence of various attitudes, decides the kind of his exploitation of the environment. Man's relations with the environment includes the following main types of behavior:

- Adaptation with the environment
- Domination over the environment
- Boosting the capacity of the environment
- Reforming and protecting the environment

Khorasan province is located in east of the country, adjacent to Afghanistan and Turkmenistan. Its large extent made unbalance dispersion of settlement regions because of taking impression of specific condition of natural environment, being located in a dry and half-dry region, low precipitation and its improper temporal and spatial distribution, high evaporation and transpiration and natural separation and great dispersion of settlement regions and spatial disturbance and regional inequality. It also had a main role in appearing and formation of some marginal and undeveloped regions.

The low rate of rainfall and inappropriate time and place of water distribution, high rate of evaporation and transpiration, natural isolation and severe dispersion of habitats have resulted in spatial disorder followed by spatial inequality in this region. Spatial inequality includes inequality between cities and villages, cities and towns, deprived and developed regions, etc.[3].

Spatial inequalities in the province resulted in unemployment, migration, poverty, and population structural changes. Migration is continuously underway from villages towards the towns, from towns to cities or from the deprived regions to the developed ones. The immigrants form special culture and customs in the city or the new region. Ecologic isolation in cities is one of the other social factors resulted from migration. The immigrants mainly settle on the margins of the cities and bring about suburbanization. As an example, we may see

more than 650,000 suburbanite around Mashhad City. [4]

Poverty, lack of appropriate social status, avoiding the local habitants from accepting the immigrants, etc... has prepared the ground for social deviations. Since these people reside illegally on the suburb of the cities, they are deprived of welfare services, the emotion of being a stranger is reinforced in them, and the social problems in the cities become intensified. All the abovementioned factors indicate that most of the problems are rooted in spatial inequality and injustice existing among the regions. The effective factors of spatial isolation in the field of economical, political, and bio-social orders may result in concentration of poverty in districts and in special cases ghetto and shanty dwellings in the cities.

Water plays a significant role in continuation of life and various measures taken for livelihood especially in agriculture sector in Iran and the under-study region.[5] In the past, the power of government in the country was associated with reliable and regular water resources, therefore, the initial condition for economical development in the region is having sufficient and regular water resources[6].

In the current situation, the basis of the regional economy depends on agriculture and small cultivation units. The shortage or excess of water may result in economic recession or flourishing.

The objective of surveying water situation in the region is campaigning against water overflow, soil erosion, and supplying water needed for agriculture, industry and drinking. The development measures for achieving this objective include erecting dams for reserving water, brooks for transferring water and irrigation as well as improving exploitation methods.[7]. Since water transfer faces with limitations, therefore, spatial organization for appropriate settlement of the population and activities is a suitable approach.

The present study is the result of surveying the capacities and shortages of water resources in Khorassan province and exploiting them as well as presenting regional development approaches with(preparation) objective. For achieving this goal, the settlement of population and activities and water exploitation status have been studied in addition to surveying the situation of water resources.

From the total area of the region which is 240,000SqKm., the total area of cultivated land by various agricultural products is 8% .A large area of the land includes desert and arid regions with

saline, low depth of soil, and rock protrusion, in brief, these regions are inappropriate for agricultural and industrial activities. The main part of the agricultural lands and industrial activities (industrial estates and regions) of the province have been formed as patches on the vicinity of Mashhad, Torbat Heidarieh, Torbat Jam, Ghoochan, and some other cities and towns [8].

The development of cities and the concentration of investment in certain areas because of investment limitations in other areas drove the country toward more and more use of oil. Paying no attention to natural resources and agriculture and following the policy of relative superiority resulted in space imbalances. These imbalances, which were rooted in the theories of development, gave rise to structures whose result was unrestrained exploitation of the basic resources of development and intensification of environmental imbalances. The dramatic change from an economy dependent on agriculture to an economy dependent on industry with no attention to the necessary infrastructure, had negative consequences. Some of the most important consequences are as follows:

2.1 Rapid Urbanization and its effects on the environment

Although cities are taking up only 4 percent of the earths land , they use huge amounts of natural resources , such as energy, water, minerals, and often the best land[9].

In the last two decades, in region rapid growth of population has changed the urban and rural population composition, resulting in rapid urbanization. This phenomenon has left destructive effects on the environment, not only in the Mashhad, but also in smaller cities. The most important effects are air pollution, water pollution, lowering of the level of the subterranean water, noise pollution and social and cultural consequences. The rapid growth of population in cities prevented the authorities from adopting the necessary policies for the protection of the environment. In these cities, not only the fundamental resources of development have been destroyed but the phenomenon of living in the margins of the cities has emerged. For example, in Mashhad, based on the latest information available, about 600,000 (30% of the population of the city) live in the margins of the city. Centralism and concentration of facilities and activities in a certain number of places disrupts the balance of the environment.

2.2 Industrial Concentration

With consideration given to previous decisions and planning policies of the recent decades, there are imbalances in the industrial usage of the lands that has mainly originated from environmental, economic, and political factors. Providing facilities for living and activity as well as the concentration of population in the central suburb of Mashhad has led to the formation of infrastructure for industrial units. The lands mainly have been used as industrial regions and estates, although in some cases, the industrial units have been established individually. Such activities were done in 20 industrial estates and 16 industrial regions. About 65% of the industrial workshops are located in Mashhad.

The plan was not successfully performed since industries rapidly began to grow to meet the economic and employment needs of the increasing population specially in the metropolises. For example, there is a law that forbids the establishment of industrial units within a radius of 120 kilometers of Tehran and along the Mashhad-Chenaran road, but there have been challenges to the enforcement of the law within the last twenty years. The unrestrained process of establishing industrial units around the big cities frustrated the policy concerning industrial units. The consequences are air pollution, and industrial water pollution, which often ends up in rivers and which poses a serious threat to the drinking water resources in the cities.

In addition to domestic sewage, pesticides and fertilizers have also increased. The use of chemical fertilizers rose from 630000 tons in 1976 to over 2500000 tons in 2001. The waste solid, hospital garbage, etc have polluted the sweet water resources [10]. In some cities, specially in the northern cities, this has resulted in the destruction of natural ecosystems and the death of the animals living in rivers and the sea.

2.3 Migration

The occurrence of environmental imbalances has several other consequences, among which are the following: transfer of capital, specially expert human forces, from rural areas and towns to big cities. For this reason, the rural areas do not have the power necessary to exploit their resources and the added value of these areas is transferred to big cities. A study of certain indicators of development

in the provinces shows that within the last two decades, not only the situation in the deprived areas has not changed, but the gap between the rich and poor provinces has deepened [11]

In fact, agricultural usage of land in different regions of the province has been dependent on the soil capacities and more important than this, on the access to water resources including the subsurface, surface, and reserved ones. In the same line, the main part of lands under aquaculture has been formed in the central regions of the province. This is because of severe ecological limitations including rate of rainfall and high temperature the result of which is the high rate of evaporation and perspiration.

The northern regions of the province are faced with shortage of suitable soil in spite of relative balance of ecological situation. Most of the lands in the region have changed into small farms and orchards and in highlands dry farming is prevalent. In the central regions and Mashhad a pressure has been applied to agricultural lands due to settlement of the main part of the population and lack of equilibrium between population and resources. Unlicensed wells have been dug for more exploitation of lands and water has been transferred from the deep depths to the surface without paying any attention to the fact that the capacity of the subsurface basins are limited. During the recent years, the most part of plains of Khorassan province have been declared critical and supra-critical. (from among 78 plains existing in Khorassan province, 65 ones have been declared prohibited).[12].

Irregular discharge of subsurface water resources has caused severe fall of water level which has doubled the farmers' problems. The charges for drainage, using more powerful motor pumps and fossil fuels have increased more and more. In addition to the increase in production costs and decrease in farmers' revenues, it has caused environment problems. Lack of suitable lands for cultivation, shortage of water resources, lack of proper policies in using lands, lack of necessary infrastructures such as installations for preserving and reserving surface waters, legal and ownership restrictions for lands and production resources, etc. have been effective in inappropriate exploitation and environmental instability in the agricultural sector of the region.

Considering the decisions made in the past and the planning policies of the previous decades about the industrial uses of lands, there are imbalances that originated from environmental, economical, and political factors. Providing facilities for living

and activity as well as the concentration of population in the central regions of the province, mainly the suburb of Mashhad city, have caused the formation of infrastructures for settlement of industrial units. Such land use has formed industrial regions and estates and in some cases the individual factories and industrial units have been erected.

Such activities have been operated in 20 industrial estates and 16 industrial regions.

About 63% of the industrial workshops of the province are located in Mashhad city. Ghoochan, Neishabour, Bojnord, Torbat Heidarieh, Sabzevar, and Birjand with 5.8%, 5%, 3.8%, 3.5%, 2.4%, and 2.3% of the industrial units respectively stand in the next standings after Mashhad. 14.7% of the industrial units are situated in other towns of the province (19 towns).[13]

Concerning other land uses, we may refer to the residential one and urban and rural habitats. In 90 urban and 7700 rural districts, a vast area of the lands with the highest quality has been allocated to residential infrastructures and structures. One of main challenges for developing the province is destroying agricultural lands located on the suburbs of cities and towns, imbalance in water resource capacities and different water consumptions. This is observable especially in the suburb of Mashhad, Neishabour, Torbat Heidarieh, Sabzevar, Ghoochan, etc.

During the recent 40 years, the per capita rate of water has decreased from 7000 to about 2000 cubic meters. If such a process continues, the per capita rate of water in province will reach to less than 1000 cubic meters per year. In order words, the region will quickly face crisis in water resources.[14].

The volume and percentage of various types of water consumption in the province: With regard to the volume of exploitation of the subsurface and surface water resources in all the sectors, the last status of the exploitation and the share of water in any of different sectors are as follows: The total volume of water consumption in the province (including the surface and subsurface water) is 12.4 billion cubic meters from which the rates in agriculture, urban and rural drinking water, and industry and service sectors are 11.5 billion, 578 million, and 330 million cubic meters respectively. The percentage of water consumption in agriculture, urban and rural drinking, and industry and service sectors are 92.4%, 4.8% and 2.8% respectively. Considering the need for supplying urban and rural drinking water and the increasing demand of water consumption in the industry and

service sector as well as the necessity for supplying a part of the shortage of subsurface water basins of the province through economizing in exploitation of the subterranean water resources, it seems that if we assume the potential of water supplied from water resources of the province is constant, the only reasonable way will be optimal consumption of water among all the sectors especially in agriculture.

During the recent 30 years, in most plains of the province the number of wells and the rate of discharged water have increased more than double times. On the basis of the studies done on the suburb of Torbat Heidarieh town, especially, on Rokh Plain, the number of deep wells from 85 in the year 1975 increased to 295 in the year 2002 and the rate of water discharge during the same period increased from 115 to about 245 million cubic meters. It should be noted that, during this period, a large area of the cultivated land of the region was allocated to cultivation of sugar beet which needs plenty of water.

The occurrence of environmental imbalances has several other consequences, among which are the following: transfer of capital, specially expert human forces, from rural areas and towns to big cities. For this reason, the rural areas do not have the power necessary to exploit their resources and the added value of these areas is transferred to big cities. A study of certain indicators of development in the provinces shows that within the last two decades, not only the situation in the deprived areas has not changed, but the gap between the rich and poor provinces has deepened .

2.4 Regional imbalances concerning activities

Based on the 2005 census data concerning the existing workshops in this region, there were 1,165 industrial workshops with more than 10 personnel each. Of these workshops, 729 (62.6%) were located in Mashhad, 152 (13.4%) in the northern region, 200 (17.2%) in the central region and 84 (7.2%) in the southern region. From among 68,000 personnel engaged in these workshops, 49,050 (71.7%) worked in Mashhad, 5,659 (8.3%) worked in the northern region, 9,792 (14.3%) worked in the central region and 3,897 (5.6%) worked in the southern region of the province.

With regard to agricultural activities, the northern, Mashhad, central and southern

regions enjoy 28.5%, 15.4%, 44% and 12% of the cultivated area of the province, respectively. In the field of animal rearing, the percentages of existing animal husbandry are as follows: northern region, 21%; Mashhad, 18.5%; central region, 43%; and southern region, 18%.

3 The general water balance in the province

On the basis of the available data, the average of rainfall in the province is 205mm. Considering the area of the region (237,000 SqKm.) the volume of annual average rainfall is 48.5 billion cubic meters from which about 74% is lost due to evaporation and perspiration because of the regional dry climate; only 11.9 billion cubic meters are used in the hydrology cycle. In fact, this volume of water may be considered as the long-term average of water of the province. From 11.9 billion cubic meters of available water in the province, about 8 billion cubic meters are used for feeding subsurface water tables and 3.9 billion cubic meters flow in the province as the surface flowing waters. With regard to exploiting 9.7 billion cubic meters water from the subsurface resources, it seems that the subsurface water resources of the province are confronted with a shortage of 1.7 billion cubic meters of water per year. The total volume of water exploited of the water resources increased from 10 billion cubic meters in the year 1980 to 12 billion cubic meters in the year 2001.

Through controlling the surface waters during the following years (2011), the volume of exploiting water resources of the province will reach 12.53 billion cubic meters.

Then, due to excess increase in exploiting the subsurface water resources because of social and economical necessities, the volume of the usable water will decrease. It is predicted that the volume of the usable water will decrease from 11.66 to 11.1 billion cubic meters per year during the years 2011 to 2021.

Table 1,
changes in exploiting water resources of the
province (in billion cubic meters)

Total volume of subsurface water exploitation	total volume of surface water exploitation	year
7.88	2.15	1980
8.67	2.3	1991
9.7	2.7	2001
8.46	3.2	Prediction 2011

Reference :Khorassan Regional Water Organization,2002.

4 The situation of subsurface water resources of the province

There are 76 plains in Khorassan province. The volume of exploiting subsurface water is 9.7 billion cubic meters at present which is 1.7 billion cubic meters more than the capacity of feeding subsurface water in the province per year. The excessive exploitation of water resources has caused the annual fall in a large number of plains of the province in such a way that in 59 plains of the province, the rate of exploitation has been more than the feeding rate and they are entitled as the prohibited plains.

From among these, 15 plains have a critical and dangerous situation. The other 17 plains have no problem due to exploiting subsurface water resources. They are mainly located on the regions where their exploitation development are confronted with problems qualitatively and quantitatively and at the early stages it is not considered economical. The most recent situation of exploiting subsurface water resources is as follows:

The total number of subsurface water resources(wells, fountains, and subterranean canals) is 35269- The volume of potential subsurface water resources of the province:

8 billion cubic meters- the total volume of exploiting and discharging subsurface water resources:9.7 billion cubic meters- Shortage of plain reservoirs in the province:1.7 billion cubic meters- Number of wells in the province:21814- The wells bearing the exploitation permit:9431- Unlicensed wells:1127- Under-study and operation wells:1256- The volume of exploiting water of wells:6.74 cubic meters- Number of

fountains:3812- The volume of discharge through fountains:0.96 billion cubic meters- Number of subterranean canals:9643- The volume of water exploitation of subterranean canals:1.99 billion cubic meters [15].

The situation of surface water resources in the province: The volume of surface river flows in the province is 3.9 billion cubic meters. Exploiting surface waters is mainly done in traditional method through using the base running rate of rivers.

Moreover, a part of surface waters related to storm flow are controlled by earth dams, dams, and installations. At present, the dams existing in the province are able to

regulate the flow of 255 million cubic meters per year in average. The most recent situation of exploiting surface water resources of the province is as follows:The total volume of the surface water resources in the province: 3.9 billion cubic meters-The rate of exploiting base flows of rivers in traditional method:about 2.2 billion cubic meters-the rate of exploiting by the modern installations(dams, diversion dam, other installations for controlling water):About 505 million cubic meters- The total rate of water outflow to the borders of the province:about 1.2 billion cubic meters- The volume of water outflow to Turkmenistan(the quota of Iran):50 million cubic meters- The volume of water outflow to Golestan province:237 million cubic meters- The volume of water outflow to the desert regions of the country:213 million cubic meters.

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Through controlling the surface waters during the following years (2011), the volume of exploiting water resources of the province will reach 12.53 billion cubic meters. Then, due to excess increase in exploiting the subsurface water resources because of social and economical necessities, the volume of the usable water will decrease. It is predicted that the volume of the usable water will decrease from 11.66 to 11.1 billion cubic meters per year during the years 2011 to 2021.

5 Main challenges in water sector of the region and the perspective of the present process

The main challenges in water sector of the region include the intervention of external factors and conditions on the reasonable management of water resources in the watershed and unlicensed and irregular exploitation of subsurface basins. The population increase, promotion of life standards, and increase in water demand in various sectors, supplying, reserving and distribution of drinking water of Mashhad city and implementation of sewerage collection system project, unlicensed occupation of river beds and borders which results in increasing potential to be susceptible to floods and incurring damage, the inconformity of water capacity with the population settlement and activities, and low rate of irrigation yield in agriculture sector are among the other grounds for challenge in water resources of the province. Throughout the world, spatial planning strategies which focus on the sustainable development adapt ecological approach and both the regional and urban planning processes are based upon ecological bases.[16]

The perspective of the continuation of the current process is becoming a large number of water resources(subterranean canals and fountains) dry, falling a large number of villages into desuetude due to becoming their water resources dry, occurring social and political crises resulted from the shortage of drinking water in cities especially in Mashhad and due to shortage of water resources in agriculture and industry sectors- land subsidence and increase of pipe laying in prohibited and critical plains the result of which is decrease in reservation capacity of subsurface

basins and crisis in management of border and common waters with the neighboring countries.

Table 2,
The situation of water resources of the
province and Iran

Iran	Khor assan Reg ion	situation
1648000	236513	Area (sq km)
60000	6050	rainfall in 1994(1000mm)
251	205	precipitation(mm)
130	11/9	total revived water resources
50/6	9/7	The rate of exploiting the subsurface water resources
3/27	1/7	rate of subsurface water reservoirs shortage
631	76	total number of plains
183	59	total number of prohibited plains
41	15	number of critical plains
32/9	0/255	rate of subsurface water reservoirs shortage (in billion cubic meters)
—	2360	per capita of revived water -1994
—	2066	per capita of revived water 2004
—	1485	prediction per capita of revived water 2010

Reference :Khorassan Regional Water Organization,2002.

In spite of the limitation in water resources, the agricultural activity dominates in this province. Especially, a large area of the cultivated lands is allocated to the products which need a lot of water such as sugar beet and theproducts. These products need water more than double of the average rate of the other products. Low rate of per capita of land, low rate of production, low price of agricultural products due to improper policies of cultivation and market, have obliged the farmers to exploit water resources of the region irregularly. Irregular exploitation, have changed the water balance of regional plains .Therefore, reasonable management on exploitation procedure deems it advisable that the annual output should not exceed

the annual feeding rate of subsurface water, otherwise, the plain will face shortage of water supply. If such a process continues, once the region will lost its water reserves and will become dry. [17].

6 The executive policies for development in the water sector

Finally, these in-coordination and difference between different regions demolish the enough unity and cohesion for improving development and strengthen the existing differences and diversities in all development fields and this process in the level of cities, regions and provinces will have certain and unavoidable influences in national levels and even right policies of development will be automatically exposed to negative changes and transformations and will provide barriers for reaching permanent development.

These spatial and regional disparities originate from many affairs:

- Adopting wrong policies by the center for regioning , budget distribution and facilities of not enough recognition of regions' conditions and states;

- Improper classifications of different places and in-coordination of different organizations with each other for giving better services and doing the entrusted duties;

- Concentration of the population in some places and emigrant acceptance of developed places which made polarization and decreases facilities;

- Worse allocation of resources and credits and wrong regional policy making in this field.

The executive policies for development in the water sector include:

- Giving a definition about the cultivation pattern in different plains and directing the farmers towards respecting cultivation pattern- Changing the irrigation system and equipping farms with modern irrigation networks- Controlling surface waters with giving priority to common border rivers- Using saline andwaters- recycling waste waters and exploiting them as substitute for agricultural water-Purchasing agricultural wells and changing their usage to drinking water and water used in industry.-Electrifying wells for establishing facilities for exploitation-Implementing projects for flood dispersion and artificial feeding in susceptible regions –Specifying

river borders and preventing from any invasion to them- Reinforcing water packing industry and consumption of its products- Erecting appropriate networks for sewerage disposal and management in cities- Controlling and preventing water resources from contamination by industrial and home waste waters- Making water tariffs reasonable- Doing research on cloud insemination for increasing the potential of water resources.

Taking measures such as propagating the culture of proper exploitation of water with the help of mass media and the irrigation and technicians of irrigation, reinforcing the potential of subsurface water basins through artificial feeding by using the dispersed floods of southern and northern mountains, developing traditional dam structures for exploiting floods, studying the cultivation of the plants resistant to salinity in agriculture in the southern regions, and etc. for developing the exploitation of agricultural water resources may be effective in improving exploitation from regional water resource [18]

- Directing regions to regional specialty in order to access the fields of growth and development and creating regional balances. One of the reasons and factors of disparity is the natural characteristics of the regions that are capabilities and limitations of each region. Since each region has its own capabilities, limitations, opportunities and challenges, specializing regions and creating essential capacities for playing the required role and producing in the process of provincial development can be effective in reducing disparities and providing the fields of growth and development in each region.

- Applying special management in region of Mashhad because of settling a large portion of the population and provincial activities in it.

7 Conclusion

Applying the general land management for appropriate distribution of population and activities in the region- decentralization of population and activities from Mashhad city and some of the cities and regions of the province- Assigning the irrigation installations and networks to the exploiters for optimal exploitation of the installations- allocating water with the priority to drinking, industry and agriculture consumptions and paying serious attention to the environmental issues- Amending laws, integrating lands and paving the ground for executing the existing laws- Paying attention to the applied researches in the

field of water and establishing modern and update data banks for water- Diversification in supplying financial resources for executing development plans- Investing in water sector and benefiting from international loans.

For decreasing the imbalance and providing the grounds for stable regional growth and development and preserving the basic resources of development, the environment should be reconstructed and the spatial structures and population and activity settlement to be reviewed.[19]

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