An overview of Iran and Sustainable development

Photo: Tehran, Iran

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CHEECO

Introduction

It would be an appropriate time for to talk about how things are going around the sustainability issues after passing a quarter of century of Rio Conference. There are so many good news about achieving the goals; however, we are confronted with too unresolved issues and a huge of complex and unpredictable subjects and problems In our country, Iran, both government and society have well been aware of sustainable development concept during the last two decades. Accordingly, there are passed some laws and legislation which concern: natural resources protection acts, jungles protection, prevention of polluting and destroying coasts, enhancing public awareness of SD concept, optimization and reduction of energy consumption, establishing and developing sanitary dumping of urban and rural sewage, empowerment NGOs and other social communities, qualitative and quantitative management of water and soil resources, reduction of chemical fertilizers and pesticides, developing of sustainable tourism industry, cleaner and more sustainable industrial production, protection of biodiversity and at the end improving research and development in these fields.[1]

That seem we have to work more hardly than before.

Social Development

Population and Urbanization Growth

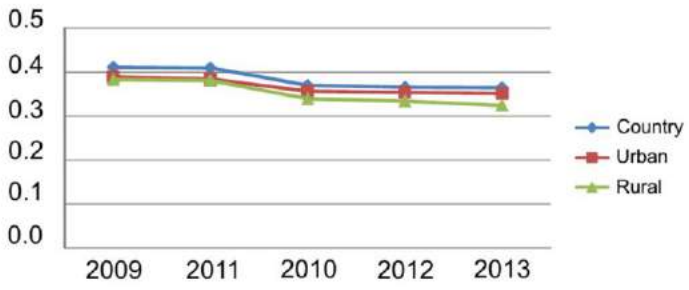
During the last two decades the population of urban area met a significant rise from 60% to 72%. Needless to say that such a spectacular rise in urban population will cause dramatic effects on resource consumption, pollution and environment especially when unappropriated measures have been taken.

Occupation, unemployment and poverty

Increasing the labor supply during the last decades by soaring of graduated persons and women participation make a spectacularly negative effect on labor market in Iran. Moreover, owing to irrelevant relation in increase in work force rate and capital investment rate, make too much unemployed young labor force and decrease the unemployment rate to more than 12%. Tackling youth unemployment in particular is a pressing policy issue in line with the evolving demographic profile of the country, which is characterized by more than 60 percent of its population estimated to be under the age of 30 in 2013.[1,3]

Poverty alleviation

It is considered in all country developing programs which involves improving social justice, health and income redistribution, extension social insurance programs, economic development, public free education, reduction of inflation rate, empowering women and gender equality. [1]



Gini coefficient of Iran 2009-2013 [2]

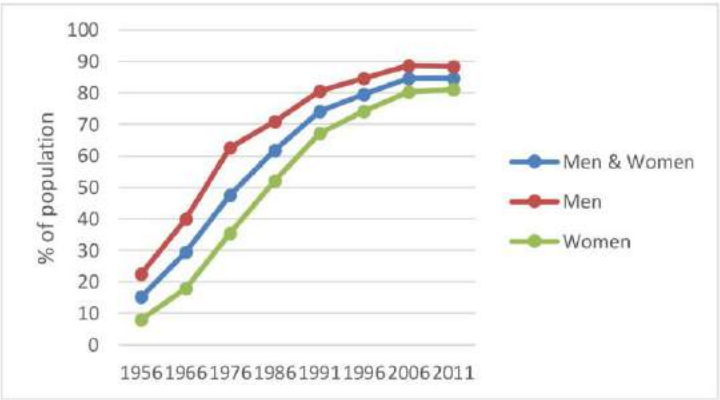
Non-Governmental Organizations and Social activities

First time, in 1996, NGO concept was introduced in Iran as one of the most important factor for SD. There are more than 6000 officially submitted NGOs and more than 17000 unofficially submitted NGOs in Iran. The main categories of their field of activities are included in: researches, social services, environment.

Moreover, there are some different kinds of founds which defined in government budget for improving and supporting these kind of social activities.

Education

Obviously, the percentage of educated population rose substantially during the last twenty years in a way that make Iran as one the most successful country across the world. The literacy rate of women was more than of men; however, the literacy percentage of men is above that. What is more interesting is that literacy rate in rural areas are more than urban areas.



Literacy percentage of population [4]

Environment protection

Air pollution

Although, air pollution issue does not have a long background in Iran, there are several cities that have been challenging with air pollution during the past decade. As mentioned above in some areas and cities we have met population explosion that make rise some problems rise exponentially. It is thought that the only way to conquer this problem is considering a huge amount of financial supports and employing experts.

Solutions

There are some regulations as official levers to struggle with air pollution. Accordingly, a comprehensive plan has announced to all administration that includes some bases:

- New vehicles
- Out of date vehicles
- Public transportation
- Fuels
- Technical diagnostic services
- Traffic management
- Public education and participation
- Stationary and area air pollution sources

There are 18 organizations that are considering the mobile sources. Accordingly, all car manufactures are forced to produce vehicle which meet Euro-2 standard. In addition, there are some measure have been taken about the fuels that include:

- Elimination of leaded gasoline
- Bi-fuel vehicles production and related infrastructure development

Climate change in Iran

Since Iran is located in arid and semiarid geographical location and high risk natural disaster areas, its economy is tied to the oil and having several polluted metropolises, this country is countered vulnerable country in UNFCCC. Unfortunately, the rate of energy consumption is among highest ratios and its greenhouse emission is high.

Financial and Technological Needs

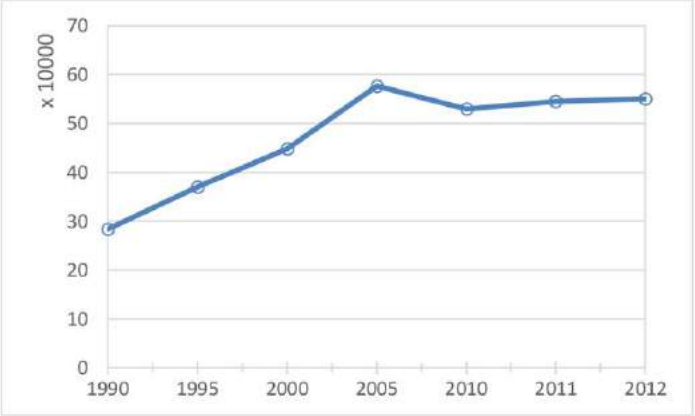
Due to the significant share of energy sector in emissions (more than 90%) and consequently the high potential of this sector in emissions mitigation, its major technological requirements are as follows:

- Technologies needed to curb and utilize gas flares;
- Reducing natural gas leakage in the distribution networks;
- Increasing efficiency through the development of CHP and combined-cycle power plants;
- Reducing transmission and distribution electricity losses;
- Energy demand optimization and management; and

Use of renewable and alternative energy resources (like nuclear power) as well as biofuels, biogas, waste to energy production and CCS.

The total annual investments needed to achieve unconditional and conditional GHGs mitigation are about 17.5 and 52.5 billion US dollars respectively. Also such actions could be leveraged at the domestic

level, though, inter alia, development of sound financial mechanisms; economics of energy, in areas such as reducing and gradual phasing out of energy subsidies; the National Environmental Fund; formulation of a master plan to promote the role of private sector, particularly in the energy sector; and optimization of energy efficiency, through establishment of service companies. [5]



Iran Greenhouse gas emission 1990-2012 [6]

Iran flora

Iran – with 1,640,000 square kilometers area, in the south-west of Asia- of the northern hemisphere, has its specific combination of different elements of life and a special ecosystem and biodiversity due to various factors including different climatic conditions, high mountains all around and a large desert in center. Different phytogeography regions in Iran's plateau cause massive genetic flow in this area which result in a variety of plant species and in comparison with neighbor countries and some others has very interesting points.

Some plant species have been walled beyond the natural fences (as endemic), and some are scattered in other lands. Most part of Iran is occupied by Deserts and semi-deserts. Residents of these areas have always been strongly dependent on vegetation cover, and where the vegetation cover could create good micro-climate, people have settled there.

Due to the diversity of climate, topography and edaphic conditions, limited areas of vegetation in Iran, are very different and heterogenous. Due to social, economic and cultural reasons, indigenous and non-indigenous residents of these regions, consciously or unconsciously have exploited from these natural resources excessively. [7]
programming and increasing the quality of forestry have been increased during the last two decades. One the most important factor of new approach is that village's social actors have taken part in developing and working out new plans and strategies.

Increasing protected areas has played a critical role. Accordingly, more than 10% of forest is under the protection laws, now. "Pay for Ecosystem Services" make considerable rise in accomplished and successful projects. Some of the brilliant projects are:

- National project on organizing cattle
- Province afforestation
- Extending green space and protecting national parks
- National project on wood farming and tree plantation

All of the above mentioned, not only consider reduction of forests destructions and forest revival but also reduce soil erosion. In addition, there about 1800 fire station in both urban and rural are that has directly impact on forest protection.

Soil erosion

Insipid of that Iran has 1.2% of land (1,648,195 km2), 10% of world soil erosion belongs to this country. More than 1.5 million hectares of fertile land are annually changed to desert. In another words, in the next 30 years there would not be any fertile land in Iran.

Now more than 60% (about 160 million hectares) of fertile lands are unstable. Desertification rate is 1%/year that make Iran the first rank.

In order to achieve the desired situation, it is necessary to codify coordinated systems:

- Categorizing system of water, soil and air
- Categorizing system of pollution sources
- Monitoring system of pollution sources
- Amending and revising of laws
- Fitting environmental crimes and punishment

Water

Iran is located in southwest Asia with an average annual rainfall of 250 millimeters. It has an arid and semi-arid climate. The average annual rainfall is about 385 billion m^3 that 65% of them evaporate and the rest (about 130 billion m^3) make rivers and add to underground water. The useable amount of water is about 73 Km^3 that 90% is allocated to agriculture, 7% allocated to domestic usage and 3% allocated to industry. Water crisis has appeared in Iran as a serious problem. There are mainly two reasons for that: (1) Lack of proper water management and (2) Occurrence of drought. In fact, water crisis can be defined as an unadjustment between water resources and rate of consumption. [8]

some experts outlined some of the key issues:

- Iran's self-inflicted water shortage stems from its exploiting 97% of its surface waters. The international benchmark for surface water use is 40%, which by comparison points to the magnitude of water mismanagement in Iran.
- The push for agricultural self-sufficiency in the

past led to over-consumption of water reserves, which in turn undermined development

- Dam building, once considered a sign of progress, dried up the nation's rivers and other waterways through poorly conceived projects.
- Iran must almost halve its annual water consumption, that is, reduce it from the current 96 billion cubic meters to 56 billion. Such an effort will require up to $8 billion in investments and include major rethinking about agriculture to halve consumption in that sector.
- The government needs to aggressively promote a new attitude toward water to reduce consumption and replenish renewable resources. [9]

biodiversity

Iran is the eighteenth largest country in the world with diverse natur. The complex and varied climates, topography, geological formations and anthropological management of natural resources have led to a varied and unique biological diversity. In the Iranian ecosystems approximately 8,000 species of plants, 197 species of mammals, 535 species of birds, 227 species of reptiles, 21 species of amphibians, 160 species of freshwater fishes and 710 species of marine fishes have been recorded. Iran is one of the most important countries in the Middle East and Western Asia for conservation of biological diversity. Habitat diversity in Iran allows for a wide range of animals to inhibit in Iran. With regards to ecosystem diversity of marine and coastal zones in the North and South of the country, it consists of 25 ecological types and units, in which the most important are coral reefs, bays and small islands. [10]

taken measures

applying biotech is one of the measures has taken by the government for protecting of different kinds of species. Establishing bio bank and biotechnology laboratories could be considered as a complementary measure for level of gens.

Increasing the number of Natural History Museums from 36 to 50 during the last decade would be an appropriate policy for improving the culture. Enactment the proposal of "country wildlife management" would play an active role in this topic. Procurement of geographical map of most of species is one the basic activities to preservation.

The number of rangers has been increased about 10% during the last decade in simultaneous increasing in the extent of protected areas.

Energy

Energy consumption per capita (Kg/year) in Iran 1971-2013 [11]

Energy wastage in Iran amounts to six or seven billion dollars (2008). The energy consumption in the country is extraordinarily higher than international standards. [12] Iran is one of the most energy-intensive countries of the world, with per capita energy consumption 15 times that of Japan and 10 times that of European Union. [13]

Half of the country's energy is wasted in domestic sector, 3.4 of which is wasted through single-occupancy vehicle use and 2/3 parts of power plants' energy.[14]

Natural gas and oil consumption both account for about half of Iran's domestic energy consumption. With its heavy dependence on oil and gas revenues Iran continues to explore for new sources of natural gas and oil. Accordingly, there are several projects have done by the following technics in order to introduce of renewable energy concepts and producing energy from them. These technics are included in:

- Geothermal Energy
- Biomass Energy
- Wind Energy
- Waves Energy
- Fuel cell Energy
- Solar Energy [15]

Sanitation, drinking-water and hygiene status overview

Over the last twenty years many actions have been taken to establish laws and regulations. Essential and broad actions have been taken in the national water sector, which include the compilation of upstream laws and regulations on water, notification of general policies in the water sector, special status in national planning, access to potable water by 99% of the urban population and to safe drinking-water by 78% of the rural population. As for the sanitary discharge of wastewater, access in urban areas is 38.82% and in rural areas about 0.42%, underlining the need to increase the ratio of access to sanitation. Effective actions have been taken in recent years in the

wastewater sector to increase population coverage on one hand and to attract the participation of international development banks as well as the non-governmental sector on the other. Despite an acceptable situation in many cases, there are also many problems and issues with the existing trend, which requires holistic planning according to upstream policies, while keeping an eye on the ideal outlook of the country. Potential solutions:

1. Increasing the share of the water and wastewater sector from the public budget in view of the fifth development plan.

2. Setting tariffs according to the cost/prices in regard to annual budget laws or economic evolution plans.

3. Rendering the functions of water and wastewater companies more economical – creating bodies to regulate the national water and wastewater sector to start the privatization process – conceding the least loss incurring companies in the initial stages of privatization.

4. Believing in drought as a recurring phenomenon in the region in view of the climate and its evolution, and planning according to this belief.

5. Accelerating the implementation of wastewater plans.

6. Completing the half completed water and wastewater projects and preventing the start of new projects that have not been included in the mid-term plans.

7. Increasing the share of rural development funds from the total funds for the acquisition of investment assets.

8. Setting executive standards and procedures appropriate for the design and execution of rural water and wastewater. [16]

Health and hygiene

In the past three decades, the Islamic Republic of Iran has adopted a policy aimed at more strongly addressing the needs of its population, and substantial progress has been achieved both in the social and economic sectors. Since the revolution of 1979, a Primary Health Care network has been established throughout the country. In rural areas, each village or group of villages contains a Health House, staffed by trained "Behvarz" or community health workers – in total, more than 17,000, or one for every 1,200 inhabitants. These Health Houses, which constitute the basic building blocks for Iran's health network, are the health system's first point of contact with the community in rural areas.

In addition, Rural Health Centers were put in place. They include a physician, a health technician and an administrator, and deal with more complex health problems. On average, there is one Rural Health Center per 7,000 inhabitants. In urban areas, similarly distributed urban health posts and Health Centers have been established. The whole network is managed and administered through District Health Centers, answerable to the Ministry of Health and Medical Education. The universities of medical sciences, of which one exists in each province, play an important role in medical education and in the provision of health services. The Chancellor of the university as executive director of the provincial health services is also in charge of all district health centers and hospitals.

Significant health indicators

Iran has fairly good health indicators. More than 85 per cent of the population in rural and deprived regions, for instance, has access to primary health care services. The infant mortality rate is 28.6 per 1,000 live births; under-five mortality rate is 34 per 1,000 and maternal mortality rate is 25 per 100,000 live births. Poliomyelitis has been reduced to the point of near-eradication and the coverage of immunization for children and pregnant women is very extensive. Access to safe drinking water has been provided for over 90 per cent of Iran's rural and urban population. More than 80 per cent of the population has access to sanitary facilities.

Despite having a proper and elaborate system in place, Iran, however, has not been able to keep pace with the rapidly changing demographic developments. Rural areas in some parts of the country are not fully covered and health centers are inadequately equipped to meet community needs.

No Iodine Deficiency Disorders

The support of UNICEF contributed to Iran having achieved its "IDD free status". Iodine Deficiency Disorders were prevalent in Iran before 1989 and less than 50 per cent of Iranian households in rural areas consumed iodized salt by 1994. A law for the mandatory production of iodized salt for households was passed in 1994. In a recent study conducted by the Endocrine Research Center and Institute of Nutrition, urinary iodine excretion was considered adequate in school children. Taking into account the percentage or Iranian households consuming iodized salt and the standards established by the IDD program, the Islamic Republic of Iran has reached a sustainable control program for iodine deficiency.

Malnutrition and childcare feeding practices

Malnutrition has been somewhat neglected in Iran, both as a result of its multiple etiologies and because many of its aspects are still unknown. Malnutrition and childcare feeding practices remain a challenge in the country, especially at community level, in disparity provinces where there is a high prevalence

of underweight, wasting and stunting, and micronutrient deficiencies among children and women are high.

Iran's capacity to address malnutrition needs to be strengthened at all levels. According to the Anthropometrics Nutrition Indicator Survey (ANIS 2), conducted by Iran's Ministry of Health and Medical Education, 11 per cent of children below the age of five from Kerman province are underweight. In Sistan and Baluchestan, this figure increases to 16 per cent. Only about 23 per cent of all children are exclusively breastfed until their sixth month, and more than half of Iran's children are weaned before the age of four months.

The knowledge and research based on nutrition increased through a series of studies on micronutrients, complementary food, regional availability of foods, implement to growth and referral system. UNICEF Iran's advocacy led to the introduction of a child-care card, facilitating health workers and care-givers to provide children with the necessary care for development. Based on previous experience, a community-based nutrition project was launched in four districts of Sistan and Baluchestan last year, with the cooperation of the Ministry of Health and medical science universities. In West Azerbaijan, the project has begun in two disparity districts, and it is planned to develop the initiative also soon in Hormozgan province.

Community Based Nutrition Initiative

UNICEF Iran has developed a model for community-based nutrition involving Nutritional Counseling Centers. These centers provide training, facilities and educational materials for mothers, health workers, and volunteers. With the establishment of 160 additional Nutritional Counseling Centers in four districts of Sistan and Baluchistan, where malnutrition is a major problem, this initiative has exceeded all expectations. This is a result of the positive response by the Iranian government to UNICEF Iran's pilot project, and the rapid expansion of the Nutritional Counseling Centers in 2006 was a significant step forward, reflecting an important success for UNICEF Iran's program. [17]

Agriculture

With an average rainfall of 240mm per year, Iran is a dryland area. Approximately 90 per cent of its territory is classed as arid and semi-arid, of which about half is characterized by low- or medium-quality rangeland, wasteland and mountains. Agriculture accounts for ten percent of GDP, employing about 30 per cent of the population. Wheat, rice and barley are grown on 70 per cent of cultivated land, with wheat - the country's main staple - accounting for over half of total crop production. Other important crops include potatoes, dates, figs, pistachios, walnuts, almonds, cotton, sugarcane, sugar beet, tea and tobacco. Sheep are the primary livestock with smaller numbers of goats, cattle, donkeys, horses and water buffalo.

One of five littoral states on the Caspian Sea, Iran's most important fishery produces sturgeon (primarily for its roe, which is used to make caviar), bream, whitefish, salmon and mullet. Lately, the government has introduced schemes to develop shrimp farming in salt marshes on the Persian Gulf and Gulf of Oman.

Iran's forests cover some ten per cent of the country, with those in the wetter north-western Caspian region producing valuable hardwoods and softwoods.

Agriculture has suffered from a lack of both public and private investment, partly due to protracted land disputes following the 1979 Islamic Revolution, which sought national self-sufficiency in food production. Many farms are smaller than ten hectares and do not benefit from economies of scale; around two-thirds of cultivable land is not in use and the majority of farms operate well below full capacity. Poor quality seed, outdated farming techniques and scorched soils from overuse of fertilizers are ongoing issues.

Water scarcity is also a major constraint to agricultural production, partly due to low rainfall, but also poor water distribution systems.

Soils in the Central Plateau, the Khuzestan and Southern Coastal Plains and the Caspian Coastal Plain are severely saline and insufficient rainfall means there is little or no natural leaching of surface salts. Although some salt-tolerant plant species have been trialed at a local level, the lack of an official national strategy means that farmers have been unable to invest in remediation technologies. Soil salinity affects half of all irrigated land and is a major cause of low crop yields, human health problems, rural poverty, farm abandonment and rural-urban migration, causing annual economic losses exceeding US$1 billion.

Limited availability of agriculturally usable soils and the lack of water are the most important natural barriers for agriculture in Iran. Due to topography and unfavorable climate, only the mountainous north, northwest and west receive sufficient precipitation to carry out spatially extended agriculture. That the agriculturally usable land is limited. only 15 per cent may be considered as farmland and another 25 per cent of the total land of the country as rangeland. The biggest part of the country (approx. 50 percent) is sterile desert or desert-steppe, which may be usable only for periodic pasturing, while the rest is mainly degraded forests. [18]

Discussion and Conclusion

As an environment activist, have you ever been in a country surrounded by hubs of terrorism and challenging with tyrannical sanctions for a decade? It is obvious that conveying the concept of sustainable development would be how much complicated when you are confronted with someone who is running around to find a medicine existed in sanction list for his/her sick child.

We are trying to do our best in spite of being in such a hard situation in which we should not only solve our country environmental problems but also try to survive from so many rules and restriction for working internationally. For instance, it is too hard to work on UN projects have been defined and are necessary, only because money transferring is banned and/or sending money and participation in international activities are impossible.

As mentioned above there are serious problems in my country that without international helps would be worst day by day. And most of them would have some dramatically effect either regional or international. For example, Iran is the 10th energy consumer and its Gg emission is high, according to statistics most of Iranian would emigrate from their homes in next 20 years.

Accordingly, it is thought that the only way to solve these problems is improving international cooperation at all levels from governments to NGOs and social activists. We officially announce that we are ready to work hard and establish a network of NGOs across the world for cooperating in challenging with such complex environmental disasters would be globally occurred.

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