

Achieving Sustainability and Environmental Reconciliation through Sustainable Environmental management

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Abstract

The importance of sustainability, particularly the environmental sustainability needs to a sustainable institutional management more efficiency and interactive between the protection of the environment and the requirements of the development this is what the research paper cares. The research aims to develop some proposals that support an effective model of successful and sustainable institutional management for a healthy and manageable environment without any negative impacts, safe and sustainable ecosystem. The city of Sulaymaniah was selected and stand at the most important environmental problems that the city suffer from, especially the Kheleifawa area located in the southwest of the urban center of Sulaimaniah as a case of study to highlight the most important environmental problems which reflect the weakness of the environmental management which achieve compatibility between the safety of environment and the polices of the development.

The research deal with a set of theoretical concepts that should be considered in the practice of planners, architects and civil engineering to avoid the negative effects of the physical environment on the environmental situation and also individuals and institutions those interested in the environmental situation from other areas can make use of it.

Introduction

The dimensions of the sustainable development economic, social and environmental dimensions are intertwined with each other and interacted. The fourth dimension which is the important one in the development policies, is the environmental management, which as a condition for its success, is to know the interconnection between these dimensions and achieve parallel progress. Actions taken in one of them promote the other to achieve the goals of sustainable development and to achieve social participation and justice. Most of the establishments and organizations concerned with the environment, took into consideration the environmental institutional management because of its importance and its role in achieving the desired goals, like CSD, OECD, World Bank, so the indicators allowed us to measure the progress achieving by the company or organization.

It is important to mention that the tools used to implement environmental management that lead to sustainability are essential for its success, such as legislation, quality standards, competition, financial, supporting institutions and organizations concerned with the protection and preservation of the environment, which provides financial and technical support for development programs.

1- Sustainability

Sustainability means meeting our economic, social, and environmental needs while ensuring that future generations will also be able to meet their own needs. Sustainability is the long-term social, economic, and environmental health of our community." [1] (pp. 8-9)

Environmentally: Sustainability for the health of our residents and the environment, we must protect the quality of our air and water and enhance our natural resources.

A sustainable future will ensure equity and prosperity for every residential district. [2] (p.6)

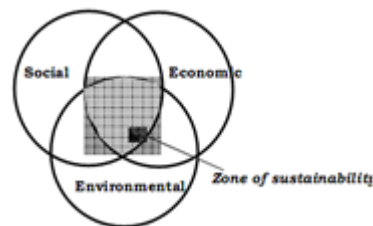


Fig: 1 the Sustainability and its Dimensions

2- Physical Sustainability: Is the methods used in construction process that lead to integrated quality (economic, environmental and social.) Successful management of building projects contributes to saving scarce resources, reducing energy consumption and improving the environment.

3- Sustainable development: Is the management and protection of the natural resource base and the directing of technical and institutional change in a way that ensures the realization of the human needs of present and future generations.[3] (P. 56)

4- Environmental Management: A plan which is developed to put a frame work dealing with the problems of environment and its impacts caused by process of construction, maintenance, changing land uses and to strength the communications between departments. By environmental management plan companies can control risks. [4] (p.54)

5- Sustainable Environmental management interests:

Importance and the fields in which the environmental management interests are:

5-1 Facts: More than one- third of nations threatened species live in wet lands while half of these wet lands damaged by humans, this was reported by EPA (**US Environmental Protection agency**).

5-2 Effects: The possibility of additional risks such as loss of food and housing in event that the management of the environment was weak and may neglected.

5-3 Significance: Protection of human health is one of the environmental management interests through a certain programs.

5-4 Misconception: The land and the wildlife will adapt with small and slow changes but it is difficult that the wildlife species be recovered under the effect of large and quick changes may happen so the belief that the earth and wildlife will restore its normal case is wrong.

5-5 Benefits: Living in an environment with no serious impact and interest of the aesthetic value is one the benefits achieved environmental management.

[5](p.34-36)

6- Environmental Management Background

6-1 ISO 1400 [6]([www.iso](http://www.iso.org) 1400stor .com)

Is an international organization for standards found in 1946 in Geneve, Swezerland, it is key mission to promote trade by developing international voluntary consensus standards, ISO was built for encouraging to systematically address the environmental impacts of their activities. The ISO 14000 family of standards are developed by ISO Technical Committee ISO/ TC207 and its various subcommittee. Family standards provides practical tools for organizations and companies to manage their environmental duties.

6-2 ISO 14001: 2015 and its supporting standards such as ISO 14006:2011

Focus on environmental systems to achieve this, Environmental management:

- Evolution of environmental policy.

- Legal a regulatory requirements must be established, development of goals and targets, application of certain system including (training, controlling process, how to deal with emergencies), controlling and measuring the operational activities, examination and auditing of environment are of interest.

Legislation & Regulations:-

Air emission- solid waste to land- water- hazardous substance [7] p (3019)

7- The Importance of the Sustainable Environmental Management

The environmental management is the mainstay of the economic activity to preserve environmental resources and rationalization of consumption. The Environmental Management System has the potential to achieve a distinct environmental system that allows its affiliates to review and assess their activities. It also includes the organizational structure that assigns responsibilities and resources to the implementation of environmental policies. This system uses environmental standards certificates like ISO as an indicator of the commitment to environmental protection, and Quality System OMS.

8- The environmental situation in the city of Sulaymaniah



Fig:1 The master plan of Sulaimaniyah city 2009
 Directory of Western Municipality of Sulaimaniah [8]

The research discuss the main problems of Sulaimaniah city, Air, Soil, Water, Noise as detailed below:

8-1 Water pollution

Source of water	Cause of Pollution
1- Derbandikhan Lake	a- Tangro River into which sewage of the sulaimaniyah and districts along the river like: Halabja New, Armaw, Sayed , Sadiq, Saraw, Arbat,Sirwan. b- Waste water of the industrial activities located in the Tangro Area. c- Dumps waste collection of to the city of Sulaimaniyah near the river Tangro and other sites near the river. d- Citizens use the Sirwan river to wash their cars and trucks causing pollution of river water flow by oils.
2- Dukan Lake	a- sewage of the districts and residential complexes along the tributaries of the lake, Chwarta, Mawat, Chwarqurna... b- Dumps of waste collection districts counties and residential complexes.

	c- The Little Zap River pollution fuel as gas, oil and Kasoel as a result of using river to transport containers filled with fuel.
3- Springs	The decrease of the rain, snow, caused by the climate changes led citizens to drill deep wells to provide water for their needs.

8-2 Air Pollution

Increasing number of factories, projects cause problems and bad effects affecting the air quality.

8-3 Noise Pollution

The main sources of noise pollution:

- a- Mixed use residential and commercial zones.
- b- Increasing number of cars.
- c- Construction and building projects.
- d- Using large number of electric generators in residential and commercial areas.

7-3 Waste pollution

All the solid wastes, commercial industrial, wastes result of activities of households collected and carried away by large containers owned by the directorate of the Municipality. It is transferred to southeast of Sulaimaniah known as Tangro and treated by landfill method without sorting and classification of the components of waste at the level of residential areas nor at the level of commercial and industrial areas.

[9](Directory of Environment of Sulaimaniah)

8-4 Planning problems affecting the environment of Sulaimaniah (Kheleifawa area as a case study)

There is another kind of problems in Sulaimaniyah city which affect its environment, is that the decision of expanding the boundaries of the master plan for the city of Sulaymaniyah which approved in 2009 and (76) Villages inside the urban center of Sulaimaniyah city was included by this decision, creating problems within the urban environment by the emergence of rural communities in a scattered manner separated by wide spaces from each other and from the city center which weakens the social relations between the residents of the village and makes the provision of public services and transport services more difficult . Construction of housing units outside the regulations and instructions of construction and far from the planning standards and lack of services and these villages are of the type of affiliated villages, lacks of urban conditions, they are slums within the urban area, unplanned and established on the land of the encroachment erected without a permit, deprived of public facilities and basic services and grew and expanded in the absence of general planning of the city and outside the laws of urban organization. One of these villages is Khaleifawa which is under studying. It is surrounded by green areas and has a population of (2000) people and an area of (0.1178278) km² with a population density of 16,909 people / km² and is located from the center of the city at (5, 3330) km between the line Length 45,381 and latitude 35,543. It is located in the western south of urban center of Sulaimaniah.[10] **page 108** To identify the most important characteristics of this region, which leads to the selection of appropriate policies to deal with the problem and through frequent field visits and the distribution of the questionnaire to the residents of the selected village Kheleifawa and a random sample 5% of the number of families was selected after testing the size of the sample (20) form was distributed in Khalifawa to study the reality of the situation of this village and to understand their characteristics and potential. What is important to us in this research is the environmental aspect, after the analysis of the questionnaires, hearing opinions of the inhabitants, researcher's, view many indicators was found that:

- 1- The condition of the roads in the study area is not good, they are unpaved and unplanned, and the proposed ones have not been implemented and the suggested one does not accomplishment.

- 2-The residential units are irregular and random in its construction.
 - 3- There is no health center or clinic in Kheleifawa as the residents go to the city center for treatment.
 - 4-The proposed projects are insufficient, as they were not on a planning basis commensurate with the size of the population.
 - 5- Commercial and industrial services are very simple in Kheleifawa.
 - 6- The proposed projects do not match the actual need for the study area.
- The passage of open sewers of the city through the study area need to transfer to the stream box and laying regular sewage net-work.
- 7- The drinking water transfer by tankers to the region, there is no drinking water network.



Fig: 2 Khaleifawa Village

Source: [11] The Researcher, depending on the Master Plan of Sulaimaniah- Municipality of Western Sulaimaniah

9- Conclusions

- 1- Sulaymaniah city suffers from environmental problems related to water, air and noise pollution.
- 2- The city of Sulaymaniah suffers from some planning problems that have a negative impact on the environment of the city such as annexing the neighboring villages to the urban center, which is a rural district lacking services and far from the laws and controls of urbanization..
- 3- The procedures were limited to partial planning treatments, such as street refinement, sewage networks, and some services according to available space.
- 4- The study area lacks services in general, and there is a lack of education, health and social services, which drives the population of these villages rely on the city to get their needs.
- 5- The projects proposed for the study area are inadequate and do not correspond to the actual need of the population of that region.
- 6- There are no detailed plans to address the problems of random construction, roads and services.
- 7- All actions taken are infrastructure projects and there are no plans to include productive projects that are concerned with the development of the economic aspect and the absorption of unemployment in the study area.
- 8- The need for a broader and more comprehensive environmental database to assist decision makers.
- 9- The inclusion of environmental issues into the five-year development plans needs an effective and practical application.
- 10- The sectoral coordination among official establishment responsible for environmental protection is weak.

10 - Proposals and Recommendations

- 1- The formation of a higher establishment that sets out strategies, goals and priorities and reviews these priorities, each country according to its circumstances. The most important duties of this establishment are:
 - a- Developing and empowering the institutional capacity of this establishment to reach the desired objectives.

b-Develop an IT development strategy and apply the quality assurance system.

c- Develop an environmental information base to assist decision makers.

d- Develop management system to face disasters and emergencies.

2- This establishments shall have representation in each institutions of the State for the purpose of distributing responsibilities and to know the problems and obstacles that affect the ecosystem in the area of responsibility entrusted to it and adopts and supports sustainable development in all areas.

For example the environmental units which is responsible for environmental protection within the planning institutions which is supposed to be managed and operated by specialists deal with the planning and construction problems which affect the environment as **below**:

A- Environmental management Cycle

By creating an effective land use to control future development, achieved by three steps:

1- Space management: It is the evaluation and plan space usage, to reduce the environmental pressure in the cities, effective space management includes:

a- Mixed use and suitable of building density.

b- Areas for buildings and commercial and industrial areas.

c- Compensation of land utilization for housing, industrial, commercial and traffic zones.

2- Spatio Management: There are an offices which responsible for setting standards and polices, it is called spatio-temporal management to keep up with the unexpected changes such as hazards and accidents.

3- Process Management: The evaluation of the projects of the both private and public sectors.

B- Environmental Contract

It is important to create a contract between the owner of the project and the environmental office specialized in environmental protection to achieve healthy and environmentally friendly conditions for future projects.

Environmental Protection Office

Public or Private Project

Contract

- Standard and regulations must be followed
- Economical guiedness which aims to minimize cost and maximize benefit

Action Plan, taken in consideration the surrounding natural environment

<ul style="list-style-type: none"> - Ensure employees' s health inside the project and the residents near the project. - To control the waste disposing into the nature by the project. 	Process of loading and transport construction wastes of the site under the supervision of the responsible of environmental protection.
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C- Personal Behavior

To change the personal behavior is very important to achieve future development without any environmental damage so the future house hold must be as below:

1- Recycling is the most important process to get rid of wastes.

2- Using eco- energy wind to produce electricity per house hold.

3- Eco- house, using solar panels on the top of the house to produce warm water.

4- Using eco-car, no fuel and no smog.

5- Sorting of waste at the beginning point which is the house hold by quantity and quality.

- 3- Creating policies that balance the calculation of needs and between the need to protect the environment.
- 4- Outputs of the strategies of this higher establishment are measurable so that the projects can be evaluated and their success be measured.
- 5- Setting priorities for specific time periods to ensure sustainability.
- 6- Encourage NGOs, civil society organizations, economic institutions and official establishments to mobilize efforts to support a sustainable environment.
- 7- This establishment takes the responsibility of the management of air quality - the implementation of renewable energy projects --The development of the instructions for green building -The development of a database to identify noise levels - Raising environmental awareness.
- 8- Pay attention to the sectorial coordination and including of environmental issues in development plans.
- 9- To focus on the aesthetic component of the region, improving the environment and promote a green environment through the planning of the green areas in the study area.
- 10- Efficient use of infrastructures.
- 11- Taking into consideration the future increase of the population of the study area and provision of infrastructure services such as roads, drinking water, sanitation, schools and the health center, as well as to make them attractive areas for housing.
- 12- Implementation of the Green Belt policy to determine urbanization and population expansion towards agricultural land and to have such belts wide and around urban areas and take legal action to prevent trespassing on this belt

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