

New Cities Design Policies as a Plan for Sustaining the City

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Abstract

The new cities design in Iraq has taken a unique dimensions with no clear policies or sustainable legislation to control it , the urban growth goes in reversed path from the center of the capital “Baghdad” to the edges and outskirts of the city which described as a reversed immigration .Also, the over growth habitats with the high land price problems made cities crowded from inside ready to explode to outside as the plans the government has put for years .All those major problems made a sustainable design policy suggestion urgent for the coming period of building new sustainable cities to sustain Baghdad and the other states in all Iraq in the future . The main problem research: is that “There isn’t a clear vision for a sustainable new cities design policies to sustain Iraqi cities”, and the hypothesis to solve the research problem is “using the sustainable policy elements in new cities design should be a national policy for sustaining the Iraqi cities in the future”. The research objective was to spot the light on the design policies used in planning the new cities in Iraq and to modify it for sustaining the city of Baghdad, The research has taken examples of planned not built cities with city under construction to measure the sustainable design policies that must be in future states and new cities all over Iraq . The results came positive for the case study cities that used a sustainable elements policy in the planning process. In conclusion, this research recommends to use sustainable design policies in future site planning process.

Keywords: Urban Sustainability, Urban Growth, New City, Design Policy.

Introduction:

This research takes the urban design policies and new cities design policy in all over the world as a strategy for sustainable urban development which could manage and control the rapid overgrowth cities and the new scattered communities emerged in Iraq and Baghdad city as a specific study area .The research examined the consequences of this rapid over growth and new cities under construction that never has a sustainable urban policy in its agenda which will affect Baghdad city and other Iraqi states in the future ,especially the issue of sustaining by being sustained from inside to outside . In this research,

a review in previous studies has been presented about the urban design policy internationally and locally as well as a review on sustainable urban design policies to complete the data collection to build a theoretical frame work and methodology of measuring the future scenarios and the actual city under construction in factors extracted from the theoretical part to add a suggestion and put a recommendation to enhance the new cities design policy sustainably.

Research problem :

In Iraq, there is so many problems related to cities design policy, on the top of the list is the city over growth which led to the reversed immigration from inside the city to outside without any clear sustainable urban policy for design and planning . This also led to other problems, such as high land price, crowdedness in inhabitation, and population explosion , which can be described as a result for the unplanned growth under no policy of sustainability. In conclusion, one can say that the problem of this research is that **there isn’t a clear vision for a sustainable new cities design policy to sustain Iraqi city in the future.**

Hypotheses:

This research suggested that using sustainable design policies elements for planning the new cities is the solution for a national Iraqi strategy for sustaining Iraqi cities.

Research Methodology:

The research followed a methodology of analyzing and measurements for selected planned cities and city under construction of specific sustainable design factors according to the collected data from the literature review, and by applying urban spider model as a framework for evaluation and scenario analysis to reach a number of recommendations that should be added to the new cities design policies to be sustainable and sustaining existed cities.

1- Literature Review :

1-1 Frank Chaffer, 1977, Study on the New Towns Policy of Great Britain

The new towns policy in Britain had a special implication and effect on so many countries all over , it was the policy of local community programs with all the power and duty of local planning authorities, and the new towns development corporations have done this successfully according to the ministries . Which according to the national studies of urban growth, it is the policy of uncoordinated pieces of policies turned by time after so many implications into a comprehensive national policy for urban growth, which has been followed by so many countries and referred to as successful implication,[4].

1-2 Gideon Golany , 1978, A National Study for International Urban Growth Policies :

The study suggested to solve problems of city over growth , high land price, crowdedness in inhabitation, and population explosion that the government of Great Britain had to go through one or more of three choices. The first choice is the policy of no policy which would not be useful in our country in the research point of view, because this policy would permit growth and developing without planning and in our country, the chaotic situation of urbanization needs another way of thinking to be solved. The second choice is an inconsistent sporadic attempt to influence trends by establishing partial policies for future urban growth with little or no coordination among them. In our country, this choice in research opinion is the actual policy followed in solving the overgrowth or the increase pressure on Baghdad city , in this kind of policy the research tries to solve or develop and suggest a change to be injective with cases of Iraqi cities . The third choice is to direct and control the urban trends with an affective coordinated comprehensive national policy for future urban growth, [3].

1-3 The study of the Organization of Economic Co-operation and Development –CDRF China Development Research Foundation, 2010:

This report includes a study on urban policies for urban development and growth implicated in many countries (national urban policies). First of all, policies focused on the government roll in urban growth and urban development according to the national policy of housing and the pattern of urban growth, also the objectives of the urban policies differ from country to another according to the city if its undergoing industrial restriction will differ from that used for high growth cities. Some countries, like United Kingdom, United

States and France are facing more serious spatial segregation issues in their cities than in Nordic countries and their policies need to target specific neighborhoods. Also, The urban policy must take into account varying levels of political centralization among the federal and national countries, and the intermediate levels of government whose responsibilities are comparable to the national government of unitary countries tend to be in charge of urban development,[12].

1-4 National Development Plan of Iraq for the Year 2010-2014 /Ministry of Planning Report :

This study includes a number of points talked about spatial development and Environmental Sustainability which has been divided to number of policies focusing on declassifying industries on the provinces of Iraq after the effect of big immigration phenomena to separate the development outside the major cities, such as Baghdad, Musel, and Basra. According to that, there was a number of policies and basic morals, these are :

- a- Industrial location policy
- b- New cities policy
- c- Growth poles policy
- d- Rural settlements policy
- e- Policy of Spatial investment

What is important to the research is the new cities policy which is one of the tools to downsize the population sprawl in major cities such as Baghdad , Musel, and Basra, due to economical development that resulted in many studies of new cities around Baghdad as poles to reduce the extra population with a good climate to assemble new industrial investments, such as (Al Zubaidia new city in Waseet), (Altharthar city in Salah Eddin), (Al Madaaen city in Anbar), with population up to 30000 for every city with economical activities independent from Baghdad . Also, there were satellite cities near Baghdad, such as (Hussinia, Alnahrwan, and Sabaa al Boor) which have been established and reduced in population, unfortunately the new cities didn't establish and what had been built is just the satellite cities that considered now days as part of Baghdad city,[8].

1-5 Graham Floter and Philipp Rode, 2014 ,Study of Steering Urban Growth :Governance, Policy and Finance :

In this study it has been compared between three groups of cities which are (emerging cities, global mega cities, and mature cities) ,and examined the governance and policy instruments that the national, regional and city government can use for delivering a new model of urban development that aims to capture the benefits of

urban growth while minimizing the negative impacts they call it the (3C model), the pillars are : compact urban growth ,connected infrastructure and coordinated governance. So in this study the authors focused on the coordinated governance as well as policy instruments required to deliver all three pillars. Finally, they found a number of policy instruments for delivering the 3C model, including planning, pricing and finance, and believed these instruments could provide opportunities and challenges, and balance for the city ,[9].

1-6 Khatib & Alami study, Baghdad comprehensive city development plan till 2030 ,Mayorality of Baghdad (MOB) , 2015:

This study for the company of Khatib & Alami went through number of future suggestions to solve some of Baghdad problems in land use specifically those problems are : Dijlah belt, The Green Belt and the Environmental Solutions, New Cities around Baghdad, Transformation and Rail ways, Improprate Land Use, Urban Scene, Industrial Activities, Infrastructure and Service Buildings, Educational Services, Cultural and Social Services, Leisure and Entertainment. The item of new cities around Baghdad is what this research care about to study, the study of Khatib & Alami suggested planning new cities around Baghdad with different sizes and destinations to reduce the population inside the city and to bare part of the the future dilatoriness so they suggested new cities near (Sweerah, AlZubaidia, New Tharthar), with sizes between (120-250) thousand person and another smaller extra cities like (Al Rashdiah, Al Mahmodia) in north and south of Baghdad, also in (Khan bani Saad, Al Jessir District), those four cities far 30-50 Km from Baghdad on the other hand the previous four cities far 70-120Km, also they suggested a rail ways and stations to connect Baghdad with this new cities, [5],[14].

According to the literature review and studies, it's worth to conclude a number of policies that must depend on for new cities to be sustainable which one could depend on as a practical frame work to measure the new cities under construction also new cities of the future, those policies are (Figure 1):

1- Comprehensive national policy of urban growth is the policy for a new cities that could be a useful strategy for Iraqi new cities depending on the findings that Golany referred to in his book, also it was the same point that Cheffer got to in his study on the British new towns experiment. The comprehensive policy of planning includes the survey and evaluation of all national resources, then formulating the comprehensive national planning,

implementing it by urban development and rural development to reach the improvement of existed cities ,small towns, establishing new cities, establishing new agrarian rural industrial settlements , and developing it to reach the improvement of the quality of the society. In this research, its agreed that it is the best way to go through to develop and sustain Iraqi cities by building new cities following the same steps .

2- The study of the Ministry of Iraqi Planning in 2009 was a hopeful good research suggested a number of strategies, one of them is the new cities policy to develop the existed major cities using the environmental sustainability objectives with it, which indicates that the Iraqi policy of new cities is a governmental legislation , all the new upcoming plans and under construction cities should be subjected to. On the other hand the latest study for Baghdad comprehensive city development for 2030 came poor and didn't add any new realistic suggestions according to the situation Baghdad going through. The cities suggested to be built came the same as the old studies suggested without a sustainable strategies or a clear design policy lead the process through to be successful.

3- The study of Graham floter suggested a sustainable 3C model policy (compact urban growth, connected infrastructure and coordinated governance) and found that the instruments of this policy are (planning urban growth, pricing congestion sprawl pollution and financing infrastructure) which are good outlines and could border and support the Iraqi policy for new cities sustainably.

4- In the study of the organization of economic co-operation and development, it was clear that the pattern of urban growth is depending on the government roll, and that it follows the governmental policies and legislation. In this case, the research agrees with the obligations the legislation impose but it must have a flexible side that could be modified according to the situation the country goes through, for example, Iraq is going through a stage that the legislation must be comprehensive and changeable to be useful and effective to build sustainable new cities .

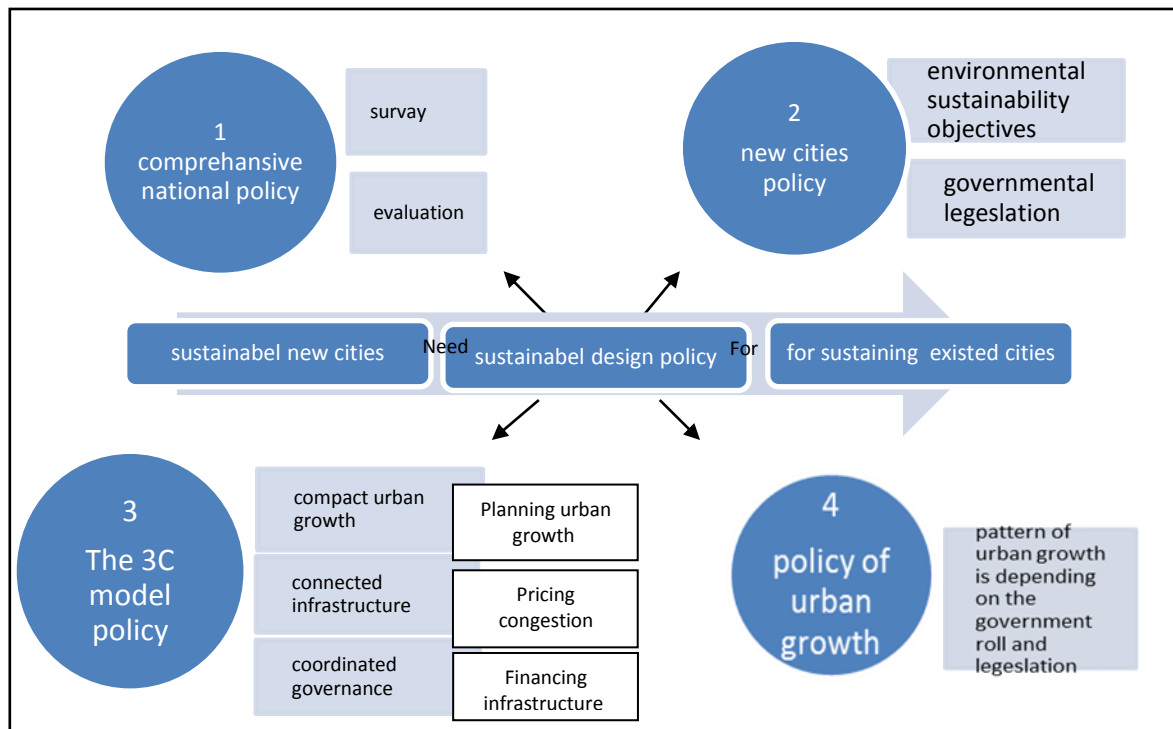


Figure 1: Conclusion of the theoretical suggestion for a sustainable new cities design policies, source: The author.

2- Elements of policies for achieving urban design for new sustainable cities:

The national policy for urban design for sustainability in Europe shows another dimension developed to be a new vision to apply in Iraq as an approach for this research, it must have a guideline and a previous implication with a clear result to support the new development for cities in Iraq. The first vision is included in the report of the Working Group on Urban Design for Sustainability to the European Union Expert Group on the Urban Environment in 23 January 2004 ; which they studied the implication of urban national policies for sustainable cities on number of European cities and studied a number of recommendations. What useful to this research is the following key factors of urban design that focus on policy objectives, legislation, targets, guidance and research :

- 1- The re-use and regeneration of urban land
- 2- Density of new development
- 3- Design of green structures and city landscape
- 4- Streets and movement structure
- 5- Promoting mixed uses
- 6- Designing for affordable housing
- 7- Accessible public amenities and services

- 8- Appropriate conservation, renovation and use/re-use of cultural heritage
- 9- Sustainable, high quality architecture and building technologies
- 10- Maximum and minimum standards,[10].

On the other hand there is another specific report to build a model for sustainable urban design and find a number of objectives and a number of elements in this research, the elements could help measure the existed cities or the new cities design according to the conclusion of the item the research talking about, those design elements briefly are:

- 1- Natural Systems including (land, water, climate, habitat)
- 2- Land use systems (land use analysis, designation of uses, sustainable urban form)
- 3- Mobility systems
- 4- Energy systems
- 5- Environmental management systems
- 6- Building systems
- 7- Governance systems ,[11].

To support the research with richness from the above two reports ,the research will depend on the 17 items under the title (Elements of policies for achieving urban design for sustainable cities) to combine with the conclusion from the literature review under

the title of practical frame work items to measure new or future cities in Iraq. Table 1 contains the key factors for sustainable policies

of new cities plus elements and sub elements of sustainable design.

Table 1: Measurable elements for sustainable policy of new cities, source: The author.

Sustainable design elements	Sub elements of sustainable design	Key factors of sustainable urban design policy
Natural Systems	-Land -water -climate -habitat	-design of green structures and city landscape
Land use systems	-land use analysis -designation of uses -sustainable urban form	-the re-use and regeneration of urban land -density of new development - promoting mixed uses
Mobility systems	-non-motorized local mobility options -public transportation systems that utilize alternative fuels, vehicles, and fueling infrastructures	streets and movement structure
Energy systems	Distributed Energy Resources	accessible public amenities and services
Environmental management systems	- Municipal Solid Waste / Landfill Gas-to-Power -Municipal Wastewater Treatment Facilities Biogas- to-Power	sustainable, high quality architecture and building technologies
Building systems	building designs and construction practices that use less material and energy	designing for affordable housing
Governance systems	systematic approach to defining, designing and developing a more sustainable urban form	appropriate conservation, renovation and use/re-use of cultural heritage

3- Land use systems for sustainable new cities design policy

After concluding Table 1 and focusing on the sustainable design elements it was decided to focus on the most important element which is the land use systems , because it will simplify the goal plus that Table 1 shows clearly the domain of the land factor on the others to achieve sustainable urban form .According to Drabkin, the

differences between cities and location of the urbanized settlements resulted from the differences between levels of economic development , urbanization and socio-cultural attainment as well as a variety of individual circumstances associated with each city or area, according to that he found that generalizing the land requirements on global scale is as in Table 2, [2].

Table 2: Land requirements for urban growth, [2].

Land requirements
Residential
Roads
Green spaces
Public services
Industry
Commercial services

In conclusion, the relation between Table 1 and Table 2 is that the sustainable policies for new cities depend greatly on the land factor, and that the land requirements for urban growth which are found to be the same as the requirements for sustainable new cities plus

new elements emerged now days are related to the environmental concerns and the conservation of the green spaces with new technologies. That will be in the research point of view the main key factor could be measured and analyzed for this research and it is an

indicator for a sustainable policy that could affect the surrounded cities to be sustainable.

4- Practctical frame work for measuring new cities and cities under construction for a sustainable future:

This research found that the suitable way to measure the sustainability of a city design under construction and scenarios of cities on paper is the methodology of Urban spiders as a frame work , this way of measuring is a study of Tuzin Baycan-levent, Frank Bruinsma and Peter Nijkamp. To describe the spider analysis one can say that the spider model is an analytical tool which can be used to visualize the relative strengths and weaknesses of the selected case studies or different scenarios for various chosen factors. The advantage of this way is that one can compare

different case studies or scenarios, which in this research is suitable to compare the Iraqi cities that are under construction and that cities designed on the papers only .The way of measuring depends on the data and factors or elements given on axis, starting from interior towards the outer boundary of the spider. The scores may be qualitative (i.e., ordinal ranking) or quantitative (e.g., standardized on a 10 –point scale), the center of the web represents zero, and the outer edges represent the highest score which is (e.g. 10) , the higher score of one factor; is represent the better performance, nevertheless there is no mutual weighing between the factors , the score of 8 on one factor does not necessarily mean that it is better than a score of 7 on another factor . To have a good review on the way of measuring, this will be explained in Table 3 ,[1].

Table 3: The calculation of the spider value for the hypothetical examples [1].

Cities	Total surface	share	Spider value	Total built up area	Total built up area/total surface	Share	Spider value
A	200000	0.32	6.7	72000	0.36	0.11	7.3
B	300000	0.47	10	99000	0.33	0.15	10
C	80000	0.13	2.7	38000	0.48	0.06	3.8
D	60000	0.09	2	28000	0.47	0.04	2.8
	640000	1		237000		1	

For city A, the share was the result of total surface area of the four cities needed to be measured divided by the total surface area of city A multiplied by the total share percentage which equal 1 to calculate the share of city A from the total share percentage of the four cities (A,B,C,D): $640000/200000*1 = 0.32$ (share percentage of city A), and the same in cities B, C and D. The spider value will be measured in a range of points from 0 to 10 according to the biggest share value which is in this example city B so it will take 10 points in spider value, according to that the spider value of city A will equal the share of city A percentage multiplied by 10 (the spider value of city B) divided by the share of city B: $0.32*10/0.47=6.7$ (spider value of city A) , and so on for city C and city D. now for the second elements needed to be measured which is the total built up area the way of calculating is : first it needs the percentage of the built up area from the total surface which is: $72000/200000 = 0.36$ (the built up area of city A from the total surface of it), for city A, then to calculate the share value from the total four cities area it is the percentage of total built area of city A divides by the total surface area of the four cities : $72000/640000*1=0.11$ (the share value of city A from the total surface area of the four cities), the same equation will be applied on the city B,C and D. the spider value of 10 in this element will be

for city B again according to the biggest share value of the total built up area element the spider value of city A is $10 *0.11/0.15=7.3$ (spider value of total built up area for city A), for city C and D the same way applied to calculate spider value for them, this example studied another elements hypothetically which is: residential housing , recreational, agricultural and forest and the calculation method was the same as in the previous explanations ¹. [1]

In conclusion, the biggest area is the good performance and the lowest area is the worst performance as shown in Figure 2. This example of the spider model could be applied over the case studies in this research selected with different elements related to a sustainable new cities design policies.

¹ This is not necessarily the full parts of an urban area or a city, the author put it as an example to explain the way of calculating the spider value as seen in figure 2, for more details check the resource (Deakin, Mark, Gordon Mitchell, Peter Nijkamp and Ron Vreeker, "Sustainable Urban Development Vol.2–The Environmental Assessment Methods", simultaneously published in USA and Canada, Routledge Tylor and Francis group –London and New York, 2007.

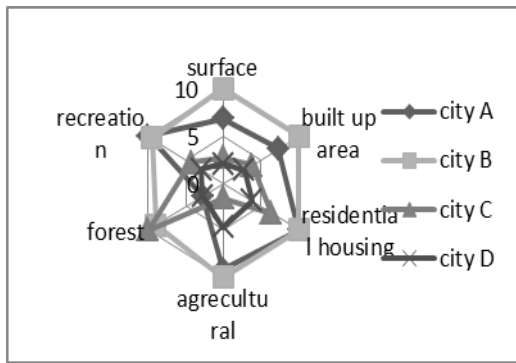


Figure2: Results of hypothetical example of the spider model, [1].

5- Case studies of new Iraqi cities:

This research has examined four case studies selected depending on the new cities designed to support Baghdad city, divided into two kinds, the first city under construction, and planned cities.

5-1 Cities under construction:-

5-1-1 BISMAYAH city, 2010-till now :

This project is considered to be the new to establish 100000 housing units and it's the first to establish one million housing units in all Iraq through investments during a five year plan 2010-2014 to reduce the housing problems Iraq going through . It is planned to habitat 600000 person to support Baghdad need for houses, the project area is 18300000 m², including all the services to the city, and it is far 10 km from Baghdad border on the international road of (Baghdad –Kut) with a total number of 100000 housing units . The project includes Residential buildings: the project was divided into seven parts, six of them are residential with the service institutions, and the seventh part is in the center of the city location for governmental and commercial needs. Also, the project contains in the first place the largest precast concert factory complex all over the world in the south east direction of the city ,and according to Figure 3, the total areas of the important elements selected according to the conclusion in from sustainable design elements and the land use requirements that the sustainable policy depend on :

- 1- Total net area of the project = 18300000 m²
- 2- The total area of the residential area is 4160000 m², and the central building residential area is 780000 m² .
- 3- The green area (green ring) of the project is about 952200 m² .
- 4- The area of the CBD is 750000 m²
- 5- The reservation area is about 120000 m²
- 6- The concert factory is about 660000 m²
- 7- The public services area is 360000 m² ,[13],(Table 4).

The general conclusion from this project that it is a project the government didn't plan for on put in the report of national development plan of Iraq 2010-2014 nor in the study report of Khatib & Alami study for Baghdad comprehensive city development plan till 2030, that means the policy of Baghdad city development is going through a non planned phase, the policy of planning Bismayah city is the policy of urban growth according to the explanation of urban growth depending on the government roll and legislation, while it suppose to be a new city policy containing environmental sustainability objectives as well as the governmental roll and legislation the city of Bismayah didn't follow

Table 4: Bismayah new city land use areas, [13].

Land use	Area by meter	%
residential area	4160000 m ²	22.7
central building residential area	780000 m ²	4.26
The green area(green ring)	952200 m ²	5.2
the CBD	750000 m ²	4.09
reservation area	120000 m ²	0.65
concert factory	660000 m ²	3.6
public services area	360000 m ²	1.96
Total	7782200	
Total net area	18300000 m ²	

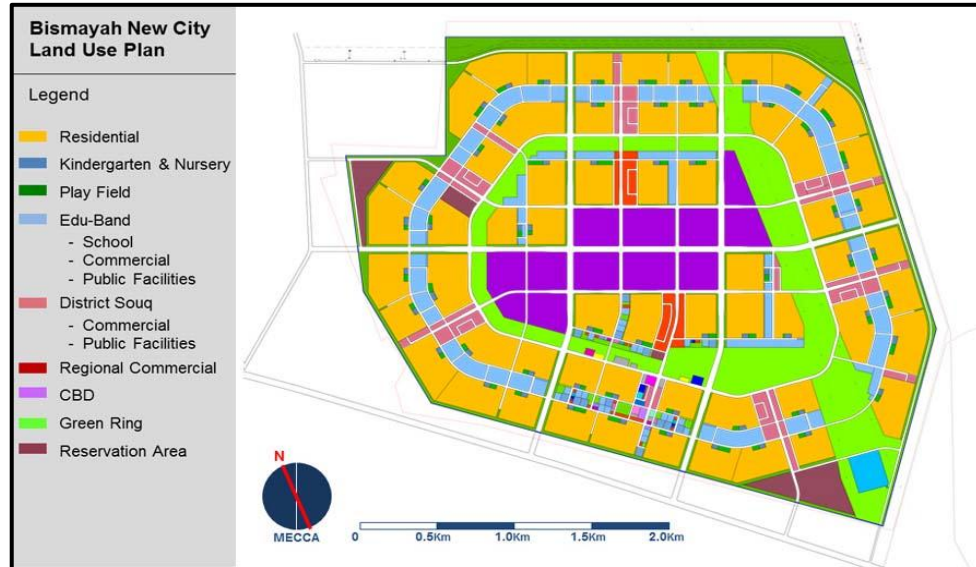


Figure 3: Bismayah new city land use plan,[13].

5-2 Planned Cities:

5-2-1 Project of Developing the Area of (Al Rasheed Camp 2012):

This project was presented and approved by the NIC (National Investment Commission) of Iraq, the project was in a contest and the winner of it was the Scientific and Engineering Consulting Office – University of Technology. It consists a number of facilities and mobility planning with land use plan showing the housing sectors also, a middle tram sector separating the plan into two parts and linking the east of the project with the west. Also, there is a hospital on the end of the tram on the west side which one can see the organic movement and the network planning of streets in the housing sectors. The plan of the project also depends on the sustainable solutions in all the urban areas of it by using technologies reducing the urban heat comes from the crowding houses also using shades with green areas all over the project trying to take the ideas of green architect and the use of renewable energies from sun, water and wind in producing energy .

The area of the project details according to Figure 4 are:

- 1- The total net area of the project = 1220000 m²
- 2- The total area of the residential area is 695000 m²
- 3- The total area of the green axis is 82500 m²
- 4- The total area for the hospital= 11000 m² and the entertainment part is=239000 in total its= 250000 m².
- 5- The sport part = 18000 m²
- 6- Public services = 37500 m²

7- Commercial services = 35000 m² , [14], (Table 5).

The general conclusion from this project is that the city of Baghdad plan didn't follow also the national development plan for Iraq nor also the comprehensive city development plan till 2030, this project could follow a 3C model plan policy (compact ,connected ,coordinated) because it follows a sustainable concepts through design and planning by adopting sustainable strategies of transportation to revive the area of the project by planning , but unfortunately this wasn't a planned project the government decided before, this un planned dissections will affect the city of Baghdad in the future for developing and solving the problems of housing and crowdedness inside Baghdad it should expand outside the border of Baghdad not crowded inside the heart of the city according to the comprehensive national policy till 2030 also the report of national development plan 2010-2014.

Table 5: Al Rasheed camp development land use areas ,[14].

Land use	Area by meter	%
residential area	695000 m ²	56.96
area of the green axis	82500 m ²	6.7
hospital	11000 m ²	0.9
entertainment part	239000 m ²	19.59
sport part	18000 m ²	1.47
Public services	37500 m ²	3.07
Commercial services	35000 m ²	2.86
Total net area	1220000 m ²	



Figure 4: Al Rasheed camp development,[14].

5-2-2 Al Tharthar New City 1987 :

All the assessments points that Baghdad region will show a major growth in population during the few decades resulted from the faster growing of the economical and social development of Iraq due to the growing of civilized communities. To control this continuous growing in the city and to prevent the growing un controlled , it is clear that the planning of new cities to develop the axis of growing in Baghdad was a must be plan, the DOXIADIS ASSOCIATES INTERNATIONAL GROUP S.A. has designed three new cities around the region of Baghdad city in locations suitable to control the growing population chosen by the government. Al Tharthar new city is one of three cities located in the north west part of Baghdad region , this part is called Al Tharthar development area located between two of the most important urban axis which is the axis of Baghdad –Ramady , and Baghdad – Musel axis. This new city is serving two reasons, the first is to reduce the pressure on Baghdad city working as a pole to attract population to it (150000)

person on the final stage of the project , and the second is the developing of an empty land near Baghdad city to hold many factors to be developed and get use of . This new technical city will include :

- 1- New University of 14000 student
- 2- Specialized hospital of 1800 bed with a medical Collage and Institution for nursing and a factory to repair medical equipments.
- 3- Technical industry on a relation with the University or the hospital
- 4- Institutions for applied technologies in civil industry related to technologies of building cities and construction
- 5- Transformative industries , non polluted materials
- 6- Research institutions and Conferences halls
- 7- Governmental offices.

The city contents and land use details are given in Table 6 and Figure 5 ,[6].

Table 6: Land use areas and percentages of al Tharthar new city, source: [6].

Land use	Area by hectare	%
Housing	1699.5	60.6
Center of sectors	138.9	5
City center	43.1	1.5
Governmental offices	26.8	1
University	207.8	7.4
Hospital	138	4.9
Institutions	15	0.5
Other institutions	30	1.1
Industrial sectors	13.6	0.5
City park and sport center	60	2.1
Inside urban area	2.2	0.1
Total	2438.3	87
Main roads 15%	365.7	13
Total area	2804	100



Figure 5: Al Tharthar New City land use plan, source: (Doxiadis Associates International Group S.A,1987, p.173)

In conclusion this city is considered to be a Seattleite city related to the city of Baghdad, the policy of designing this new city is considered to be a comprehensive national design policy according to the work of surveying and evaluation in the report of Doxiadis Associate by surveying the data on the ground and collecting it also by evaluating the alternatives of planning AlTharthar new city and in the end by choosing the best design , if we compare this new city planning process with the sustainable design elements in Table 1 we will find that the main concept of

establishing this new city is a sustainable design policy by achieving the main purpose which is supporting Baghdad city to sustain, also the city is designed to be a technical city connected by universities and institutions which could be compared now days with new cities designed to archive the same purposes to be sustainable cities **.5-2-3 Al Madaain New City, 1983:** The reason of planning this new city was the crowded population in Baghdad and the acceleration in urbanization, to avoid all the negative results of that the government planned new cities around the

capital, to reduce distribution of the growth and to balance the investments. This new city is designed for 50000 person and located south east of Baghdad along with the road of (Baghdad –Kut) far 40 Km from the center of Baghdad. The location is surrounded with two farms they are Al Nahrawan Farm and Al Sweara Farm, also the city far 5 Km from the River Dijlah, the city contents and land use details are given in Table 7 and Figure 6,[7] .

In conclusion this project is designed and planned for the same purpose the city of AlTharthar

planned for but its different in the main function of it which is commercial and housing , the design policy of this city according to the theoretical suggestion for a sustainable new cities design policies is a comprehensive national design policy according to the report of the ministry of planning that used surveying and evaluation, also this city has the same classification of sustainable design elements in Table 1, but unfortunately it hasn't any concept related to the sustainability theoretical frame.

Table 7: Land use areas and percentages of Al Madaain new city, [7].

Land use	Area by hectare	%
Housing with services	495	52.1
Sport city	80	8.4
The international commercial fair	49	5.2
Shopping center	5.5	0.6
The civic center	19	2
Central park and green areas	12.5	1.3
Sport	8.6	0.9
Social and commercial services	6.8	0.7
Hospital	1.6	0.2
Industrial services	32	3.4
Roads	100	10.5
Green rings	140	14.7
Total	950	100



Figure 6: Al Madain new city land use plan,[7].

6-Applying the Theoretical Frame Work on the Research :

After explaining all the four case studies in the previous item, the frame work was ready from Table1 that we selected the land use systems element as the major affecting element concluded in item 3 in this research, to calculate the spider value to compare the case studies and to measure how this element would change the scenario of the new cities planned or constructed to achieve a

workable design policy for new cities sustainable to sustain Baghdad city.

The land use system of the four case studies contain 10 parts common between them the calculation of the share value to calculate the spider value of each part is listed below using Excel program in the calculation and in extracting the final results of the spider value figures as seen in Table 8 for share value and Table 9 for spider value:

Table 8: The Calculation For The Land Use Element for The Case Studies for the Share Value, Source ; the Author

Land use elements	BISMAYAH City	Al Rasheed camp city	Al tharthar new city	Al Madain new city
	share	share	share	share
Total surface	$18300000/40590000*1=0.45$	$1220000/40590000*1=0.03$	$28040000/40590000*1=0.69$	$9500000/40590000*1=0.234$
Total built up area /total surface	$6762200/18300000=0.37$	$1027500/1220000=0.84$	$24383000/28040000=0.086$	$6975000/9500000=0.73$
Share for Total built up area	$6762200/40590000*1=0.17$	$1027500/40590000*1=0.03$	$24383000/40590000*1=0.6$	$6975000/40590000*1=0.17$
Residential	$4160000/40590000*1=0.10$	$695000/40590000*1=0.02$	$16995000/40590000*1=0.42$	$4950000/40590000*1=0.12$
Green spaces	$952200/40590000*1=0.02$	$82500/40590000*1=0.00$	$431000/40590000*1=0.01$	$1525000/40590000*1=0.04$
Public services	$360000/40590000*1=0.009$	$37500/40590000*1=0.001$	$22000/40590000*1=0.001$	$190000/40590000*1=0.005$
Roads	$2745000/40590000*1=0.068$	$183000/40590000*1=0.005$	$3657000/40590000*1=0.09$	$1000000/40590000*1=0.025$
Industry	$660000/40590000*1=0.016$	$0/40590000*1=0$	$136000/40590000*1=0.003$	$320000/40590000*1=0.008$
Commercial services	$750000/40590000*1=0.018$	$35000/40590000*1=0.001$	$1389000/40590000*1=0.034$	$613000/40590000*1=0.015$
Medical facilities	$0/40590000*1=0$	$11000/40590000*1=0.0003$	$138000/40590000*1=0.0034$	$16000/40590000*1=0.0004$
Sport facilities	$0/40590000*1=0$	$18000/40590000*1=0.0004$	$600000/40590000*1=0.0148$	$886000/40590000*1=0.0218$

Table 9: The Calculation For The Land Use Element for the Case Studies for the Spider Value, Source the Author

Land use elements	BISMAYAH City	Al Rasheed camp city	Al tharthar new city	Al Madain new city
	Spider value	Spider value	Spider value	Spider value
Total surface	$10*0.45/0.69=6.52$	$10*0.03/0.69=0.43$	10	$10*0.234/0.69=3.39$
Total built up area	$10*0.17/0.6=2.77$	$10*0.03/0.6=0.42$	10	$10*0.17/0.6=2.86$
Residential	$10*0.10/0.42=2.45$	$10*0.02/0.42=0.41$	10	$10*0.12/0.42=2.91$
Green spaces	$10*0.02/0.04=6.24$	$10*0.00/0.04=0$	$10*0.01/0.04$	10
Public services	10	$10*0.001/0.009=1.04$	$10*0.001/0.009=0.61$	$10*0.005/0.009=5.28$
Roads	$10*0.068/0.09=7.51$	$10*0.005/0.09=0.5$	10	$10*0.025/0.09=2.73$
Industry	10	0	$10*0.003/0.016=2.1$	$10*0.008/0.016=4.8$
Commercial services	$10*0.018/0.034=5.4$	$10*0.001/0.034=0.3$	10	$10*0.015/0.034=4.4$
Medical facilities	0	$10*0.0003/0.0034=0.8$	10	$10*0.0004/0.0034=1.2$
Sport facilities	0	$10*0.0004/0.0218=0.2$	$10*0.0148/0.0218=6.8$	10

Table 11: spider value amounts for the four cities applied to have the final spider model, source: the author.

Total percentage	Sport facilities	Medical facilities	Commercial services	Industry	roads	Public services	green spaces	residential	built up	surface	cities
50.87	0.00	0.00	5.40	10.00	7.51	10.00	6.24	2.45	2.77	6.50	BISMAYAH City
4.64	0.20	0.80	0.30	0.00	0.50	1.04	0.54	0.41	0.42	0.43	al Rasheed camp city
72.34	6.80	10.00	10.00	2.10	10.00	0.61	2.83	10.00	10.00	10.00	Al tharthar new city
47.58	10.00	1.20	4.40	4.80	2.73	5.28	10.00	2.91	2.86	3.40	Al madain new city

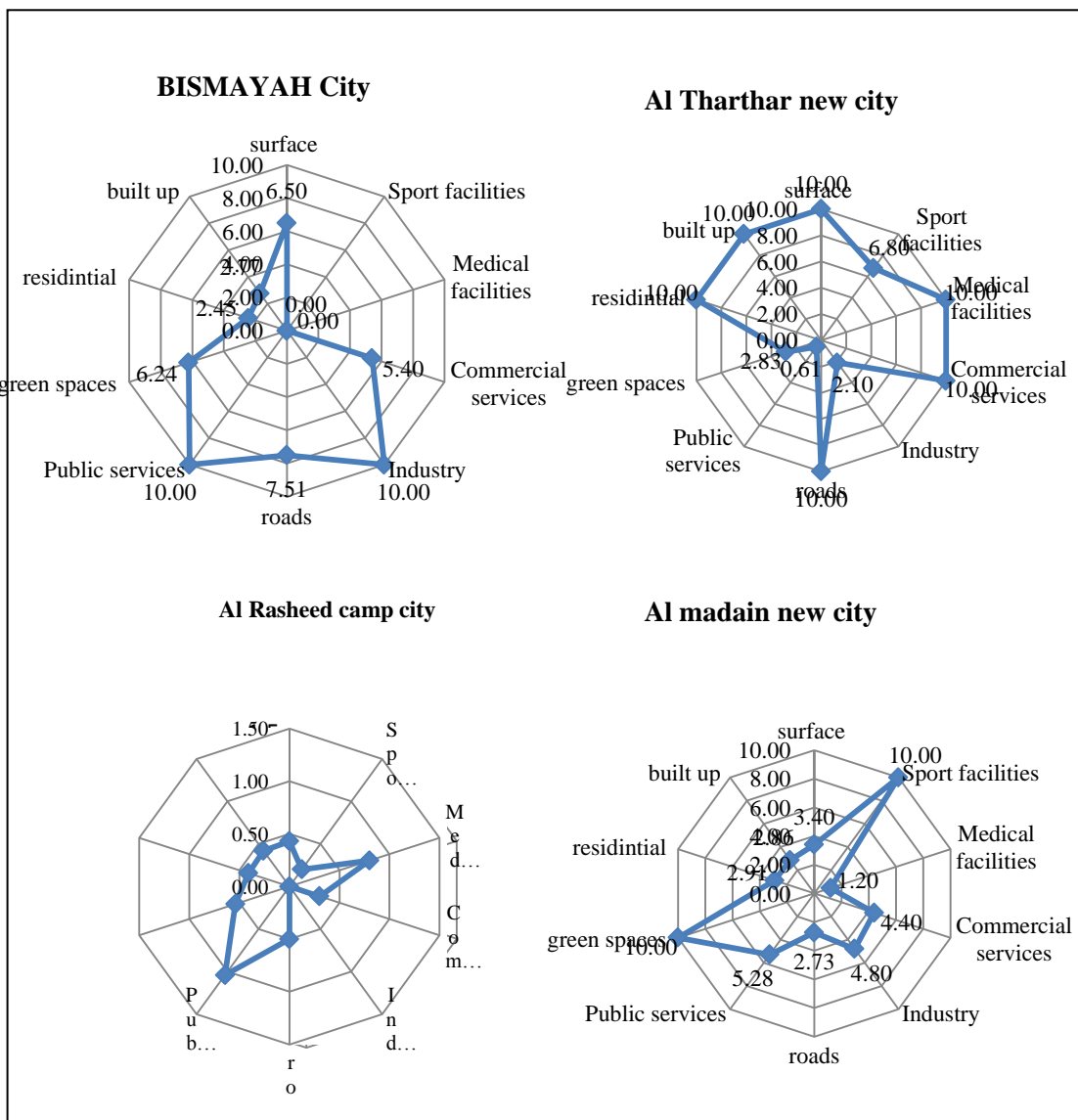


Figure 7: The Final Results of the Spider Model For The Case Studies, Source: the Author

7- Discussing the results : In Table 10 and Table 11, the four cities are described by their total surface , total built up area , the residential area , the green area , public services , roads , industry , commercial services , medical facilities and sport facilities .The result after calculating the share of each element in each city individually as listed in Table 10 also the calculation depending on the share value for having the spider value is listed in details in Table 11. The research conclude that Al Tharthar city has the best scenario for a land use elements as a sustainable design policy of planning, new city of Bismayah and Al Madaan city come in the second and third place and then Al Rasheed camp city. These results tell us that the studied plans and the policy of the old designed cities which they are especially designed to accommodate the nature and the real situation of Baghdad city as a capital are better than a city designed to meet the needs of housing only. The city of Al Tharthar is a good example for a sustainable new city policy, it shows the highest marks in measurements of the elements of sustainable city, and depending on Table 11 , the final results of the calculation for the spider value are translated in Figure 7 .

8- General conclusions:

As a general conclusion the policy of Al Tharthar city is a Comprehensive National Policy of urban growth and this kind of policy for controlling new cities is the most suitable policy for Iraqi cities and for this case the policy of sustaining Baghdad city. The results of the spider value indicate the case of building new cities without taking in mind the real needs of Baghdad. Al Rasheed Camp city had the lowest values in the main elements of land use system needed to construct a new sustainable city, depending on a policy of 3C model, this mean that the policy of planning hadn't meet the real criteria of land use but it concentrated on the sustainable ideas without applying it correctly, in addition the government role was not clear in the planning process. On the other hand the city of Al Madain show that they are nearly the same in the importance of the elements result with the city of Bismayah but for sure Al Madaan city plans came in the fourth place it get the full marks in the green spaces and in sport facilities while bismayah gets the full marks in public services and industry this matches the design policy of each city , for Al Madain it is a comprehensive national design policy and it matches the policy of completing all the parts of the city in land use system while for bismayah it's a policy of urban growth and that's clear for getting the full marks in industry which means it's a growing pole for a much bigger city designed to be much effective in the future . what helps is the clear role and effort

for the government decision that support the process from the first to the stage of constructing, while the investor came in the second place to complete the process . In conclusion the model of planning a new city should meet the criteria, and the land use elements of sustainable new city policies and cities of Iraq could publish a list of policies obligate the investors to follow under the control of the government to meet the needs of our cities to be sustainable and to sustain the old cities also .

9- Recommendations:

This research recommends the government of Iraq to make a review on the policy of new cities as a sustainable strategy for sustainable cities and as a national policy of comprehensive point of view to sustain Baghdad city, also to publish this as a legislation for all future investors to follow the elements of sustainable cities in their proposals of planning in a clear vision following successful example of planned cities.

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سياسات تصميم المدن الجديدة كخطة لاستدامة المدينة

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الخلاصة :

اتخذ تصميم المدن الجديدة في العراق منحى فريدا من نوعية باعادة بدون ان تكون له سياسة واضحة او تشريعات مستدامة لتديره , حيث ان النمو الحضري قد اتجه لاتجاه معاكس من مركز مدينة بغداد الى اطرافها و حافاتها لا بل بعدها لا بعد من ذلك مما يمكن وصفها بالهجرة المعاكسة . كما ان النمو المتزايد بالسكن مع مشاكل غلاء الارض جعل المدينة مكتضة من الداخل مستعدة للانفجار خارج الخطة التي وضعتها الحكومة لسنين . كل هذه المشاكل الكبرى جعلت من سياسات التصميم المستدامة اقتراحا ضروريا للمرحلة القادمة لبناء مدن جديدة مستدامة لديمومة مدينة بغداد و المحافظات العراقية الاخرى مستقبلا . ان مشكلة البحث الرئيسية تتمثل في عدم وجود رؤية واضحة لسياسات تصميم مدن جديدة مستدامة لديمومة المدن العراقية , كما نصت الفرضية على ان استخدام عناصر السياسات المستدامة في تصميم المدن الجديدة يجب ان يكون سياسة دولية لديمومة و استمرار المدن العراقية في المستقبل . كما هدف البحث الى تسليط الضوء على السياسات المستخدمة لتصميم المدن الجديدة في العراق و لتعديلها لديمومة مدينة بغداد , اتخذ البحث امثلة لمدن مخططة غير مبنية و مدينة تحت الانشاء لقياس سياسات التصميم المستدامة الواجبه في المدن المستقبلية في كل العراق , جاءت النتائج ايجابية للمدن التي استخدمت عناصر السياسات المستدامة في عملية التخطيط , و في الاستنتاج النهائي اوصى البحث باستخدام سياسات التصميم المستدامة في عملية التصميم و التخطيط مستقبلا .

الكلمات المفتاحية : الاستدامة الحضرية , النمو الحضري, المدن الجديدة, سياسات التصميم

