Palestine Polytechnic University

College of Engineering and Technology

Civil and Architectural Engineering Department

Graduation Project

Revitalization of Mixed Use Lands in Hebron City

Project Team

Safwat S. Jubeh

Dema A. Azzeh

Aisha M. Abd Elnabi

Project Supervisor

Arch. Abdelrahman Halawani

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Palestine Polytechnic University

(PPU)

Hebron – Palestine

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Abstract

This graduation project in architectural engineering section focuses on the problem of negative mixed land uses in Hebron City, this problem is spreading wide all over the city, and many problems appears as a result of this fatal phenomena.

The mixed land uses affect the humans, the environment, and the resources of the area, it causes pollution in air, soil, and water, it also causes land consuming.

Factories standing side by side with the residential buildings causes humans to have health problems and also decrease the quality of life in the area, mixed use lands caused by having no regulations or rules to organize the process of deciding the suitable land use.

As one of the main duties of the urban planning is to create the environmental and other solutions in order to solve this problem –negative mixed land use-

The urban transformation is a vital solution, it is a process based on a group of actions starts from defining the problem, data collection, processing data, in order to find the suitable solutions, that satisfy the needs and that enhances the quality of life of people living there in many sides, educational, services, environmental, and social.

الملخص

ان هذا البحث بعنوان اعادة احياء و تخطيط المناطق ذات التخطيط المختلط في مدينة الخليل يهدف الى التركيز على مشكلة التخطيط المختلط من الناحية السلبية، حيث أن هذه المشكلة أصبحت من المشاكل التي تهدد السكان و البيئة و المنطقة بشكل عام .

مشكلة المناطق ذات التخطيط المختلط تسبب أضرار كبيرة على البيئة حيث انها تلوث التربة و الماء و الهواء و تستهلك مساحات واسعة من الاراضي في حين أنها يجب أن تستغل في فعاليات و خدمات تحتاجها المنطقة بشكل رئيسي.

و مشكلة التخطيط المختلط تسبب العديد من المشاكل الصحية للانسان فضلا عن تدني المستوى المعيشي و رداءة الاحوال الاجتماعية للسكان، و هذه النتيجة السلبية ناتجة عن عدم تطبيق القوانين التخطيطية في المدينة و عدم احترام و تطبيق تشريعات تقسيم الاراضي التي يتم اقرارها من خلال البلديات.

ومن مهمات المخطط العمراني للمدينة ايجاد الحلول البيئية و العمرانية لعلاج هذه المشكلة – بعد العمل على ايقافها و ايقاف توسعها وانتشارها- ومن ابرز الحلول المقترحة هي عملية النقل الحضري و التي تتدرج فيها العمليات من تحديد المشكلة و جمع المعلومات و تحليل المعلومات و الوصول الى حلول مناسبة.

و بهذا نضمن تحقيق الهدف الاساسي من هذه العمليات و هو تحسين المستوى المعيشي للافراد القاطنين في المنطقة سواء على المستوى الترفيهي و التعليمي و الاجتماعي و الاقتصادي.

Chapter One

Introduction

1.1 introduction

1.2 problem definition

1.3 goals

1.4 beneficiations

1.5 justifications

1.6 methodology

1.7 time line

1.1 Introduction

The city of Hebron is the largest city compared to cities in the west bank, the area that Hebron city occupies is approximately about 22.8 square kilometers according to the 2008 PCPS observations, and the population was about 450 thousand persons and Hebron city is considered as the point of strength in economy in Palestine.

Hebron suffers from such serious problems, such as, the traffic congestion and un-organized building conditions, the lack of green areas and open spaces in the city, and the problem of the mixed-use lands in the city can be mentioned.

Figure 1-1: traffic congestion in Hebron
Source: researchers lens

In the mixed land uses factories can be found within the residential context causing problems for the environment, the people and the way of life in this area.

This study tries to explore this phenomena and try to suggest solutions for it based on many methods such as questionarring and meeting with engineers and reviewing literature.

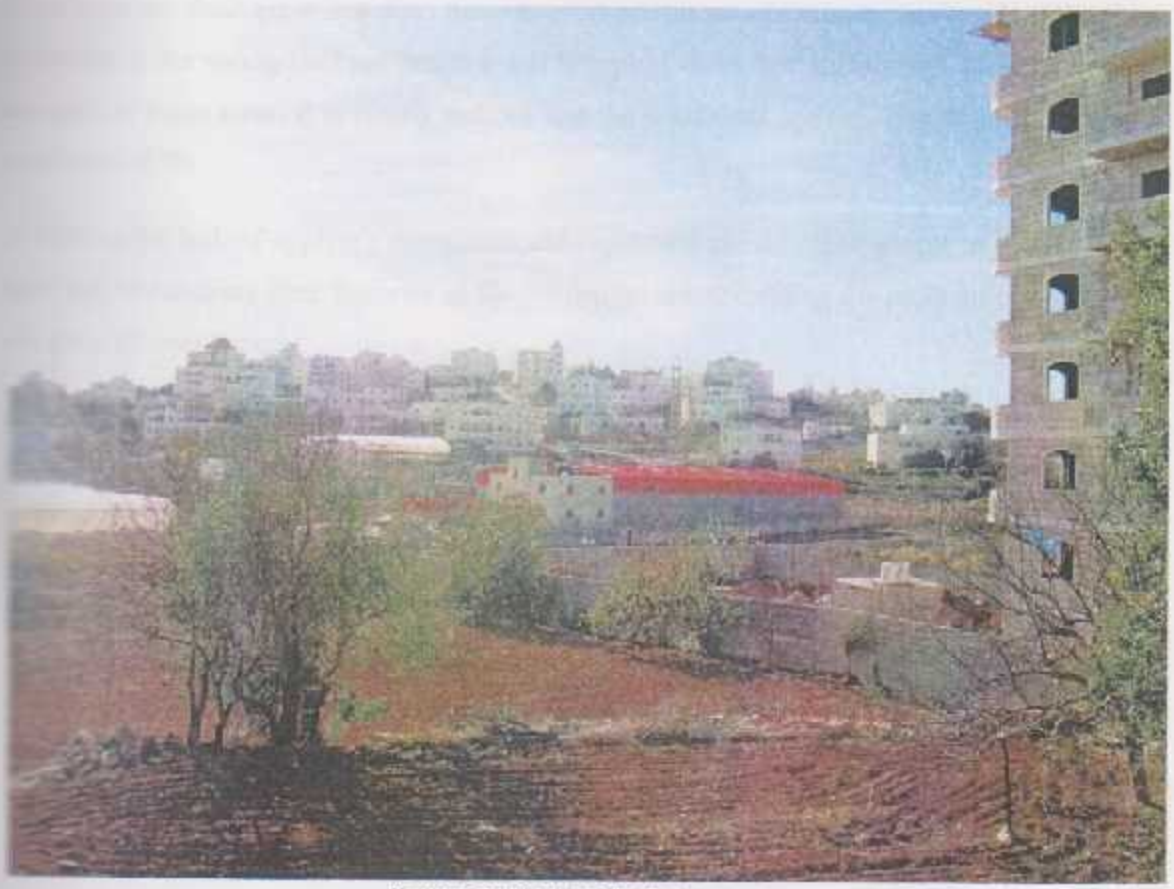


Figure 1-2: mixed-use land phenomena
Source: researchers lens

1.2 Problem definition:

This study which name is revitalizing the mixed-used lands in Hebron city is mainly considered with areas that contains a mix of uses, such as the residential, commercial, and industrial uses, having no respect to the planning considerations and laws, demolishing the crucial way of living to residents living in these areas.

and from the title; when the word revitalize is said, it means moving the area which is dead to life again.

Dead areas …

Dead areas are these areas that don't provide good conditions of living to people who lives there according to the wrong land use practice that is applied there, and if Hebron City is taken as an example of these areas, it is clearly noticed that the conditions are not suitable for providing a good rank of life.

In Hebron the lack of applying disciplines and regulation caused some people to disrespect the laws and to construct their factories in the residential areas, creating the problem of the mixed-use areas all over the city.

Side issues that caused the problem to enlarge :

- In Hebron city there is a lack of urban planning, the last master plan for this Hebron city was applied in 1944 . And now a days there is no master plan for the city; in order to reduce the mixed-use functional buildings
- Hebron needs urban planning; also needs good planners to find the new master plan and a compulsive effort for this master plan to approve success

Issues resulted from the problem

- Mixing of land use in this city ; makes the use of land not suitable with the geographical features and topographical features , and it will reduce the use of lands.

- Natural resources and human effort.
- Mixed-use land which contains residential building and manufactural construction causes.
- the people to have health and pollutional obstacles.
- The phenomena of the industrial constructions stands by the residential buildings creates. a problem in the areas of other functions needed in the study areas.

1.3 Goals :

This project focuses on achieving these goals :

1- To have an over look to the positions in Hebron city, in order to pick an area where the problem is most severe, to try to put good solutions for the problem.

2- Re-planning the mixed-use area (study area) according to the right disciplines and regulations.

3- Reducing the pollution problems that the area faces.

4- Presenting suggestions to transform the factories in the area to the industrial area in Hebron providing to them all conditions of good work and facilitate the process of transforming.

5- Re-using the buildings of the factories in a use that is necessary to the area.

6- Creating green open spaces inside the residential areas.

7- Trying to find a residential area that provides everything the resident may need to have a high way of living.

1.4 Justifications

After achieving this research, it is expected to generate the new clear image for the mixed-use case study area; a clean area with no pollution resources, an area that contains all high quality living conditions, and also contains all services and activities that an individual needs in order to rank a style of life.

It is expected for the newly revitalized area to supply the needs of inhabitants who lives there, and creates a mood of comfort that perfectly attracts people and welcomes them to live there.

1.5 Beneficiations

Dealing with the problem

Mixed-use areas are very common in Hebron in Hebron city; there is no place that is clean from whether industrial or manufactural constructions standing side by side with the residential buildings

and in order to have the wanted result a series of actions must be taken to solve the obstacles that faces these areas, such as the existing factories and mixed buildings, the existing roads and problems of land-use and lands properties and ownerships, and financial problems … etc

Social problems that may be caused because of the people having problems to adapt the new changes must not be forgotten, and the owners of the factories to accept the idea of urban transformation to their factories convincing them side by side that they will have a better industrial circumstance in new area they will be transformed to.

So besides working to fix the previous problems there must be an adapted policy to revitalize the thoughts of the people in order to have a successful project.

1.6 Methodology

The methodology contains a group of steps , that enables us to get all the needed information, these steps or methods are as the following :

1- Literature review :

A review will be done, in order to have a deep look at the projects done before, also the essays and studies that is considered with the subject and may help us in our research will be studied.

2- Questionnaire :

Questionnaire will be done in order to see what people think about the newly suggested condition and also to see what people demands in order to satisfy all their needs.

3- Meetings and interviews :

Meetings will be held with engineers from the municipality of Hebron to know the municipality's' plans for the future and whether they thought to make urban transformation across the city mixed-used lands or not also this may help us to have a look upon the previous studies that is considered with the subject.

4- Observation :

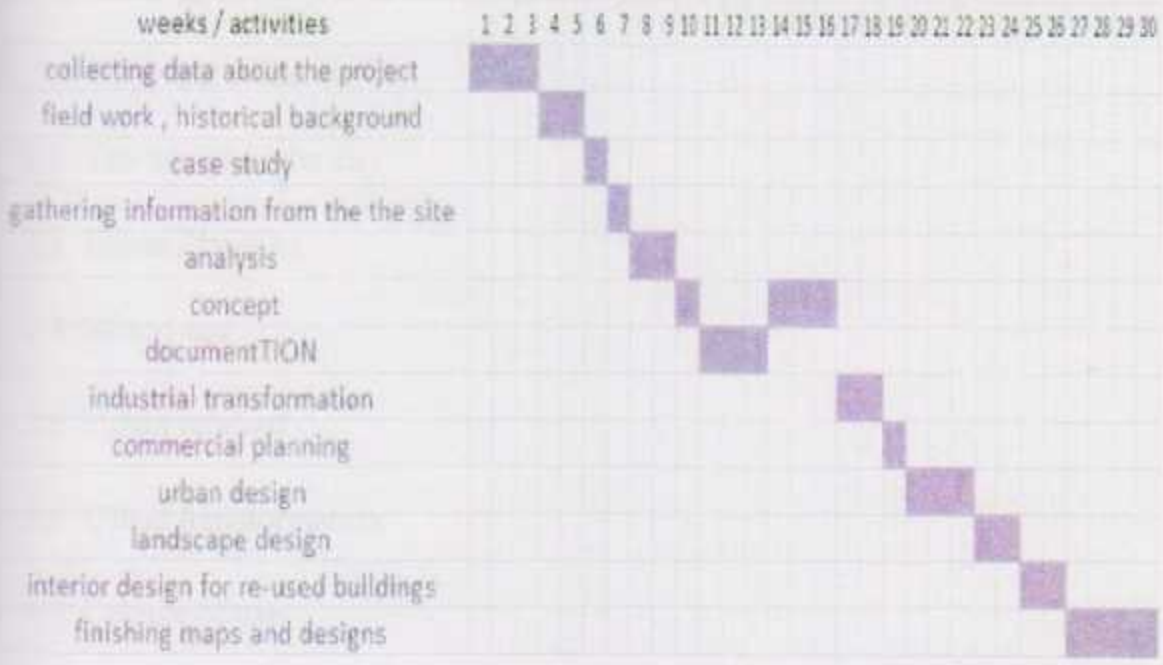
The field work must be adapted, going down to streets and areas which suffer from the problem of mixed-use lands in order to see the problem closely, and that helps us in proposing logical solutions for this severe problem.

5- Mapping and designing :

After analyzing the existing conditions and problems, a master plan for the study area will be generated, this master plan must have solutions for the problems that the study area faces.

1.7 Time line :

A program was suggested, and it contains the tasks that will be done, and the time needed for these tasks and this will be shown in the following table :



Chapter Two

Literature review

2.1 Meaning of the city

2.2 The nature of the city

2.3 Urban Planning

2.4 Mixed-use

2.5 Urban renewal

2.6 Urban transformation

2.7 Change of use

CHAPTER TOW

LITERATURE REVIEW

2.1 Meaning of the city?

Gibbered (1982) define it in his book (town design) as 'A place in which citizen with rights of citizenship live in a civil life. (Gallion and Eisner 1980).

The civil life was derived out of civilization which existed thousands of years ago. In more architectural term Medhurtst (1969) defined the city as:

Both an arrangement of building and spaces and a location of community with all as cities grew and become specialized in one or more activity after the end of the nineteen century, another definition was introduced by Gallion and Eisner (1980).

2.2 The nature of the city:

The word city implies a concentration of people in a given geographic area who support themselves on a fairly permanent basis from the economic activities of that area. The city can be a center of industry, trade, education, government, or involve all these activities. This diversity of opportunity attracts people from rural areas to the cities.(http://www.wikipedia.org/)

Thus, the cities tend to become big if their economic base is broad. The smaller cities are usually satellites that depend on larger cities to sustain their economic life. (Gallion and Eisner 1980).

Cities have circulation systems that unite the different areas and provide routes for the transportation, cities have many obvious faults when it comes to their services to people. They can be overcrowded, not well planned, having services less than adequate, and others.

A city that is not planned according to regulations, faces many problems such as, inefficient traffic and transportation systems, negative mix of land use, messy distribution of services and problems concerned with the city center.

However, even with all of these faults, cities are here to stay. The charge to planners at all levels, public and private, is to find ways to make these essential elements in our social system work better, more efficiently, and thus to make our cities more desirable places in which to live.

2.3 Urban Planning:

Is the act of drawing the new image of the city; shape, size, and population, these factors deal with the neighborhoods and futural extension areas .This plan will determine the suitable direction of development and extension upward, wide extension side by side with the natural, social, economic, and political factors; and solving the problems, changing the land-use classification, then drawing the full plans and design.

The urban planning is the science contains number of alternatives – natural, social, economical, etc in order to direct the extension of the city , dial with the city problems and giving the important life services to the people.(Henehan,Woodson, and culbert 2003).

Comprehensive land use planning and zoning

2.3.1 Achieve livable communities:

The lack of development plan hinders progress in any city, owners, builders, and developers want to know what the administrative requirements and ordinances will be before they begin a project

2.3.2 Planning :

The most essential role of the planning is identifying and solving community's problems, through comprehensive plans and zoning ordinances drafted, it will also protect important community features and guide how community grows, public and business participation in this process are crucial, because the primary challenge of the execution of these plans is the preservation and protection of property rights.

While planning is a political, economic, and aesthetic process, planning efforts may not always serve the existing residents and voters if they do not own property and tend to remain silent. (Norton & company 2003).

Planning duties:

1- Maintaining and updating the master plan and coordinating city planning efforts
2- Providing planning recommendations to the planning commission
3- Furnishing information to the planning commission, city council, and the public regarding plans and petitions
4- Preparing the capital improvements budget

Planning should consider the broad implications of the social issues and ills and attempt to accommodate the essential concerns of all segments of society, it should also look toward a proactive vision for the community that makes the most of its inherent advantages to create a frame work for a sustainable future. (Norton & company 2003).

2.3.2.1 Comprehensive plan :

Comprehensive plan results from analysis of data and plans for incremental land use modifications to fit a developed and recorded vision, planners derive the comprehensive plan after analysis of demographic, ecological, economic, infrastructure, transportation, crime, health, and geographic data may be used to record any of the quantifiable or physical data in a graphic database in layers that can be used for modeling, quantifying, and comparing variables. (Hemehan,Woodson, and culbert 2003).

2.3.2.2 Plan analysis tools:

SWOT, strength, weaknesses, opportunities, and threats analysis is a framework that are available, SWOT will help identify weaknesses and threats so they can be minimized. (Henehan,Woodson, and culbert 2003).

A SWOT analysis is a function of time, resources, and scale.

2.3.2.3 Development patterns:

If the frame works are understood to be the skeleton, then development patterns are the flash of the urban community. An analysis of the development patterns shows us what, within a well-defined set of categories, has been constructed on a particular framework at a particular scale. Thus, development patterns drawings illustrate both the type and density of use within an area.

The urban design process functions like a lens of a camera. when you first look, the image is blurry, out of focus. At each step of the process – each turn of the lens, so to speak – the image comes into tighter focus until the ultimate resolution is sharp and a design solution emerges.(Norton & company 2003).

The urban design **process**:

1- Phase one: understanding – figuring out what's going on
2- Phase two: exploring – trying out ideas, exploring alternatives
3- Phase three: deciding what to do – developing the plan

2.3.2.4 **Smart growth plans:**

Plans are evaluated on the basis of of nine elements:

1- Issues and opportunities
2- Housing
3- Transportation
4- Utilities and community facilities
5- Agricultural, natural, and cultural resources
6- Economic development
7- Intergovernmental cooperation
8- Land use
9- Implementation

They are expected to establish **goals including**:

1- Promoting development
2- Providing transportation choices
3- Protecting natural areas and resources
4- Maximizing the efficiency of infrastructure and public services
5- Forming or reinforcing community identity
6- Determining the balance between property rights and community needs
7- Providing multi-modal, efficient and economical transportation system

2.3.3 **Zoning:**

is a device of land use planning used by local governments in most developed countries. The word is derived from the practice of designating permitted uses of land based on mapped zones

which separate one set of land uses from another. Zoning may be use-based (regulating the uses to which land may be put), or it may regulate building height, lot coverage, and similar characteristics, or some combination of these. Similar urban planning methods have dictated the use of various areas for particular purposes in many cities from ancient times.

Theoretically, the primary purpose of zoning is to segregate uses that are thought to be incompatible. In practice, zoning is used to prevent new development from interfering with existing residents or businesses and to preserve the "character" of a community. Zoning is commonly controlled by local governments such as counties or municipalities, though the nature of the zoning regime may be determined or limited by state or national planning authorities or through enabling legislation.

Zoning may include regulation of the kinds of activities which will be acceptable on particular lots (such as open space, residential, agricultural, commercial or industrial), the densities at which those activities can be performed (from low-density housing such as single family homes to high-density such as high-rise apartment buildings), the height of buildings, the amount of space structures may occupy, the location of a building on the lot (setbacks), the proportions of the types of space on a lot, such as how much landscaped space, impervious surface, traffic lanes, and parking must be provided.

Most zoning systems have a procedure for granting variances (exceptions to the zoning rules), usually because of some perceived hardship caused by the particular nature of the property in question.

Basically, urban zones fall into one of five major categories: residential, mixed residential-commercial, commercial, industrial and special (e. g. power plants, sports complexes, airports, shopping malls etc.). Each category can have a number of sub-categories.(http://www.wikipedia.org/)

2.3.4 Instrument of zoning and planning:

Zoning breaks comprehensive plans down into broad land use groups, most of these groups are single-use by definition, zoning differs from single use and widely interpretive at the administrative level, it generally permits a mix of uses, without specifying which uses are included in that mix.

A statement of purpose and enforceable guidelines that may include development standards.

There are several approaches to comprehensive planning, the first is the traditional model that primarily emphasizes single-use zoning and the segregation of living, working and other uses. The next is smart growth planning which is aimed at controlling growth and urban sprawl and reducing blight, with the essential beneficial outcomes being sustainable economy and environment. New urbanism is an approach which divides land into districts, and promotes high density buildings, maximizes walk-ability, and encourages mixed uses (neighborhood) identity through defined urban forms and public spaces.

New urbanism is challenging to incorporate in existing urban and suburban areas, it can be complimentary toward smart growth planning. (Henehan,Woodson, and culbert 2003).

2.4 Mixed-use:

Mixed-use development is the practice of allowing more than one type of use in a building or set of buildings. In planning zone terms, this can mean some combination of residential, commercial, industrial, office, institutional, or other land uses. The concept of "mixed-use" as a discrete zone is predicated on the relatively recent practice of single-use zoning wherein uses in all other parts of a community are widely separated by legislative mandate.

Throughout most of human history, the majority of human settlements developed as mixed-use environments. Walking was the primary way that people and goods were moved about, sometimes assisted by animals such as horses or cattle. Most people dwelt in buildings that were places of work as well as domestic life.

This historical mixed-used pattern of development declined during industrialization in favor of large-scale separation of manufacturing and residences in single-function buildings. This period saw massive migrations of people from rural areas to cities drawn by work in factories and the associated businesses and bureaucracies that grew up around them. These influxes of new workers needed to be accommodated and many new urban districts arose at this time with domestic housing being their primary function. Thus began a separating out of land uses that previously had occurred in the same spaces. Furthermore, many factories produced substantial pollution of various kinds. Distance was required to minimize adverse impacts from noise, dirt, noxious fumes and dangerous substances. (http://www.wikipedia.org/)

These factors were important in the push for Euclidian or single-use zoning premised on the compartmentalization of land uses into like functions and their spatial separation.

Throughout the late 20th century, it began to become apparent to many urban planners and other professionals that mixed-use development had many benefits and should be promoted again. the need to separate residences from hazardous factories became less important. Completely separate zoning created isolated "islands" of each type of development. In most cases, the automobile had become a requirement for transportation between vast fields of residentially zoned housing and the separate commercial and office strips.

Zoning laws have been revised accordingly and increasingly attempt to address these problems

by using mixed-use zoning. A mixed use district will most commonly be the "downtown" of a local community, ideally associated with public transit nodes in accordance with principles of Transit-oriented development (TOD) and New urbanism. Mixed use guidelines often result in residential buildings with street front commercial space.

2.4.1 Drawbacks

Mixed use development is often seen as too risky by many developers and lending institutions because economic success requires that the many different uses all remain in business. Most development throughout the mid to late 20th century in the United States was single-use, so many development and finance professionals see this as the safer and more acceptable means to provide construction and earn a profit.

2.5 Urban renewal :

Is a program of land redevelopment in areas of moderate to high density urban land use.

Renewal has had both successes and failures. Its modern incarnation began in the late 19th century in developed nations and experienced an intense phase in the late 1940s – under the rubric of reconstruction. The process has had a major impact on many urban landscapes, and has played an important role in the history and demographics of cities around the world. (Henchan,Woodson, and culbert 2003).

Urban renewal may involve relocation of businesses, the demolition of historic structures, the relocation of people, and the use of eminent domain (government purchase of property for public use) as a legal instrument to take private property for city-initiated development projects.

Urban renewal has been seen by proponents as an economic engine and a reform mechanism, and by critics as a mechanism for control. It may enhance existing communities, and in some cases result in the demolition of neighborhoods.

Many cities link the revitalization of the central business district and gentrification of residential neighborhoods to earlier urban renewal programs. Over time, urban renewal evolved into a policy based less on destruction and more on renovation and investment, and today is an integral part of many local governments, often combined with small and big business incentives.

2.6 Urban transformation:

Urban Transformation refers to a physical transformation of urban areas, previously used for other purposes.

The sites lie within the existing fabric of the city, and the size of the sites requires the transformation projects to provide a structure of public spaces as well as buildings. The purpose is to create urban areas with a mixed use of housing, culture, recreation and workspaces. The projects are usually planned and implemented by private developers or publicly owned companies working under the same conditions as private companies. The framework of transformation projects is complex. The projects are restrained by the conditions of the site, regulations, market, and also by the developers' demand for return on their investments. The planning process is then undertaken by a developer, who has other goals than what the Norwegian Planning and Building Act established as the purposes of planning.(PhD project, Sissel Arctander.2006)

2.6.1 Steps in the Urban Transformation Process

The matrix suggests a generic process for vision-driven urban development projects, and identifies a number of gaps in current structural, financial and regulatory processes. A work programme is required to close these gaps.

The urban transformation process is suggested to be conceptualized as a four-step process:

- Creating the context for urban transformation
- Empowering special purpose vehicles to carry out urban transformation
- Land and property development activity
- Securing longer-term transformation outcomes

2.7 Change of use:

Change of use is a term used both in the context of zoning as applied to functional and characteristic changes in allowable land-use, and as a term used in construction plan review. (Hinchan,Woodson, and culbert 2003).

The term describes an existing building or structure that alters the level of risk associated with a building, a change of use in terms of zoning won't necessarily trigger alternation to the site or the existing structures, a change of use in terms of the building code may, especially if a building has moved to a riskier use.

Issues defining the context in which change of use and redevelopment occur (problems):

1- The urban core.
2- Sprawl.
3- Economic development.
4- Planning.
5- Zoning.

6- Citizen action that fosters regional.

7- Urban and suburban forms that positively contribute to the quality of life.

2.7.1 Why change of use ?

Ultimately it's about economics and quality of life, communities can sustain and revitalize their existing fabric by finding a new use for an existing building that have become obsolete, this is readily achieved if their primary structural integrity is intact. Such buildings can be a wonderful resource to a community.(latham 2000)

For environmentally conscious builders, they can be an energy efficient source of building shells for almost any proposed use. Reduced urban sprawl leads to energy conservation in transportation required to support business activity.

For business, organizations, and developers in search of space for a project, unused structures form a ready supply of spaces that might be quickly and affordably occupied, often there are incentives for re-use of existing structure in the form of infrastructure improvements and tax abatements.

For owners with empty buildings, a little creative thinking and application of code and zoning optimization can increase the value of the property and attract groups of tenants or purchasers that might be otherwise untapped.

Chapter Three

Study Cases

3.1 'Am Borsigturm', Berlin, Germany

3.2 'Parc Logistic in the Zona Franca', Barcelona, Spain

CHAPTER THREE
STUDY CASES

'Am Borsigturm', Berlin, Germany

3.1 Impact of change

The 15 ha site 'Am Borsigturm' lies in the North-western part of Berlin/Germany in the district Reinickendorf (see figure 1). Since the 1830s, this site has been used for industrial production such as locomotives produced by the famous entrepreneur family Borsig.100 years ago, the Borsig company was a symbol for economic growth in Berlin. More than 14,000 locomotives were produced in the factories on the site and exported to the whole world (Birk and Engel 2000). In the early 1920s the first high-rise building of Berlin was erected and named the "Borsigturm". To this day, it remained the landmark of the site. For economic reasons, production of locomotives in Tegel stopped in 1930, but other industrial activities on the site continued.

Due to economic change, production on the site declined little by little. Only a few new companies moved there and by that time large parts of the site had already deteriorated. After the fall of the Berlin Wall, rapid structural changes took place. Berlin had been an enclave in the middle of the GDR (German Democratic Republic). This meant protection and support for companies which where willing to stay in West-Berlin, but it also restricted the potential for further development. After reunification, companies and investors were expecting a booming market in Berlin. Although the site 'Am Borsigturm' was a contaminated industrial brown field at the beginning of the 1990s (see figure 2), it also was a site with high development potential: it was a famous, well-known site embedded into the urban fabric with an excellent location next to highways, railways and underground transportation.

Figure 3-1 : Location of the site 'Am Borsigturm',
Source: http://www.am-borsigturm.de/

Figure 3-2 : Site 'Am Borsigturm' in 1992, Birk and Engel, 2000
Source: http://www.am-borsigturm.de/

The impact of change was dramatic. In the span of a few years, industry had to adapt to completely new market conditions. Due to speculation, land prices rose rapidly which forced industries and residents to leave the city and move to the suburban region. Derelict sites remained, and large investors and companies failed to appear.

Physical/Environmental impact The site 'Am Borsigturm' is situated in an excellent location: near the Tegeler Lake and with direct access to highway, railway and metro. As a derelict site, it had negative effects on neighbouring areas. The site was not accessible for residents and was an eyesore for the whole district. Due to its former industrial use, the site was partly contaminated and represented a long-term environmental risk.

3.1.1 Physical/Environmental impact

The site 'Am Borsigturm' is situated in an excellent location: near the Tegeler Lake and with direct access to highway, railway and metro. As a derelict site, it had negative effects on neighboring areas. The site was not accessible for residents and was an eyesore for the whole district. Due to its former industrial use, the site was partly contaminated and represented a long-term environmental risk. Impact on image The loss of companies and population also means a loss of image for the city. After the city's borders were opened, industries and residents moved from the city to the suburban region of Berlin. Between 1993 and 2000 Berlin lost 93,000 of its residents. Now(2004) the population stabilised. Image is an important factor in the severe competition on a global market. International investors can choose between several cities, which have the image to be "global cities" (Sassen 1996). If sites deteriorate and companies and residents move away, cities become unattractive for global players on the market. For Berlin as the new capital of a reunited Germany, the image of the city was crucial for attracting investors and new companies.

3.1.2 How did the city deal with change?

In 1992, Herlitz AG succeeded in the competition for the site 'Am Borsigturm' and bought the site expecting a high profit. It founded Herlitz Falkenhöh AG (later RSE (real estate services company) Project management AG) as a subsidiary to develop the site. Due to rising prices on the land market, the Berlin Senate decided to develop a concept, which was supposed to help stabilize land prices for industrial land and thus maintain industry within city borders. In November 1992, the site became part of this initiative called ISK ,which meant a restriction to industrial use only. Further barriers for the developer RSE were: preservation of historic buildings, uncertainty in the degree of contamination afflicting the site, environmental requirements, zoning, integration into.

neighboring uses and the general economic situation in Berlin. RSE embarked on a strategy to develop the site in intensive cooperation with the City of Berlin, which was essential for successfully implementing the revitalization concept. The transformation of the derelict site into a modern attractive location was only possible with the approval and support of the public administration. Additionally, neighboring areas which had to be considered in a holistic concept for transformation belonged to the city of Berlin. Thus, an intensive public-private-partnership between RSE and the city of Berlin was a crucial precondition for a successful revitalization. Besides the need for co-ordination with the public administration, RSE was highly dependent on the market and the demands of potential investors. To fulfill the needs of the market and of the city, a mixed use concept was chosen. In the meantime, the ISK concept.

was revised and the restriction to exclusive industrial use was lifted: uses were broadened to include production-oriented services. The concept at one time had been successful in stabilizing land prices for industrial land, but it also became evident, that it did not take into account actual market needs and thus was no longer appropriate to satisfy current needs. The city of Berlin realized that it made no sense to conserve the prior conditions and adapted its strategies and

plans to the changes. The changed economic situation was also an important issue in the discussions and negotiations

between RSE and the city. The central question for the city was: How does manufacturing change in the city and how should the city react to economic changes (Birk and Engel 2000).

The revitalisation concept was adapted to modern requirements of light industry and production-oriented services. To realise the vision of a mixed use site, the area had to be opened to the population. The site was to be reintegrated into the urban fabric, but without neglecting its industrial history. Refurbished historic buildings became the brand of the site (see figure 3). The revitalization of the site was a process, where the direction was clear but the approach as to how to realize the vision was uncertain. Shop-owners of neighboring streets were afraid of the competition with large shopping facilities on the revitalized site. Thus, surveys, demand analyses and architectural competitions were conducted before deciding on the ultimate mix of uses on the site. In the end, the following uses were realised: residential (206 flats), shopping ("Hallen am Borsigturm"), a health care centre, recreational and leisure facilities, restaurants etc.

Figure 3-3 : Aerial view of the site 'Am Borsigturm' during revitalisation process, Birk and Engel, 2000
http://www.am-borsigturm.de/

In 2003, the revitalization process was approximately 80% complete. The site was cleaned-up, the quality of open space has improved, and historic buildings were preserved and adapted to new needs. 'Am Borsigturm' became a truly mixed use site and a new economic centre of north-western Berlin.

3.1.3 Different types of uses can now be found on the former industrial site:

Figure 3-4: Model of the site "Am Borsigturm"
Source : http://www.am-borsigturm.de/#

- **Residential use:** (see model, no. 5):

206 flats were built, including a day care centre, and senior- and handicapped-friendly flats.

- **Offices:**

In 1999, the first phase of construction of the office park was finished. Three 6-story office buildings and one hotel with 105 rooms (no.7) have already been constructed.

The Borsigturm (no. 8) is located in the middle of the site, and has housed the developer company since 1995. Additionally, the building provides office space for service-suppliers. For

the successful restoration of the Borsigturm, the building was honoured with the "Bauherrenpreis" in 1996, a special award for excellent refurbishment of old buildings. Another office building lies directly on Berliner Straße (no. 1). The upper storeys accommodate offices, in particular for users of large joint areas. The two lower storeys of the building are occupied by retail in the "Hallen Am Borsigturm".

Figure 3-5 : elevation of the offices building
Source: http://www.am-borsigturm.de/

Figure 3-6 : inside the offices

Source: http://www.am-horsigturm.de/

- **Trade and innovation park:** (no. 4):

1998 the technology centre for "new industries" was opened. The third construction phase was completed in 2001.

The trade and innovation park includes the incubation centre "Phönix". Thematic focus of the incubation centre lies in the field of traffic engineering technologies. The building offers rooms suitable for small manufacturing companies as well as offices. The incubation centre was publicly funded to improve the economy at a regional level.

Figure 3-7 : view of the trade and innovation park

Source: http://www.am-borsigturm.de/

- Shopping centre:

The shopping centre (no. 2) (architect: Claude Vasconi) was opened in 1999 and was fully occupied before opening. It contains 120 shops, international restaurants, and services. The "Hallen am Borsigturm" received the real estate award 2000 and the "Certificate of Merit" of the international Council of Shopping Centres.

Figure 3-8 : aerial view of the shopping and health centers

Source: http://www.am-borsigturm.de/

- **Office and health centre (no. 6):**

This building formerly housed Borsig headquarters and was preserved as a cultural heritage building with new uses. One part of the building was rebuilt to become a health centre, which houses different physicians

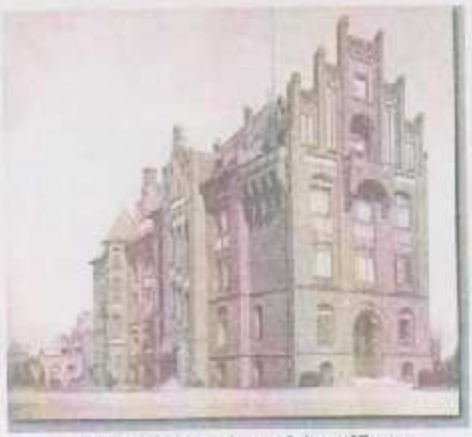


Figure 3-9 : view of the offices

Source: http://www.am-borsigturm.de/

Figure 3-10 : view of the hotel and health center

Source: http://www.am-borsigturm.de/

Figure 3-11 : the hotels' restaurant from inside

Source: http://www.am-borsigturm.de/

- Parking:

The indoor parking garage (no. 3) provides 1,600 parking spaces.

- Motorola:

Motorola (no. 10) was attracted to the site, but bought the land it occupies due to a special deal with the city – the city paid for the decontamination and commissioned a major order).

Figure 3-12 : the whole project

Source: http://www.tellitec.be/contact/index.html

3.1.4 Aspects of sustainability

Improvement of the ecological situation through two ways:

- Clean up pollution from polluted sites.
- To full fill the environmental requirements.

Sold surfaces can be handling by adding tree, court yards and plantations with about 20 percent from the total area of sold surfaces, that's leads to save about 50 percent of rain water to go through plantations area instead of going it to storm water or sewage networks; this mean saving about 50 percent of the construction costs of infrastructure projects

Through improving the ecological situation, the site increased in value and was opened for new uses. The site was no longer restricted to only industrial use, but developed into a mixed use area. Thereby, integration into the urban fabric was markedly improved. The site is now accessible to all residents and improved the quality of the whole district. Although the revitalization affected a radical restructuring and modernization of the site, historical features were kept alive. Monuments were restored and maintained as land marks (e.g. the Borsigturm). This facilitated building a sense of identity among residents for the new site.

The first factor that's led RSE able to establishing harmonized structures is the owner of company who have a general view and overall concept for the sit, the second factor is the ability of company to transforming large and old industrial sites to modern with conserving vital living and working places, and that's needs to make balance between public and privets interests ,a vision and concept .

RSE had to comply with environmental regulations and requirements such as providing for at least 20% green areas on the site. The people start to adapt the land use plan which designed by RSE, more over in 1996 the Berlin Senate's take a decision which allowing industrial sector to use only in certain areas was softened.

In order to improve site's image, maintenance of historical buildings and designed on the entire site where very important issues

3.1.5 In summary, key elements of the revitalization process in Berlin are:

- Taking on the challenge for change and believing in the potential for successful restructuring
- Cooperation between authorities and developer
- Staying adaptive to new circumstances and needs
- Using the history of the site as a brand for future development and for strengthening the identification with the site

Figure 3-13 : before revitalization
Source: http://www.am-borsigturm.de/

Figure 3-14 : after revitalization

Source : http://www.am-borsigturm.de/

Figure 3-15 : view of the project

Source: http://www.am-borsigturm.de/

Figure 3-16 : view of the hotel

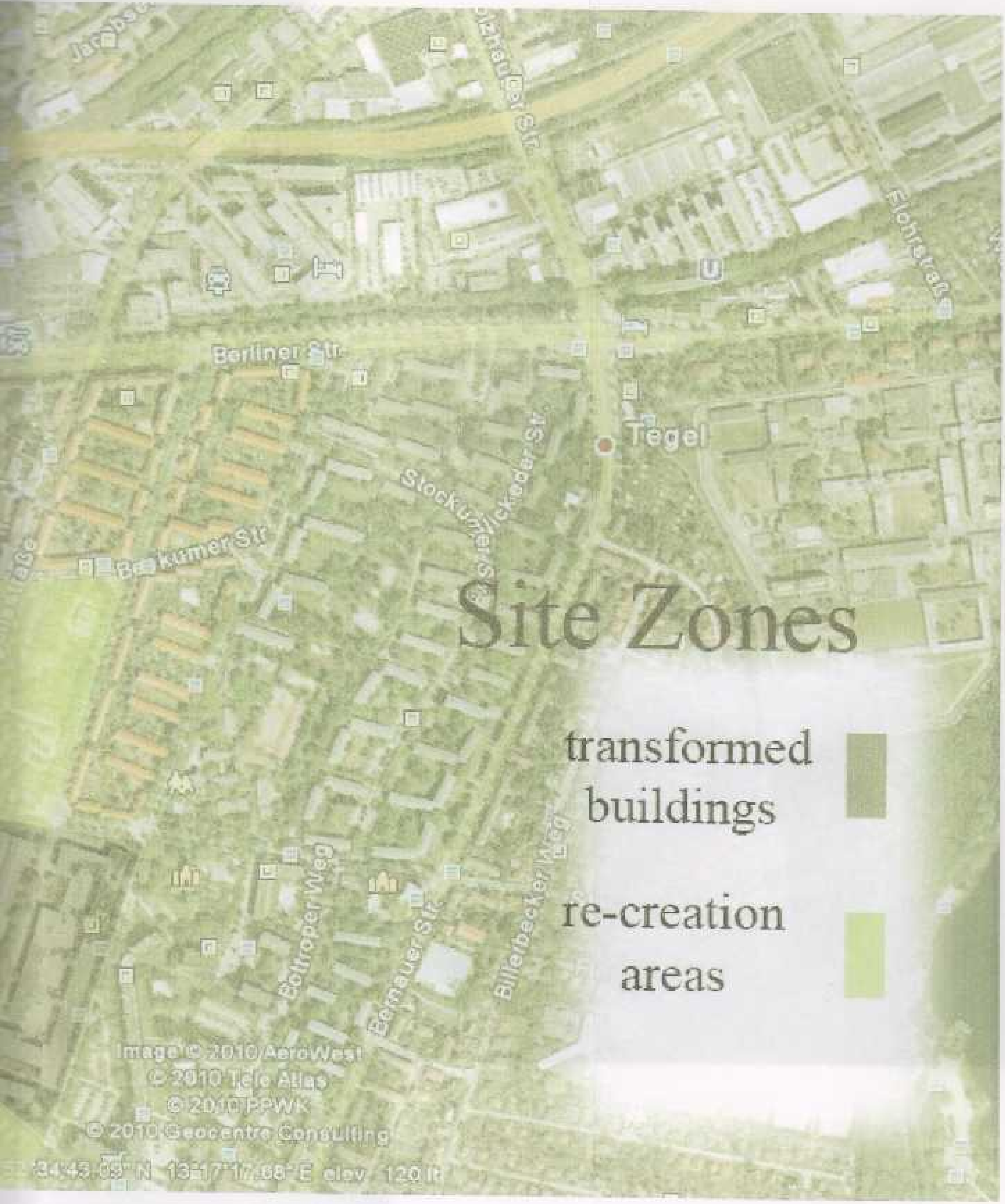
Source: http://www.am-borsigturm.de/

Figure 3-17 : view from inside showing how architects preserved elements

Source: http://www.am-borsigturm.de/

One of the key issues in any successful revitalization process is land ownership. In this example, the developer company RSE owns the land, which enables the company to devise a development concept for the whole site.


Illerzeile
Eschachstraße
E26
Buddestraße
Gruibdorfstraße
Borsigturm, Am Borsigturm, Berlin, Germany
Schulstraße
Kirchgasse
Schlesische Straße
Date: 5/5/2006


Site Zones
transformed buildings
re-creation areas
Berliner Str
Tegel
Boltroper Weg
Billerbecker Weg
Image © 2010 AeroWest
© 2010 Tele Atlas
© 2010 PPWK
© 2010 Geocentre Consulting

'Parc Logistic in the Zona Franca', Barcelona, Spain

3.2 Location:

The site lies in the South-Western part of Barcelona between the river Llobregat and the ring highway Ronda del Litoral. Zona Franca encompasses 600ha, whereas the revitalised site Parc Logistic has an actual size of 40ha.

Zona Franca encompasses 600ha, whereas the revitalised site Parc Logistic has an actual size of 40ha. Industrial use of the site can be traced back to the beginning of the 20th century, when El Consorci de la Zona Franca was founded in 1916 by the City Council and the Chamber of Commerce to develop the Zona Franca, a tariff-free zone of Barcelona. The original project was focused on industrial use. Today, Zona Franca Industrial Estate is the biggest and most active industrial area in Spain.

Figure 3-18 : Location of Zona Franca and Parc Logistic
Source: El Consorci: Annual report 2001 p.58

Site location is ideal, because it is close to the city centre, the airport, and next to the coastal ring road (Ronda del Litoral) and the port. Until now, public transportation has been insufficient.

Before Zona Franca's industrialisation, the site was agriculturally used. In the early 20th century, the city decided to transform the site into the main industrial location of Barcelona.

Parc Logistic became responsible for recovering the site. The aim of Parc Logistic was to transform the site and to replace traditional industrial use with other, more innovative commercial and industrial activities (particularly in the field of logistics). Currently, two thirds of the site are in industrial use and one third is used by logistics firms.

For transforming the site to more innovative industries in the field of logistics, the site had to be equipped with modern infrastructure and technologies.

Parc Logistic has a dedicated public telephone switchboard with more than 7,000 lines, a fiber-optic ring that will connect all the buildings and premises and all necessary infrastructure for value-added services (standard wired telephone, cellular telephone and cordless telephone, configuration of virtual switchboards, private digital switchboards, pp data-transmission lines, Frame Relay and ATM networks, Internet access, configuration of private networks between different buildings etc.).

The site offers plenty of outdoor parking lots and underground parking in the buildings. A metro line connecting Parc Logistic with the airport and the city centre is planned. A certain mix of

cafés, restaurants, shops, banking, travel agencies etc. shall create an optimum working environment for employees. Parc Logistic coordinates basic services such as surveillance and security, maintenance and cleaning of common facilities, selective waste collection and garden maintenance.

Architect Ricardo Bofill designed the spectacular looking buildings shown below, whose roofs are reminiscent of waves.

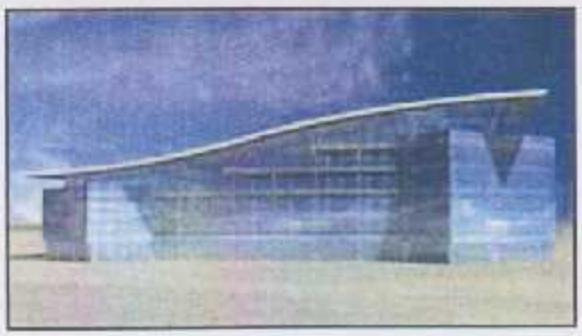


Figure 3-19 : Models of the office buildings
Source: http://www.elconsorci.net/

Figure 3-20 : Models of the office buildings
Source: http://www.elconsorci.net/

Figure 3-21 : Parc Logistic under construction
Source: Annual report of El Consorci

Use of the buildings is flexible and warehouse and office space can be rented modularly. The first phase of the revitalisation is fully completed now. The first two office-buildings have already been finished and are occupied Future construction activities Further construction activities depend on market needs. Enlargement of the logistic area depends on whether SEAT wants to stay on the site or move to another location. However, plans already exist to expand the logistic park to 120ha. In the near future, more buildings with another 35,000m2 of office space are planned and at the end of the process.

3.2.1 Political framework in Barcelona:

Redevelopment of Parc Logistic is embedded into a political framework aiming at revitalising Barcelona. With the Olympic Games in 1992, renewal of the city commenced. The enormous collective effort of central, regional, and local government in creating a vital and successful city prior to and during the Olympic Games served as a catalyst for the city's transformation. Several initiatives were started and many areas have been revitalised, mainly for business or residential use. The government has supported industrial policy initiatives to create industrial estates in

order to move economic activities outside the city. Industrial growth then shifted to the outskirts of the city.

Major redevelopment projects in Barcelona In addition to the transformation already described, there are four major redevelopment projects in Barcelona called FORUM 2004, 22@bcn, Delta Plan, and Sagrera-Sant Andreu. Each of them plays an important role in developing a city that is recognised internationally and in particular in the Mediterranean countries as one of the major players in commerce, industry.

Figure 3-22 : The four major projects of Barcelona currently
Source: Barcelona City Council: Barcelona – the place to B. S.4

3.2.2 Before and after:

Figure 3-23 : Current situation at the port
Source: Internet

Figure 3-24 : Development due to the Plan Delta
Source: http://www.cnpc.fr/enseignements/Legait/projet/MEI/Barcelone/plandelta.htm

Redevelopment of the abandoned SEAT-site and the transformation process in Zona franca are accompanied by several other projects such as Delta Plan as previously mentioned. These projects are financed and supported by local, regional and national authorities. Political strategies and plans of the city of Barcelona have to comply with the political framework on the regional level (Catalonia) and the national level. Barcelona as the capital of Catalonia, has to define its own identity and solidify its position alongside Madrid, the capital of Spain.

3.2.3 Strategic Plan

Currently, Barcelona is the largest industrial agglomeration in Spain. 1986-1991 the loss of jobs in the city of Barcelona (-35,655 jobs) was almost equivalent to the number of new jobs created in the first metropolitan belt (44,095).

The Strategic Metropolitan Plan of Barcelona is a public-private cooperation, established by a private, non-profit association founded in 1988. El Concorci de Zona Franca was an initiator of the foundation and is member of the association. In 2002, the association extended its metropolitan scope and representatives of 8 municipalities (of the 36) became members of the Executive Committee.The Association's General Council includes 300 members including private companies, public institutions, and governmental bodies.

Principal milestones:

- 1988: Plan initiated
- 1990: 1st Barcelona Strategic Plan approved
- 1992: The Olympic Games
- 1994: 2nd Plan approved
- 1999: 3rd Plan approved
- 2002: 1st metropolitan Plan initiated

3.2.4 Revitalization process:

3.2.4.1 Adaptation

The revitalization was a reaction and adaptation to new circumstances. The old industrial structure was transformed to new modern industry in the field of logistics. This fits well to the existing industrial structure and uses the given potential of the site.

3.2.4.2 Improvement of infrastructure

To ameliorate the condition and image of the site, the infrastructure had to be improved. Roads, parking lots and underground parking were built, the site was equipped with fibre-optic networks and plans for a new metro line already exist.

3.2.4.3 Sewage Treatment Plant

Improvement of purification capacity and quality of treatment (tertiary treatment). Will also contribute to improving sea water quality.

3.2.4.4 Eco park

In 2002, Barcelona has opened a new Eco park in the Zona Franca area. It's the first facility for complete treatment of municipal waste in the metropolitan area of Barcelona. This plant will permit the treatment of 325,000 tons of waste materials each year, will convert part of the city's urban waste into biogas, electricity and fertilizer, and will recover reusable materials, all of which will result in an improved environment.

3.2.4.5 Pitfalls

Possibilities and responsibilities of cities' are reduced to the area within the cities borders. Nevertheless, big cities, like Barcelona, have to think and plan in larger dimensions. For Barcelona this fact became evident only in the last few years. The city reacted to the high suburbanization-rate and accepted the first metropolitan belt as a part of the city itself. The first metropolitan strategic plan gives evidence of this rethinking. In other points, the city is restricted in their freedom of action by national measures, regulations and frameworks.

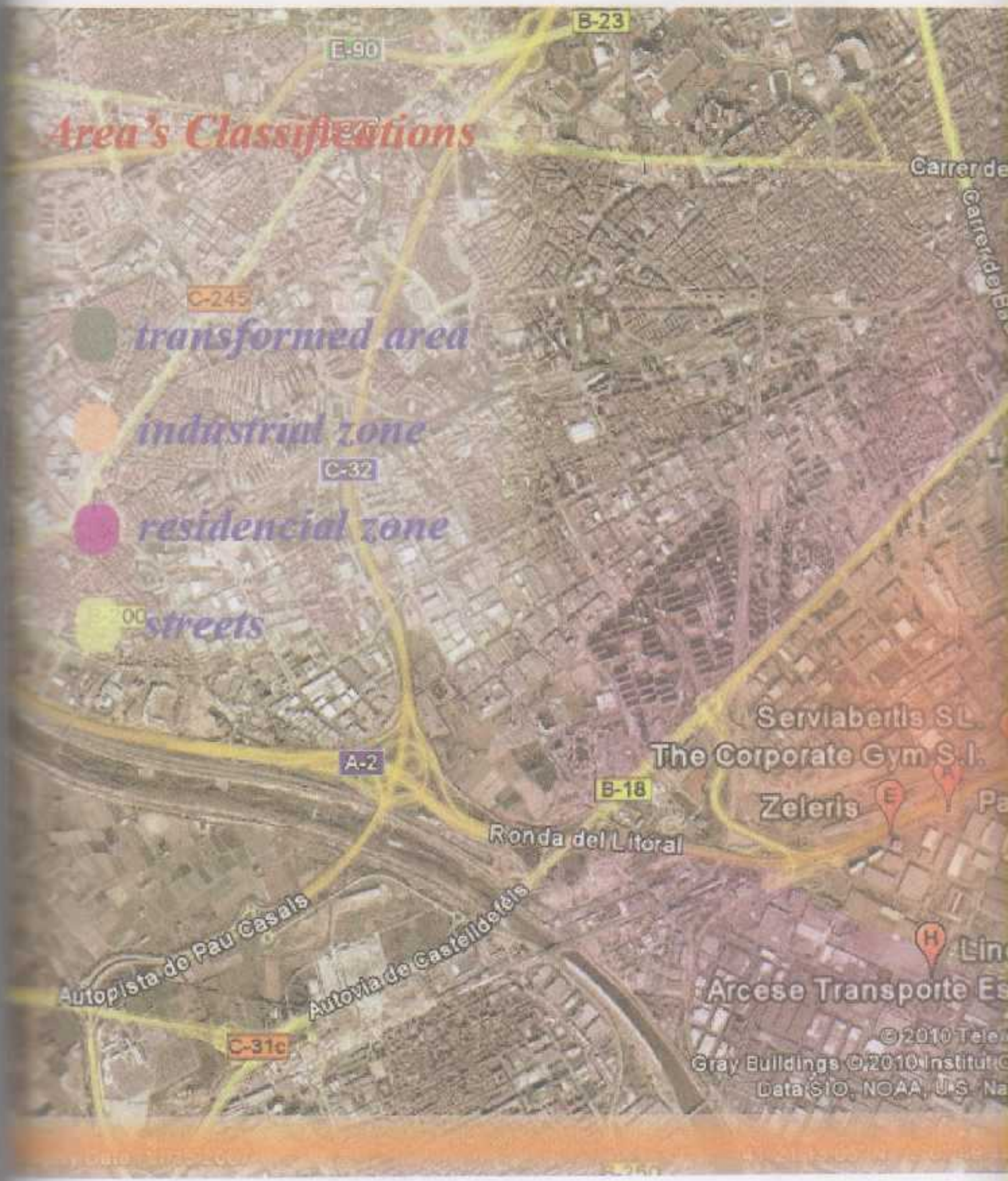
3.2.5 Conclusions

Barcelona has high ambitions. Once the location for some of the best known industries in Spain, the city now has to cope with diverse structural changes (e.g. due to migration of residents and companies to the suburban region). Barcelona has to make changes in two ways: it has to accept itself as a metropolitan area and it has to redefine itself. The aim of the city is to change to a clean metropolitan area that focuses on logistics and develops attractive residential areas and offers cultural attractions in order to become more significant in Europe. In addition, it wants to develop the most important port in the Mediterranean region. Huge amounts of European, national and local money have been invested thus far to implement the various projects.

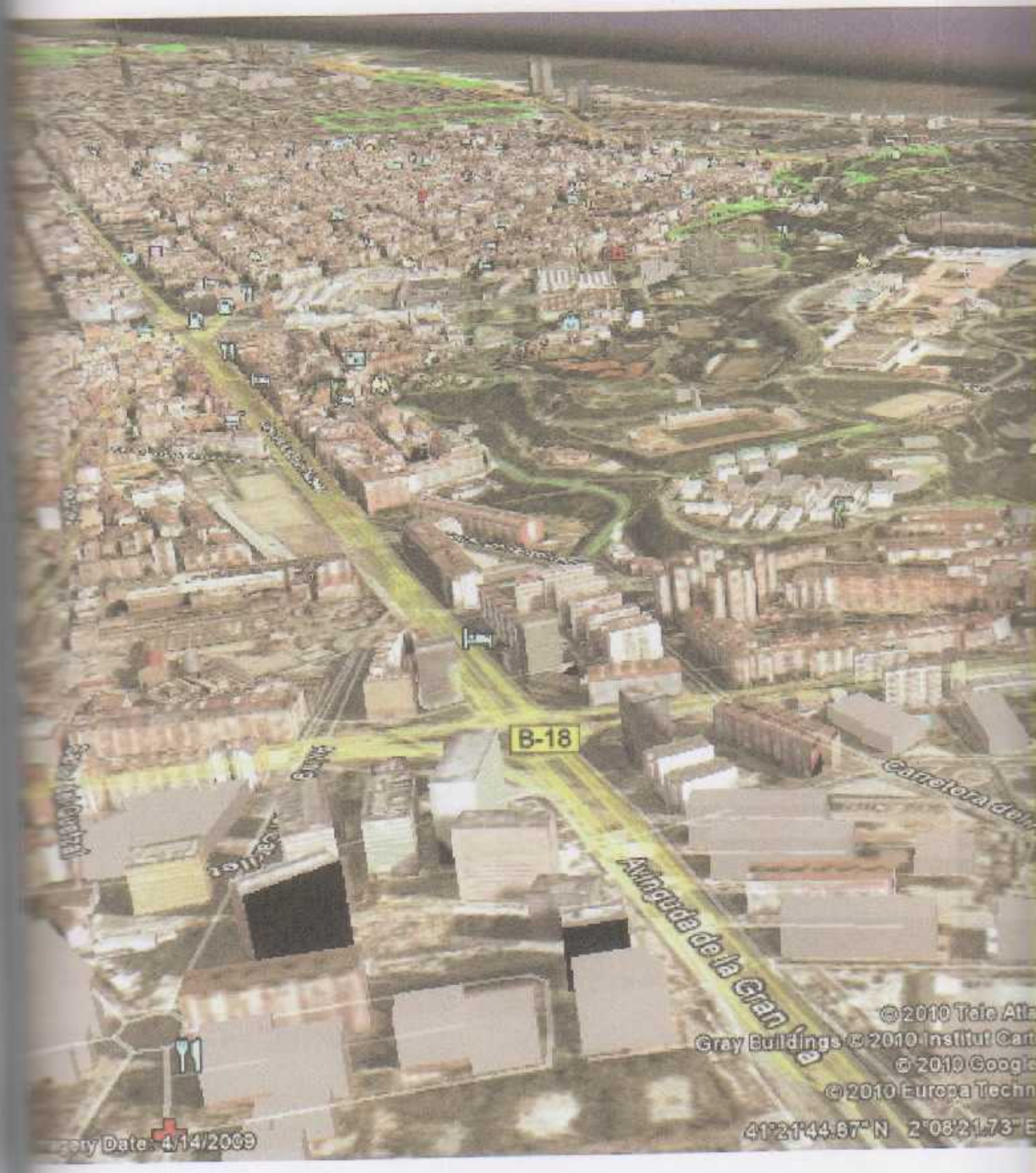
The transformation illustrates that project promoters have tried to adapt to changing conditions and market needs. In order to market the image of the site, modernisation of the site has taken place. Equipping the site with modern infrastructure along with the design of open space and buildings improve the quality of the area and increase attractiveness of the site for new companies. The Parc Logistic of Zona Franca is the result of a successful revitalisation process of an abandoned industrialsite to a modern business and logistic area alongside existing industries in Zona Franca.

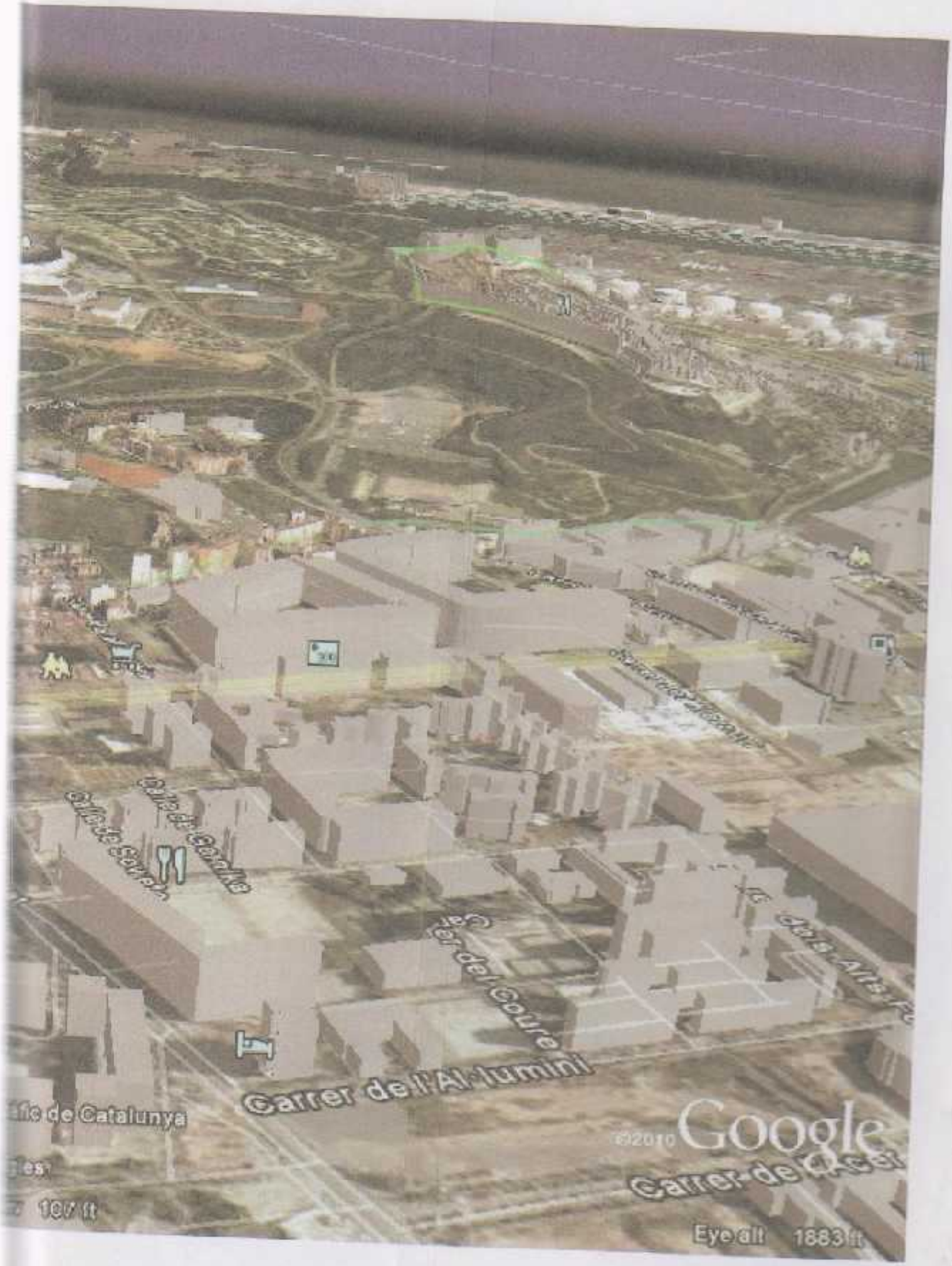
Figure 3-25 : Current situation at the port
Source: http://www.archidir.com/architecture/zona-franca-logistic-park-architecture-by-ricardo-bofill/

Figure 3-26 : Current situation at the port
Source: http://www.archidir.com/architecture/zona-franca-logistic-park-architecture-by-ricardo-bofill/


Area's Classifications
transformed area
industrial zone
residencial zone
streets
B-23
E-90
C-245
C-32
A-2
B-18
C-31c
Ronda del Litoral
Autopista de Pau Casals
Autovia de Castelldefels
Carrer de
Serviabertis SL
The Corporate Gym S.L.
Zeleris
Arcese Transporte Es
©2010 Tele
Gray Buildings ©2010 Institut C
Data SIO, NOAA, U.S. Na


Carrer de Sants
Carrer de Badal
Avinguda de
Gran Via de les Corts Catalanes
Passeig de la Zona Franca
Moll Costa
Barcelona
Zepi II
Parc Logistic de la Zona Franca S.a.
Linea 10
orte España S.a.
©2010 Tele Atlas
Institut Cartogràfic de Catalunya
A, U.S. Navy, NGA, GEBCO
©2010 Google
source - Google Earth


B-18
Avinguda de la Gran
Gray Buildings
41°21'44.87" N


Carrer de l'Alumini
Carrer del Coure
Carrer de Quer
©2010 Google
Eye alt 1883 ft

Chapter Four

City Analysis

4.1 City Analysis

4.2 Industrial Sector

4.3 Industry in Hebron

4.4 Classifying criteria

4.5 Selecting the study area

2.1 City analysis:

Is located in the southern West Bank, 30 km south of Jerusalem

Nestling in the Judean Mountains, it lies 930 meters above sea level. It is the largest city in the West Bank and home to around 650,000 Palestinians, and over 2000 Israeli settlers concentrated in and around the old city of Hebron.

Occupied by Israel in 1967, Hebron came under Palestinian control in 1994

The city is scared city for Muslims for its association with Abraham (and the city named instead of Abraham and his mosque, Ibrahim al-Khalil means "Abraham the friend", that means God chose Abraham as his friend) and it's viewed as one of the "four holy cities of Islam"

The city is most notable for containing the traditional burial site of the biblical Patriarchs and Matriarchs and is therefore considered the second-holiest city in Judaism.

Hebron isthe center of West Bank's trading . It is locally well-known for its grapes, figs, limestone, shoes factories, pottery workshops and glassblowing factories, and is the location of the major dairy product manufacturer, al-Junaidi.

The old city of Hebron is characterized by narrow, winding streets, flat-roofed stone houses, and old bazaars. The city is home to Hebron University and the Palestine Polytechnic University and Hebron University.

2.1.1 Important information:

1- The Province area's near 997 sqkm.
2- The city area's near 22.8 sqkm.
3- The Province area's near 16.6 % from all the area of the west-bank
4- Population density near 526 person / sqkm.
5- 100 villages related to the main city of Hebron.
6- The province of Hebron has a population that reaches to 684,510 persons

Figure 4-1 : Map of Palestine

Source: Internet

2.1.2 The city planning:

The last master plan for the city performed in 1944 by the British occupation planners. But till now the city hasn't a master plan for 60 years, and it hasn't a regulations for building and land use distributions. Although the city has an industrial area, there are no regulations reducing the possibility to build a factory within the residential areas.

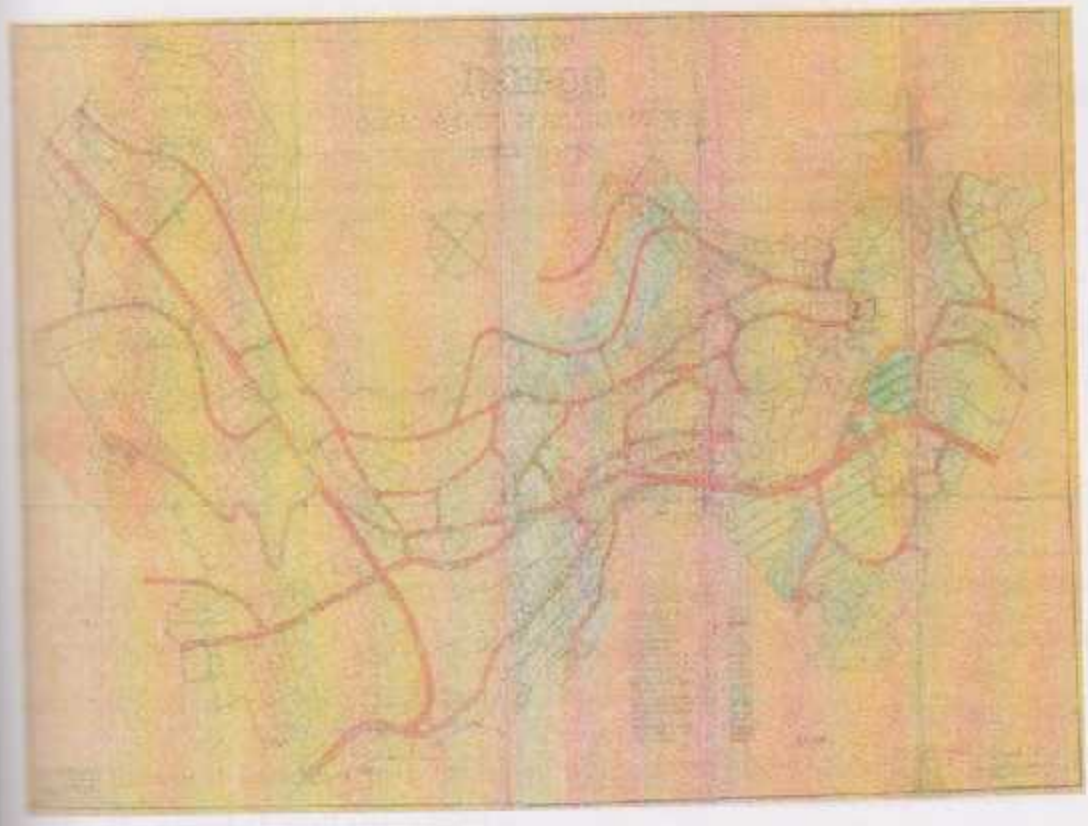


Figure 4-2 : master plan of Hebron 1944
Source: Hebron municipality

4.1 Industrial sector:

The Palestinian industrial sector is one of the main sources of income for the Palestinian people. The growth of this sector has been influenced by different political and economical circumstances during the last 35 years.

Such **influences** include:

1- The absences of national Palestinian laws, regulations and standards, meanwhile, the source of law was the military orders and the Jordanian outdated regulations.
2- The absence of industrial development basic needs and infrastructure.

It is a difficult task to have an exact number and size of the different type of industries due to the above mentioned circumstances. Big number of industries is not licensed and was built in non-designated industrial areas.

The result of these pressures has led to unsafe accommodation and development of these industries especially from the environmental point of view. The environmental impact of the industrial development under such circumstances has led to:

1- The establishment of many industries in houses and inhibited areas;
2- The spread of small size industries
3- Many industries where established without any licenses or approvals.

4- The absence of suitable industrial areas including industrial estates or parks.
5- The absence or lack of industrial infrastructure.
6- The absence of national environmental regulations and standards.
7- The absence of environmental management system that ensures the application of suitable environmental measures and effective monitoring system.

4.2 industry in west bank :

Hebron city ranks the first in the total percentage of industries that are in Palestine, and there are many types of industry in the city such as stone cutting, quarries, stone crashing, shoes making, leather tanning, glass, and others.

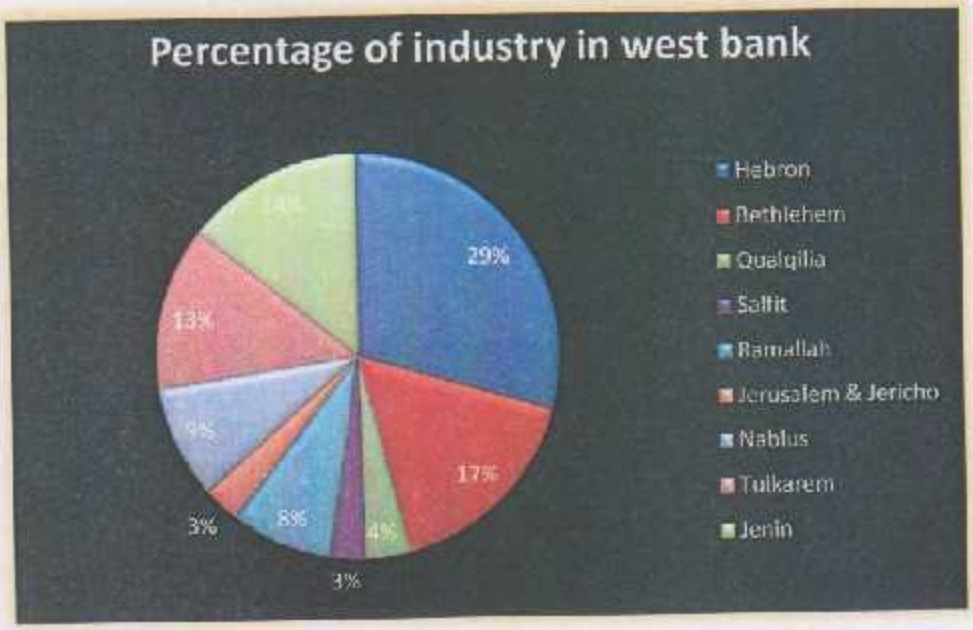


Chart 4-1: percentage of industry in west bank
Source: Inventory and Environmental Impacts Assessment Report, 2007

Industries in west bank

HEBRON	787
BETHLEHEM	444
QUALQILIA	97
SALFIT	75
RAMALLAH	217
JERUSALEM	79
NABLUS	240
TULKARIM	349
JENIN	383

Table 4-1 : industries in west bank
Source: Inventory and Environmental Impacts Assessment Report, 2007

As mentioned before, there are many types of industries in Hebron city, there are some industries that are centered in the city in large percentage, such as the stone crashing and stone cutting and quarries, because of the raw material that is found in the city.

4.3 Industry in Hebron:

The stone cutting paraxes and the quarries and other factories are found within the residential context, this is considered as an example of the negative mixed-use concept, the impact of these industries influence the environment and the humans health.

The chart bellow shows the percentages of the industries that are found in Hebron city.

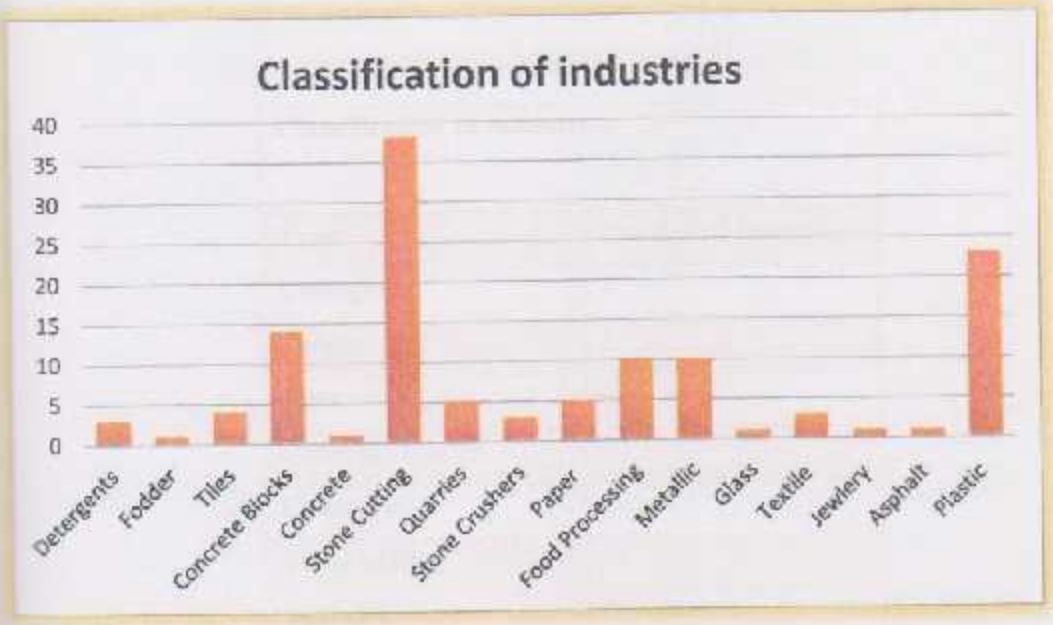


Chart 4-2 : classification of industry
Source: Inventory and Environmental Impacts Assessment Report,2007

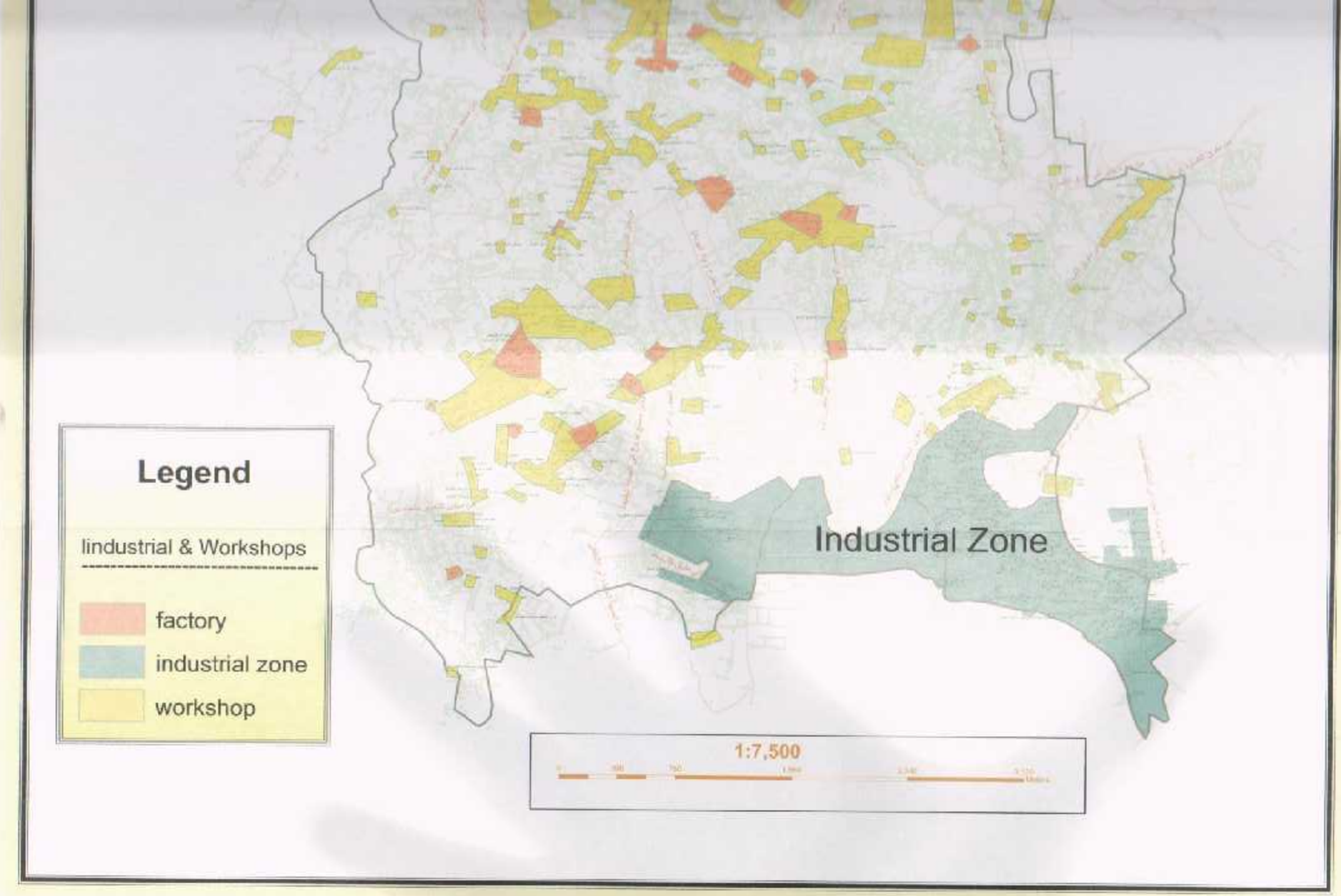
All types of factories can be found within the residential zones leading to the main problems and issues resulted from the mixed-use phenomena, and because of not having an industrial area with facilities and good conditions, these factories spread all over the city, some factories are constructed under residential houses, and workshops may be constructed in mixed buildings includes houses and kindergartens, and this forms a great danger over humans and living conditions in an area, This phenomena also distorts the visual image of the city.

The table bellow shows the types and numbers of factories located within the residential context

Classification of industries	
Type	Number of factories
Detergents	3
Fodder	1
Tiles	4
Concrete blocks	14
Concrete	1
Stone cutting	38
quarries	5
Stone crushers	3
Paper	5
Food processing	10
Metallic	10
Glass	1
Textile	3
Jewlery	1
Asphalt	1
Plastic	23

Table 4-2 : classification of industries
Source: Inventory and Environmental Impacts Assessment Report, 2007

Industrial And Workshop Zones


Legend
Industrial & Workshops
factory
industrial zone
workshop
Industrial Zone
1:7,500

Types Of Factories- Hebron


Legend
workshops
factories
block
carbion factory
cast
ceramic workshop
cleaning substances factory
concrete
cooling and refridgerating workshop
fibers factory
fire factory
food
heavy mechanics workshop
ice cream factory
iron factory
life industry
mattresses factory
minerals factory
nylone
oil factory
plastic factory
shoe's factories
stones cutting
store
Industrial Zone
1:7,500

4.4 Classifying criteria:

The industries are classified into three classifications:

High risk, intermediate risk, and low risk industries

4.4.1 High risk:

High risk industries are industries that includes quarries, stone cutting, stone crashing, shoes making, plastic industry, leather tanning.

1- Substances that are used in the industry and their effects on environment and health of workers and neighborhood

- Chemicals and heavy metals that are used in these industries.
- Transforming the huge stone blocks to quarries forms a high risk on people in streets and in neighborhood.

2- Solid wastes that are not managed

- The dust that is produced from quarries and stone cutting paraxes goes into the air causing air pollution, also causes health problems in the respiratory system for humans
- Sludge penetrates into the soil causes soil pollution.

- the solid wastes being not treated impact the downstream agricultural land and the adverse impact on the drinking water aquifers.

3- high TSS in waste water and surface water, transportation, agriculture land and biodiversity.

- This causes water pollution, increasing the carbon dioxide percentage in the air also enlarge the problem of air pollution.

Figure 4-3 : Herbawi factory for mattresses- high risk inventory
Source: researchers lens

Figure 4-4 : query – high risk inventory
Source: researchers lens

Figure 4-5 : stone cutting parax – high risk inventory
Source: researchers lens

4.4.2 Intermediate risk:

Intermediate risk industries includes industries like tiles industry, concrete blocks and concrete industry, marble and jewelry.

1- Smell and chemicals air emissions
   - Dealing with the smells and chemical air emission is not a big problem comparatively with the substances used in high risk industries.
2- Noise
3- Oil wastes and dirt

4.4.3 Low risk :

Low risk industries are industries that don't cause much pollution as the material used in it don't contain pollutants and riskfull substances.

Such as food industries and sewing workshops.

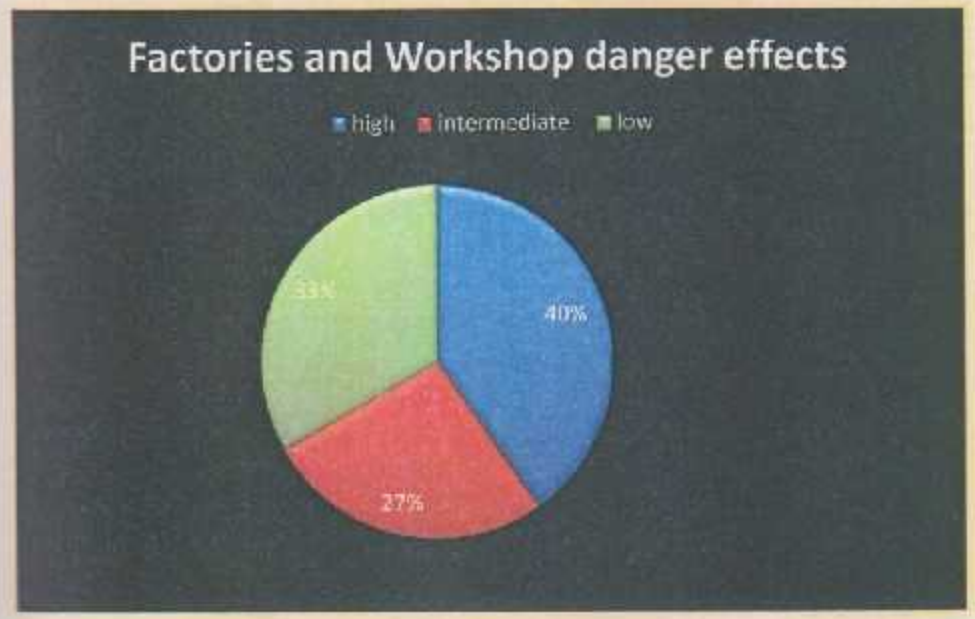


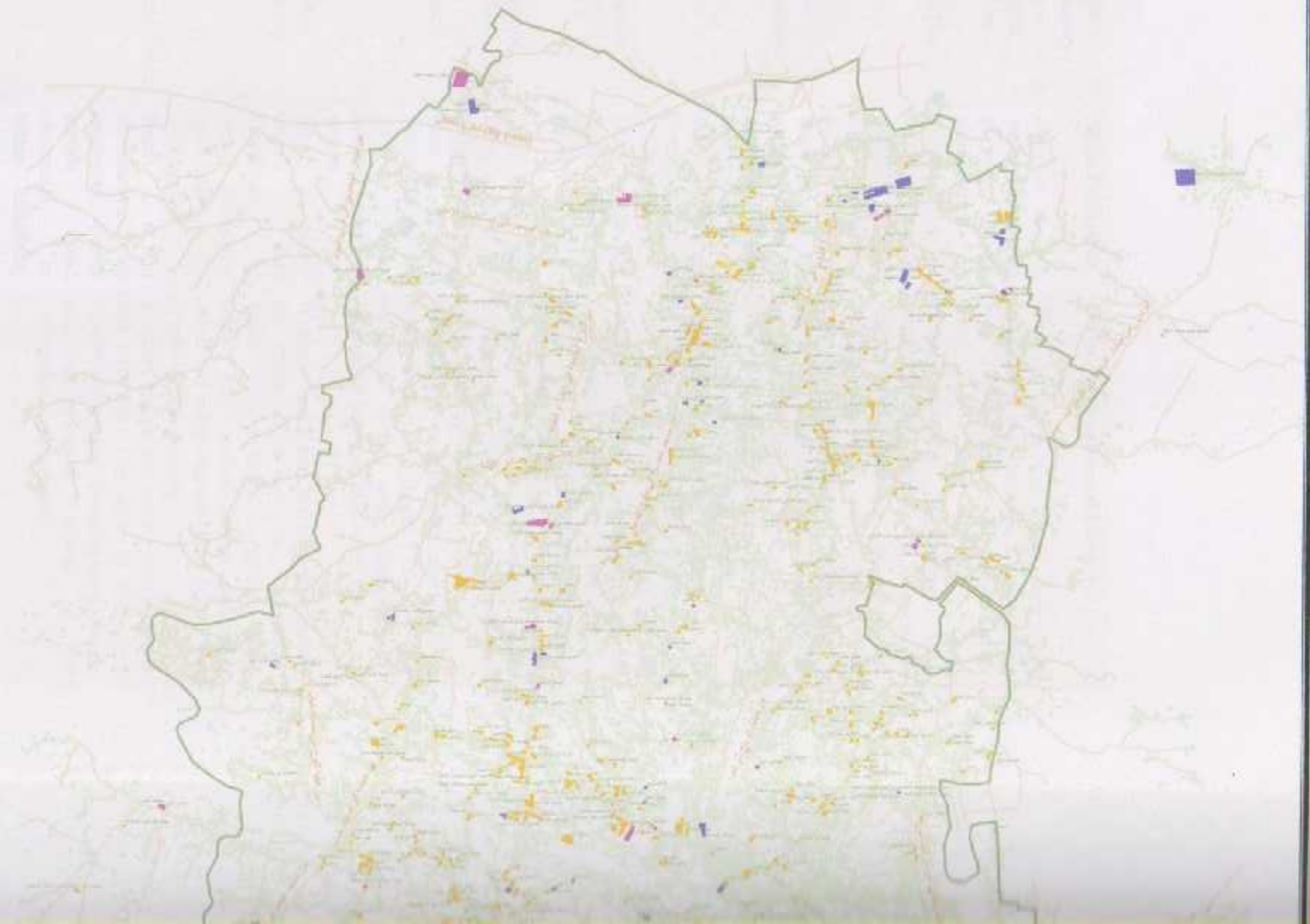
Chart 4-3: factories and workshop danger effects
Source: Inventory and Environmental Impacts Assessment Report, 2007

The table below shows the classification of factories according to their impact on environment and health of humans.

Factories and workshops danger effects	
Classification	Number of factories
High risk	250
Intermediate risk	164
Low risk	206

Table 4-3 : factories and workshop danger effects
Source: Inventory and Environmental Impacts Assessment Report, 2007

Classications (Level) Of Industry




Legend
classications of industry
lite industry
midd. industry
heavy industry
industrial zone
store
workshop
Industrial Zone
1:7,500

Rank	Category	Type of Industry	Main Pollutants	Other Environmental Impacts / on
	Stone Industry	Stone & Marble cutters	Dust in the air, water and on the ground, Noise, solid wastes	Workers health and safety, agriculture land, water consumption, transportation, high TSS in waste water and surface water,
		Quarries	Dust in the air, water and on the ground, Noise, land destruction, solid wastes	Workers health, agriculture land, transportation, biodiversity, Spread of vector-borne diseases, soil loss and erosion, change in natural water flow, high TSS in surface water, safety risks
		Stone Crushers	Dust in the air, water and on the ground, Noise, land destruction	Workers health and safety, agriculture land, transportation, biodiversity, soil loss and erosion, change in natural water flow, high TSS in surface water
		Tiles	Dust in the air, water and on the ground, Noise	Workers health and safety, water consumption, high TSS in waste water and surface water, transportation,
		Concrete	Dust in the air, water and on the ground, Noise	Workers health and safety, water consumption, high TSS in waste water and surface water, transportation and road contamination,
		Concrete Blocks	Dust in the air, water and on the ground, Noise	Workers health and safety, water consumption, high TSS in waste water and surface water, transportation
		Asphalt	Dust in the air, water and on the ground, Noise, harmful gases, oil wastes	Neighboring communities and workers health and safety, high TSS in waste water and surface water, transportation, agriculture land and biodiversity.
	Leather Tanning	Leather Tanning	Smell, heavy metals and chemicals in water effluence, solid wastes	Workers health and safety, heavy metals and chemicals in water and wastewater, water consumption, hazardous solid wastes from animal leather producing smell and infectious remains. Social and psychological impacts.
	Electroplating	Electroplating	Smell and chemicals air emissions, heavy metals and chemicals in water effluence, noise	Workers health and safety, heavy metals and hazardous chemicals in water and wastewater, water consumption, Social and psychological impacts on the surrounding communities.
	Olive Oil Mills	Olive Oil Mills	Oil wastes, solid wastes, noise	Contaminated water effluence, crowded site with cars and trucks. Surface and waste water high contamination, water

				consumption
	Charcoal	Charcoal	Carbon monoxide, dirt.	Public health, deforestation, biodiversity, landscape, agriculture.
	Aluminum	Aluminum	Indoor & outdoor air pollutants, contaminated wastes,	Health impact, water and wastewater contamination with heavy metals, excess use of water, safety risks
	Pharmaceutical	Pharmaceutical	Solid and hazardous wastes, air chemical pollutants.	Hazardous chemicals in wastewater and solid wastes, workers health risks, safety risks, smell, water consumption.
	Slaughter	Slaughter	Smell, solid wastes high organic liquid wastes.	High BOD and COD level in waste water, water consumption, transportation, public health.
	Gas	Gas	Household gas air contamination	Explosion risks, health risks
	Paints	Paints	Solid and liquid hazardous wastes including volatile compounds and heavy metals, air chemical emissions	Heath risks, air and water contamination,
	Jewelry	Jewelry	Air pollution with Ammonia and acid vapors. Waste contaminated with chemicals	Health risks,

Table 4-4 : risk from inventory's
Source: Inventory and Environmental Impacts Assessment Report, 2007

Inventory's Impacts On Invironment


Industrial Zone
Legend
Classifications
high
industrial zone
lite
midd
1:7,500

4.5 Selecting the study area:

Criteria of selecting the study area :

Beir Haram Al-Rameh and Qizon street are the two parts of the selected study area, this area is classified as a residential area, though there are many workshops placed under houses, and many factories that mediates the residential context.

1- Dangerous inventories: Comparatively with the other regions in the city the study area suffers from a number of dangerous inventory's such as mattresses and foam industry and quarries and plastic inventory.

2- Negative mixing in land use: The factories are located so close to the houses, which helps to increase the acuteness of the impact on humans' health.

3- Agricultural land: The land which is supposed to contain the expansion of the factories, is having having great extent of fertile soil, this will reduce the land that is specified for agriculture, and also reduces the resources of the area.

4- Services are not sufficient: The study area suffers from the lack of services, such as health centers, shopping malls, open spaces, cultural centers and others.

5- Visual pollution: The existence of factories and workshops destroy the visual image of the area and deepens the visual pollution.

selecting the STUDY AREA


Industrial Zone
Legend
Classifications
high
industrial zone
lite
midd
1:7,500

Figure 4-6 : residential buildings in study area
Source: researchers lens

Figure 4-7 : residential buildings in study area
Source: researchers lens

Figure 4-8 : agricultural land in the study area
Source: researchers lens

Chapter Five

Study Area Analysis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N
Selected Area
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٦٠٢٠٠٠
٦٠١٠٠٠
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٢٠٩٠٠٠
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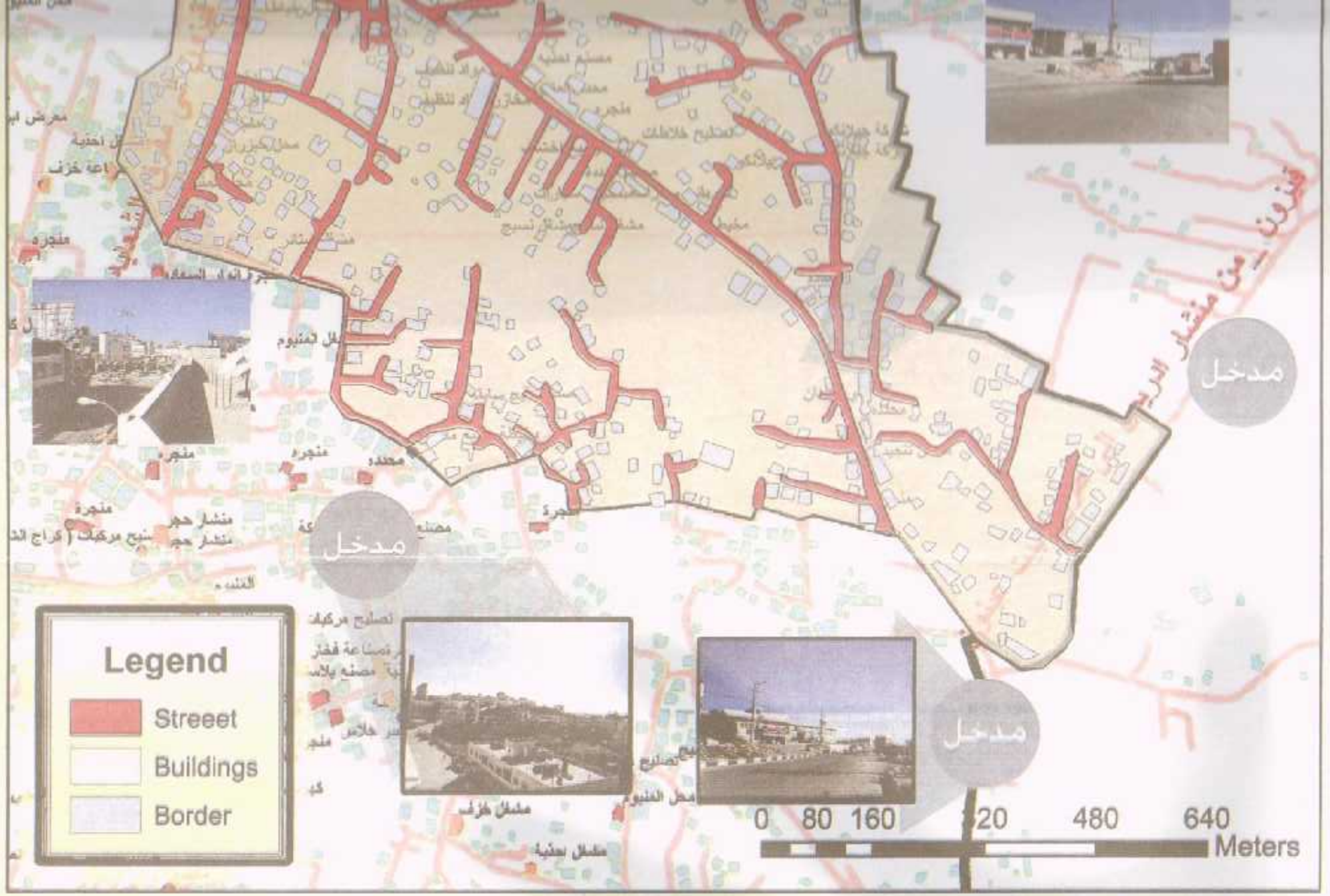
Streets Analysis

مدخل

مدخل

مدخل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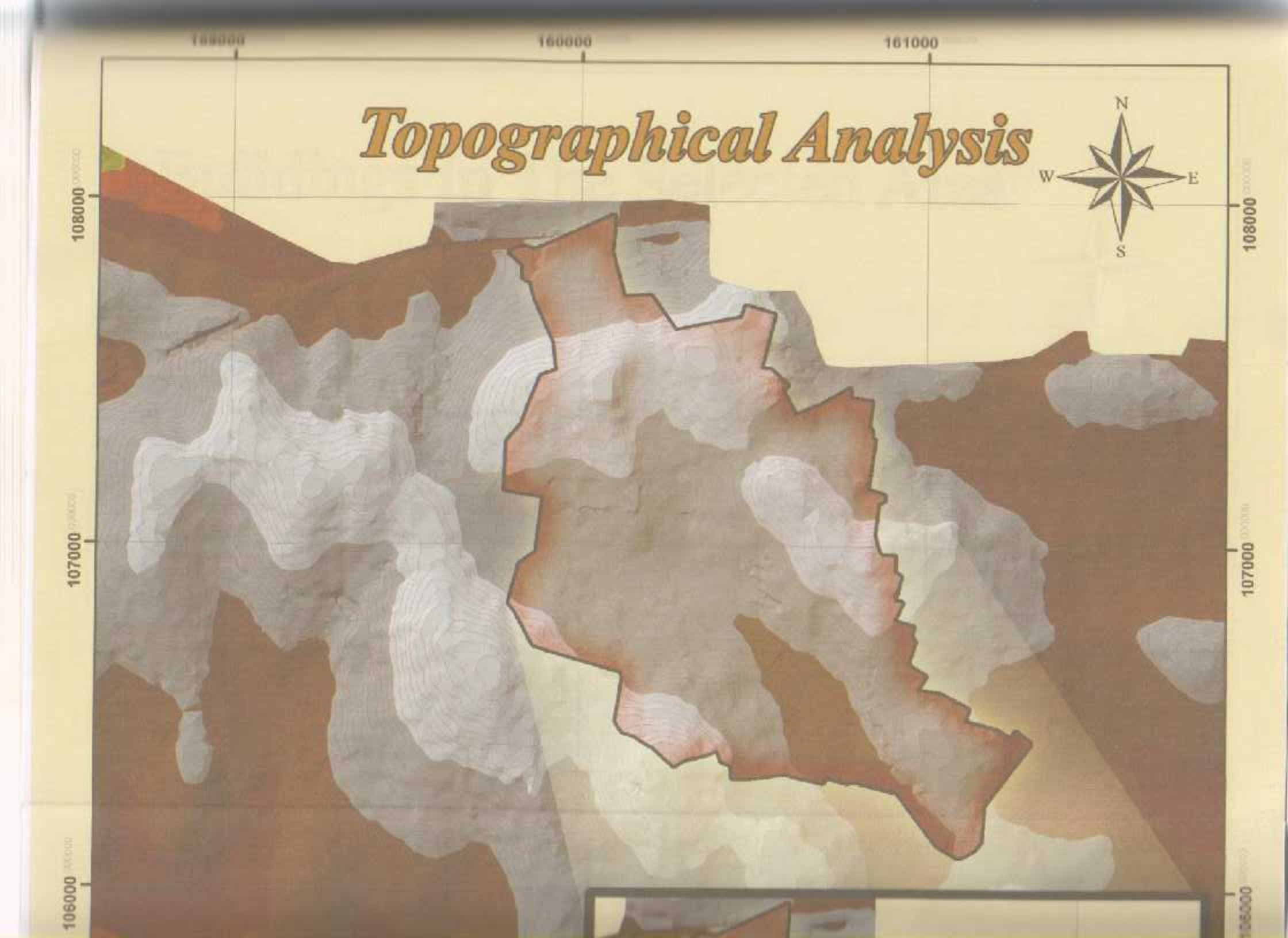
Legend
Streeet
Buildings
Border
0 80 160 320 480 640
Meters

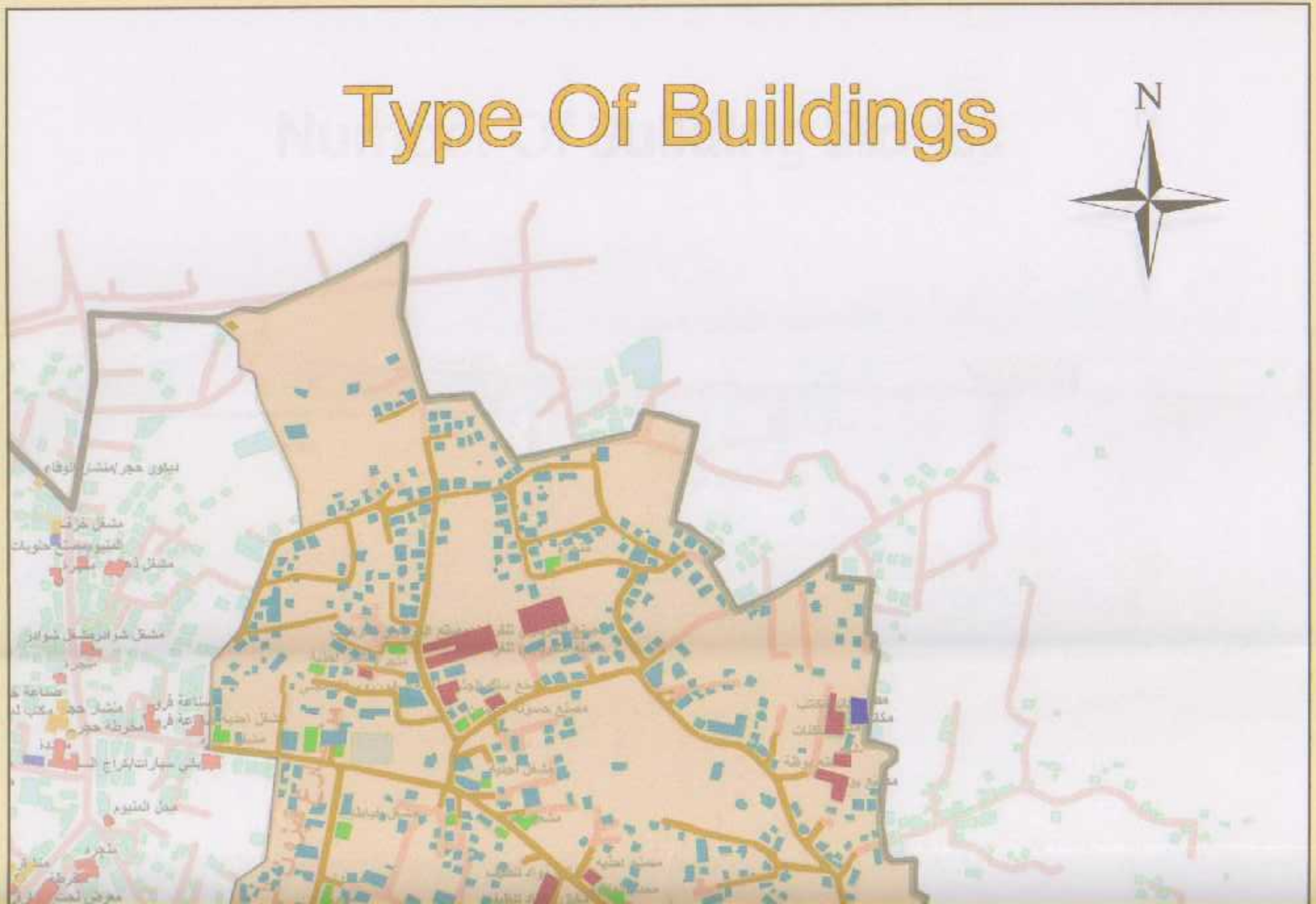

Topographical Analysis
N
W
E
S
160000
161000
108000
107000
106000


Legend
Elevation
992.5 - 1017.5
967.5 - 992.5
942.5 - 967.5
917.5 - 942.5
892.5 - 917.5
867.5 - 892.5
842.5 - 867.5
817.5 - 842.5
792.5 - 817.5
0 150 300 600 900 1,200
Millimeters
106000
105000
159000
160000
161000

Buildings In The Selected Area

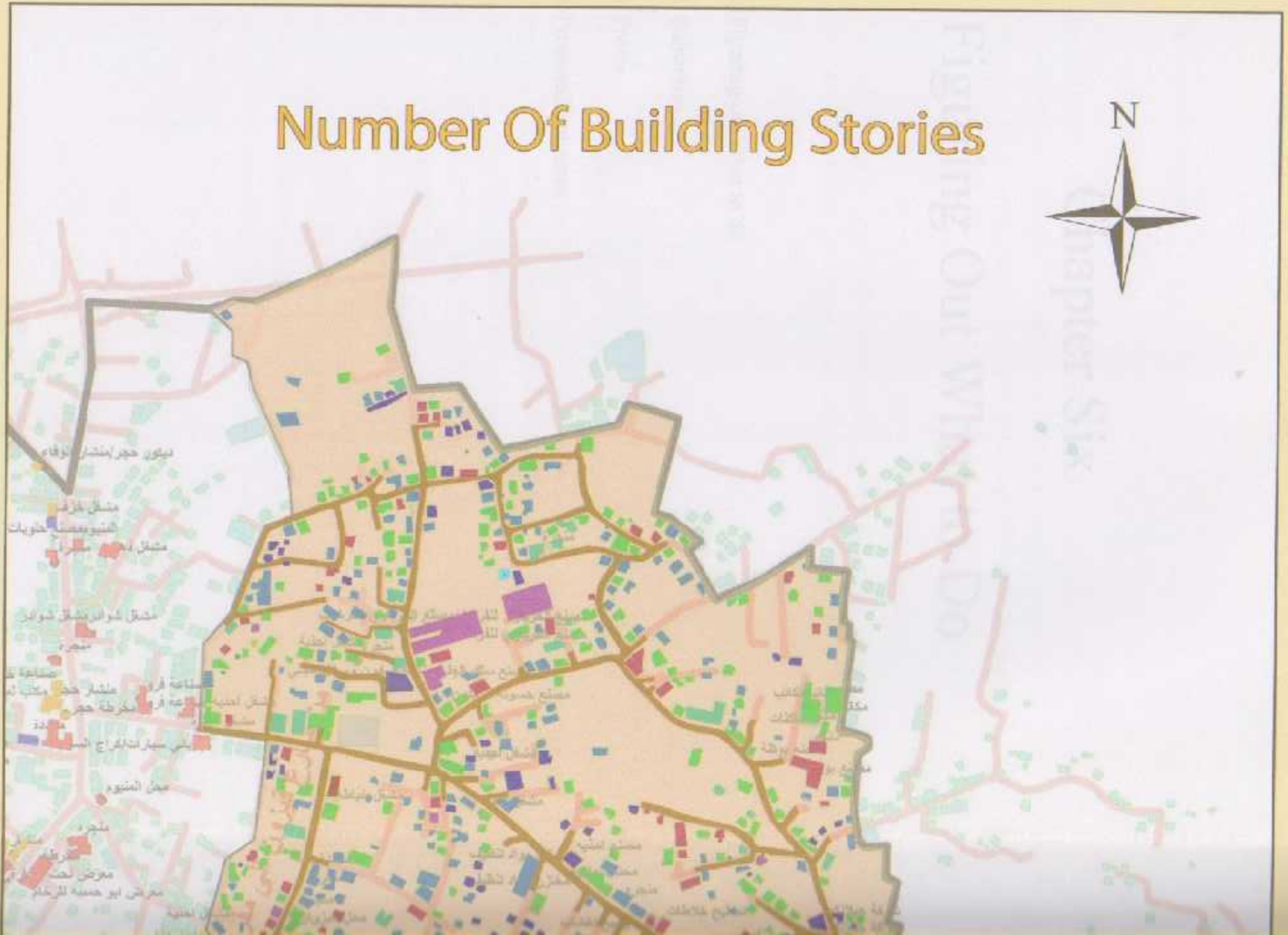
0 85 170 340 510 680
Meters

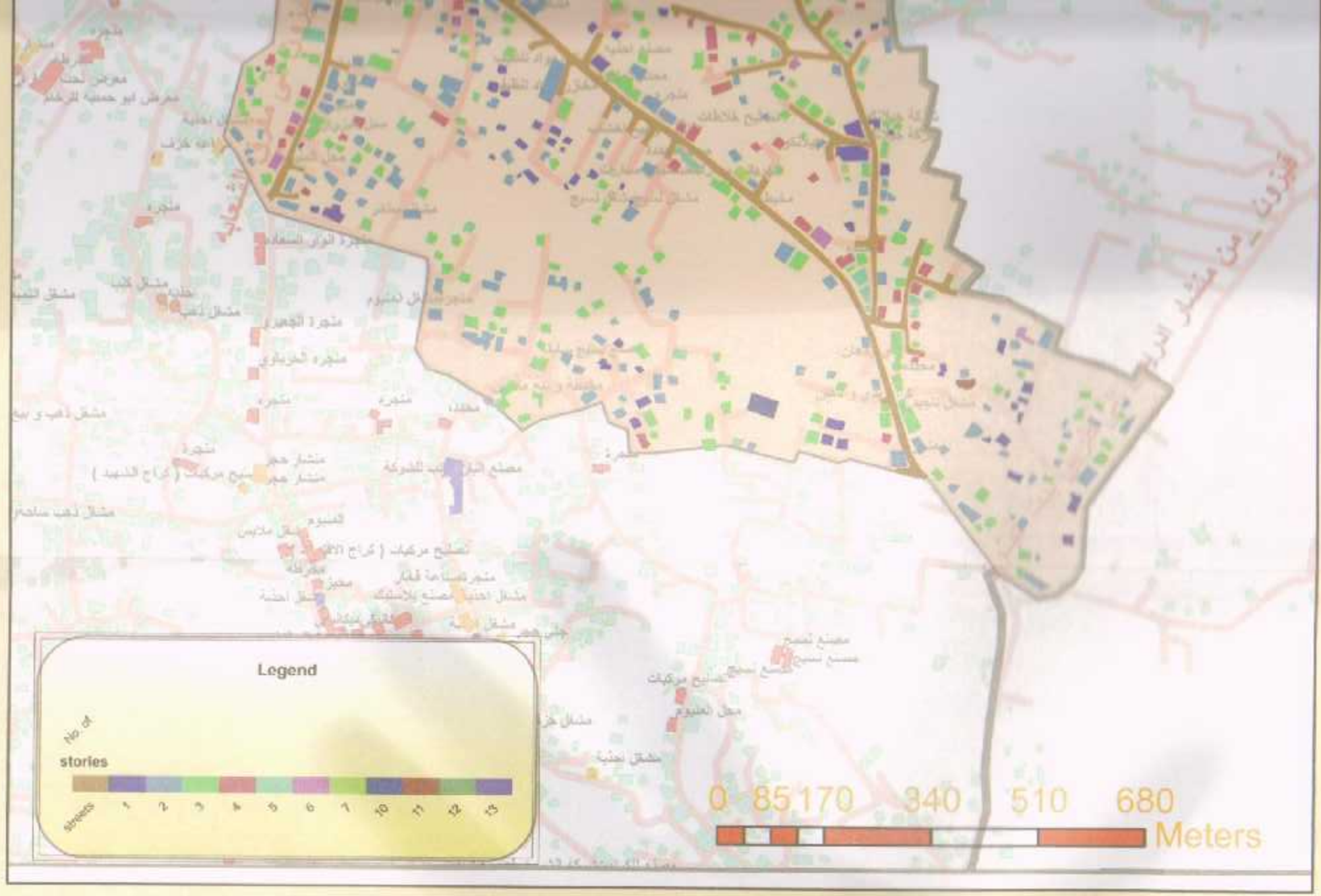
Type Of Buildings




Legend
Building calssifications
Industry
High Risk
Closed Factory
Houses
Workshops
Streets
0 85 170 340 510 680
Meters

Number Of Building Stories




Legend
No. of
stories
streets
1
2
3
4
5
6
7
10
11
12
15
0 85 170 340 510 680
Meters

Chapter Six

Figuring Out What to Do

6.1 Figuring out what to do :

In planning, solution is always based on four main substrates, economy, culture, environment, and needs, in order to determine the most suitable solution, a study must be done to figure out how to compromise between the needs and the other three substrates.

Master plans for the current situation must be done, and studied well, so that reconcile between the existing features and the proposed solution so that a conflict is been avoided.

6.2 Substrates:

6.2.1 Economy:

An economy consists of the economic system of an area, the labor, capital and resources, and the economic agents that socially participate in the production, exchange, distribution, and consumption of goods and services of that area. A given economy is the end result of a process that involves its technological evolution, history and social organization, as well as its geography, natural resource endowment, and ecology, as main factors. These factors give context, content, and set the conditions and parameters in which an economy functions.

The economy in the study area is mainly formed by factories, as an example; Alherbawi factory for mattresses is an active force in forming the economy of the whole city, there are also a number of factories that can be considered as a parameter of the economy.

The agricultural nature of the area is another important factor in forming economy, about 45% from the total area of the land is fertile and suitable for planting many

crops, but a large percentage of these agricultural land is not very well used, and is left for the remnants of factories, and the people.

Commercial zone is very wide in the study area, such as the whole city, most of the building are classified as mixed-use buildings, that contains commercial and residential uses.

When working in an area with such economical elements, the economical factor must be cautiously taken in consideration, balance must be achieved between the current situation and the proposed situation, even if different elements used, for an example if a factory will be removed, it must be replaced with an element that can cover the loss in incomes for the area.

6.2.2 Culture :

Any planning solution aims to serve the people, and offers a better life for them, in line with this idea, solutions must be compatible with the culture of the community, respecting beliefs and culture, if they were no so, solutions will fully prove their failure.

The whole city is very well known for its reserved culture, and people are so stuck in their beliefs, and according to this, any solution must be carefully studied and examined in order to succeed.

It is very important to mention that people in Hebron city are also open minded, and can be easily convinced with new creative ideas that can raise their level in life, but still; these ideas must be in the general framework of the prevailing culture.

6.2.3 Environment:

The natural environment, encompasses all living and non-living things occurring naturally on Earth or some region thereof. It is an environment that encompasses the interaction of all living species. The concept of the natural environment can be distinguished by Complete ecological units that function as natural systems without massive human intervention, including all vegetation, microorganisms, soil, rocks, atmosphere and natural phenomena that occur within their boundaries.

As mentioned in the analysis, the existence of factories within the agricultural residential context causes a great damage for the environment, large percentage of the agricultural lands are polluted and consumed, and the dense of factories in the study area, made the problem incurable.

In a plan for ten years, clear solvents must be adopted so that the problem can be fixed or detracted, policies must pay attention to promote the means of environment protection, and to increase the green cover that helps to purify the polluted air, this can be easily controlled when implementing the transformation of factories and workshops.

And as there will be some factories with longer than 10 years transformation plan, green solutions must be provided for rationing the danger over environment, green boundaries formed of cypress trees that absorbs gas wastes from the factories, and

other procedures must be applied, and the agricultural lands must be planted, facilities for planting must be provided such as agricultural research center and agricultural labs and shops for agricultural tools and accessories.

6.2.4 Needs:

Questionnaire results:

The total population of the area is almost 25500 capita. Out from the questionnaire, the number of people under 20 is 5040 capita. This category of age is mainly formed out of school students, 44% of this category are students in the primary level which is equivalent to 2220 capita, 1240 of them are females, and when looking to the services in the study area, lack of primary schools can be easily noticed especially females' schools, there are two males primary schools, but the number of students that these schools hold, is still not covering the current number of students, and it's important to take in mind the expected increase in population through the ten coming years.

87% of the people living there faces obstacles in many sides of life, 19% do have problems in reaching shops, many people finds it formidable to get their children into kinder gartens.

75% out of the people in the study area do not find it safe for their children to pass the road from one side to the other, and most of the people there need open spaces and recreation areas to head to.

70% from the people faces problems resulted from heavy traffics that are related to the factories, about 35% from the residents approved on the fact that factories consume the services that suppose to serve them such as water, many people near the

most dangerous factories complained that the electricity sometimes dims and is not able to supply some electrical machines.

The infra structure of the study area is very decadent, the streets are damaged due to heavy traffics also.

Large percentage of people found the idea of transforming factories very persuasive, and demanded to prescribe laws and regulation to codify the impact of the factories, they also showed their approval on constructing service buildings such as schools, gardens, malls, dispensaries, sport halls and a cultural center in order to deepen the cultural awareness in people's minds.

6.3 Précis:

Project program

After the reconnaissance of peoples' complements and needs through the questionnaire, an action plan must be adopted in order to out scheme a master plan that contains all needs and services, and these services include:

One Girls primary school for about 1000 students.

One Boys primary school for about 560 students.

One Agricultural gallery and restaurant.

One Agricultural research center.

One Medical center and rehab area.

One Sport hall and playgrounds.

Two large malls supporting the main commercial line.

One restaurant.

One large main open space.

Two gardens between the residential area.

One Cultural center and heritage gallery.

One large open space that may serve the whole city.

6.4 Proposed Solutions:

6.4.1 Zoning :

6.4.1.1 Existing zones:

The existing zones reveal the seriousness of the problem, the residential zones are scattered and industrial zones are placed within the residential zones, there are also certain areas that are not used within the residential areas without being used in uses that are needed in the area.

And even though the area is classified within the agricultural areas, the percentage of green zones that are planted is very low.

The commercial zones are also scattered on the sides of the streets without being regulated and organized.

6.4.1.2 Proposed zones:

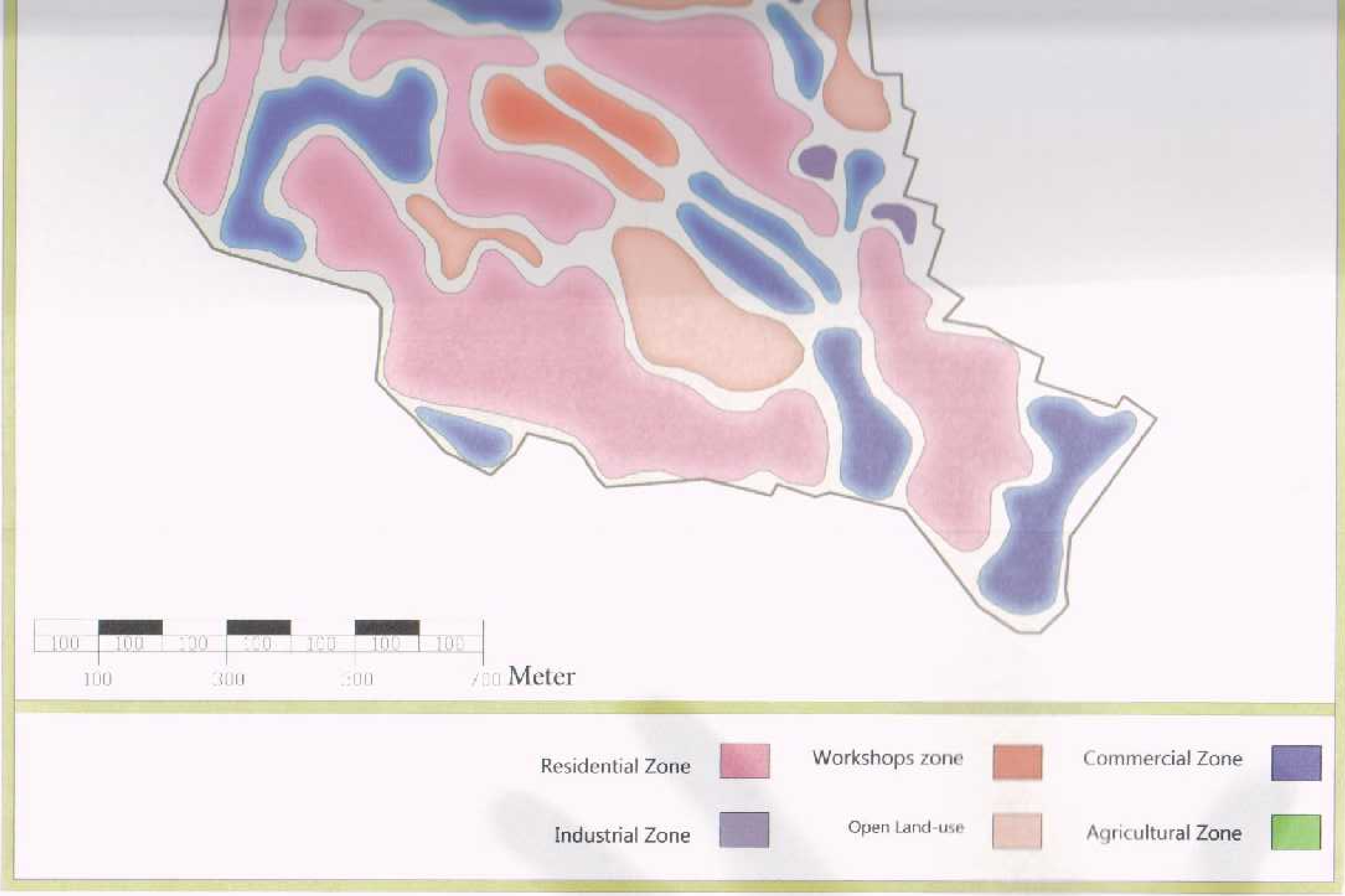
The proposed zones try to suggest solutions for the problem, as the factories are being transformed, new functions will take place, these functions will satisfy the needs of the area, empty spaces will be also utilized in functions that helps the people and comforts them.

The residential zones are arranged together and the industrial zones are now integrated with the residential area, a new category of housing was used, that is the residential-agricultural zone, in order to spur the agriculture in the area.

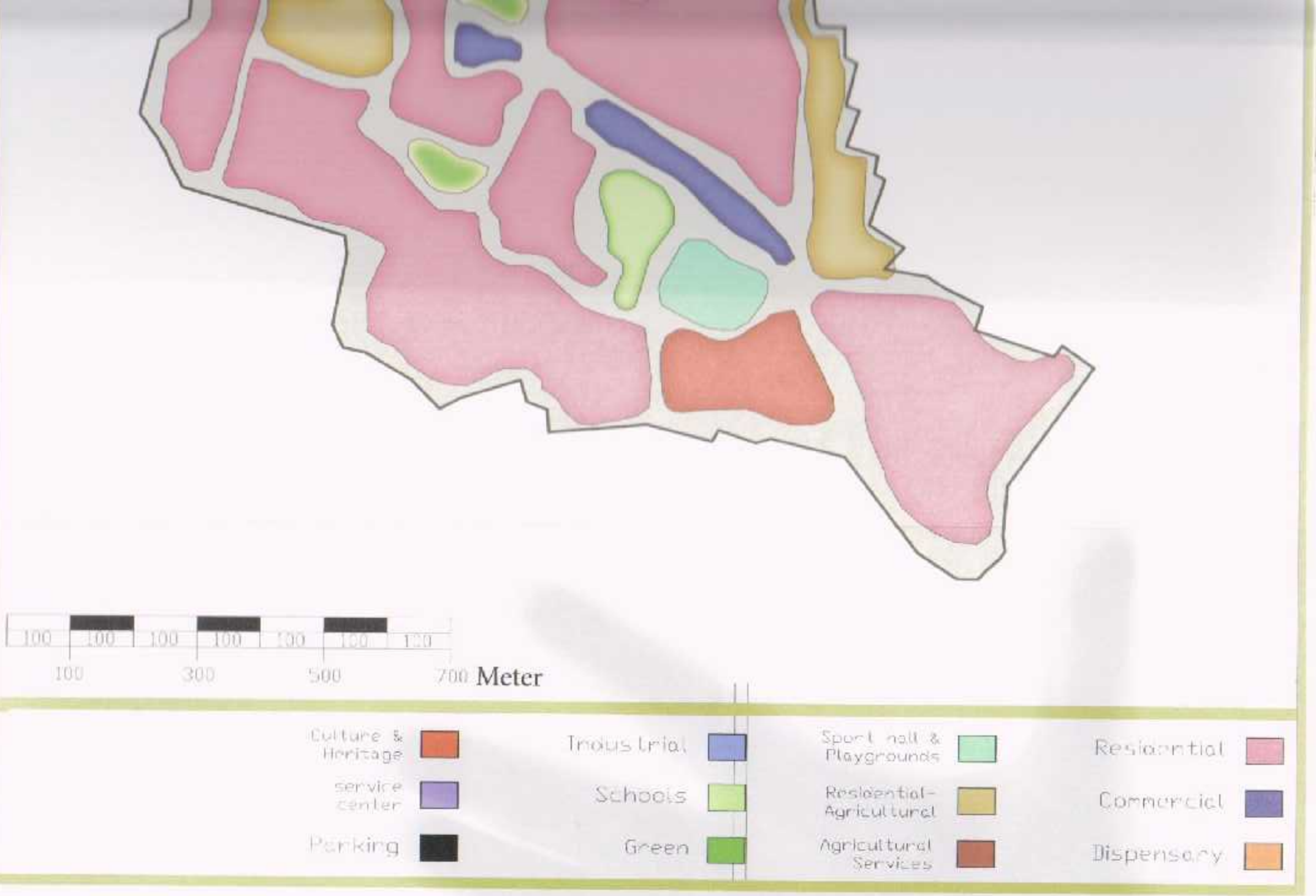
The commercial zone was strengthen as a commercial line on the sides of the main street, and certain areas that are located near the borders of the city were kept as positive mixed-use zones that includes commercial and residential uses.

Other zones such as a sport center, schools, agricultural research center and agricultural gallery, cultural center, green an recreational area were proposed in order to fulfill the needs.

Existing Zones


Meter
Residential Zone
Workshops zone
Commercial Zone
Industrial Zone
Open Land-use
Agricultural Zone

Proposed Zones


100
100
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100
100
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100
300
500
700 Meter
Culture & Heritage
service center
Parking
Industrial
Schools
Green
Sport hall & Playgrounds
Residential-Agricultural
Agricultural Services
Residential
Commercial
Dispensary

6.4.2 Streets:

6.4.2.1 Existing Streets:

The existing streets in the study area are not arranged on hierarchy, the main street leads to secondary streets, the width of the secondary street in some placed exceeds the width of the main street, some service streets are lumpy and unpaved, even paved streets are damaged in the circumference of the industrial zones.

Figure 6-1: Damaged streets near industrial areas
Source: researchers lens

Most of the streets in the area were left without sidewalks, the main street is the only street with sidewalks, and in certain places it is used for the hardware of the construction processes in the area.

Figure 6-2: constructions hardware on sidewalks
Source: researchers lens

6.4.2.2 Proposed Streets:

The proposed streets were divided into three categories:

Main street ..... width = 17.5 m

Secondary streets ..... width = 12-8 m

Service streets ..... width = 6-4 m

Sidewalks are divided into two parts:

Paved walk side ..... width = 1.5 m

Green area ..... width = 1 m

The green area separates between the street and the paved sidewalks, this helps to decrease the pollution resulted from the traffics, and helps to create a gentle environment for people passing the streets, the safety factor is also taken in consideration, the green area is planted with low shrubs which enables people to reveal the street clearly.

Existing Streets


100
100
100
100
100
100
100
Meter
100
300
500
700

Proposed Streets

100 100 100 100 100 100 100 Meter

100 300 500 700

Proposed Main Street

Proposed Secondary Street

Proposed Service Street

Proposed-Detailed Streets

100 100 100 100 100 100 100 Meter

100 300 500 700

Proposed Main Street

Proposed Secondary Street

Proposed Service Street

6.4.3 Transformed Factories:

6.4.3.1 Transformation Process:

The transformation process for the 10 years plan will include the transformation of:

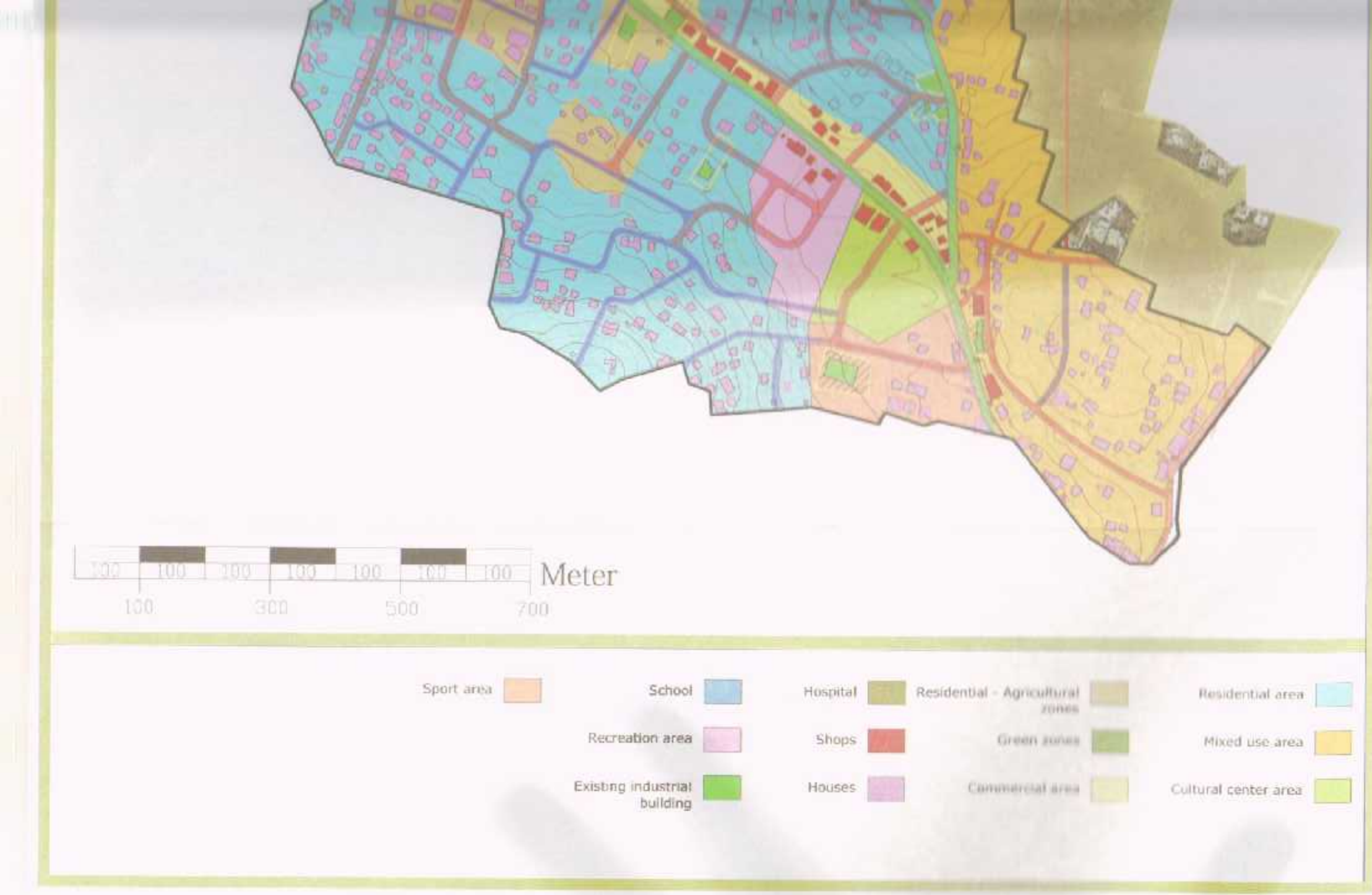
1- Hassoneh factory for Soap industry.
2- Royal factory for Plastic industry.
3- Al-bakri factory for Soap wrapping.
4- Al-mahabba factory and transportation.

The transformation includes presenting facilities for these factories in order to help the owners to move to the industrial area in Hebron, these facilities includes canceling the taxes that are imposed on these factories, provide them a good area to move to, the transportation to this area must provided and reaching this area must be easy, also providing good alternatives and uses for the factories, helps to convince the owners in the concept of transformation.

Other factories in the study area will be left for the 15 years plan, such as Herbawi factory for mattresses.

The complexity of the process of urban transformation depends on the size and type of the factory, the volume of production, the number of workers, and the infra-structure, all these factors must be considered when deciding to implement the urban transformation.

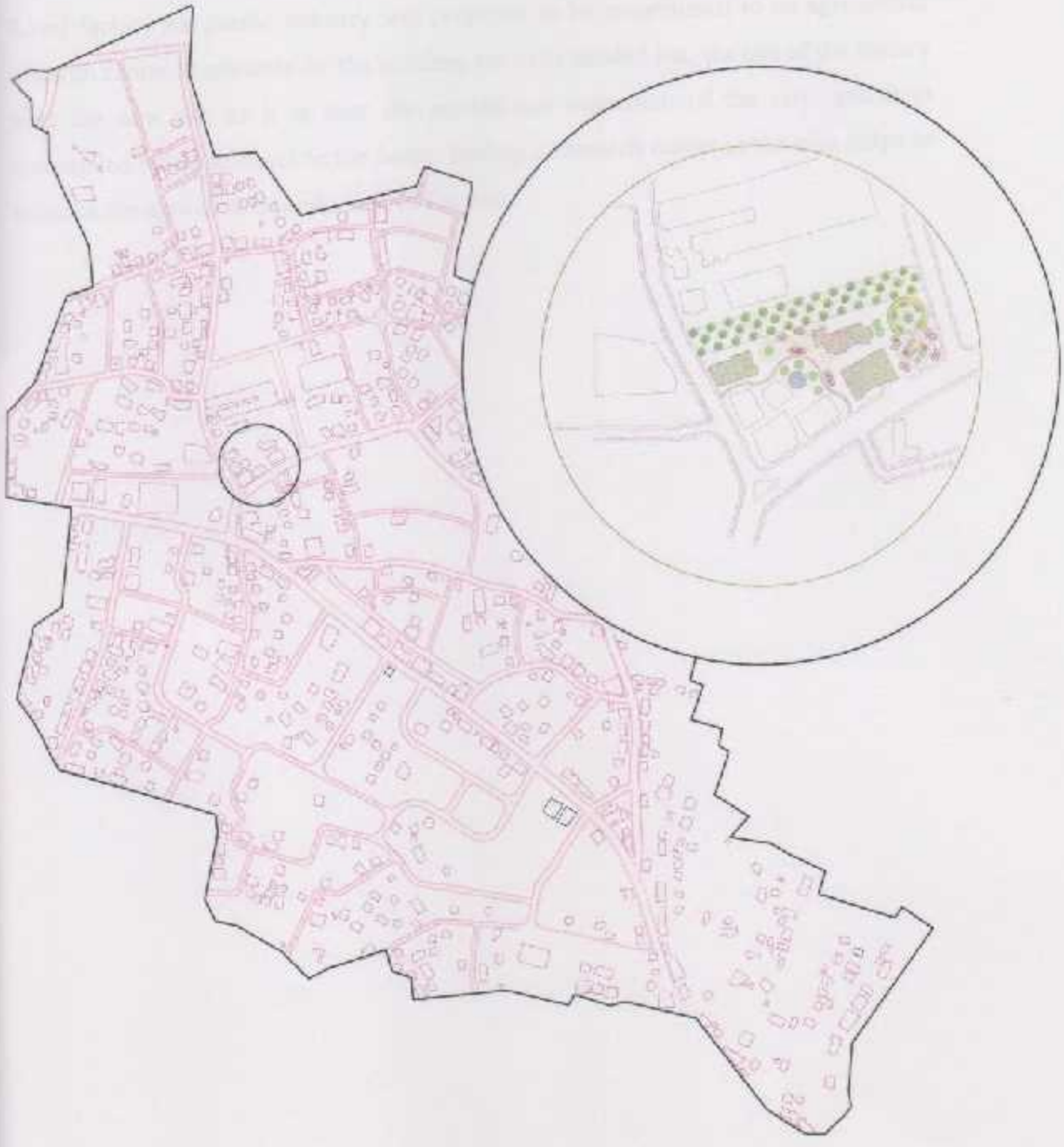
Proposed Land-use


100
100
100
100
100
100
100
Meter
100
300
500
700
Sport area
School
Hospital
Residential - Agricultural zones
Residential area
Recreation area
Shops
Green zones
Mixed use area
Existing industrial building
Houses
Commercial area
Cultural center area

6.4.3.2 Samples of Transformation:

6.4.3.2.1 Hassoneh factory for Soap industry:

After studying the location of the factory, it was proposed to transform it to a shopping mall and service center, the location suits the new use as it lays on the main street, this helps to promote the commercial, and can be easily reached.

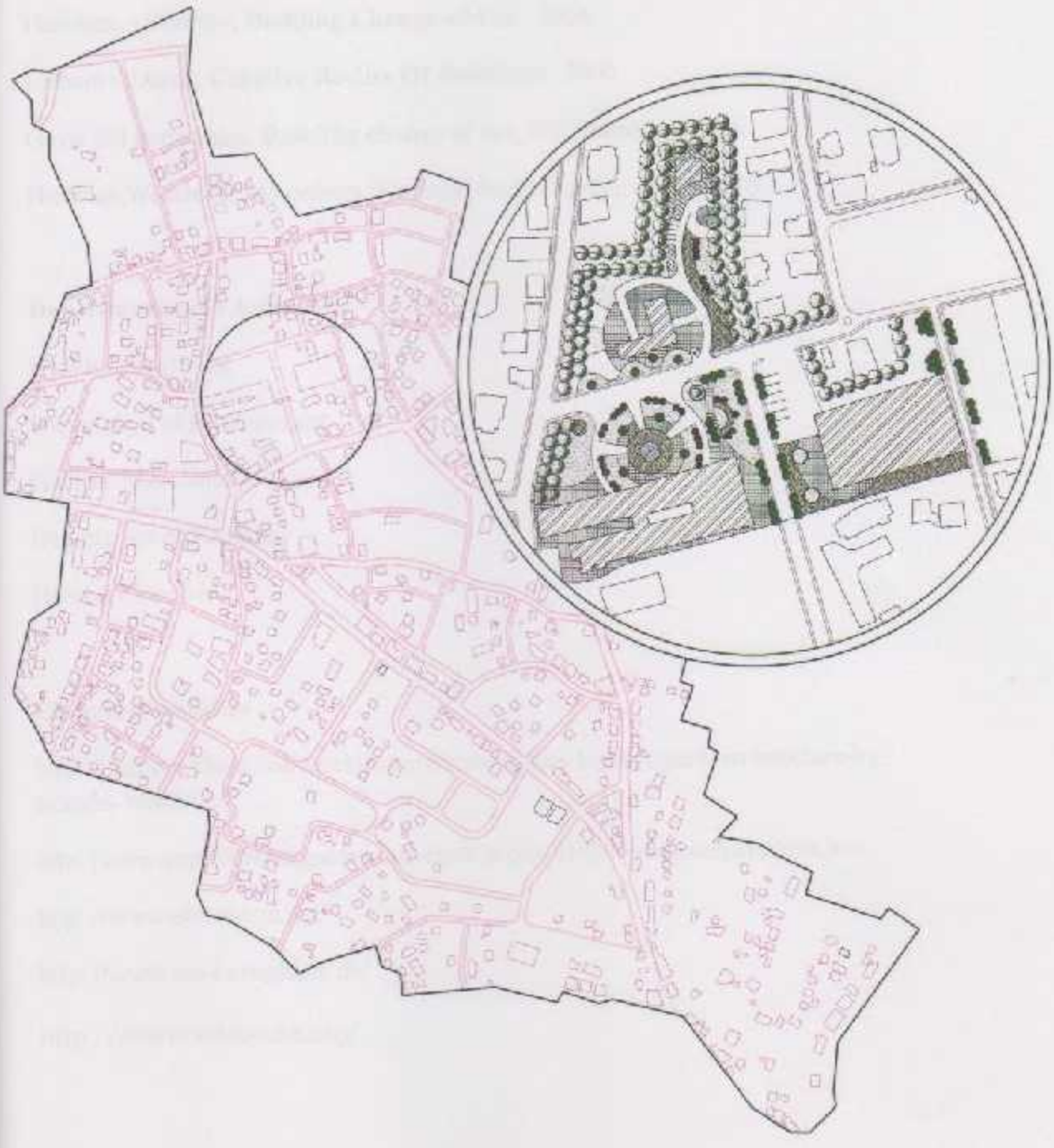


6.4.3.2.2 Royal factory for Plastic industry:

Royal factory for plastic industry was proposed to be transformed to an agricultural research center, treatments for the building are surly needed but, the site of the factory suits the new use as it is near the agricultural expansion of the city, and it is surrounded by agricultural fertile lands, finding a research center in the area helps to enhance the agricultural production of the area.

6.4.3.2.2 Herbawi factory for mattresses:

Herbawi factory for mattresses will not be transformed within the plan of 10 years, but such treatments were proposed for the zone of this huge factory such as, stopping the process of expansion, supplying a green buffer with a width of 15 m this buffer is planted with trees that helps in decreasing the quantity of pollutional substances that spreads in the air.



References

Books

Gallion - Arthur B, **The Urban Pattern**, Reinhold company, 1986.

Henehan – Dorothy, **Building Change-of-Use**, 2004.

Latham – Derek, **Creative Re-Use Of Buildings**, 2000.

Grow hill companies, **Building change of use**, RR,Donnelley,2004.

Henchan,Woodson, and culbert, The hand book of urban design,2003.

Departments and Associates

Health Department

Department of Environment

Hebron Municipality

Department of Economy

Hebron Chamber

Electronic websites

http: //www.archidir.com/architecture/zona-franca-logistic-park-architecture-by-ricardo- bofill/

http: /www.enpc.fr/enseignements/Legait/projet/MEI/Barcelone/plandelta.htm

http: //www.elconsorci.net/

http: //www.am-borsigturm.de/

http : //www.wikipedia.org/

Appendix A

Questionnaire

Palestine polytechnic university

College of engineering and technology

Civil and architectural engineering department

Students

Safwat Jubeh Dema Azzeh Aisha Abd alnabi

Project title : revitalizing mixed-use lands in hebron city

This questionnaire aims to know the problems that people's faces according to their residency in the mixed-use areas, and to know how factories affect the whole area, and what people think about the concept of urban transformation for the factories.

Part one :

1- Gender:

.... Male .... Female

2- Age:

.... Under 20 .... 20-40 .... 40-60 .... older than 60

3- Educational level:

.... Primary .... Secondary .... High education

4- Marital status :

.... Married .... Single .... Widowed .... Divorced

5- Property type :

.... Owned property .... Rent

Part two :

Question one: Do you face any obstacles according to the place you live in?

..... Yes ..... No

Question two : do you face any problems when reaching markets and shopping?

..... Yes ..... No

Question three: mention the educational level of children you have?

.....Kindergarten .....Primary .....Secondary .....High school

Question four: do yo:ur children face problems reaching their schools?

..... Yes ..... No .....Sometimes

Question five : is the road safe enough for your children to pass by (caused by traffics and lorries)?

..... Yes ..... No

Question six: when you need to recreate yourself; do you find places near you to go to?

..... Yes ..... No

Part three :

Question one : Do you face problems from heavy traffics and lorries in your area?

..... Yes ..... No

Question two : Do the factory near your housing decrease the quality of services that you need (water, electricity, land)?

..... Yes ..... No .....Maybe

Question three : As a citizen : do you face problems when reaching to the industrial area if needed?

..... Yes ..... No

Question four : if you are a labor in a factory : do you accept the idea of transforming the factory to the industrial area, so that you can live in healthy area?

..... Yes ..... No

Question five : do you approve on regulating the process of constructing factories and workshops in you residential area ?

..... Yes ..... No

Question six : Do you approve on moving factories from your residential area and replacing it with services you need ?

..... Yes ..... No

Question seven : is there enough services in the area you live in (educational, infrastructure, commercial, recreational) ?

..... Yes ..... No .....Maybe

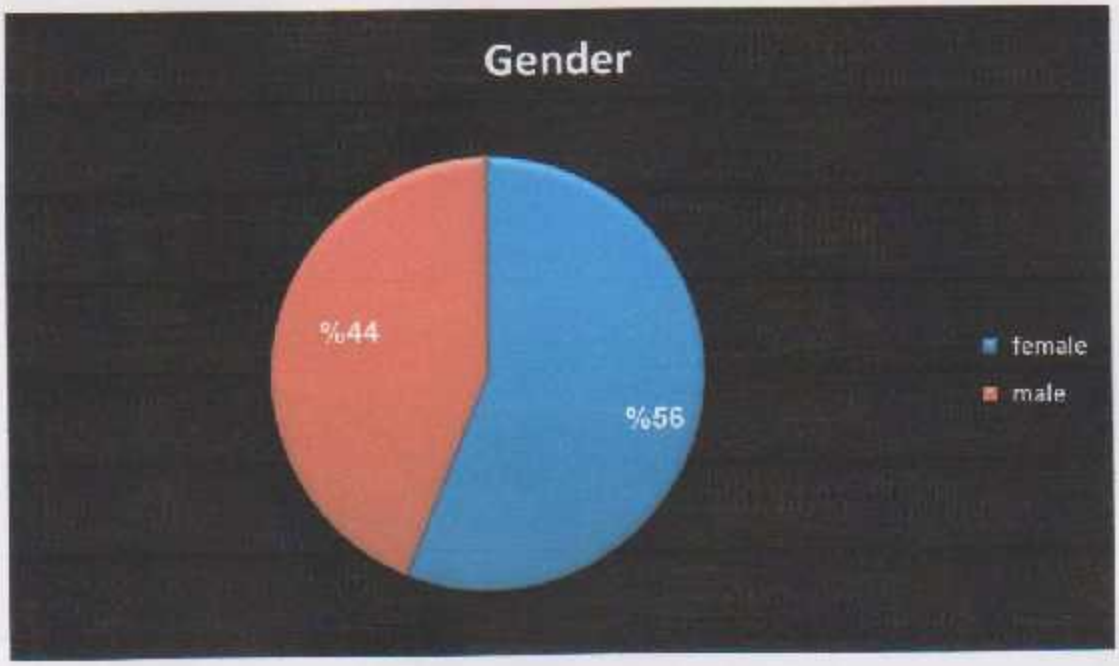
Question eight : Services that you need:

.....Schools .....Malls .....Health Centers .....Sport Halls .....Culture Centers

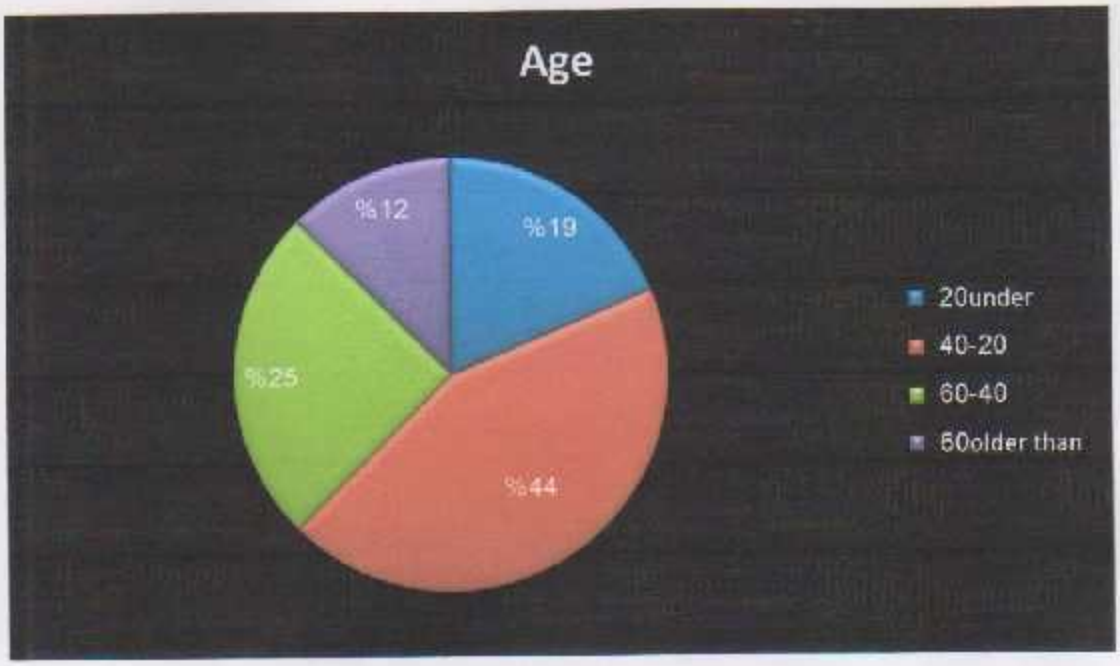
Questionnaire Analysis

Part one :

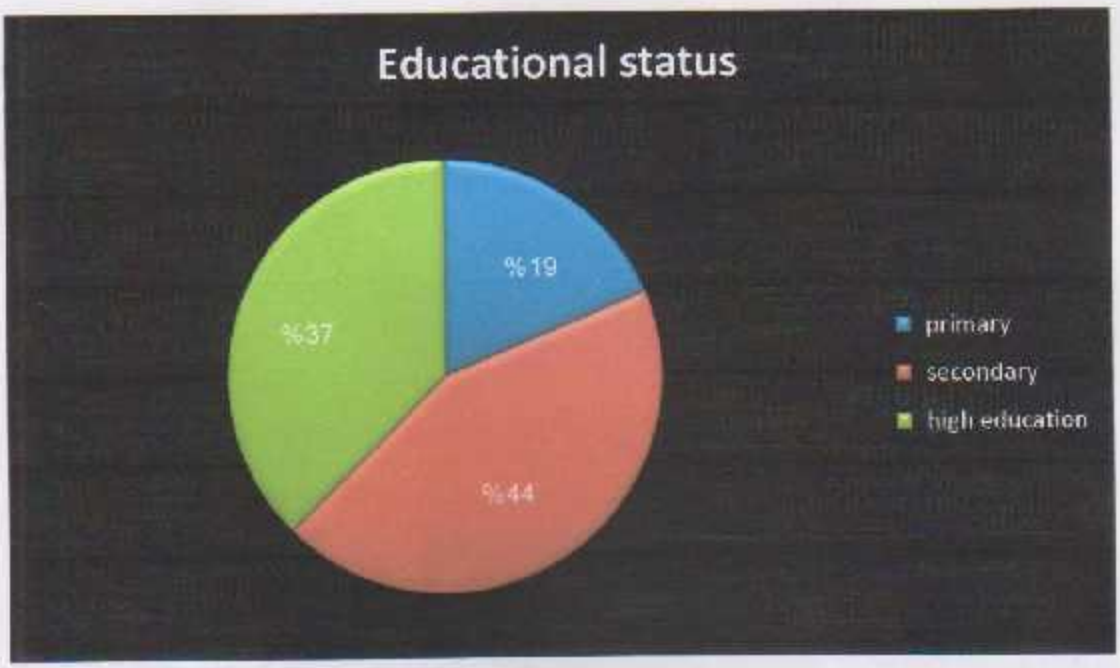
Question one : gender



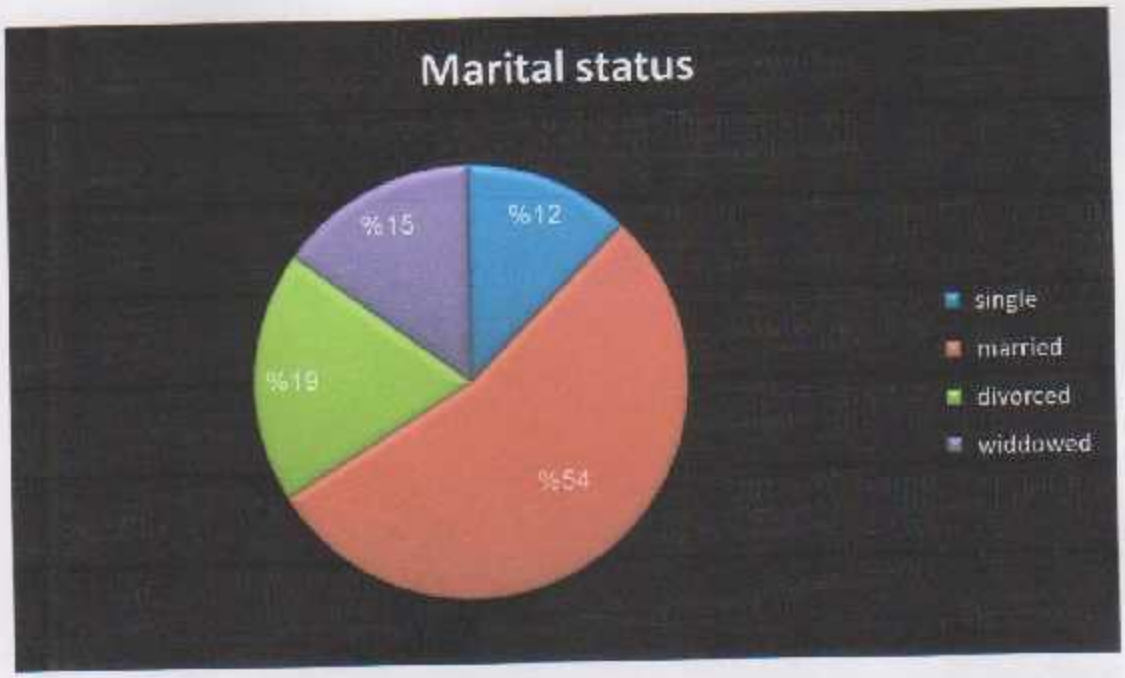
Question two : Age



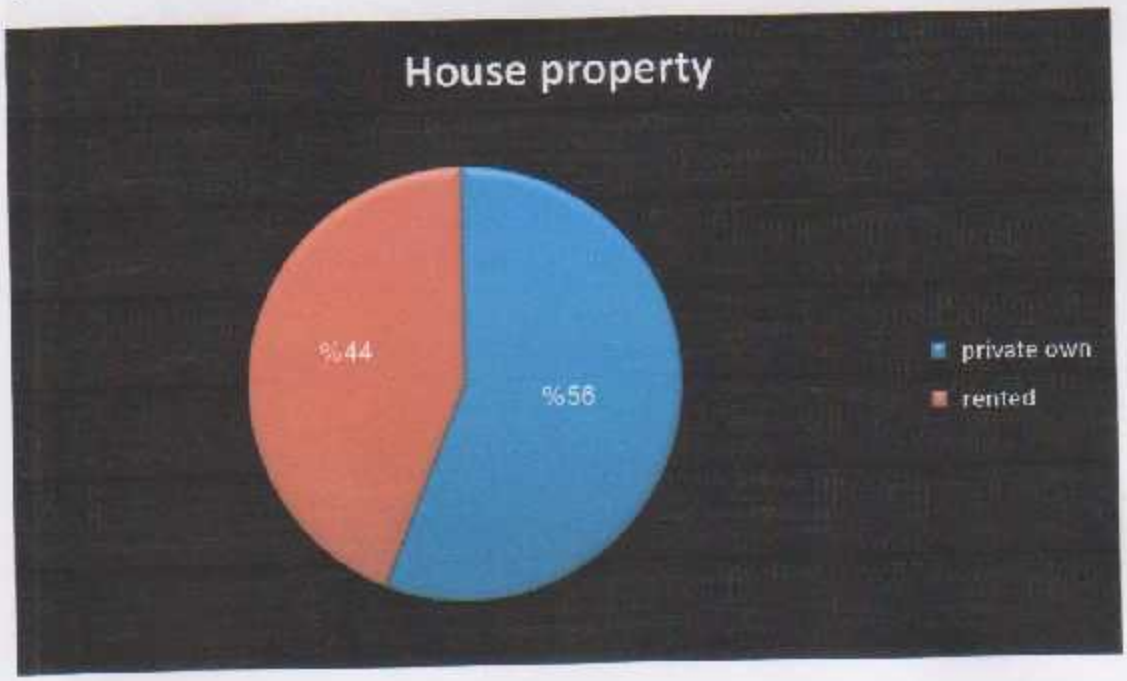
Question three: educational status



Question four: marital status

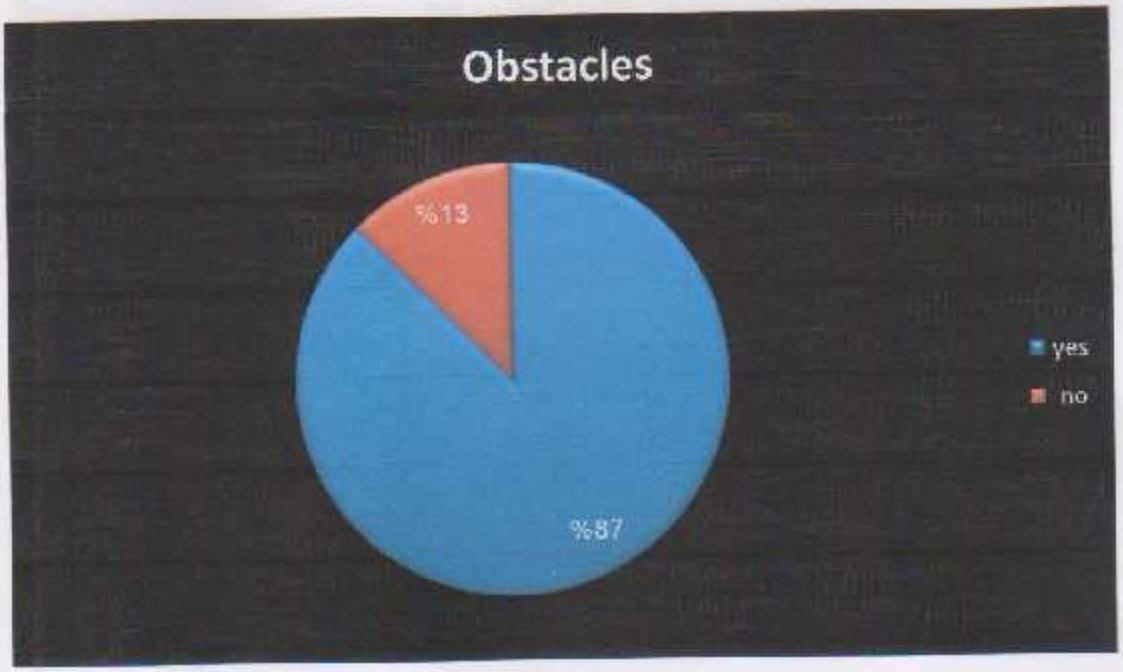


Question five: house property

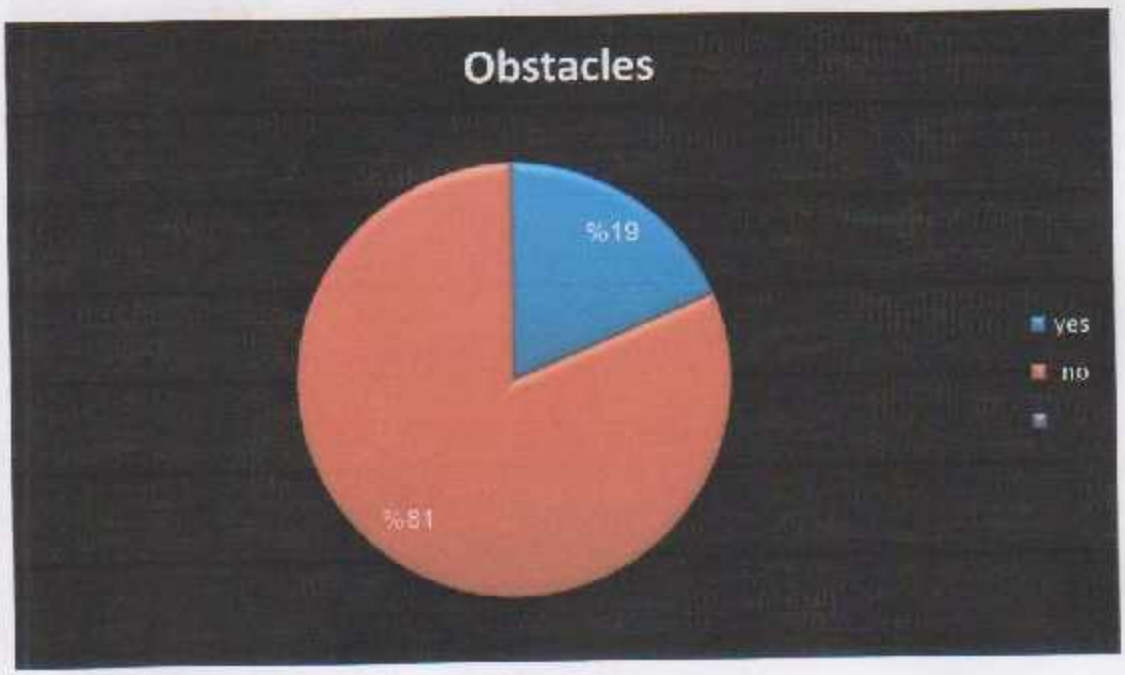


Part two :

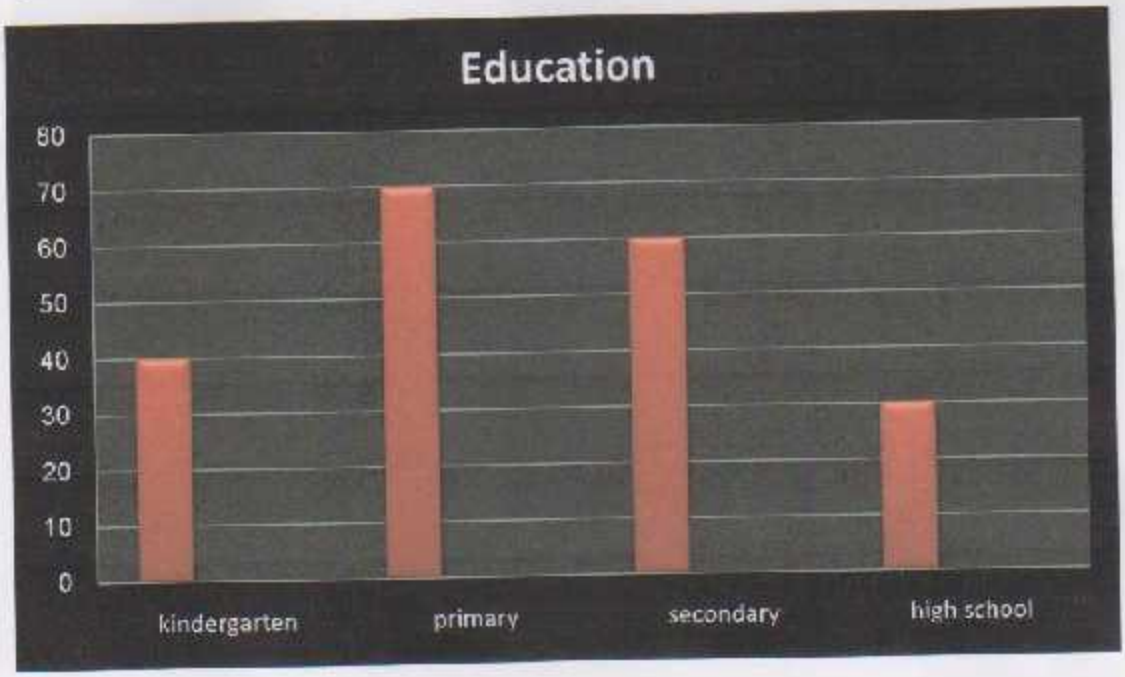
Question one: Do you face any obstacles according to the place you live in?



Question two : do you face any problems when reaching markets and shopping?

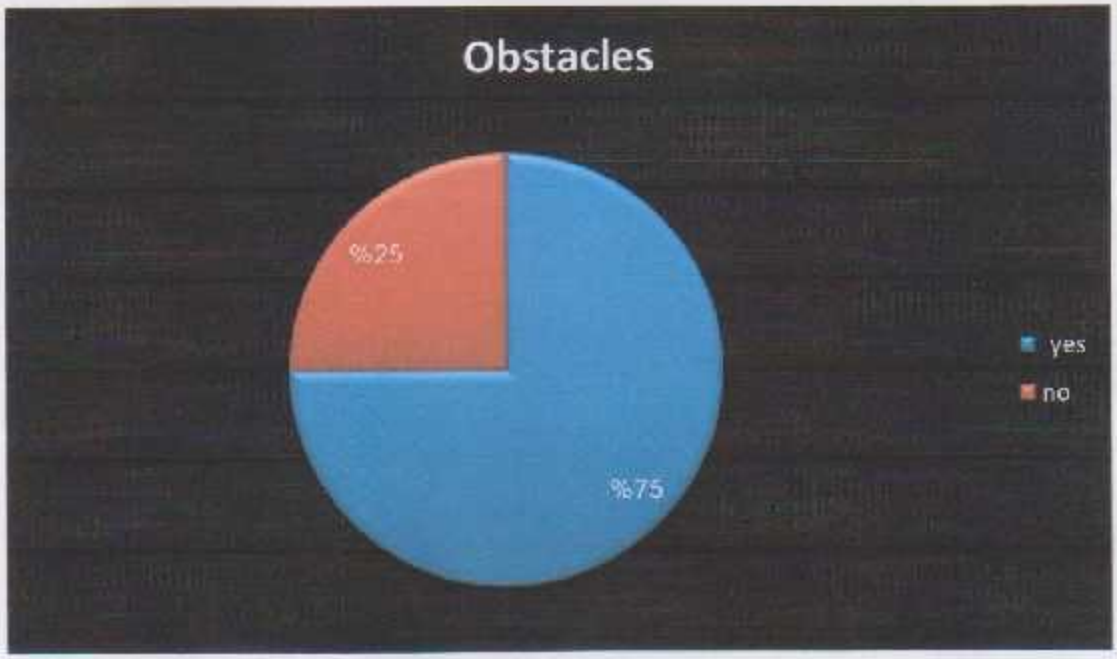


Question three: mention the educational level of children you have?

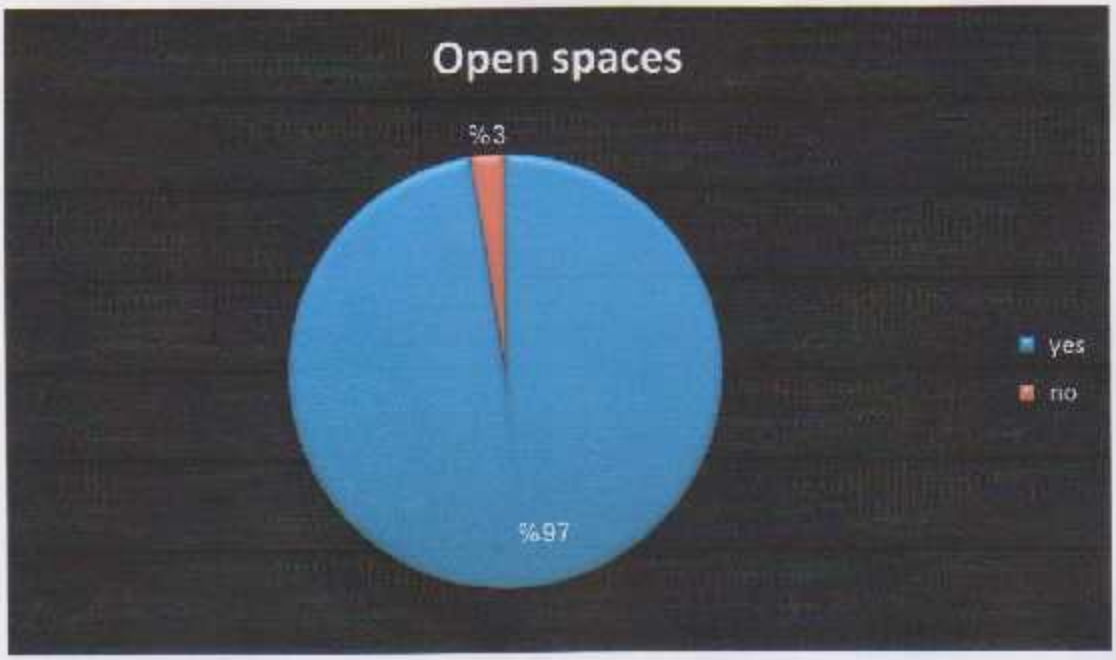


Question four: do your children face problems reaching their schools?

Question five : is the road safe enough for your children to pass by (caused by traffics and lorries)?

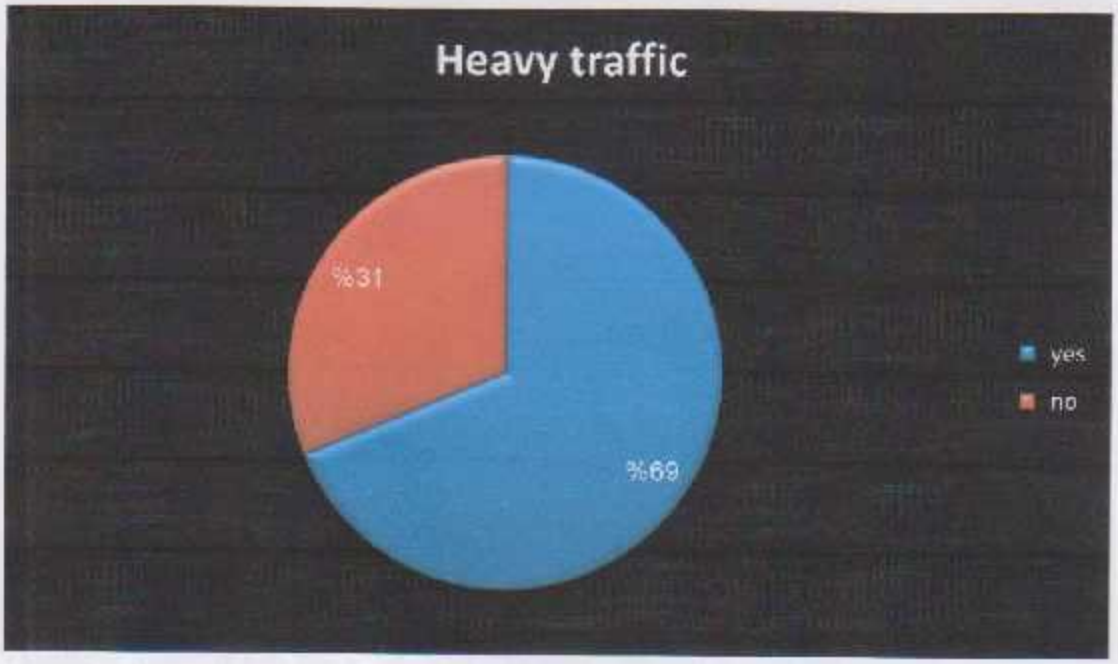


Question five: when you need to recreate yourself, do you find places near you to go to?



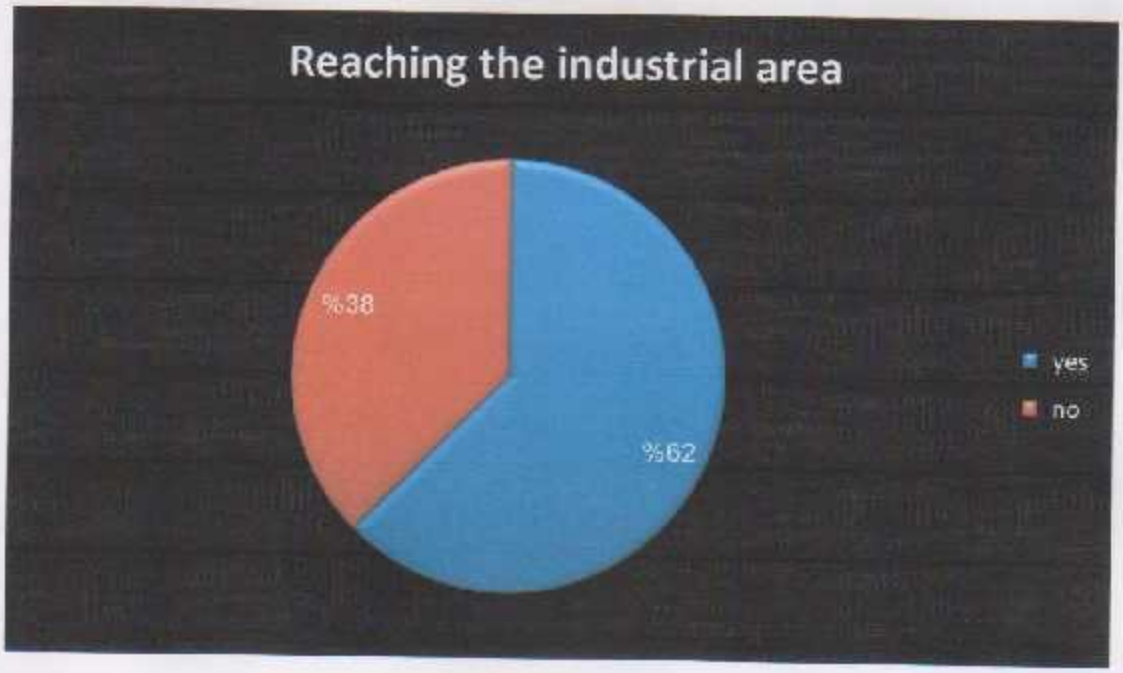
Part three :

Question one : Do you face problems from heavy traffics and lorries in your area?

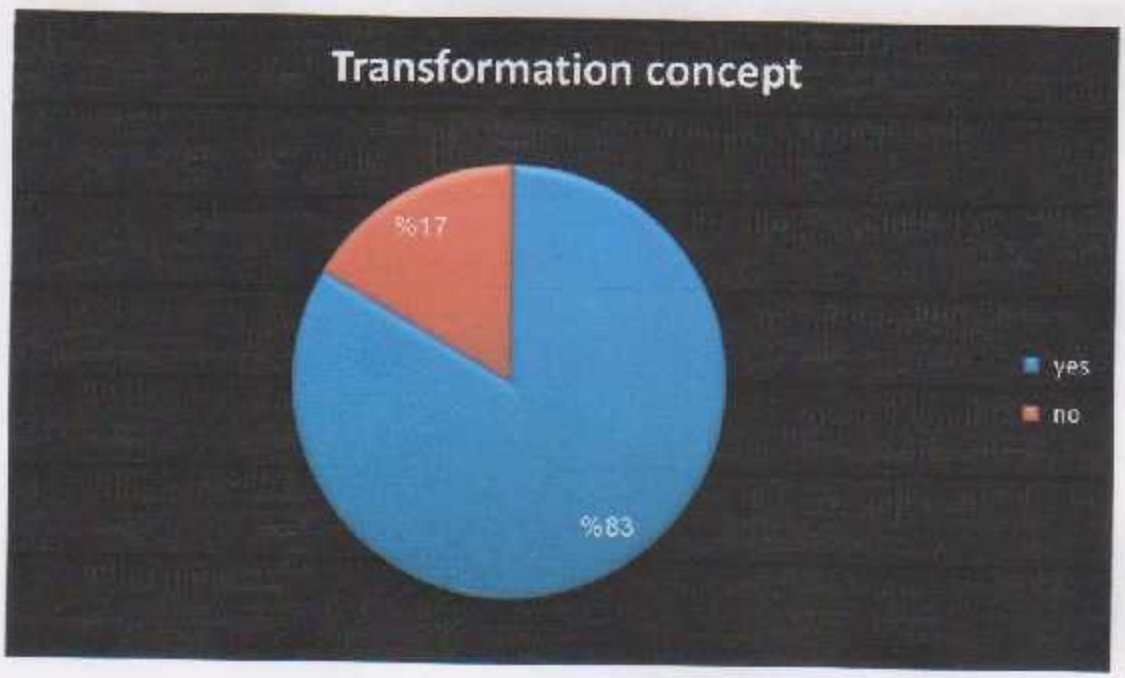


Question two : Do the factory near your housing decrease the quality of services that you need (water, electricity, land)?

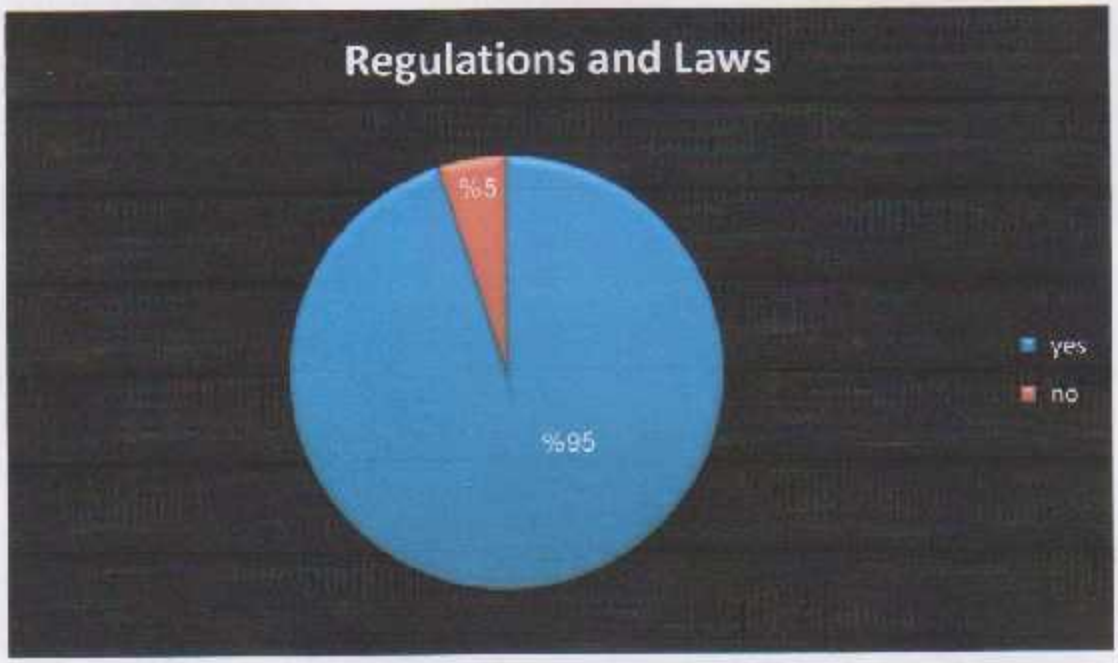
Question three : As a citizen : do you face problems when reaching to the industrial area if needed?



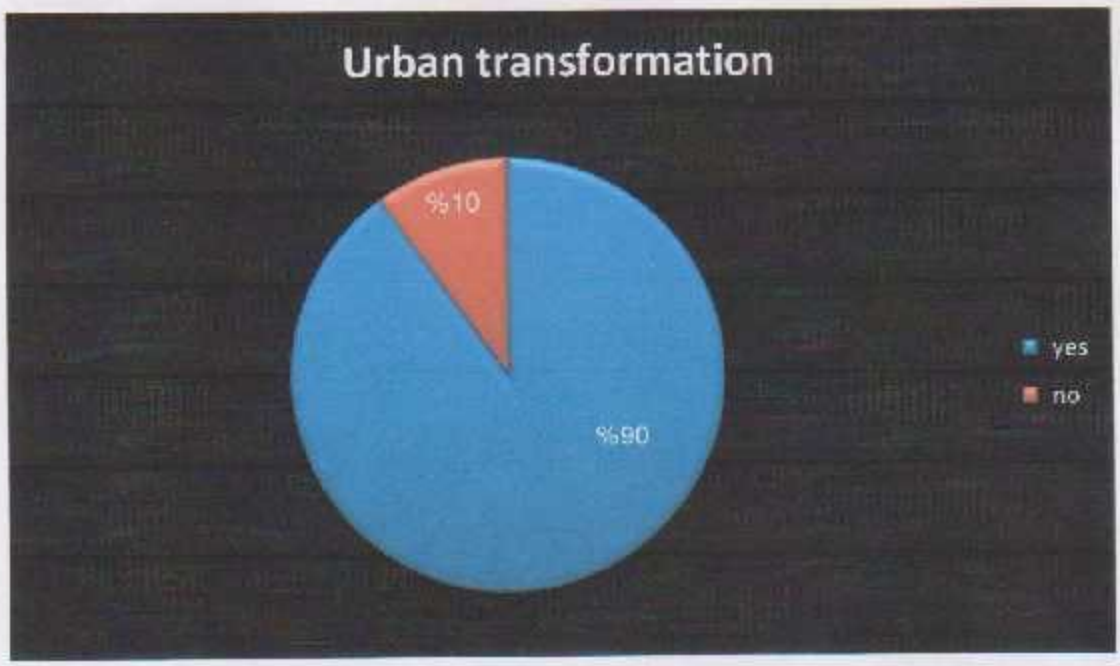
Question four : if you are a labor in a factory : do you accept the idea of transforming the factory to the industrial area, so that you can live in healthy area?



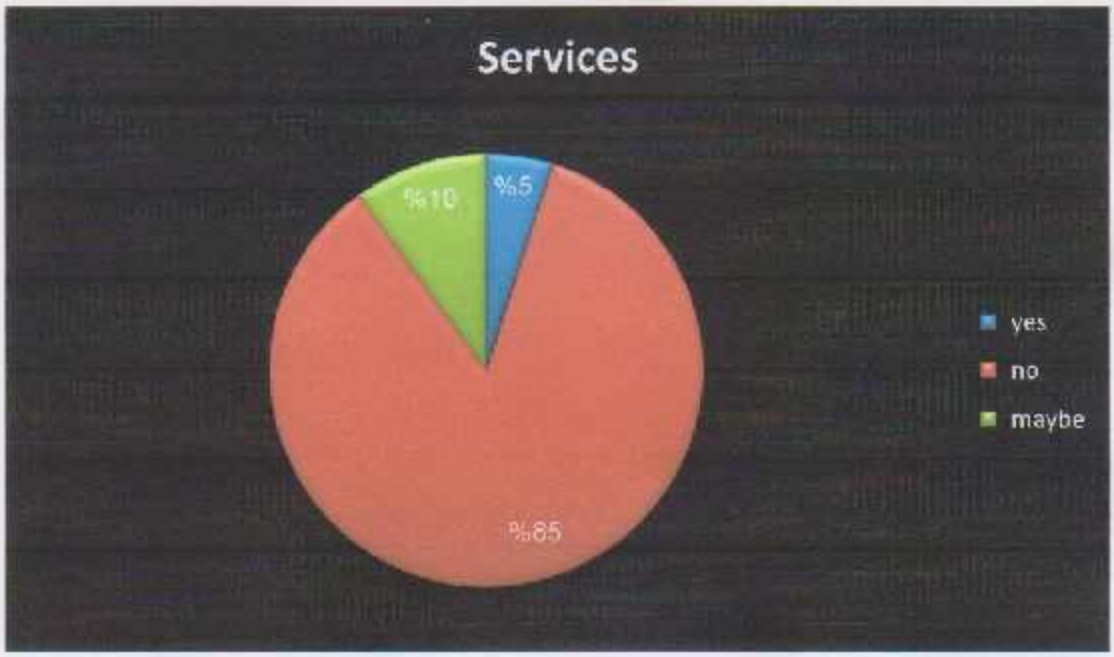
Question five : do you approve on regulating the process of constructing factories and workshops in you residential area ?



Question six : Do you approve on moving factories from your residential area and replacing it with services you need ?



Question seven : is there enough services in the area you live in (educational, infrastructure, commercial, recreational) ?



Question eight : Services that you need: