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Efficient land use: tools and practices

Enhancing Land Management, Land Development and Construction

Remodeling informality into sustainable housing prototype, Alexandria case, Egypt.

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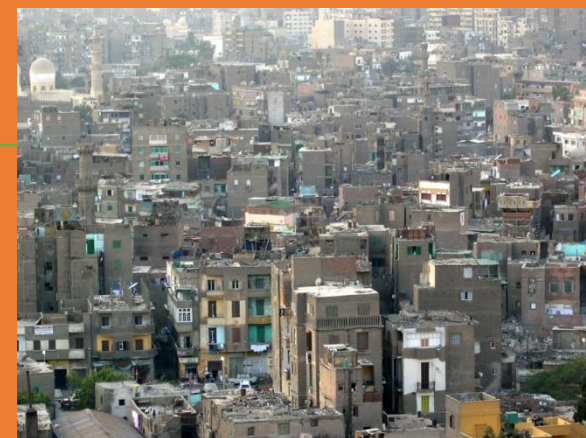


Introduction

- **Urban informality and Encroachment of agricultural lands are two faces for one coin, by which the widespread of slums and imbalance in urban development is leading to the arbitrary urban expansion.**
- **These two challenges are tackling hundreds of threats on social health, economy, safety, social security and national stability, especially in developing nations and Arab countries such as Egypt.**
- **Governments should facilitate formal land registration for the poor and enabling people to utilize the advantages of land ownerships.**

Main Problem

- **Governments can't control these informal growth and communicate with its inhabitants to help provide them proper houses to satisfy all needs. Even low-income projects are not well studies in land location and selection.**



Methodology

Literature review, data collection and analysis

- Define: “slums”, “Informality”, and “agricultural encroachment”
- Analyze Informal settlements distribution in Alexandria city.
- Review the reasons of widespread of slums
- Explore bad effect of slums on governments
- Discuss land plot affordability.

Review informality & problems in Alexandria

Research proposal for controlling informality

- Designs and structures are concluded designs and structures to assist governments in upgrading slums by:
- comparison between 3 structure systems.
 - Explaining most convenient structure.
 - Designing a structural prototype
 - Sustainable implementations.

Conclusion: Review positive effects of new proposal and paper recommendations

“Slums” can be described as:

Unsafe and unhealthy homes -Overcrowded homes- Limited or no access to basic services: water, Sanitation, electricity, transportation.

Widespread of slums in Alexandria

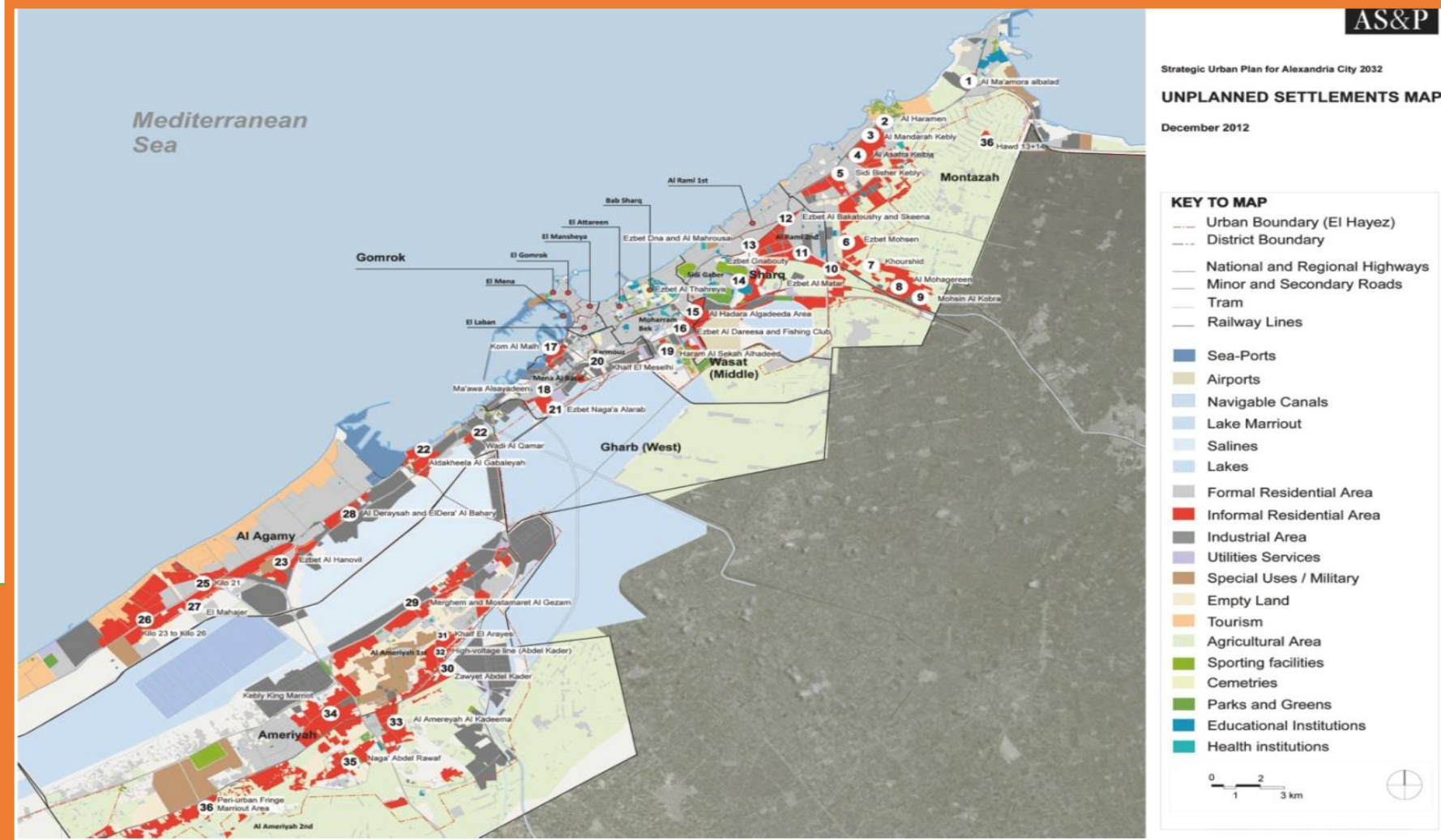
- The total land area of Egypt one million sq. km - Total population is approximately 102,334,404, with a growth rate 1.94 per cent.

- Alexandria is one of the most important Egyptian cities on the Mediterranean Sea and is considered the second city with highest population 3,811,516

- Slums cover approximately 3.25 per cent of the total city area, characterized by high population -poor infrastructure.

SECTION 1 / DEFINITION AND SPREAD OF INFORMAL SLUMS

Alexandria, Egypt.



SECTION 1 / DEFINITION AND SPREAD OF INFORMAL SLUMS

Slums are divided in Alexandria city into THREE types

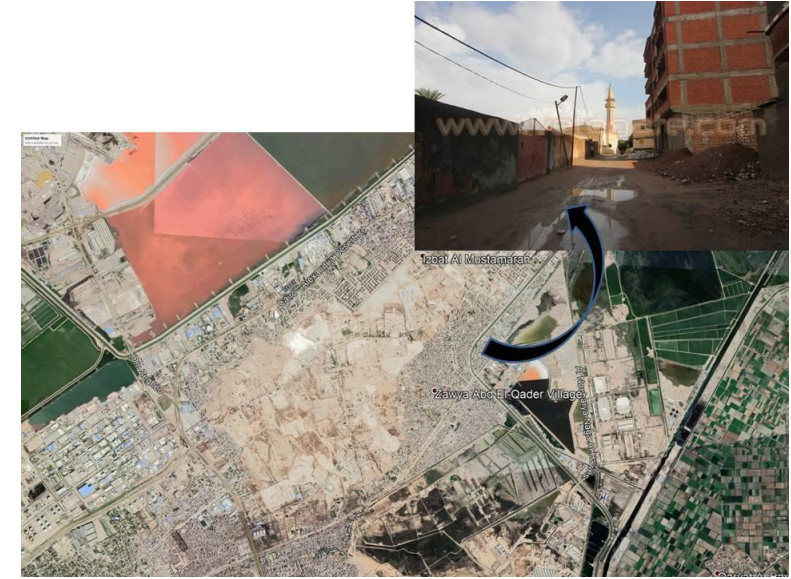
Alexandria, Egypt.



**TYPE 1: Encroachment on
Agricultural like Ezbet Ibrahim
Moussa, Montaza.**



**TYPE 2: Settlement on public and
voluntary dedicated lands like
slums above Archeological site,
like Tabyet Saleh**



**TYPE 3: Unplanned development
on Bedouin land, where land
ownership is unclear**

Unsafe areas are estimated to constitute 1% of the urban areas, with an average density of 200 person/ feddan, and the building height from 1 to 2 floors.

They are mostly deteriorated, dangerous on inhabitants and surrounding environment and do require deliberate intervention.

Reasons of Informality

Government Aspects

- Laws
- Demand and supply
- Security stability
- Urban expansion

Economic Aspects

- Unemployment
- People building themselves
- Capital Accumulation

Social Aspects

- Renting
- Migration

Alexandria, Egypt.

Effects of informal slums on community

Health & well-being

Absence of: clean water, proper ventilation sanitation and people die from building collapse due to weak structures

Disasters and evictions

spread of evictions or buildings collapse due to weak structures

Aesthetic values

Absence of external finishing-buildings on agricultural plots, damaged the aesthetic views of farmlands

Safety & violence

Increases crimes- Widespread violence and lack of awareness-Absence of land ownership lead to insecurity.

Economically

Decrease in agricultural production and food crisis due to Building on agriculture lands

Perpetuating the cycle of poverty

Spread of illness - Presence of black market -Lack of employment

There are many concerns related to land, and it will be gathered in the following points:

Alexandria, Egypt.

Land Price and market:

Governmental interventions has lead to increase in land prices and imbalance in land markets, therefore inability of the low-income people to live formally due to:

1- project development in a fringe area is thus suitable for urban residents, the project has increased speculation and land acquisition by the private sector

2- The commercialization of land through public auction helped to raise land market prices

Land Ownership:

On one hand, Egypt should work to reduce urban sprawl through an assessment of urban land markets and legal and regulatory impediments to developing land within urban boundaries.

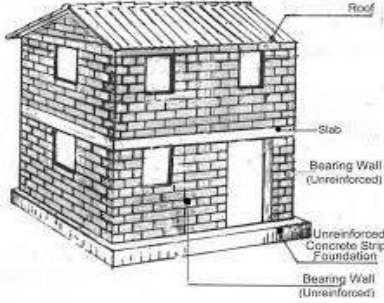


On the other hand, Egypt takes steps to improve slum conditions, including efforts to regularize land rights within informal settlement areas

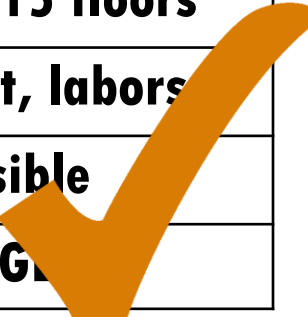
Land Location:

Some low-income communities, which are created by governments to solve housing problems and upgrade slums, have problems concerning transportation, linking them with cities main spines, absence of job opportunities and lack of main services like schools and hospitals.

Selection of structure

SECTION 3 / NEW STRUCTURAL PROPOSAL TO CONTROL SLUMS SPREAD

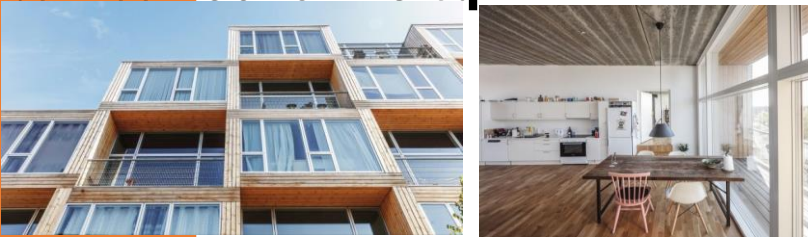
Points of comparison	Bearing wall	Skeleton structure	Box-unit Structure
Images			
Definition	Build in site	Build in site	Industrialized construction system
Load distribution	Load bearing walls.	Supporting columns, beam & slab.	Self supported 3D spatial elements
Materials used in construction	Wall are constructed of bricks or stone	Column, beam and slab are concrete.	Pre-fabricated units in factories
height	Three to Four floors	It can reach 75 floors	It can reach 15 floors
labors	High number needed	Fewer are needed	Factory-built, labors
Economically	Not Feasible	Not Feasible	More feasible
Advantages/Disadvantages	More DISADVANTAGES	Equal	More ADVANTAGES



Example on box-unit structures

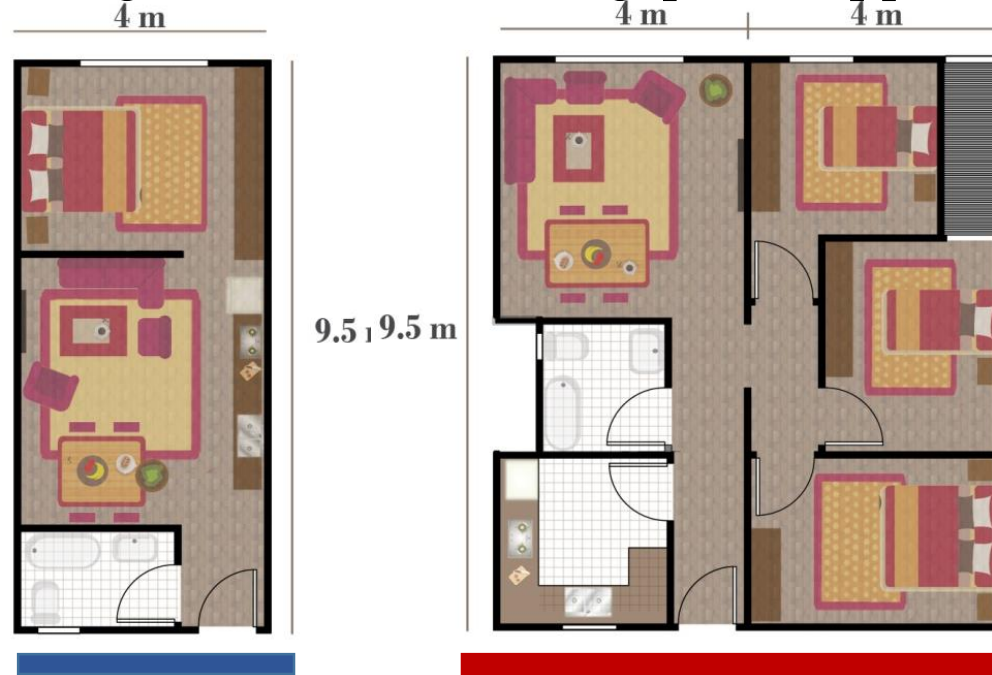
**“Homes for All – Dorteavej Residence”,
located in Copenhagen in 2013**

It is housing for low-income inhabitants, contains 66 homes distributed - Factory implementation of interior wood and concrete - the apartment with areas ranging between 60 to 115 sq m



SECTION 3 / NEW STRUCTURAL PROPOSAL TO CONTROL SLUMS SPREAD

Design of the housing prototype



Sustainable Implementations

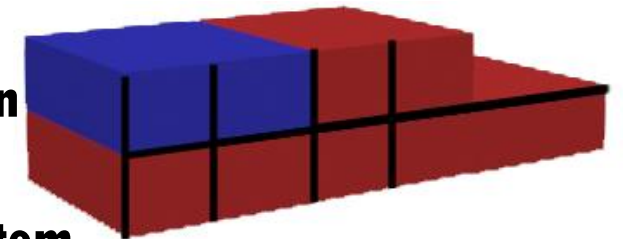
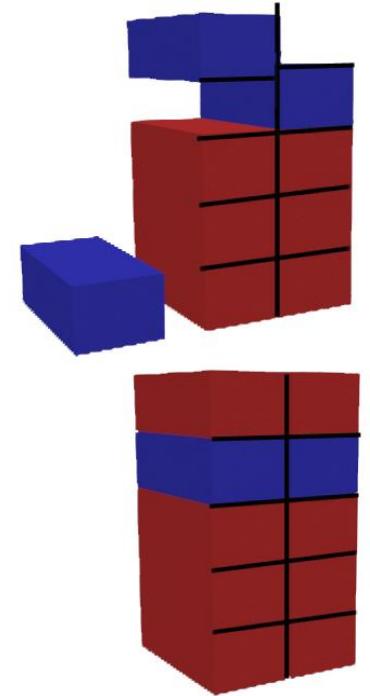
Green roof

Water recycling in building

Natural resources for energy generation

**Garbage and pollution control through
smart Pneumatic waste conveyance system**

Horizontal and vertical distribution of units



This pre-fabricated box-unit system is chosen as it is mainly employed in structures containing a high degree of service units.

This structure is based on inhabitants needs and will allow government to pay attention to land plots importance, creating a social economical areas that satisfy the inhabitants needs and still connected directly to cities and job opportunities



CONCLUSIONS AND MAIN RECOMMENDATIONS OF RELEVANCE TO THE REGION

Importance of this structures to governments:

- **Control informal growth with governmental manufactured houses and make the best use of small lands,**
- **Rapid exchange of week demolished informal buildings**
- **Replace the unfinished deteriorated structures with pre-fabricated units finished externally and internally in factories,**
- **End the series of disasters and evictions**
- **More Feasible: increasing of production will decrease costs.**
- **Compensate governmental loss in control and not achieving the maximum benefits of self-helping Egyptian projects.**

On the other side, these structures are attractive to low-income citizens as:

- **Self-built week structures, will be replaced with factory-manufactured strong and durable units.**
- **Time saving as they are delivered to site with complete exterior and interior finishing. Once they are assembled at site, they are ready to be inhabited.**

THANK YOU FOR THE ATTENTION!