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**A complementary Strategy for the Reconstruction Operations in Syria**

Sonia Ahmed\*1, Peter Dlask1

*1Faculty of Civil Engineering,Czech Technical University in Prague, Thakurova 7/2077*

*166 29 Prague 6 – Dejvice, Czech Republic,* [*sonia\_ahmed@yahoo.com*](mailto:sonia_ahmed@yahoo.com)*,* [*dlask@fsv.cvut.cz*](mailto:dlask@fsv.cvut.cz)*,*

Abstract

Most levels of the Syrian society were affected with the results of the current war. The most serious of these outcomes is the unbalanced demographic distribution of population, for this reason, this study is concerned in putting a plan for a complementary structural strategy that starts essentially with the regional, structural, and organization charting to the affected regions, and then the architectural, constructional and environmental studies. This strategy is achieved by putting complementary plans to produce the complementary map that guarantees an initial vision of all the populated gatherings within small and/or medium residential cities instead of the devastated random regions that are difficult to be restored or fit for living in, and putting the bases and necessary rules to support decision makers to reconstruct the partially or fully affected regions in Syria in concordance with the regional planning aspects, and preparing the necessary detailed plans and programs to execute the public and private projects that satisfies the objective of reconstruction and development. This study includes: plan of data gathering and analysis, the activity direction and programs preparation plan, the plan of the temporary alternative housing, the legal, legislative and administrative development plan, the technical development and implementation plan. Each of these plans includes a group of operations, each one of them needs inputs to be processed through a group of techniques to produce a group of outputs that could be used as inputs to another group of operations, either in the same plan, or other plans. And to complement these plans and operations together, a working team of officials, experts, technicians, consultants in all aspects, this team is coordinated with each other through a flexible hierarchy that has many sub-committees that are related to a higher organization of reconstruction.

Keywords

regional planningauthority; complementary map; interactive map; Geographic Information System (GIS)

Introduction

Most employees left their original residence to another one which depending on the difference of the economic and social status, where we can notice different groups of social levels that were moved internally or externally:

1. The External Section: it includes:

• Non-productive section that is moved outside the country.

• A productive section that moved to live in the bordering countries.

2. The Internal Section: it is composed of people who were moved from the hot areas to other safe regions inside the country, either in the same governorate or in other governorates, it includes:

• Non-productive section that is living in governmental public residency areas such as schools.

• Productive section that is able to rent alternative houses or are living with their relatives.

• Productive section that is able to buy alternative houses.

Methodology

The suggested strategy seeks to help people according to the humanitarian priorities, where the first section that is living in the public residency areas has the first priority to get an alternative temporary house and provide the temporary job during the reconstruction period.

1. The urgent stage (Assimilation)

2. The medium stage (initializing and preparation)

3. The Final Stage (Implementing)

1st section

2nd section

)

3rd section

(1) Abroad

(1) Shelters inside Syria

1. Bordering countries in refugee’s camps

2. Direct and indirect bordering countries

(2) Transitory house

(3) Permanent house

Fig1. The suggested strategy according to the humanitarian priorities.

Results

**Reconstruction Plans:**

The study includes a group of plans that should be integrated and complemented with each other to produce reconstruction plans, as in fig. (2):

Inputs

First operation

Second operation

Outputs

Inputs

Techniques

Outputs

Techniques

**Plan 1**

**Plan 2**

Fig.2 Use the results of some processes like an inputs for subsequent processes.

First: Gathering and analysis of data plan.

This plan is concerned with gathering, categorizing, checking and analyzing the necessary data to all aspects of activity that might form the basis of planning of the temporary and permanent housing

1. **data gathering and checking**

This process starts directly, where the working team gathers and checks available data, according to its types, as follows:

1. **Inputs: data types:**

Different data to be gathered form the basis inputs to this process, as in fig (3).

Data types

Damages data

Spatial data

Demographic data

Gathered and checked data

Fig. 3 Data type.

1. **Manipulation: data gathering and checking**

Gathered data is manipulated and checked through models and depending of pervious experiences.

1. Data gathering missions:
2. Checking data
3. Getting benefit from international experiences

Outputs: The Verified data

Gathered and verified data from the outputs of this process, the steps of stages are interrelated as is shown in fig. (4).

1. **Data analyzing and categorizing.**

This process starts after or during the gathering of data, where the working team, after gathering and checking data, to analyze it according to its types to get the necessary information as follows:

**Gathered and verified data**

Data auditing

Data gathering

Benefit from past experiences

Devise guidelines of data manipulation

Devise criteria of data accuracy

Devise the data gathering samples

Identification of the concerned parties

Standards

Fig. 4 The process of collecting and auditing of data.

1. Inputs: Data Analysis

The gathered Demographic and spatial data, and damages data for the inputs to this operation, as in fig (5).

Demographic data

Analysis of verified data

Spatial data

Affected areas data

Verified data

Integrated map

Fig (5). Input of the integrated map

1. **The Manipulation: the complimentary map**

The verified (demographic, spatial and damages) data after being analyzed and classified as before will form the complimentary map, which is a map that depends on the Geographic Information System (GIS) in which all the residential gatherings from organization regions and random regions with the classification of state properties inside/outside the organization charts, then the basis map. s

1. **Outputs: Information resulting from data analysis (of the complementary map)**

The information resulting from the demographic, spatial and damages data analysis in addition of the basis map for outputs of this process:

1. **Demographic data**

We can classify the demographic data according to the certain levels:

* **The first level**: This is outside the country and will return to the safe regions.
* **The second level**: it includes people who are in the public residency centers and they need a ready temporary house as soon as possible.
* **The third level:** it includes those who are not living in the public residency centers, and they don't need a ready temporary house, but they need to settle as soon as possible.

1. **The spatial information:**

The spatial data can be classified according to the following:

* **Classification according to the state property.**
* **Classification according to the organization chart.**
* **Classification according to the** **use**.
* **Classification according to the:**
* empty lands
* Vacant lands, any existing buildings.
* Classification of existing buildings (governmental, private).

1. **The information about the affected areas:**

The affected areas data can be classified according to the following:

* **Slightly affected areas:**
* **Partially affected areas:** these can be dealt by one of the following methods.
* **Fully affected areas:** these should be demolishedre-plan the whole area**.**
* **New regions:** the region should be planned completely.

Secondly: Activity steering and programming plan

This plan depends totally on the information resulting from data gathering and analysis, which will produce a group of guidelines and economic and technical indices of each governorate alone to put the program of reconstruction each governorate alone and serves it. This plan consists two processes, which are indices and programs setting.

1. **Indices setting:**
2. **Inputs:**

The guidelines and previous experiences, governorates' suggestions, information from the integrative map form a starting point to this process, as in fig. (6),

1. **Manipulation**

Regions are divided in this process into:

1. **The affected regions**.
2. **The return of inhabitants**.
3. **The random regions**.
4. **The organized regions**.
5. **The state's properties.**
6. **Outputs:** indices Many economic, social, technical and political indices stem from this process, some of them are:
7. Increase the investment factor in some regions
8. Modify the population density in other regions.
9. Put new organization charts of unorganized regions.
10. Get rid of the random housing regions.
11. Benefit of the state's property lands.

**Programs setting process**

This process benefits of the resultant information of data analysis and classification and of the previous studies in reconstruction and guidelines, indices and governorates' suggestions each alone, and this operation includes:

1. **Inputs**

In addition to inputs in the previous operation, the resulting indices of the previous operation form an important starting point for this operation to set a group of plans of reconstruction each of the affected regions that form the manipulation for this operation, as in fig (6).

Guidelines

Governorates' suggestions

Information from the complementary map

Pervious experiences

Indices setting

Indices

Setting of plans

Plans

Fig.6 The put process of programs.

1. **Manipulation (setting of plans)**

Plans could be set based on the priorities of the affected areas (high, medium, low) and classifying these regions (organization charts, random housing, and state’s properties), to get some results:

1. Setting various plans through dealing with the affected random regions according to an adopted system, as in fig (7).

Low

Less than a certain value

Larger than a certain value

Random housing region Interlaced with the Organizational chart

Random housing region outside the organization chart

Random housing region within the organization chart

Eradicate random housing region

Interlaced ratio

Occupancy ratio

Merge the random housing region with the organizational chart

High

Fig (7) Plans for treatment the random regions

1. Setting various plans through damaged random and organizational regions as in fig (8),

Affected regions

Low priority

Medium priority

High priority

Emergence of new regions

State's property lands

Random housing regions

Organization charts

Amendment existing regions

Disappearance of existing regions

Maintaining of existing regions

Fig (8) Plans for treatment the damaged random and organizational regions

1. Setting various plans according to execution techniques and affected regions as in fig (9),

Fully affected regions

New regions

Partially affected regions

Lightly affected regions

Demolish and perform partial re-planning and reconstruction

Demolish and reconstruct the affected only

Restore damages only

Demolish and perform full re-planning reconstruct

partial re-planning and reconstruction

Planning and reconstruction the whole region

partial re-planning and reconstruction

Traditional techniques, Traditional contracting and implementing, Traditional dependency

Rapid construction techniques, modern contracting and construction, non-traditional dependency

Fig (9) Plans of treatment according to execution techniques

* **Rapid construction techniques**: they are granted the affected places according to their classification:
* **Partially affected places:** these should be demolished and perform a full planning for the whole region.
* **Partially affected places:** these should be demolished and perform a full planning for the whole region.
* **New places that have priority in the alternative housing.**

1. **Outputs: reconstruction programs**

After getting the decisions of related authorities in governorates in addition to the purposed plans to reconstruct each of the affected areas. These plans are studied by the related authorities that discuss the conformation of these plans with the objective indices and criteria, and authorize these plans to be the governorate's reconstruction programs, as in fig. (10). One program at least should be issued for each of the affected Syrian governorates, which forms the basic outcome of this process.

Pervious experiences

Governorates' suggestions

Guide lines partial re-planning and reconstruction

Reconstruction programs

Information from the interactive map

Setting of indices

Indices

Building programs

Setting of plans

Plans

Fig. 10 issuing reconstruction program

Requirements' Setting

Private sector

Public sector

Governmental buildings

Preparation of programs

Temporary infrastructure

File preparation

State's property

Outside the plan

Inside the plan

Information of the complementary map

Fig (11) The Preparation of programs for the technical consultative stage.

Thirdly: The temporary housing plan

1. The technical Studies Process.
2. The technical consultative information: It includes requirements' setting and choosing alternative, and preparing the files of the alternative temporary houses, as in fig. (11).
3. Requirements' Setting

It is setting the necessary and required requirements of the prefabricated houses to include inhabitants of the first and second levels.

1. File preparation

This phase includes the file preparation for each office or a company to be consulted through the first or the second alternative of the previous point. This file includes the necessary information to get the decision.

1. **Temporary infrastructure information**

The related authorities are consulted in this phase to identify the necessary information to execute the temporary infrastructure of the residential gatherings.

1. Preparation of programs

In this phase a professional team of the following tasks:

1. Prepare the organization charts of the temporary gathering places,
2. Put execution schedule
3. Prepare cost and finance program.
4. Allocation process

where the residential groups are allocated according to the architectural models and the areas of the available lands, as in fig (12).

1. Implementation process

This process includes the following, as in fig (12),

First Segment

Information of the complementary map

Second Segment

Residency places

n

Abroad

n

Information of the complementary map

Temporary housing

n

Usage

n

Permanent housing

n

Information

n

File

n

Infrastructure

n

Contacting

n

Allocation

n

Program

n

Execution

n

Fig. 12 Supply and execution phase.

1. Contracts signing phase:

It includes execution contacts' signing, which are:

1. Temporary infrastructure execution contacts' signing,
2. Signing contracts of temporary houses supply and construction.
3. Supply and execution phase:

Temporary alternative houses with their infrastructure are executed in this phase:

1. Execution of temporary houses
2. Supply and assembly of temporary houses.

Fourth: The legal, legislative and administrative plan

This plan in concerned about developing the legislative and administrative laws of the governmental institutions and administrations that will be the proxy of authorization of reconstruction programs in governorates, and then supervises the study and execution of reconstruction projects, the governing laws to follow the reconstruction process should be developed.

Fifth: The development and technical plan

These plans in developing the rapid construction techniques and methods in concordance with the basic and logical idea of reconstruction, and to copy, establishes and adopt the rapid construction methods in the Syrian Arab Republic. The plan includes the following processes: requirements' setting, skills gathering and setting of transfer file.

1. **The processes: requirements' setting**

The working team sets the necessary requirements of the skills gathering and setting of transfer file the rapid construction methods in the Syrian Arab Republic. And contact the foreign companies and offices that are specialized of rapid construction methods, and had implemented similar projects and get initial information about:

1. The adopted techniques in rapid construction process
2. the local requirements
3. **File preparation**

This process prepares the file according to the used technique that has the necessary information to make the decision, such as:

1. Supply time
2. Construction time
3. Requirements of rapid construction process
4. Required expertise in rapid construction process
5. Cost of square meter unit

This process considers the suitability of various rapid construction processes with the local situation.

1. **Transfer process**

It is concerned of transferring and establishing the chosen techniques of rapid construction process in the local market, so the local institutions and firms own these techniques, and rehabilitate the governmental/private local staff technically to execute and supervise the execution according to the rapid construction methods.

Conclusion

the main objective of gathering, analysis, and classification all this data according to damages is to get various alternative to be implemented to get the final product, which is reconstruction and organization, taking into consideration new standards to produce modern areas at the level of towns or small cities (as necessary) that include all the commercial, industrial, agricultural and tourism in addition to the residential. The establishment of modern cities according to the new criteria (to be produced during the study) has many positive aspects, some of them are:

1. **Raise level of living**
2. **Raise the level of services**
3. **Reduce traffic jams**
4. **Raise the level of safety and security**
5. **Increase the Green areas**
6. **Organizing the commercial and industrial zones**
7. **Improve the truism level**

The recommendations

To get complemented plans and processes together and make the reconstruction process in Syria successful, a working team of officials, experts, technicians and consultants should share in implementing them in all geometric, technical administrative and financial aspects, to participate in setting plans, studies and development operations, and this team should be coordinated with each other and change it through a flexible hierarchy that is composed of sub-committees that are connected with a higher authority of reconstruction , as in fig. (13).

1. **The higher authority of reconstruction**

A higher independent authority with flexible structure should be established to do all the legal, technical processes to direct reconstruction processes **Sub Committees**

The Higher Reconstruction Authority is connected with a group of technical consultative, legal, financial and sub-committees that will contribute in executing the required activity.

1. **The technical committee.**
2. **The Legal Committee.**
3. **The Administrative Committee.**

Presidency of Council of Ministers

Higher reconstruction Authority

n

Governorates

n

Ministries and organizations

n

Central Experts Team

n

Sub-Committees

n

Reconstruction Committee

n

External experiences

n

Local experiences

n

Fig. 13 The team of thr reconstraction process.

1. **Experts Team**

The execution of reconstruction projects necessitates benefiting of all the possible and available skills, including international ones, in addition to hardware, software in training and rehabilitation of the local tea,, including aerial photos and supply the necessary skills to gather data and check its accuracy and analyze it to get the necessary information of classification process and arrange it to direct the reconstruction process in the direction that guarantees reduction of time and cost, especially in the initial establishment stages.

1. **Governorates**

the officials of governorates should participate in data gathering and verification (to get accurate data), through controlled samples that are directed to the officials of governorates, so we ensure getting controlled and planned data, in addition to getting local solutions and recommendations to each governorate alone, and ideas and guidelines that guarantee getting ideas and indices to work in each governorate alone.

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