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A Model Proposal for Raising Awareness and Spreading of Emergency Architecture

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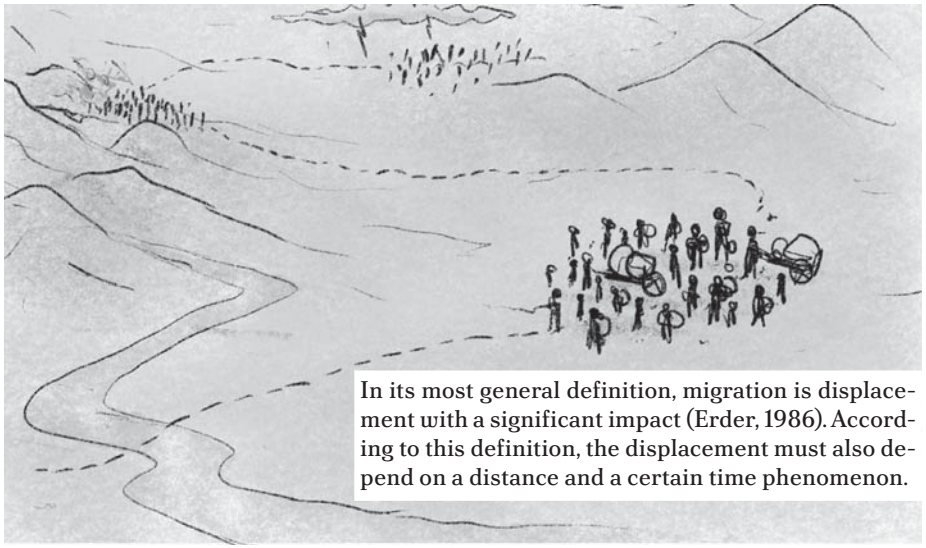
Abstract This study primarily explores the phenomenon of migration and causates the need for emergency architecture. Migration derives from the fact that communities want a better "place". 3 different groups who had to move away from their current places and migrate for different reasons were defined in the scope of the study. These groups are; (1) earthquake victims, (2) refugees, and (3) seasonal agricultural workers. Emergency architecture offers solutions in response to the desire of these three groups to live in better conditions. The model proposal, which is the main focus of the study, was developed in this direction. The model proposal focuses primarily on basic needs and includes solutions to this problem. In addition, the social needs of the communities were also evaluated and sustainability principles were observed. In the preparation of the model proposal, ecovillage setup was also used. In order to increase the widespread impact of emergency architecture awareness, the necessity of a digital library was also emphasized and the contents & structure that the digital library should have was mentioned.

1. Introduction

With the emergence of agricultural societies, the nomadic order left its place to a settled order. Human beings made immigration movements based on basic needs such as natural disasters, climate, religion, nutrition and shelter in ancient times. The emergence of industrial societies triggered migration due to health, war and / or economic reasons (Önal & Keklik, 2016).

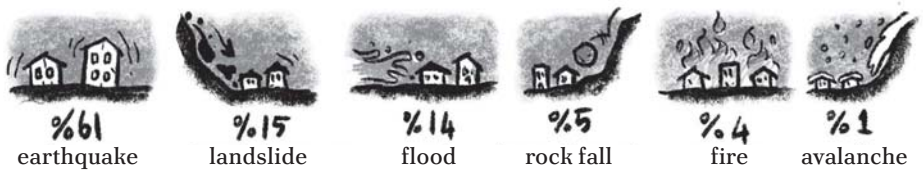


In its most general definition, migration is displacement with a significant impact (Erder, 1986). According to this definition, the displacement must also depend on a distance and a certain time phenomenon.

The phenomenon of migration triggers the human need for a better living condition. Therefore, in mass movements such as migration, space is one of the dominant concepts that should be discussed and emphasized. At this point, emergency architecture, which deals with the housing and regular life of disadvantaged groups, comes to the fore. The problems faced by groups who have to leave their comfort zones due to necessity can be overcome by architectural solutions and these groups can continue their lives in hygienic, well-organized and designed spaces. Within the scope of this study, a model proposal has been presented in order to raise awareness of emergency architecture and the issues that can be done in order to spread this awareness are mentioned.

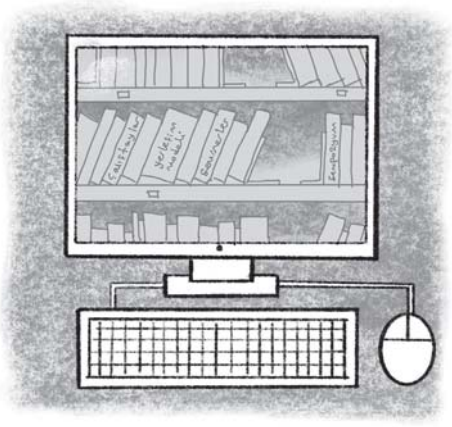
2. Focus of Research

Among the basic situations that emergency architecture is related to, the most striking is natural disasters. Earthquakes take the first place in terms of damage. The percentage ranking of natural disasters according to the damage they cause is as follows; 61% earthquake, 15% landslide, 14% flood, 5% rock fall, 4% fire and 1% avalanche (T. M. M. Odası, 2010).



Actions and policy of interest contrary to engineering, science and rational thought have caused our country to turn into an earthquake and disaster country. Each year, 3% and 7% of GNP is used to compensate the damage caused by natural disasters. Earthquake, landslide, avalanche, rock fall, flood etc. events are natural and damaging. This damage increases in cases such as wrong location decisions, not using engineering-based data in development plans, and low-quality building production. The natural disasters and earthquake problem in the country should be handled within this framework and evaluated as a whole (Anonymous, 2010).

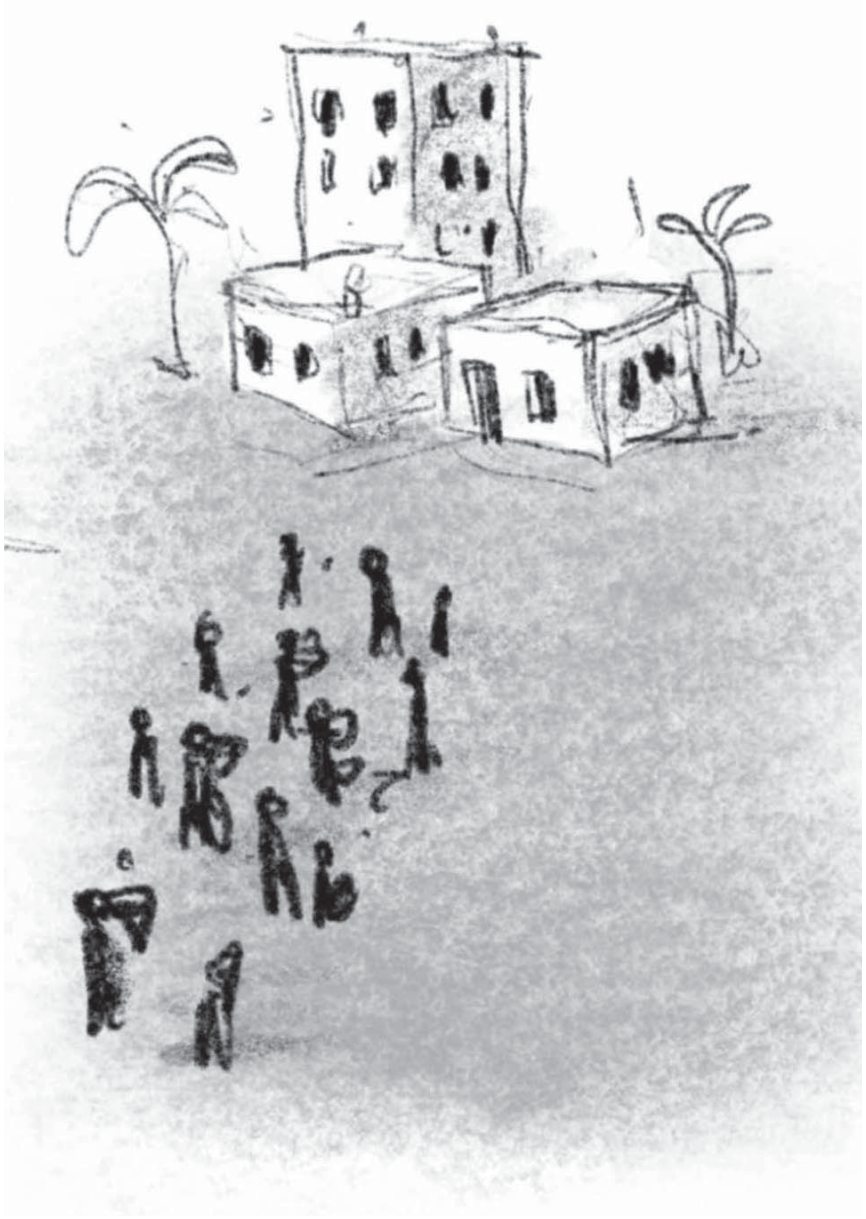
In this study, as a transformation and development movement in which sustainable development is directly related to human and environment, a model proposal has been put forward that includes social, economic and ecological elements as well as physical elements. It is anticipated that this proposal will benefit the re-participation of different disadvantaged groups in society such as refugees and earthquake victims, in social life after the disaster. In addition, it is planned to develop an "Immigration and Natural Disaster Digital Library" to raise awareness about emergency architecture. Therefore; the model proposed in this study can be considered as the first step taken for digital library. It is suggested that the digital library will be an important material for the awareness of emergency architecture and its spread. Accordingly, the digital library is expected to contain the following items; (1) outputs related to emergency architecture and ecological architecture, (2) the education-training system designed to popularize the model, (3) possible symposiums, workshops, webinars to increase the widespread impact, and finally (4) an architectural model proposal.



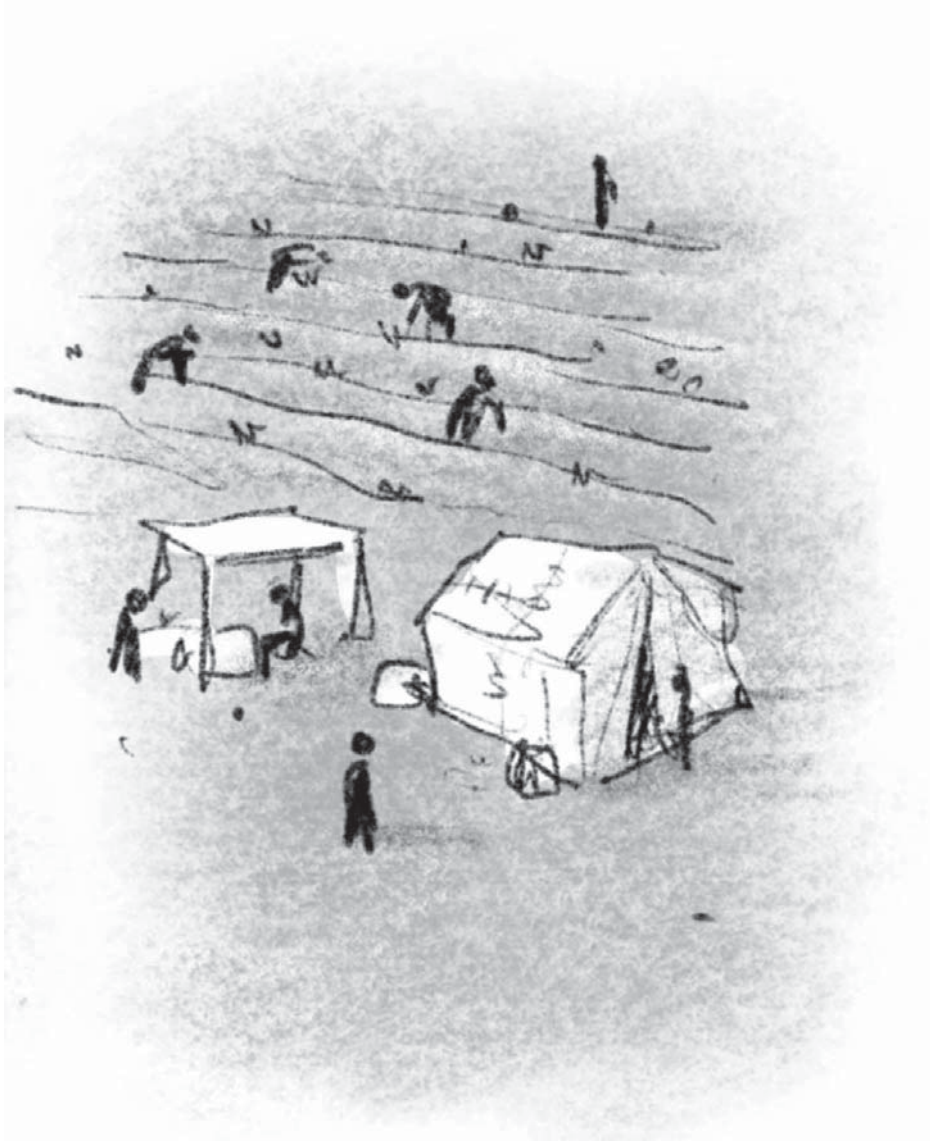
National Science and Technology Policies, Energy Efficiency Law, Energy Efficiency Strategy Document and Energy and Environmental Technologies Strategy were prepared in line with the Rural Development Plan and 2023 targets. In these documents prepared, attention is drawn to the social, economic and ecological dimensions of development (Anonymous, 2015). Development, planning, design and production models to be developed for urban and rural areas are important in achieving the 2023 goals.

The proposed model is primarily for basic needs. A certain level of social needs is also included in this model. The model proposal in the study has three different target groups. The first of these is earthquake victims. Basic requirements such as nutrition, shelter and health after natural disasters can be overcome with emergency architecture solutions. In addition, emergency architecture can be used to address the problems of other disaster-affected communities, especially earthquake victims.

Another target group is refugees. Refugees, one of the important problems of our country as much as natural disasters, are directly related to emergency architectural solutions. The main difficulties experienced by refugees are related to communication, financial difficulties, psychosocial problems and health services (Cenkci & Nazik, 2018). With the developed model proposal, solutions can be brought to the mentioned difficulties from the architectural framework. For this reason, refugees have been chosen as another target group of this study.



The final group is seasonal agricultural workers. Seasonal agricultural workers are people who have to migrate from one region to another during certain months of the year.



Solutions based on the model proposal in the study have a forward-looking content as well as responding to primary requirements. In this context, it has been considered to develop a suitable model for groups affected by natural disasters to contribute to the local economy. In addition to economic relations, social activity venues considered within the scope of the model proposal can also provide medium and long-term benefits in making the daily life dynamics of refugees work again.

3. Method

Within the scope of this study, the arrangements to be made regarding basic needs and social needs have been presented. Then, the design and production possibilities of ecological buildings were investigated. In addition; comfortable, economical and ecological building designs have been developed. These designs are based on the rapid production of structures. Since the proposed model will also be used for different policy objectives, the economic and ecological structure has been taken into account. For this reason, a village-city-like model proposal that has been tried to be implemented in the past years has been used as a reference. Drawing tools and sketches were used while developing the model proposal. In addition, as a requirement of the concept of accessibility, it is also an important issue to consider the post-disaster situations of disabled individuals in detail. The suitability of the developed model proposal for this situation has been discussed and it has been designed in a structure that can be transformed if needed. Thus, relevant changes can be made on the model proposal depending on the demands of different communities and for different reasons.

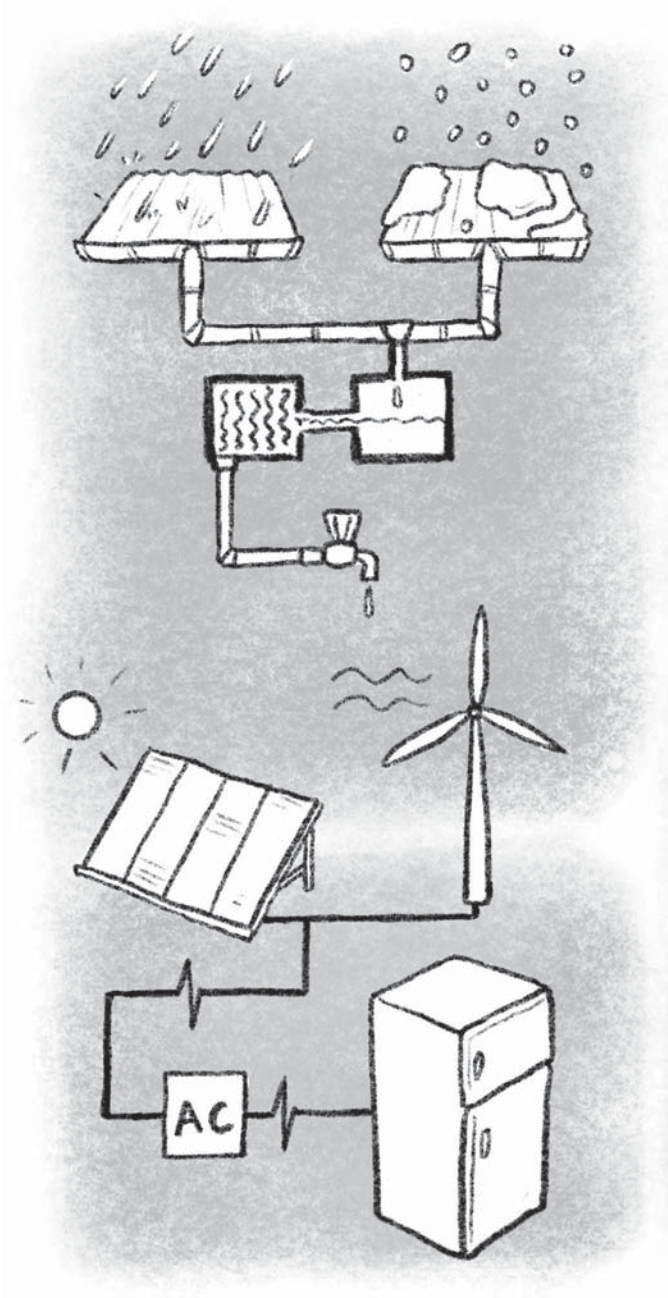
4. Findings and Outputs

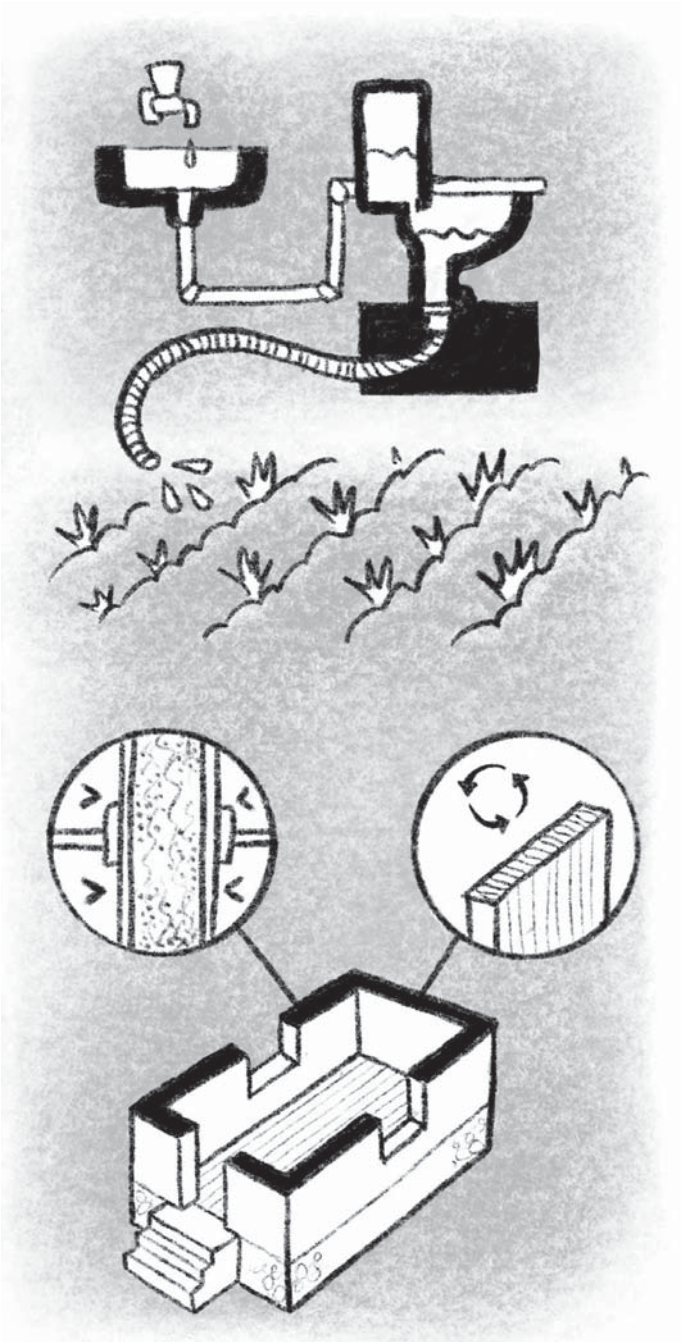
The concept of eco-architecture on which the model proposal is based includes elements such as electricity generation from renewable energy, sewage treatment, recycling of waste materials and food production (Wu et al, 2011). For this reason, eco-architecture can be used for energy efficiency, infrastructure improvement, use of local building materials, solid waste recycling, and dissemination of organic agriculture activities. In addition, a program proposal for the 2023 goals and the Rural Development Plan can be achieved with eco-architecture principles. The eco-architecture concept, whose design and application criteria have been developed for years, brings a new definition of need for humanity. Eco-architecture is an alternative to consumption-based urban life and suggests a radical sustainable lifestyle based on harmony with nature (Lan, 2011). The disaster-resistant, environmentally friendly and easy-to-build building typology, which is planned to be developed with this study, has the following basic design principles:

- The water collected from rain and snow can be kept in the reservoir and it is possible to make it ready for use by passing it through a pressure pump and filter. This water can be used in bathrooms and sinks.
- Sewage treatment: Used water can be treated with natural techniques and reused as gray water in toilet flushing. Black water used in the toilet can feed the plants as fertilizer if transferred to the soil.
- Use of solar and wind energy: Eco-architecture, which aims minimum or zero fossil fuel use, proposes electricity generation based on natural energy resources. The linear current obtained from the sun and wind with the photovoltaic power system can be converted to alternating current and used in electrical tools and machines.
- Thermal / Solar heating-cooling: The thermal mass created by using compressed soil and recycled insulation materials provides coolness in summer and warmth in winter. Thus, the need to use electricity for heating and cooling is eliminated.
- Use of recycled materials: Disaster-resistant, natural, environmentally friendly, recyclable building materials that are planned to be designed can be shaped and used with minimum or zero energy consumption.

The design and production principles of ecological buildings are developed within the framework of the eco-architectural concept. These structures are based on the principle of harmony with nature and define radically sustainable living spaces. The ecological structures developed have qualities such as water capture, sewage treatment, electricity generation from solar and wind energy, use of recycled materials and food production.

Thanks to these qualities, ecological structures are thought to support ecological development in rural areas. Eco-architecture has the potential for reaching social, economic and ecological goals that is related to the Turkey's 2023 vision. The design and production principles of ecological buildings are developed within the framework of the eco-architectural concept.





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of recycled materials and food production. Thanks to these qualities, ecological structures are thought to support ecological development in rural areas. Eco-architecture, Turkey's 2023 vision for the social, economic and ecological objectives has the potential to reach. Because low-cost structures that can be used in rural areas in our country can be produced with eco-architectural principles. While eco-architectural principles suggest compliance with local culture and materials, they allow the design and production of a fast-building typology. It is important that the model proposed here is both ecologically and economically sustainable. Buildings planned to be built with recyclable and waste materials are autonomous since they are independent of urban infrastructure systems. These structures, where renewable energy sources such as wind and solar will be used, can minimize the dependence on fossil fuel consumption. Living spaces of low-income segments should be modeled on the axis of eco-sustainability. Because structures designed in accordance with eco-sustainability;

- compatible with nature
- has effective solid waste management
- produces its own energy
- access and mobility are at a level with the least harm to the environment
- built from recyclable and reusable materials

Eco-sustainability supports the creation of an important design model that can be used by decision makers, planners and implementers.

This model will be shaped as a settlement typology based on the approach of creating self-sufficient and independent housing units. As an example; 4 housing sub-units can be combined to create a home for a family with two children, or two housing sub-units can be used for families without children. These residences can later be turned into larger residences by adding new housing sub-units. 4 residences will combine to form the lowest unit of the settlement. Water harvest, electricity generation, decomposition and treatment of gray water will be carried out in this sub-unit. The sub-unit is aimed to be sustainable in terms of energy and water security. Especially, this lowest unit will be sufficient to solve the problems of seasonal agricultural workers mentioned above. When 250 of these four residential sub-units are combined, a district will be formed when five neighborhoods are combined. These numbers can be changed according to the needs. There will be an administrative structure similar to the neighborhood mukhtar at the neighborhood level, and an administrative structure similar to the municipality and district governorship at the district level. In addition, a sufficient amount of education and health units will be derived in the neighborhoods consisting of 1000 dwellings and 250 settlement sub-units. Likewise, a district will be able to fully meet its own electricity needs. In the basic city settlement consisting of the combination of 2 districts;

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- A self-sufficient system to the maximum extent in terms of agricultural production will be developed
- and employment problems will be minimized.

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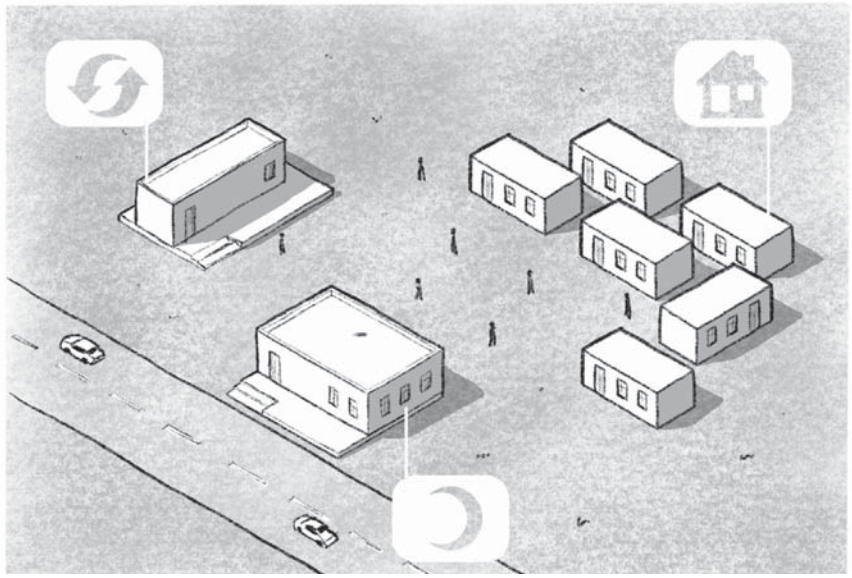
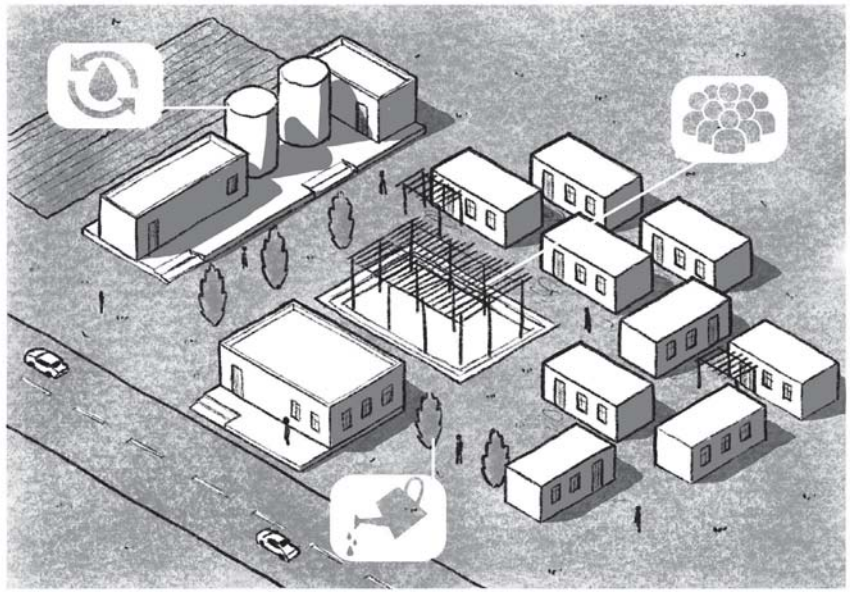
- and employment problems will be minimized.

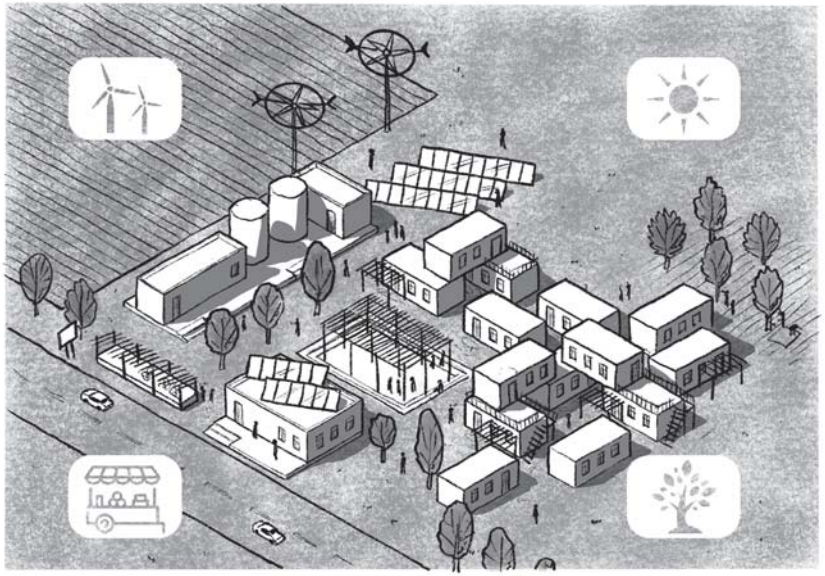
As a result, food, water and energy security will be ensured, as well as all necessary solutions in terms of employment opportunities, administrative and social needs. This solution will be especially beneficial for new cities to be created after mass migrations and major disasters.

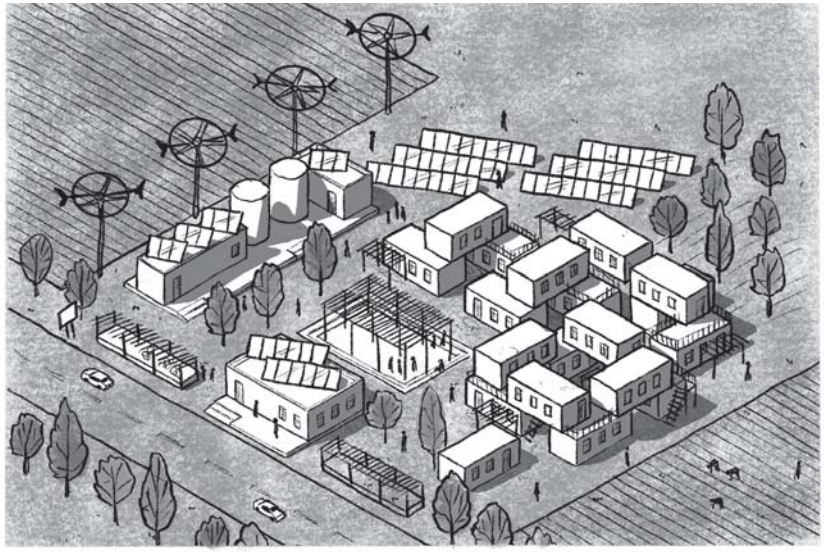
Graphics regarding the model recommendation are given below and 4 phases:





[1]The number of people who will study at the basic education level is calculated approximately to the rates of our country (one-eighth of the population). That is accepted that 10% at the pre-school level, 45% at the primary school level and 45% at the secondary school level of the educated population.





5. Conclusion

In addition to the accommodation and settlement solutions developed based on the concept of emergency architecture and sustainability explained above, the dissemination of the related subject is also within the scope of the study. In this direction, it is planned to create a digital library. Another step is the development of an education system that will support the creation of a digital library. In addition to the settlement model gathered under the digital library, the education-training system, webinars, symposiums and all other outputs resulting from the workshop can also be collected under this library and can be shared with relevant institutions and organizations by making them available for open access.

6. Further Research Question

Disadvantaged groups, especially refugees and disaster victims are considered one of the main problems in Turkey and the world. These groups, as well as any community, have the right to a comfortable and orderly life. With the ecological and economic life model suggested in this study, a solution-oriented step was taken for the masses who moved away from their places for various reasons. Thus, more livable "places" can be designed for the mentioned social classes and a more fair social order can be created.

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