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# "GREEN RECOVERY" FOR A FUTURE RESILIENT TO EARTHQUAKES & DISASTERS

Our country was shaken by massive earthquakes in Kahramanmaraş on February 6, 2023 and in Hatay on February 20, 2023. Affecting millions of people in 11 provinces and neighboring countries and claiming the lives of nearly 50 thousand people, it may take decades to recover from the devastation. The rapid start of debris removal works in earthquake zones and the announcement that construction works will start soon raise questions. In recent years, our country's and the world's agenda has been marked by the pandemic process, climate crisis and increasing extreme weather events, floods, and forest fires. The recent earthquakes have added irreparable losses to this series of disasters. As this chain of disasters has painfully shown us, human health and well-being is inseparable from the health of nature. We have to keep this fact in mind in the steps to be taken, the decisions to be taken, and the projects to be put forward after the earthquake in order to prevent a repetition of the suffering we have experienced. Getting back on our feet must go beyond the construction of buildings and mean establishing life in our earthquake-stricken provinces with a new understanding. From debris removal to the construction and development of living spaces, we call for every stage of this recovery process, which we see as our country's struggle to build a healthy future, to be handled according to the principles of "Green Recovery".

## The Problem

The approach to disasters such as earthquakes, forest fires, floods and landslides in our country to date has generally focused on post-disaster activities, leading to high loss of life, property and nature. After the 1999 earthquakes, the Kahramanmaraş earthquake was a painful proof of the lack of emphasis on preventive measures. The rapid start of debris removal works in earthquake zones and the announcement that construction works will start soon have brought new debates. Ignoring the environmental impacts of disasters makes people and nature more vulnerable to future risks. Türkiye's infrastructure faces many risks (floods, storms, forest fires, droughts, etc.) from climate change and natural hazards. These risks are exacerbated by the fact that settlements and production areas are not currently built in harmony with nature.

## Our Point of View and Suggestions

In the proper management of major disasters such as earthquakes and in overcoming them with the least possible loss of life, property and nature, the process should be handled in a cyclical integrity and preventive and risk-reducing works should be given importance at least as much as the reconstruction efforts made after the disaster. Making the necessary investments for this will not only ensure the safety of life and property, but also reduce the costs that will arise after the disaster. Nature/environment should be considered as an integral component of the disaster management strategy in order to rebuild our living spaces in a safer way and to be stronger against similar shocks that may be encountered in the future. In this process, the goal should be to reduce risks and vulnerability to both human and nature by designing, developing and implementing both social and ecological solutions. Therefore, in the process of repairing the devastation caused by the earthquake, the following basic Green Recovery principles should be put into practice in the post-earthquake recovery and reconstruction process in cooperation with public institutions, local governments, professional organizations, scientific world and civil society:

### Safer and Nature-Compatible Living Spaces

1. The objective of the reconstruction process should be to go beyond pre-disaster conditions in all respects (life safety, urban fabric, natural environment, etc.).
2. Reconstruction projects should be designed, implemented, monitored and evaluated in a way to ensure that environmental problems in the region are identified, negative environmental impacts are minimized and positive environmental impacts are supported. In this context, nature-based solutions should be taken as the basis in the construction of new living spaces.
3. In the redevelopment of post-disaster cities and new living spaces, open spaces and green areas of sufficient size, number and scale that people can breathe and may need in times of disaster should be created.

### Governance

4. The reconstruction process can offer opportunities for infrastructure improvements that, if carried out in a sustainable manner, can have positive outcomes for people and the environment. In the long term, it is important to ensure a participatory decision-making process involving various sectors/stakeholders.
5. Recognizing that each disaster is unique, recovery activities should be tailored to local conditions and utilize local knowledge, experience and capacity as much as possible to generate public interest and support.

## **Environmental Impacts and Precautions**

6. A comprehensive strategic environmental assessment of the reconstruction process should be conducted. On a project basis, environmental impact assessment (EIA) should be included in the process, and post-disaster needs and environmental problems should be addressed by considering the well-being of human beings and the health of nature as a whole.
7. For the environment and human health, scientific approaches should not be compromised in the disposal of materials containing harmful chemicals. For the protection of underground and surface water resources, grounds that will not allow leakage should be preferred in the selection of sites where such wastes will be dumped.

## **Nature: Forests, Pastures, Wetlands, Sea and Coasts**

8. For the sustainability of ecosystem services and human well-being, protected areas such as national parks, wildlife sanctuaries, wetlands, natural sites, drinking water basins, rivers, coasts and important natural areas, forests and pastures should be kept free from all kinds of harmful interventions including waste disposal and construction.
9. "Nature/environment" should be included as a value in social programs and projects to be initiated for improving livelihoods and reducing disaster risk after disasters, and the relationship between the benefits of the project and the environment should be understood by citizens and the project should be supported.

## **Water and Sanitation**

10. Construction works during the reconstruction process may risk contamination of clean river waters with cement and muddy water. Negative impacts on surface water and groundwater quality, particularly close to natural water bodies, should be avoided.
11. This process should include innovative water and sanitation solutions that can make people more resilient to potential future disasters and reduce long-term impacts on ecosystems. Technology options such as domestic water treatment technologies, treatment wetlands, wastewater management and solid waste management should be considered.
12. Innovative solutions/models such as "sponge cities", "rainwater harvesting" and "closed loop systems" should be included in the plans for sustainability of water resources in the reconstruction process of destroyed settlements.

## **Infrastructure**

13. Sustainability-oriented design principles should be taken into account in architectural design, selection of construction materials and the life cycle of the building, and this approach should be based on the entire construction cycle. Flexibility of use, building and material lifespan, local climatic conditions, energy efficiency, waste management and sustainable water and energy systems should be taken into account.
14. For post-disaster construction that will protect both people and the environment, the use of sustainable materials should be preferred, their supply should be supported, designs that require relatively less material should be applied, local resources should be used as much as possible, disaster residues should be utilized, and recycled materials should be preferred.
15. Monitoring mechanisms should be developed for each city in order to reduce disaster risk, increase resilience against disasters and identify existing risks.

## **Energy**

16. Sustainable/renewable energy systems should be prioritized in the reconstruction process. In addition, access to energy for individuals, particularly disadvantaged groups, should be secured. The planning of settlement and production areas and the design and construction of new buildings should aim to minimize energy consumption.

## **Agriculture and Food**

17. In the redevelopment of agriculture in rural areas, it should be essential to prioritize "restorative agriculture" that protects, restores and enriches the soil, improves water resources and enhances ecosystem services for nature and human health, and to adopt the principle of *"produce locally, consume locally"*.

It is as important to prevent the same disasters from occurring again as it is to normalize life in the disaster area as soon as possible. For this reason, we invite all relevant institutions, organizations and organizations to cooperate in the post-disaster reconstruction process, and we believe that this process should be planned with a common mind in a sustainable manner for human life and the human environment and should be implemented without compromise.

## Earthquakes, Disasters and Türkiye

The earth's crust (lithosphere), on which we live, is like a living being that constantly changes its external form and internal structure. There are many active faults in our country, which is located on the Alpine-Himalayan belt, one of the important earthquake belts of the world. According to the Türkiye Fault Map prepared by the General Directorate of Mineral Research and Exploration, the North Anatolian Fault (NAF), the Eastern Anatolian Fault (EAF) and the Eastern Anatolia, Marmara and Aegean regions are the areas with the highest earthquake risk in our country. While 92% of Türkiye's territory is located in the earthquake zone, 95% of the population lives in these regions. In the last hundred years, there have been 7 major earthquakes on the NAF, starting in Erzincan in 1939 and following a regular course along the fault segments from east to west, resulting in hundreds of thousands of lives and property losses.

Two historic earthquakes on the EAF, first in Pazarcık (7.7) and then 9 hours later in Elbistan (7.6) districts of Kahramanmaraş at 04.17 on February 6, 2023, affected nearly 15 million people in 11 provinces (Kahramanmaraş, Adıyaman, Malatya, Hatay, Gaziantep, Kilis, Osmaniye, Adana, Şanlıurfa, Diyarbakır, Diyarbakır, Elazığ), killing more than 45,000 people, injuring more than 110,000 and causing hundreds of thousands of people to become homeless and migrate to other places. This was followed by two major tremors in Hatay on the evening of February 20.

According to the OECD's "Outlook for Governments 2017" report, Türkiye is among the countries with the highest number of natural and unnatural disasters in the world (USA, Mexico, Japan, Türkiye). According to the earthquake prediction report prepared in cooperation with the Istanbul Metropolitan Municipality and Boğaziçi University within the scope of the "Istanbul Province Possible Earthquake Loss Estimation Update Project", in a possible earthquake of 7.5 magnitude, it is estimated that 12.6% of the buildings in the city would be moderately damaged, 9% will be severely damaged and 1.2% very severely damaged, up to 15 thousand people may lose their lives, 2 million people (640 thousand households) may need emergency shelter, financial losses may reach an average of 68 billion TL and 25 million tons of debris may be generated.

### For further information:

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