

EARTH

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Here is why the world needs regenerative agriculture

Soil fertility and biodiversity are decreasing across the globe. It is necessary to regenerate soil on more than four billion acres of cultivated farmland to feed the world, keep global warming below 2 degrees Celsius and stop biodiversity loss.

Regenerative agriculture is a holistic farming system that focuses on soil health, food quality, biodiversity improvement, water quality and air quality. It improves soil health through practices that increase soil organic matter, biota and biodiversity. It also aims at enhancing water-holding capacity and carbon sequestration. Regenerative agriculture builds soil health, supports biodiversity and returns carbon and nutrients to the soil. Biodiversity is the prime driver of soil carbon sequestration and other ecosystem benefits. Soil organic carbon and soil organic matter are vital for plant growth. It facilitates soil aggregation, water infiltration, retention and nutrient cycling. Regenerative agriculture also reduces erosion, provides habitat and food for diverse species and is beyond sustainability.

What is it?

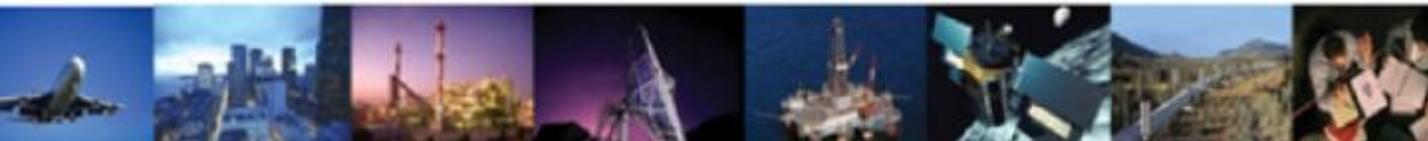
There are many definitions and descriptions of regenerative agriculture. Reducing the use of chemical fertilisers and pesticides, reducing tillage, integrating livestock and using cover crops are the common threads used to define regenerative agriculture.

Regenerative agriculture adheres to the following principles:

- Minimise soil distribution through conservation tillage
- Diversify crops to replenish nutrients and disrupt pest and disease lifecycles
- Retain soil cover using cover crops
- Integrate livestock, which adds manure to the soil and serves as a source of carbon sinks

Permanent pastures can trap large amounts of carbon and water, reducing farm emissions and polluted runoff. Healthy soil protects land from floods and drought and provides crops with higher nutrient density. Overall, regenerative agriculture improves the ecosystem's health, beginning with soil fertility, through a holistic systems approach that includes the health of the animals, farmers and community. It builds resilience and mitigates the effects of extreme weather caused by a changing climate.

Source: <https://www.downtoearth.org.in>



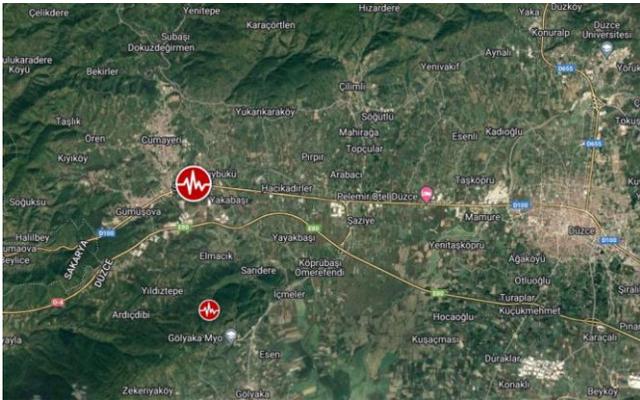
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A strong and shallow Earthquake M6.1, hit Düzce, western Turkey



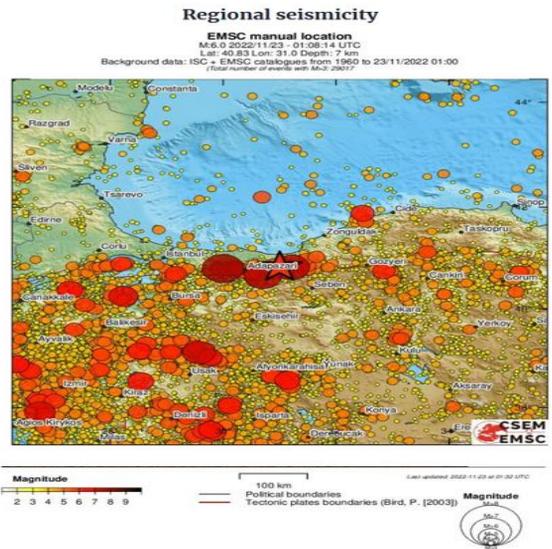
A strong and shallow earthquake, registered by the USGS as M6.1 with a depth of 10 km (6.2 miles), hit Düzce, western Turkey at 01:08 UTC on November 23, 2022.

The USGS issued a Yellow alert for shaking-related fatalities and an Orange alert for economic losses. The Disaster and Emergency Management Authority (AFAD) reported 74 aftershocks.

Recent earthquakes in this area have caused secondary hazards such as landslides that might have contributed to losses.

Significant damage is likely and the disaster is potentially widespread. Estimated economic losses are less than 1% of GDP of Turkey. Past events with this alert level have required a regional or national level response.

Overall, the population in this region resides in structures that are a mix of vulnerable and earthquake resistant construction. The predominant vulnerable building types are adobe block and dressed stone/block masonry construction.



Source: [watchers.news / earthquaketrack.com](https://watchers.news/earthquaketrack.com)

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Historic major earthquakes

The Izmit Earthquake a M7.4 occurred on 17 August 1999, which lasted less than a minute. It was followed by the magnitude a M7.2 Düzce Earthquake on 12 November 1999. Both these Earthquakes occurred on the North Anatolian Fault & were the largest natural disasters of the 20th century in Turkey after the 1939 Erzincan earthquake.

During these two earthquakes, Gölcük, Değirmendere, Derince, Adapazarı, Gölyaka, Düzce and Kaynaşlı cities were almost destroyed. A total of 330,000 residences were damaged. Total economical losses are estimated at \$10 billion, leading to a 6% shrinking of the Turkish economy in 1999.

The Izmit earthquake was unique in several ways. First, it covered a very large area, which included seven provinces. The total earthquake area was estimated at 5,000 square miles (12,950 square kilometer) in Turkey's industrial and population heartland.

The risks of significant damage in the masonry and adobe buildings, especially in rural areas of Turkey, are very high in future earthquakes. Being highly seismic area, Turkey experiences serious seismic activities, which result in serious damages in both urban and rural areas every two years (M = 5 or larger). However, the percentage of life losses and damages is higher in rural areas.

An important lesson learned following the earthquake was the importance of risk mitigation and preparedness. To achieve this, new building codes were introduced, and related legislation was amended. As rapid and unplanned urbanization was also identified as a risk factor, the "Planned Urbanization and Housing Production Mobilization" strategy was introduced, a compulsory earthquake insurance system implemented, and strengthening of critical public infrastructure, including schools, hospitals, pipes and lifelines, was undertaken.



Figure 1. Epicenters of Izmit and Duzce Earthquakes (Source: AIR)

Source: preventionweb.net / AIR

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Losses due to earthquakes

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Date of Occurrence	Location	Magnitude (M)	Economic Losses (US\$)	Insured Losses (US\$)
October 23, 2011	Van, Erics, Turkey	7.2	1.5 Bln	90 Mln
May 19, 2011	Simav Kutahya, Turkey	5.7	244 Mln	4 Mln
November 12, 1999	Düzce, Turkey	7.1	20 Bln	1 Bln
August 17, 1999	Marmara, Izmit, Turkey	7.4		

Compulsory Earthquake Insurance

Turkish Catastrophe Insurance Pool (TCIP) is a non-profit public entity affiliated with the Ministry of State, to whom the Under-secretariat of Treasury reports. TCIP was established by the Decree Law 587 (Date: 27.12.1999) pertaining to the Compulsory Earthquake Insurance.

According to the decree law, Earthquake insurance was made compulsory for all registered residential buildings within the municipality boundaries. Accordingly, the Government of Turkey has decided to enforce the earthquake insurance on the nationwide basis with the sole purpose of privatizing the potential risk by offering insurance through the TCIP and then exporting the major part of this risk to the international reinsurance and capital markets. Original aim of TCIP was to provide a multi-peril coverage, but currently it provides only compulsory earthquake insurance coverage.

References:

- downtoearth.org.in
- Watchers.news
- Earthquaketrack.com
- preventionweb.net
- AIR
- MCEER
- nhess.copernicus.org
- Swiss Re Sigma
- Earthquake Research papers

Source: MCEER / nhess.copernicus.org

