



A wildfire rages in the forests of the Zagros Mountains in southwestern Iran.

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Better preparation for Iran's forest fires

In Iran, one of the driest countries in the world (1–3), about 1500 wildfires are reported each year, destroying thousands of hectares of forests and pastures annually and causing more than US\$5.6 million in economic damage (4–6). To mitigate fire damage, Iran should improve containment strategies and work toward more effective fire prevention.

By the time fires are detected in Iran, they are often difficult to control (5, 7). Iran lacks specialized manpower, forest emergency bases, and air relief. Firefighters often lack access to the fire sites and water reservoirs. As a result, time-consuming preparation hinders their ability to prevent the fire's spread (3, 7, 8).

Iran could also benefit from better fire prevention (9). By creating a database of past fires in the geographic information system, the Iranian government could focus preventive measures in the areas most at risk of wildfire (10). A spatial database could track the factors influencing the occurrence of wildfires and the environmental characteristics of forests in different regions. These data would allow Iran to build fire towers and watchtowers in high-risk areas. In addition, Iran should educate the public to raise awareness about forest vulnerability and the importance of natural resources (3, 5).

Iran should invest the funds necessary to provide updated firefighting training and equipment. The government should also build forest road networks, water

storage ponds, and helicopter launch pads throughout high-risk areas. Finally, nationwide wireless networks would facilitate fire alerts (3). With the support of the public, nongovernmental organizations, and scientists, Iran can reduce the rate of wildfires.

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China's restoration fees require transparency

China is home to 10% of the world's wetland areas, but many of those wetlands are threatened by development (1). To increase conservation efforts, China's first wetland protection law, which came into force on

1 June (2), will charge a fee to developers whose projects result in wetland area losses. The fees will pay for restoring wetlands with comparable qualities and quantities elsewhere. When this strategy has been implemented in the past, transparency has been insufficient. The wetlands law, as well as other laws requiring restoration fees, must include data tracking and availability to ensure that the money is used as intended and that the restored ecosystems are suitable substitutes for those that have been degraded.

China has enacted two previous nationwide mandatory natural habitat restoration fees, one in 1998 for forest vegetation (3, 4) and one in 2003 for grassland vegetation (5). In each case, tracking conservation outcomes and evaluating whether ecological compensation requirements and targets are being met have proved challenging. Information on how much money various levels of governments have collected and spent, and on what, is extremely limited, at least in the public domain. The lack of financial transparency could lead to misuse or misappropriation of restoration funds as well as ineffective use of funds, with money going toward, for example, projects with no evidence of positive outcomes (6).

A similar approach has been implemented for wetlands in the United States since the 1980s (7) as well as for other habitats in other countries, including Australia, Brazil, the United Kingdom, and Germany (6, 8). In each case, results were mixed (8, 9). Given that success is not guaranteed, it is even more vital to track the progress of the program and adjust its implementation to maximize benefits.

In 2021, China committed to enhancing biodiversity and ecosystem functions and services by gradually advancing information disclosure and encouraging public participation (10). In light of this pledge, China's government should create a mechanism to clearly, thoroughly, and regularly report the collection and use of forest, grassland, and wetland restoration fees. The information should include government spending, ecological assessment before development begins, restoration implementation, and outcomes (11), and all data should be made available for public scrutiny. As a monitoring system model, China could use the US Regulatory In-lieu Fee and Bank Information Tracking System, a registry of conservation-related programs that has been in place for nearly 40 years (12).

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Global goals overlook freshwater conservation

As global conservation and restoration policies focus on a land and sea framework, freshwater biodiversity and services continue to decline at alarming rates (1). If freshwater ecosystems are overlooked, their sustainability could be compromised when decision-makers evaluate trade-offs with land and sea conservation and development goals. To protect freshwater biodiversity and vital services, international agreements must explicitly acknowledge freshwater ecosystems as a unique realm and set specific goals to address their problems (2, 3).

At the 2021 UN Climate Change Conference in Glasgow (COP26), countries reaffirmed their commitments to the three Rio Conventions on Biological Diversity, Climate Change, and Desertification (4). The three respective panels are preparing reports that will shape the 2030 sustainable development goals (SDGs) and the 2021–2030 UN Decade on Ecosystem Restoration. Setting explicit objectives for freshwater ecosystems in these goals must be a priority.

Unfortunately, the recently released "Global land outlook" (5), the flagship publication of the UN Convention to Combat Desertification, a convention that defines pathways to sustainable land and water management, still mostly treats fresh water as a simple resource for services such as irrigation and consumption rather than a unique ecosystem that sustains biodiversity and a range of other services and that has particular management needs. The undervaluing of freshwater ecosystems is demonstrated by how rarely the word is used: Fresh water is mentioned twice in the summary for decision-makers, but both times as "freshwater use," with no mention of the associated ecosystems or their management. Land restoration commitments of "1 billion hectares of farms, forests, and pastures" make no explicit allusion to rivers or other freshwater ecosystems. This shortsightedness is consistent with SDG 15 ("life on land"), which discounts the uniqueness of the freshwater realm, and with SDG 6 ("water and sanitation"), which prioritizes only the most immediate services that freshwater ecosystems provide. Underestimating the value of fresh water undermines the potential for long-term sustainability.

Some recent reports provide hope that we can prioritize freshwater conservation and recognize the unique problems and

challenges that such ecosystems face. In the Intergovernmental Panel on Climate Change's sixth assessment report (AR6), the working group on "impacts, adaptation and vulnerability" breaks ecosystem impacts into terrestrial, ocean, and fresh water (6). In addition, the latest draft of the post-2020 Global Biodiversity Framework indicates the possibility of including fresh water in several goals and targets (7).

Ahead of keystone events like COP27 in November in Sharm El-Sheikh, Egypt and the UN Biodiversity Conference (COP15) finally scheduled for December in Montreal, authors of reports that influence international agreements must make the case that freshwater ecosystems require attention independent of other conservation efforts. This recognition could include, if not an additional SDG, targets addressing freshwater-specific area protection and restoration, the waterflow quality needed to maintain ecosystems and related services, and integrated water resources management (2).

Ground and surface freshwater habitats are home to more than 10% of all known species, including 30% of all vertebrates (8). The ecosystem services they provide are estimated to be worth more than US\$4 trillion annually (9). Only by explicitly recognizing the value and distinctiveness of freshwater ecosystems can we set goals that can effectively protect them.

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