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## Lessons Learned from Shaheen Tropical Cyclone in Iran, 2021

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### Letter to the Editor

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#### Dear Editor,

Tropical cyclones usually develop in the Indian Ocean and eventually move to Pakistan, Bangladesh, and India (1). Shaheen Cyclone was the continuation of the Gulab cyclone, which moved from the Bay of Bengal to India, re-entered the Indian Ocean from land, and reached the Arabian Sea. It then worked on the Oman Sea and ended. The storm was active from September 30 to October 4, 2021. It belonged to the category of severe cyclone storms, with a wind speed of 110 km per hour that affected Baluchistan, Iran, Gujarat, Oman, and Sindh. It also killed 20 people in the affected countries. The clouds of this cyclone were extended in the north to a radius of nearly 600-700 km and in the west to a radius of nearly 400 km from the eye of the storm. Overall, the cloudy range of the storm reached almost 1200-1300 km.

Shaheen tropical cyclone entered Sistan and Baluchistan and Hormozgan provinces located in eastern Iran from October 2 to October 3, 2021. This cyclone did not cause much damage to Iran, but it resulted in relatively heavy rains in Sistan and Baluchistan and Hormozgan provinces. Infrastructure including electricity was also off in several cities for hours. However, the eye of the beholder reached Oman and caused a lot of damage.

Climate change was not the reason for the movement of this storm towards Iran. This phenomenon can occur every few years and lead to heavy rainfall, but climate change can be

effective. In terms of climate change, these storms are created on the sea. However, absence of rain implies that the air is heated and the convergence belt that causes the production of these systems is shifted to the north.

Measures taken in Iran included holding crisis management meetings in the governorates of Sistan and Baluchistan and Hormozgan provinces, preparing the equipment needed by aid workers and relief organizations including the Red Crescent, providing tents and emergency accommodation for people, and providing food. Additionally proper media coverage led to the evacuation of several coastal villages.

Nonetheless, weaknesses and challenges included people's unpreparedness and lack of knowledge about storms and necessary measures in these cases, misuse of cyberspace in publishing false news, and contradictory information about the cyclone by organizations and cyberspace.

Finally, the learned lessons were:

1. Making use of the latest and most up-to-date meteorological forecasting technologies;
2. Promoting public knowledge and awareness about storms;
3. International or neighboring countries' cooperation for forecasting and managing future storms;
4. Managing the cyberspace appropriately;
5. Increasing the resilience of communities and coastal cities;
6. Using contingency management approaches in storm management;

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7. Improving the capacity and reducing the vulnerability of cyclone-affected cities.

### **Conclusion**

Due to climate change in the world, many storms are expected to occur in the future. Therefore, policymakers and crisis and disaster managers should consider their instructions, programs, and efforts to manage these events in order to have the least human, financial, and environmental damages at the time of disasters. The coordination and cooperation of the affected countries can also be effective in reducing the destructive effects of these storms.

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### **Conclusion**

The authors have no conflict of interest to declare.

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