

1. What are the factors behind Australia's bushfires? Are such incidents prevalent in India? What is the strategy to mitigate bushfires/ forest fires? Discuss.

Introduction

Bushfires are a natural result of the hot, dry conditions of Australia's environment, particularly over summer. Importantly, they're also a normal part of Australia's ecosystem, with several native plants relying on them to regenerate and grow.

Body

Factors behind Australia's bushfires

- **Available fuel** – volume of bark, leaf litter and other natural dry material that is consumed by the fire as fuel.
- **Temperature and dryness** – Hot, dry fuel easily ignites. Australia's fire season is far more damaging in summer, when rain is scarce. Fires are also encouraged by hotter temperatures, because fuel will naturally be closer to its burning point, making ignition easy.
- **Wind speed** – Stronger winds bring more fuel into the path of fires, allowing them to grow bigger and spread. Winds are also able to create new fires via the transference of embers, which then ignite other patches around the original fire. This process is known as 'spotting' and can happen up to 30km away from a fire.
- **Humidity** – Plants become easily flammable at lower humidity because they lack the moisture to combat the heat.
- **Slope angle** – Fires operate on a convection and radiation basis, meaning that bushfires travelling uphill will spread faster than they do travelling downhill. Steepness is a factor in this, and may aid fire advancement

While all of these factors play a part in the ignition and spread of fires, they are aided by the rise of climate change, which has led to the drier, hotter conditions where bushfires thrive.

Forest fires in India

- The number of forest fires shot up to 14,107 from 4,225 between November 2018 and February 2019 according to the Real Time Forest Alert System of the Forest Survey of India (FSI).
- In February 2019, massive forest fires broke out in numerous places across the Bandipur National Park of the Karnataka state in India. While, forest fires very often occur naturally in the dry summer months, before the rains arrive; the carnage recently in Bandipur shows they are becoming more and more unpredictable with each passing year.
- The FSI data reveals that, in 2019, large wildfires raged across several states. Between January 1, 2019, and February 26, 2019, 209 out of 558 forest fires occurred in the five southern states of India — Andhra Pradesh, Karnataka, Tamil Nadu, Telangana and Kerala. That is 37% of the fires.

Strategy to mitigate bushfires/ forest fires

- Construction of narrow lanes in the forest, at crucial junctions, to restrict forest fires.
- Special trainings to National Disaster Response Force and State Disaster Response Force in combating fire disasters.
- Coordination among various agencies like forest department, NDRF, state government, and Environment ministry to put off the fire at early stage itself.
- Scientific waste management techniques to avoid fires due to Methane Gas evolution, like the one happened in Deonar, Mumbai.
- Pre-fire alerts - alerts to concerned departments for immediate action about fire-prone forest areas.
- National action plan for forest fires.
- Satellite tracking of vulnerable areas, training local forest dwellers to be on vigil and sensitizing them against harmful practices.

Conclusion

Forest fire causes imbalances in nature and endangers biodiversity by reducing faunal and floral wealth. Traditional methods of fire prevention are not proving effective and it is now essential to deal with it holistically.

2. What are the most essential components of disaster preparedness? Explain with the help of suitable examples.**Introduction**

Disaster preparedness refers to measures taken to prepare for and reduce the effects of disasters. India is one of the most disaster-prone country as per the latest UNISDR report. Disaster preparedness is vital in this context to minimise the vulnerability and effective response.

Body**Components of disaster preparedness:**

- Disaster mapping: Listing potential emergencies and ranking them in regards to importance and likelihood is essential to knowing what to do and what resources to invest. E.g. map of earthquake based on intensity would help plan building earthquake resilient buildings like in Japan.
- Clear communication: Between the different stakeholders inside and outside the organization. Communication infrastructure should be built in a way to withhold the disaster impact. E.g. DISNIC project with communication

network between various stakeholders like NDMA, district administration, home ministry etc.,

- Comprehensive training: for the staff to handle disaster as well as to include community explaining the preparedness, mitigation measures as well as response. This also include building a team with dedicated roles.
- Knowledge of assets: specially the healthcare and communication infrastructure to make the disaster response resilient to disaster impact.
- Technology fail-safes and protocol: maintaining the physical space, access to files and software systems. For e.g. maintenance of health records in cloud.
- Emergency plan and beforehand communication to the community and the relevant stakeholders. Also, the critical information and plans should be effectively communicated in time to avert disaster loss. E.g. clear communication and evacuation in time saved the lives during Odisha cyclone few years back.
- Testing the plan: Lectures and response session, mock drills will help in proper implementation of procedures designed.
- Humanitarian agencies connection: humanitarian agencies are often called upon to deal with immediate response and recovery. To be able to respond effectively, these agencies must have experienced leaders, trained personnel, adequate transport and logistic support, appropriate communications, and guidelines for working in emergencies. E.g. Humanitarian Assistance and Disaster Relief, Doctors Without Borders etc.,

Conclusion

“It is not the disaster, but the lack of preparedness to disaster that kills”. The goal of emergency preparedness programs is to achieve a satisfactory level of readiness to respond to any emergency situation through programs that strengthen the technical and managerial capacity of governments, organizations, and communities. Thus, disaster preparedness is one of the most vital component in disaster management.

3. Odisha’s promptness and effectiveness in mitigating cyclones makes it a model state disaster management. Elucidate.

Introduction

Learning its lessons from the super-cyclone of 1999 which claimed 10,000 lives in Odisha, the eastern state has, over the years, emerged as a role model in disaster preparedness. With decades of positive intervention by the government, civil society groups, and NGOs, the state has received praise from numerous national and international organisations, including the United Nations.

Body

- In the aftermath of Cyclone Fani, one of the worst cyclones to hit India’s eastern coastline, Odisha had proved it is one of the most disaster-ready

states in the world. In preparation for Cyclone Fani, Odisha carried out 'one of the biggest human evacuations in history,' with more than a million people evacuated into 9,000 shelters in 24 hours.

- According to UN, Odisha's zero casualty approach to managing extreme weather events is a major contribution to the implementation of the Sendai Framework (for disaster risk reduction) and the reduction of loss of life from such events.
- The Odisha State Disaster Management Authority (OSDMA) was established in 1999, much before the Disaster Management Act was passed in 2005, and the National Disaster Management Authority (NDMA) was constituted in 2001. OSDMA was the first disaster management authority centre established in India, or perhaps the world, given its scale of operations.
- Even today, Odisha, along with Assam, Gujarat, and Bihar are the only states with active State Disaster Management Authorities (SDMAs). These states have their own offices, management, and staff. In most states, SDMAs are still being run out of the State Revenue Department Office, which is a temporary arrangement

Even more recently, Cyclone Bulbul in 2019 highlighted how Odisha has mastered disaster management – with lessons for other disaster-prone cities and states. In this regard, lessons in disaster relief for the country include :

- Resilient infrastructure (cyclone shelters) - The Odisha State Disaster Mitigation Authority (OSDMA), a constituent of the state government, designed some 800 multipurpose cyclone and flood shelters in the coastal districts in association with the Institute of Information Technology (IIT) Kharagpur.
- Autonomous disaster-management authority - The Odisha Disaster Management Authority (ODMA) was set up as an autonomous body to combat emergency situations during disasters. It has proven to be highly effective as the state is no longer dependent on central government and can act quickly.
- Technology - Millions of SMS messages were sent out by Location Based Alert System (LBAS) and Group Based Alert System (GBAS) to warn people. The "SATARK" (System for Assessing, Tracking and Alerting Disaster Risk Information based on Dynamic Risk Knowledge) of Odisha State Disaster Management Authority (OSDMA) has won the IT Excellence Award, 2019 for its innovative conception by using information technology in the field of disaster management.
- Preparedness - Odisha has recently implemented its ambitious Early Warning Dissemination System (EWDS). Using the mechanism, OSDMA can activate sirens across 122 towers operational across the state's 480 km coastline, alerting the population at the press of a single button.
- Empowering Community - Empowering the community has been a big game-changer. All vulnerable regions in Odisha have active Cyclone Management Centres, which are community-based organisations with the local Sarpanch

as the president. Community is the first point of contact for rescue and preparedness. Odisha has managed to create a sense of community during such disasters that other states can also emulate. Cyclone evacuation is a social process, and people's decision to evacuate depends on how they perceive the risk from the warning message.

- Future preparedness - Odisha has raised 20 units of Odisha Disaster Rapid Action Force (ODRAF), comprised of highly trained personnel with multi-disaster tackling capabilities. They are trained in tackling floods, building collapses, cyclones, biological and nuclear disasters. Odisha plans to create a network of weather forecasting doppler radars across the state. Odisha's focus in disaster management and risk reduction now includes a broader range of potential hazards, including the impacts of climate change.

At the same time, the Government of Odisha certainly needs to think about investing in creating safer housing especially in the coastal regions, and in creating electrical systems that are underground. This will not only help minimize the need for evacuation, but also save on the systematic investments that are made when household assets are lost during a disaster.

Conclusion

Disaster is dynamic, and with the climate change situation, the intensity and frequency of disasters is changing. In the future, such extreme events are predicted to hit coastal areas with more intensity due to climate change, and this necessitates that governments address socio-economic problems along with cyclone adaptation programmes to make disaster management more effective.

4. What are public health disasters? What are the most common measures to address such disasters? Explain.

Introduction

People across the world are faced with a wide and diverse range of risks associated with Public health disasters. These comprise infectious disease outbreaks, natural hazards, unsafe food and water, chemical and radiation incidents, antimicrobial resistance, the effects of climate change, and other sources of risk.

Body:

Developments such as climate change, unplanned urbanization, population growth, migration and state fragility are increasing the frequency, severity and impacts of many types of public health disasters throughout the world.

India has faced many public health disasters in recent cases of Nipah, Zika, Chikungunya and Avian Influenza outbreak along with Japanese Encephalitis among children in Bihar.

Most common response to Public Health disaster:

- Risk Assessment: A multi-disciplinary central team from the National Centre for Disease Control to investigate and respond, in close coordination with state government officials.
- Emergency preparedness: Syndromic surveillance enhancement. Hospital and community surveillance strengthening. Involvement of national testing laboratories like National Institute of Virology conducted laboratory testing to confirm and rule out cases.
- Response and Recovery: Specific guidelines such as case definitions; guidelines for hospital infection prevention and control; guidelines for sample collection and transportation; clinical management guidelines for suspected and confirmed cases; guidelines for safe disposal of dead bodies; and information for the general public and for health care personnel. Risk communication messages to the community, public, partners and other stakeholders.
- Training and capacity building for health care personnel in the following areas: sample collection and transportation; safe disposal of dead bodies; contact tracing; hospital waste management; hospital infection prevention and control; and the use of personal protective equipment.
- Multisectoral and multidisciplinary approach: The government coordination amongst all relevant sectors including zoonoses, wildlife, animal husbandry, human health, clinicians, pulmonologists, neurologists, biologists and private sector.
- Disease Surveillance system with common control room: The Strategic Health Operations Centre (SHOC) at the National Centre for Disease Control to monitor the outbreak.

The management of these risks is vital to protect people's health from emergencies and health disasters, to ensure local, national and global health security, to attain UHC and to build the resilience of communities, countries and health systems.

Conclusion

Preparedness measures are necessary to deal in emergencies of public health disasters. It is important for implementing the SDGs, including the pathway to Universal Health Coverage and target 3d to "strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks."

5. What is the Sendai Framework for Disaster Risk Reduction? What are its objectives? Discuss.

Introduction

The Sendai Framework for Disaster Risk Reduction 2015-2030 is a 15-year, voluntary, nonbinding agreement. It recognizes that the State has the primary role to reduce

disaster risk but that responsibility should be shared with other stakeholders including –

- Local government
- The private sector and
- Other stakeholders

It aims for substantial reduction of disaster risk and losses in lives, livelihoods, and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.

The Four Priorities for Action

- Understanding disaster risk
- Strengthening disaster risk governance to manage disaster risk
- Investing in disaster risk reduction for resilience
- Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction

Body

The Seven Global Targets of Sendai Framework

- Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality rates in the decade 2020-2030 compared to the period 2005-2015.
- Substantially reduce the number of affected people globally by 2030, aiming to lower average global figure per 100,000 in the decade 2020 -2030 compared to the period 2005-2015.
- Reduce direct disaster economic loss in relation to the global gross domestic product (GDP) by 2030.
- Substantially reduce disaster damage to critical infrastructure and disruption of basic services by 2030.
- Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.
- Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation.
- Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.

Conclusion

India and United Nations Office for Disaster Risk Reduction has signed a Statement of Cooperation. India will partner with UNISDR to work towards strengthening the capacity of Asian countries in ensuring risk resilient development. It will also facilitate the sharing of knowledge and experiences, and collaborative efforts towards addressing critical regional challenges.

