



Drought in Europe

For Prelims: Drought, Heat waves, Land degradation, Climate Change

For Mains: Drought - Impacts, Causes and Ways to tackle it

Why in News?

After the **record-breaking summer heat**, 2022 may be the **worst [drought](#) year in Europe in 500 years**. Large rivers have been reduced to shallow streams, hitting power generation.

- **China and the US too are facing drought situations.**

What is a Drought?

- **About:**
 - Drought is generally considered as a **deficiency in rainfall /precipitation over an extended period**, usually a season or more, resulting in a **water shortage causing adverse impacts on vegetation, animals, and/or people**.
- **Causes:**
 - **Variability in rainfall**
 - **Deviation in the route of monsoon winds**
 - **Early withdrawal of the monsoon**
 - **[Forest fires](#)**
 - **[Land degradation](#)** in addition to **[Climate change](#)**
- **Types:**
 - **Meteorological Drought:** It is based on the degree of dryness or rainfall deficit and the length of the dry period.
 - **Hydrological Drought:** It is based on the impact of rainfall deficits on the water supply such as stream flow, reservoir and lake levels, and ground water table decline.
 - **Agricultural Drought:** It refers to the impact on agriculture by factors such as rainfall deficits, soil water deficits, reduced groundwater, or reservoir levels needed for irrigation.
 - **Socioeconomic Drought:** It considers the impact of drought conditions (meteorological, agricultural, or hydrological drought) on supply and demand of some economic goods such as fruits, vegetables, grains and meat.

How bad is the Drought Situation in Europe?

- **Present Scenario:**
 - The drought is considered the worst in 500 years. The European summer was this dry last in **1540**, when **a year-long drought killed tens of thousands of people**.
 - However, earlier European droughts such as those in **2003, 2010, and 2018** too

were compared to the 1540 event.

- Some of Europe's biggest rivers — [Rhine](#), [Po](#), [Loire](#), [Danube](#) — which are usually formidable waterways, are unable to support even mid-sized boats.
- As per an analytical report by the **Global Drought Observatory (GDO)**, an agency of the [European Commission](#), about **64% of the continent's landmass was experiencing drought** conditions.
 - Nearly **90% of the geographical area in Switzerland and France**, about **83% in Germany**, and close to **75% in Italy**, was facing **agricultural drought**.
 - The **situation is unlikely to improve** substantially in the coming months.
- **Causes:**
 - Droughts are part of the natural climate system and are not uncommon in Europe. The extraordinary dry spell has been the result of a **prolonged and significant deviation from normal weather patterns**.
 - It is the **record-breaking heat waves** that have resulted in temperatures in many countries rising to historic highs.
 - Unusually high temperatures have led to **increased evaporation of surface water and soil moisture**.
 - The severity of the current drought can also be attributed, to an extent, to the fact that it occurred **so soon after the 2018 drought**.
 - **Many areas in Europe were yet to recover from the last drought**, soil moisture had also not been restored to normal.

What is Understood by Heat Waves?

- A heat wave is a **period of abnormally high temperatures** typically occurring between the months of March and June, and in some rare cases even extending till July.
- According to [India Meteorological Department \(IMD\)](#), a heat wave is declared when the **maximum temperature of a station reaches at least 40°C for Plains** and at least **30°C for Hilly regions**.
- **Impacts:**
 - **Transportation:** Europe depends heavily on its rivers to move cargo in an economical manner, including coal to power plants. With water levels down to less than a metre in some stretches, **most large ships have been rendered unusable**.
 - **Power:** Power production has been hit, leading to **electricity shortages** and a further **increase in energy prices** which were already high due to the [war between Russia and Ukraine](#).
 - Lack of adequate water has **affected the operation of nuclear power plants**, which use large amounts of water as coolant.
 - **Food Security:** **Food has become sharply more expensive** in many countries, and **drinking water is being rationed** in some regions. **Agriculture** has also been affected badly.

What about the Drought Situations in the US and China?

- **Drought in China:**
 - Many parts of China too are headed towards a serious drought, **being described as the worst in 60 years**.
 - The country's **longest river, Yangtze**, which caters to about a third of the Chinese population, is seeing water levels drop to record lows.
 - Two of the country's biggest freshwater lakes, **Poyang and Dongting, have reached their lowest levels since 1951**.
 - The water scarcity is leading to problems similar to those in Europe.
 - The drought has posed a **"serious threat" to China's autumn grain production** which makes up about 75% of the country's annual grain output.
 - Power shortages in some areas have begun to **force factories to shut**, adding to the **strain on global supply chains**.
- **Drought in the US:**

- According to the US government, **over 40% of the area in the United States too is under drought conditions** currently, affecting about 130 million people.

How Drought is Declared in India?

- In India, there is **no single, legally accepted definition** of drought. The **State Government is the final authority** when it comes to declaring a region as drought affected.
- The Government of India has published two important documents in respect of managing a drought.
 - The first step is to **look at two mandatory indicators - rainfall deviation and dry spell.**
 - Depending on the extent of the deviation, and whether or not there is a dry spell, the manual specifies various situations that may or may not be considered a drought trigger.
 - The second step is to **look at four impact indicators – agriculture, vegetation indices** based on remote sensing, **soil moisture, and hydrology.**
 - The **States may consider any three of the four types** of the Impact Indicators (one from each) for assessment of drought, the intensity of the calamity and make a judgement.
 - If all three chosen indicators are in the ‘severe’ category, it amounts to **severe drought**; and if two of the three chosen impact indicators are in the ‘moderate’ class, it amounts to **moderate drought.**
 - The third step comes in after both previous triggers have been set off. In that event, **“States will conduct sample surveys for ground** in order to make a final determination of drought.
 - The finding of field verification exercise will be the final basis for judging the intensity of drought as ‘severe’ or ‘moderate’.
- Once a drought is determined, the state government needs to **issue a notification specifying the geographical extent.** The **notification is valid for six months unless de-notified earlier.**

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. Consider the following pairs: (2014)

	Programme/Project	Ministry
1.	Drought-Prone Area	Ministry of Agriculture & Farmers Welfare
2.	Desert Development Programme	Ministry of Environment, Forests & Climate Change
3.	National Watershed Project Development for Rainfed Areas	Ministry of Rural Development

Which of the above pairs is/are correctly matched?

- (a) 1 and 2 only
- (b) 3 only
- (c) 1, 2 and 3
- (d) None

Ans: (d)

Mains

Q. The process of desertification does not have climate boundaries. Justify with examples. **(2020)**

Q. In what way micro-watershed development projects help in water conservation in drought-prone and semi-arid regions of India? **(2016)**

Source: IE

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