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## News Analysis (05 Jan, 2021)

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### State of the Climate Report 2020: IMD

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#### Why in News

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According to the **India Meteorological Department (IMD)**'s **State of the Climate Report**, the **year 2020 was the eighth warmest since** India started keeping records in **1901**.

The State of the Climate Report **looks at temperature and rainfall trends annually**.

#### Key Points

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- **Eighth Warmest Year 2020:**

- **Average Temperature:**

- During the year, the annual average temperature in the country was **0.29 degree Celsius (°C) above normal** (29-year average from 1981-2010).
- However, it was **much lower than 2016** (+0.71 degrees Celsius), which **remains the warmest ever year** the country has recorded since 1901.
- Such temperature trends were reported **despite the cooling effect of La Nina**, a global weather pattern that prevailed in 2020 and is linked to substantially below normal temperatures in winter.
  - La Nina typically has a cooling effect on global temperatures, but this is now **offset by global warming due to greenhouse gas emissions.**
  - As a result, **La Nina years now are warmer than years with El Niño events of the past.**
  - El Niño and La Nina are the **extreme phases of the El Niño and the Southern Oscillation (ENSO) cycle.**
  - **ENSO** is a periodic fluctuation in sea surface temperature and the air pressure of the overlying atmosphere across the equatorial Pacific Ocean. It has a major influence on weather and climate patterns such as heavy rains, floods and drought.
  - **El Niño has a warming influence** on global temperatures, whilst **La Nina has the opposite effect.**

- **Comparison to Global Average Temperature:**

India's nearly 0.3 degree rise was **less than the average global temperature rise of 1.2 degree** (January to October, as per the **World Meteorological Organisation's State of the Global Climate**).

- **Warmest Years over India:**

- The **eight warmest years** on record in order were: **2016** (+ 0.71 degree C) > **2009** (+0.55 degree C) > **2017** (+0.541 degree C) > **2010** (+0.539 degrees C) > **2015** (+0.42 degree C) > **2018** (+0.41 degree C) > **2019** (+0.36 degree C) > **2020** (+0.29 degree C).
- The **past decade (2011-2020) was the warmest on record.**

- **Extreme Weather Events:**

- Extremely heavy rain, floods, **cold waves** and thunderstorms led to significant loss of lives and properties.

According to the report **“Preparing India for Extreme Climate Events”** released by the **Council on Energy, Environment and Water (CEEW)**, over 75% of districts in India are hotspots of extreme climate events.

- **Uttar Pradesh and Bihar reported the highest casualties** due to cold waves, **lightning** and thunder last year.

- **Data on Tropical Storms:**
  - Globally, the **Atlantic Ocean experienced one of the most active years**, with over 30 tropical storms originating here.
  - The **Indian Ocean** region - the **Arabian Sea** and the **Bay of Bengal**, **together reported five cyclones** - **Amphan**, **Nisarga**, **Gati**, **Nivar** and **Burevi**.

Of these, **Nisarga & Gati formed over Arabian Sea**, while the remaining 3 cyclones formed over the Bay of Bengal.
- **Data on Rainfall:**

The annual rainfall over the country in 2020 was **109% of the Long Period Average (LPA)** calculated for the period of 1961-2010.

## India Meteorological Department

- IMD was **established in 1875**.
- It is an agency of the **Ministry of Earth Sciences** of the Government of India.
- It is the principal agency **responsible for** meteorological observations, weather forecasting and seismology.

**Source: IE**

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## Iran Steps Up Uranium Enrichment

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### Why in News

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Recently, Iran has **resumed enriching uranium up to 20%** in violation of the **2015 nuclear deal** and also seized a **South Korean-flagged tanker** near the **crucial Strait of Hormuz**.

Meanwhile, the **USA** has decided to keep **nuclear powered aircraft carrier Nimitz** in the Gulf region in the wake of threats from Iran.

### Key Points

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- **Uranium Enrichment:**

- **Natural uranium** consists of two different isotopes - nearly **99% U-238** and **only around 0.7% of U-235**.

- **U-235 is a fissile material** that can sustain a chain reaction in a nuclear reactor.

- **Enrichment process increases the proportion of U-235** through the **process of isotope separation** (U-238 is separated from U-235).
- For **nuclear weapons**, enrichment is required upto **90% or more** which is known as **Highly Enriched Uranium**/weapons-grade uranium.
- For **nuclear reactors**, enrichment is required upto **3-4%** which is known as **Low Enriched Uranium**/reactor-grade uranium.

- **2015 Nuclear Deal:**

- In **2015**, Iran with the **P5+1 group of world powers - the USA, UK, France, China, Russia, and Germany** agreed on a long-term deal on its nuclear programme.
  - The deal was named as **Joint Comprehensive Plan of Action (JCPOA)** and in common parlance as **Iran Nuclear Deal**.
  - Under the deal, **Iran agreed to curb its nuclear activity in return for the lifting of sanctions and access to global trade**.
  - The agreement **allowed** Iran to **accumulate small amounts of uranium for research** but it **banned the enrichment of uranium**, which is used to make reactor fuel and nuclear weapons.
  - Iran was also **required to redesign a heavy-water reactor** being built, whose spent fuel would contain plutonium suitable for a bomb and to allow international inspections.
- In **May 2018**, the **USA abandoned the deal** criticising it as flawed and reinstated and tightened its sanctions.
- Since sanctions were tightened, **Iran has been steadily breaking some of its commitments** to pressure the remaining signatories to find a way to provide sanctions relief.

- **Issues Involved:**

- The dual incidents come amid heightened **tensions between Iran and the USA.**
- Enrichment could shorten Iran's time it would take to develop a **nuclear bomb.**
- **Israel criticised Iran's** enrichment decision.
  - Iran's decision to begin enriching to 20% purity a decade ago nearly **triggered an Israeli strike targeting its nuclear facilities,** tensions that only abated with the **2015 nuclear deal.**
  - A resumption of 20% enrichment (at **fordow facility**) could see that **brinkmanship** return as that level of purity is **only a technical step away from weapons grade levels of 90%.**
    - Brinkmanship** is the art or practice of pursuing a dangerous policy to the limits of safety before stopping, especially in politics.
- Previously the **International Atomic Energy Agency (IAEA)** expressed serious concerns over Iran's blocking of **inspections of two suspect locations of Uranium enrichment for more than four months.**

## Strait of Hormuz



- **Geographic Location:**
  - It is the waterway **separating Iran and Oman**, linking the Persian Gulf to the Gulf of Oman and the Arabian Sea.
  - On the north coast lies Iran, and on the south are the UAE and Musandam, an enclave of Oman.
  - The Strait is **21 miles wide** at its narrowest point, but the **shipping lane is just two miles wide** in either direction.
- **Importance:**
  - The Strait of Hormuz is **one of the world's most strategically important choke points**.
  - **Two-thirds of the oil and half the Liquefied Natural Gas (LNG) Indian imports** come through the strait between Iran and Oman.
  - As much as **18 million barrels of oil pass through the Strait of Hormuz every day**, accounting for one-third of the global oil trade.
  - A **third of the world's LNG trade** also passes through the strait.
- **Issues in the Strait:**
  - The strait of Hormuz plays a vital geopolitical role to the point where the **US Fifth Fleet guards this strait**.
  - During the recent years, Iran has threatened the safe passage of oil tankers in this strait.

## Way Forward

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- All countries part of the 2015 deal should engage constructively and resolve all issues peacefully and through dialogue.
- Both the USA and Iran must act with strategic restraint as any crisis in West Asia will not only affect the region as a whole but will have a detrimental impact on global affairs as well.

## Source:TH

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## COVISHIELD and COVAXIN Approved for Restricted Use

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### Why in News

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Recently, the **Drugs Controller General of India's (DCGI)** approved **COVISHIELD** and **COVAXIN** vaccines for **restricted use** against **Covid-19** in the country.

**COVISHIELD, COVAXIN and BNT162b2** applied to the **Central Drug Standard Control Organisation (CDSCO)**, seeking **emergency use approval**.

### Key Points

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- **Type of Approval:**
  - Both vaccines have received a **restricted use approval** in an **emergency situation**.
  - This means the **vaccines have been approved** for use **despite the companies not having completed clinical trials**.
  - This approval is, however, subject to regular submission of **safety, efficacy and immunogenicity data** from their ongoing trials.
    - The **immunogenicity** of a vaccine is its ability to prompt an immune response.
    - The efficacy, in this case, is a measure of its ability to bring down the number of symptomatic Covid-19 cases.
- **Reason for the Emergency Approval:**
  - Given the pandemic, the government wanted a **vaccine ready to use at the earliest**.
  - Another growing concern is the **mutation of the SARS-CoV-2 virus in countries like the UK** which are now starting to spread to other parts of the world, including India.
- **COVISHIELD:** It is the name given to an **Oxford-AstraZeneca** Covid-19 vaccine candidate which is technically referred to as **AZD1222 or ChAdOx 1 nCoV19**.
  - **Produced By:**
    - It is a version of the vaccine **developed by the University of Oxford** in collaboration with **Swedish-British drugmaker AstraZeneca**.
    - **Serum Institute of India (SII)** is the manufacturing partner in India.
  - **Constituents and Action:**
    - It is **based on a weakened version of a common cold virus** or the adenovirus that is found in chimpanzees.
    - This viral vector **contains the genetic material of the SARS-CoV-2 spike protein** (protrusions) present on the outer surface of the virus that help it bind with the human cell.
    - The **body's immune system** is supposed to **recognise this protein** as a threat, and work on **building antibodies against it**.
  - **Significance:**

It had triggered an immune response in humans against the **novel coronavirus** in early trials and is considered to be one of the global frontrunners for the Covid-19 vaccine.

- **COVAXIN:** It is India's only indigenous **Covid-19** vaccine.
  - **Produced By:**

Developed by **Bharat Biotech**, Hyderabad in collaboration with the **Indian Council of Medical Research's National Institute of Virology**, Pune
  - **Constituents and Action:**
    - It is an **inactivated vaccine** which is **developed by inactivating (killing) the live microorganisms** that cause the disease.
    - This **destroys the ability of the pathogen to replicate**, but keeps it intact so that the immune system can still recognise it and produce an immune response.
    - It is expected to **target more than just the spike protein**.
    - It also **aims to develop an immune response to the nucleocapsid protein** (the shell of the virus that encloses its genetic material).
  - **Significance:**
    - **COVAXIN** is more likely to work against newer variants of the virus, **including the UK variant**, as it contains **immunogens (epitopes)** from other genes in addition to those from Spike protein.
      - **Immunogen** is a stimulus that produces a humoral or cell-mediated immune response, whereas antigens are any substance that binds specifically to an antibody.
      - All immunogens are antigens, but all antigens may not be immunogens.
    - Approval of **COVAXIN** ensures India has an additional vaccine shield especially against potential **mutant strains** in a dynamic pandemic situation.



# Vaccines out, but data missing

The efficacy data of the Phase-3 trials conducted in India for the two vaccines approved for restricted public use on Sunday have not been made public yet

## COVISHIELD

- A vaccine developed by the Serum Institute-Pune based on the AstraZeneca-Oxford vaccine has been given 'conditional approval'

- The vaccine's efficacy is reported to be 70.4% based on the Phase-3 trials conducted in the U.K. and Brazil

- The efficacy data of the Phase-3 trials conducted on 1,600 volunteers in 17 Indian cities have not been made public yet

## COVAXIN

- A vaccine developed by Bharat Biotech and the Indian Council of Medical Research has been approved for restricted emergency use in clinical trial mode

- During the first two months after the roll-out, the firm has to inform drug regulators every fortnight about the adverse effects of the vaccine

- Phase-1 and 2 trials were conducted on 800 volunteers to determine the safety and immunogenicity of the jab

- The efficacy data of the ongoing Phase-3 trials with 22,500 volunteers have not been made public yet



**Source:IE**

## National Metrology Conclave 2021

### Why in News

Recently, the Prime Minister has inaugurated the **National Metrology Conclave 2021** and also laid the foundation stone of **National Environmental Standards Laboratory** through a video conference.

- The Conclave was organised by **Council of Scientific and Industrial Research-National Physical Laboratory** (CSIR-NPL), New Delhi, on its 75<sup>th</sup> year of inception.
- **National Atomic Time Scale** and **Bharatiya Nirdeshak Dravya Pranali** were dedicated to the nation on the occasion.

- Metrology is defined by the International Bureau of Weights and Measures (BIPM) as **"the science of measurement, embracing both experimental and theoretical determinations at any level of uncertainty in any field of science and technology"**.

## Key Points

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- **National Atomic Time Scale:**

- The National Atomic Time Scale generates **Indian Standard Time** with an accuracy of **2.8 nanoseconds**.

The **longitude of 82°30' E** has been selected as the 'standard meridian' of India against which the Indian Standard Time is set.

- Now **Indian Standard Time** is matching the **International Standard Time** with the accuracy range of less than **3 nanoseconds**.
- **CSIR-NPL** is the **National Measurement Institute of India** and authorized (by an act of Parliament) to realize and **maintain the Indian Standard Time (IST)**.
- IST is realized at CSIR-NPL through the **National Primary Time Scale** consisting of a bank of **ultra-stable atomic clocks**.
- CSIR-NPL is on a **mission to synchronize all the clocks in the nation to IST for securing digital infrastructure and reducing cyber crime**.
- CSIR-NPL is strengthening the **national timing infrastructure of India**, where a very rough estimate shows an economic impact of more than **10% of GDP**.
- **Benefits:**

This will be a big help for organizations like **Indian Space Research Organisation** who are working with cutting edge technology. **Banking, railways, defense, health, telecom, weather forecast, disaster management , Industry4.0** and many similar sectors will be benefited greatly from this achievement.

- **Bhartiya Nirdeshak Dravya Pranali (BND):**

- These are Indian reference materials developed by CSIR-NPL. It is committed to ensure the **quality of products in every manufacturing and consumer sector** by providing **SI traceable measurements** and enhancing quality life of citizens through metrology.

SI system is used to describe units of measurement in the International System (from French 'Système International').

- Reference materials (RM) play a pivotal role in maintaining the **quality infrastructure** of any economy through **testing and calibration** with precise measurements traceable to SI units. NPLI has recently released two very important certified RMs as Bharatiya Nirdeshak Dravyas (BNDs) **for purity of gold and for Bituminous coal**.
- Recently, the Govt of India (GoI) has supported NPLI to strengthen its BND program by developing BNDs in the area of **AYUSH, Materials, Nanotechnology, Medicine, Food & Agriculture and Biologics**.
- The availability of SI traceable BNDs are poised to **boost the “Make in India” program** and harmonize the **quality infrastructure of the country**.

**Source:PIB**

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## **Sagarmala Seaplane Services**

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### **Why in News**

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The **Ministry of Ports, Shipping and Waterways** is starting the ambitious Project of **Sagarmala Seaplane Services (SSPS)** with potential airline operators.

A seaplane is a **fixed-wing aeroplane** designed for taking off and landing on water.

### **Key Points**

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- **Mechanism:**

- The project is being initiated under a **Special Purpose Vehicle (SPV) framework** through prospective airline operators.
- **SPV** is a legal object formed for a **specifically-defined singular purpose**.

- **Project Implementation:**

- The project execution and implementation would be through **Sagarmala Development Company Ltd (SDCL)**, which is under the administrative control of the Ministry of Ports, Shipping and Waterways.
- Airline operators will be invited to form a SPV with SDCL.
- The routes may be operated under the government's subsidised **ude desh ka aam nagrik (UDAN) scheme**.

- **Location:** Several destinations are envisaged for seaplane operations:



- **Benefits and Significance:**

- The seaplanes services will be a game-changer providing a **supplementary means of faster and comfortable transportation across the nation.**
- Apart from providing air connectivity to various remote religious/tourist places, it will **boost tourism for domestic and international holiday makers.**
- It will **save travel time** and **stimulate localized short distance travelling** especially in the hilly regions or across the rivers/lakes etc.
- It will provide **infrastructure enhancements** at the places of operations.
- It will **generate employment opportunities.**

- **Previous Project:**

One such Seaplane Service is already in operation between **Kevadia and Sabarmati Riverfront in Ahmedabad** which was inaugurated in October 2020.

### **Sagarmala Programme**

- The Sagarmala Programme was **approved by the Union Cabinet in 2015** which aims at holistic port infrastructure development along the 7,516-km long coastline through modernisation, mechanisation and computerisation.
- Under this port-led development framework, the government hopes to increase its cargo traffic three-fold.
- It also includes the establishment of rail/road linkages with the port terminals, thus providing last-mile connectivity to ports; development of linkages with new regions, enhanced multi-modal connectivity including rail, inland water, coastal and road services.

**Source:PIB**

# School Bag Policy 2020

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## Why in News

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The Directorate of Education has issued a circular asking schools to follow the new '**School Bag Policy, 2020**' released by the **National Council of Educational Research and Training (NCERT)**.

## Key Points

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- **The Circular:**
  - School teachers should inform the students in advance about the books and notebooks to be brought to school on a particular day and frequently check their bags to **ensure that they are not carrying unnecessary material**.
  - It is the duty and the responsibility of the school management to provide **quality potable water in sufficient quantities** to all the students in the school so that they do not need to carry water bottles from their homes.
- **About the School Bag Policy 2020:**
  - It **lays down the guidelines on homework and weight of school bags** for classes I to XII.
    - **School bags should not be more than 10% of the bodyweight of students** across classes I to X and there should be **no bags in pre-primary students**.
    - It recommends **no homework up to class II** and a maximum of two hours per week for classes III to V, one hour a day for classes VI to VIII and two hours a day for classes IX and above.
  - The Policy will **also require schools to introduce infrastructural changes** as students will not be able to carry many books daily.
    - The schools **need to provide lockers** right from preschool to senior secondary to enable children to leave books in school and carry home only what is required.
  - It adds that the **teachers** should take the **responsibility of checking the weight** of school bags of the students **every three months on a day selected for the whole class** and any information about heavy bags should be **communicated to the parents**.
  - It adds that files and **thin/light exercise** books should be preferred to **thick/heavy ones**.

- **Problems of heavy school bags:**
  - The heavy school bag has **severe/adverse physical effects on growing children** which can cause damage to their **vertebral column** and **knees**.
  - A heavy backpack can pull on the neck muscles contributing to headache, shoulder pain, lower back pain and neck and arm pain.
  - The **posture of the body** also gets affected to a great extent which in the long term develops imbalances in the body and **affects the health of the nervous system**.

## NCERT

- It is **an autonomous organization under the Ministry of Education (MoE)** which is responsible for:
  - Ensuring **qualitative improvement in school education** by undertaking and promoting research in areas related to school education.
  - **Prepare and publish model textbooks**, supplementary material.
  - Develop and **disseminate innovative educational techniques** and practices.
- Act as a **nodal agency** for achieving the goals of **Universalization of Elementary Education**.

## Source:TH

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## Prevention of Cruelty to Animals Act, 1960

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### Why in News

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The **Supreme Court (SC)** has **asked the Centre to either withdraw or amend rules notified in 2017** for confiscating animals of traders and transporters during the pendency of trial in cases under the Prevention of Cruelty to Animals Act, 1960.

### Key Points

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- **About the 2017 Rules:**
  - The **Prevention of Cruelty to Animals (Care and Maintenance of Case Property Animals) Rules, 2017** have been framed under the **Prevention of Cruelty to Animals Act, 1960**.
  - The Rules **allow a Magistrate to forfeit the cattle of an owner facing trial under the Act**.
    - The animals are then **sent to infirmaries, animal shelters**, etc.
    - The authorities **can further give such animals for “adoption”**.

- **SC's Observations:**
  - The Rules are plainly **contrary to Section 29 of Prevention of Cruelty to Animals Act**, under which **only a person convicted of cruelty can lose his animal**.
  - It asked the government to either change the rule or face a stay from the court.
- **About the Prevention of Cruelty to Animals Act, 1960:**
  - The legislative intent of the Act is to “**prevent the infliction of unnecessary pain or suffering on animals**”.
  - The **Animal Welfare Board of India (AWBI)** was established in 1962 under Section 4 of the Act.
  - This Act **provides for punishment for causing unnecessary cruelty and suffering to animals**. The Act **defines animals and different forms of animals**.
  - **Discusses different forms of cruelty, exceptions, and killing of a suffering animal** in case any cruelty has been committed against it, so as to relieve it from further suffering.
  - Provides the **guidelines relating to experimentation on animals** for scientific purposes.
  - The Act enshrines the provisions relating to the **exhibition of the performing animals**, and offences committed against the performing animals.
  - This Act provides for the **limitation period of 3 months** beyond which no prosecution shall lie for any offences under this Act.

**Source: IE**

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## **Indian Pangolin**

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### **Why in News**

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Recently, the Odisha Forest department has stressed the need for **stricter monitoring of social media platforms to check pangolin poaching and trading**.

### **Key Points**



- **About:**

Pangolins are **scaly anteater mammals** and they have **large, protective keratin scales covering their skin**. They are the only known mammals with this feature.

- **Diet:**

Insectivore- Pangolins are **nocturnal, and their diet consists of mainly ants and termites**, which they capture using their long tongues.

- **Types:**

- Out of the eight species of pangolin, the **Indian Pangolin** (*Manis crassicaudata*) and the **Chinese Pangolin** (*Manis pentadactyla*) are **found in India**.

- **Difference:**

- Indian Pangolin is a large anteater covered by 11-13 rows of scales on the back.
- A terminal scale is also present on the lower side of the tail of the Indian Pangolin, which is absent in the Chinese Pangolin.

- **Habitat:**

- **Indian Pangolin:**

- It is widely distributed in India, except the arid region, high Himalayas and the North-East.
- The species is also found in Bangladesh, Pakistan, Nepal and Sri Lanka.

- **Chinese Pangolin:**

It is found in the Himalayan foothills in Eastern Nepal, Bhutan, Northern India, North-East Bangladesh and through Southern China.

- **Threats to Pangolins in India:**

- **Hunting and poaching** for local consumptive use (e.g. as a protein source and traditional medicine) and international trade for its meat and scales in East and South East Asian countries, particularly China and Vietnam.
- They are believed to be the world's most trafficked mammal.

**Source:TH**

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