SIPRI Report on Nuclear Arsenal

Prelims: SIPRI report, Treaty on the Non-Proliferation of Nuclear Weapons (NPT), Comprehensive Nuclear Test Ban Treaty (CTBT), Treaty on the Prohibition of Nuclear Weapons (TPNW), Nuclear Suppliers Group (NSG), Missile Technology Control Regime (MTCR), Hague Code of Conduct against Ballistic Missile Proliferation, Wassenaar Arrangement, No-first-use policy

Mains: No-first-use policy, Nuclear arsenals, Nuclear diplomacy, Disarmament

Source: IE

Why in News?

Recently, a Stockholm International Peace Research Institute (SIPRI) **report** was released that highlighted the **increased risk and instability** associated with the ongoing **modernisation and expansion** of nuclear arsenals **worldwide.**

What are the Key Highlights of the Report?

- **Global Nuclear Warheads:**
  - All **nine nuclear-armed states** (USA, Russia, UK, France, China, India, Pakistan, North Korea, and Israel) continued to **modernise their nuclear arsenals.**
  - The total global inventory of nuclear warheads was approximately **12,121 as of January 2024,** with about 9,585 in military stockpiles.
  - Around 2,100 warheads were kept on high operational alert, primarily by Russia and the USA, but for the first time, **China** may have **some warheads on high alert.**
- **Country-Specific Developments:**
  - **Russia and USA**: Together **hold almost 90%** of all nuclear weapons.
  - **China**: China has significantly increased its nuclear arsenal from 410 to 500 by January 2024 and is expanding its nuclear arsenal **faster than any other country.**
  - North Korea has approximately 50 warheads and materials for up to 90.
  - Israel is **modernising its arsenal** and enhancing **plutonium** production capabilities (though not officially acknowledged).
  - **India and Pakistan:**
    - India now has 172 nuclear warheads as of January 2024, ranking 6th globally, ahead of Pakistan (170), and is emphasising longer-range weapons aimed at China.
- **Nuclear Diplomacy Challenges**:
  - Nuclear arms control and disarmament diplomacy faced setbacks, particularly due to the war in Ukraine and Gaza.
  - Tensions between Iran and the USA fluctuated and the Israel-Hamas war complicating diplomatic efforts.
  - Significant setbacks included Russia's suspension from the New START treaty and withdrawal from the Comprehensive Nuclear-Test-Ban Treaty (CTBT) ratification.
- **Global Security Concerns:**
  - It also highlighted issues like military expenditure, arms transfers, and the role of private

military companies in conflicts.
    - It also highlighted the risks related to artificial intelligence, outer space, cyberspace, and the protection of civilians in war zones.

SIPRI

- It is an **independent international institute** dedicated to research into conflict, armaments, arms control and disarmament.
- It was established in 1966 in **Stockholm (Sweden).**
- It provides data, analysis and recommendations, based on open sources, to policymakers, researchers, media and the interested public.

What are the Challenges and the Way Forward for India's Nuclear Program?

- **Challenges:**
    - **India faces nuclear threats mainly from Pakistan and China** due to **border tensions and terrorist issues.**
    - Due to the **rising threats of cyberattacks** ensuring the safety and security of nuclear systems is crucial as any weaknesses could lead to consequences like alleged 2019 cyberattack on India's Kudankulam Nuclear Power Plant.
    - The rapid **advancement of hypersonic missiles, autonomous weapons**, and AI poses **new challenges for nuclear deterrence strategies.**
    - India's nuclear energy program faces **challenges like the risks of radioactive contamination, environmental and health impacts.**
- **Way Forward:**
    - While maintaining credible minimum deterrence, India should responsibly modernise its nuclear arsenal by developing **advanced delivery systems** and Invest in advanced nuclear technologies like thorium-based reactors.
    - India should engage in **global nuclear governance initiatives** like the Nuclear Security Summits and Global Initiative to Combat Nuclear Terrorism (GICNT) and should work on **reducing nuclear risks with Pakistan and China** through confidence-building measures.

International Treaties for Nuclear Programs

- **Treaties Preventing Nuclear Proliferation and Testing:**
    - The Treaty on the Non-Proliferation of Nuclear Weapons (NPT).
    - **Partial Test Ban Treaty (PTBT)**: Banning nuclear weapon tests in atmosphere, outer space and under water.
    - The Comprehensive Nuclear Test Ban Treaty (CTBT) was signed in 1996 but has yet to enter into force.
    - The Treaty on the Prohibition of Nuclear Weapons (TPNW), which will enter into force on 22nd January 2021.
- **Other Related Initiatives:**
    - Nuclear Suppliers Group
    - Missile Technology Control Regime
    - Hague Code of Conduct against Ballistic Missile Proliferation
    - Wassenaar Arrangement

India's Nuclear Program

- India tested its **first nuclear device in May 1974,** and remains outside both the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and the Comprehensive Nuclear Test Ban Treaty (CTBT).
- However, India has a **facility-specific safeguards agreement in place** with the International

Atomic Energy Agency (IAEA) and a waiver from the Nuclear Suppliers Group (NSG) allowing it **to participate in global civilian nuclear technology commerce.**

- It was admitted as a member of the Missile Technology Control Regime (MTCR) in 2016, Wassenaar Arrangement in 2017 and **Australia Group in 2018.**
- In 2024, India initiated the core loading of India's Prototype Fast Breeder Reactor (PFBR) at Kalpakkam, Tamil Nadu marking a significant milestone in India's nuclear program.
- India maintains its official commitment to no-first-use of nuclear weapons.

Drishti Mains Question:

Q. Discuss the current status of India's nuclear arsenal and analyse the challenges it faces in the context of regional and global security dynamics.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims:

Q. In India, why are some nuclear reactors kept under "IAEA safeguards" while others are not? (2020)

(a) Some use uranium and others use thorium

(b) Some use imported uranium and others use domestic supplies

(c) Some are operated by foreign enterprises and others are operated by domestic enterprises

(d) Some are State-owned and others are privately owned

Ans: (b)

Mains

Q. With growing energy needs should India keep on expanding its nuclear energy programme? Discuss the facts and fears associated with nuclear energy. **(2018)**