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- ✧ PERFORMANCE OF SSI IN KERALA
- ✧ ARMS RACE: WHERE DOES INDIA STAND?
- ✧ ENTREPRENEURSHIP DEVELOPMENT CHALLENGES
- ✧ DIGITAL TRANSFORMATION & DATA CENTRES
- ✧ SARVASHIKSHA ABHIYANA IN KARNATAKA
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CONTENTS

EDITORIAL

India and Regional Comprehensive Economic Partnership

– Vijayalakshmi V. 5

ARTICLES

• Current Trends in Interest Rates and Monetary Policies
of Central Banks Across the World – K.K. Ammannaya 9

• Merger of Public Sector Banks in India
– Mukund Maruti Mundargi 13

• Digital Transformation and Data Centres: An assessment
– Vijayalakshmi V. 15

• Entrepreneurship Development Challenges: A Case Study
– N. Nithyananda and Subramanya A. 19

• Arms Race – Where Does India Stand?
– Uma C. Swadimath, Prasanna B Joshi & A. M. Patil 22

• Performance of SSI in Kerala: Post Liberalization Period
– Sindhu P.K. 27

• Indian Banking at Crossroads: Some Reflections
– Shaktikanta Das 33

• Sarvashiksha Abhiyana in Karnataka State
– S. Srinivasa 37

Andhra Pradesh Notes 40

Karnataka Notes 42

News Snippets 43

Views on Current Issues 44

Books 45

Economic and Financial Data 50

Arms Race – Where Does India Stand?

By Uma C. Swadimath, Prasanna B Joshi and A. M. Patil*

Possession of nuclear weapons and other advanced sophisticated weapons is in itself a sign of military and nuclear strength by all nations in the world. Though the world has witnessed the devastating impact of 2 atomic drops dropped on Hiroshima and Nagasaki the islands of Japan, there is no stop on the production of nuclear weapons. Nations consider manufacturing nuclear weapons is indispensable when protection and security issues are very vital and one of the priorities. USA, Russia, China, UK, France, Israel, Pakistan and North Korea are nuclear powerful countries. Development of nuclear weapons is also one of the objectives of India's planning and it has developed and conducted nuclear tests in 1974 & 1996.

India has joined the nuclear arms race with the rest of the nuclear powerful countries. Nuclear weapons are those devices which destroy human beings as well as living organisms in no time – these weapons can destroy the whole world within seconds. Atomic science and development assumed a significant role in the technological development and the modernization of the country.

It is the technology era in the present modern times. Technological development has become so rapid and powerful, that every country competes to be the best with the rest of the world. Technological development has accelerated research in space and nuclear technology where countries are incurring huge expenditure on the development of nuclear

weapons. Most of the countries are in the rat race to exhibit their nuclear strength and development. For instance, North Korea is always in the big news in terms of nuclear tests. Nuclear weapons are those devices which destroy human beings as well as living organisms in no time – these weapons can destroy the whole world within seconds.

The world has witnessed two world wars and its repercussions, especially World War II when the atomic bombs were dropped on Hiroshima & Nagasaki islands of Japan. Since then, some countries have come forward stating that nuclear development should be used only for constructive purposes, but the truth is that many countries are in the arms race for developing and possessing nuclear arms. India is one among the countries which is also strengthening its nuclear capability by developing nuclear technology to protect peace & sovereignty from its enemies with similar powers. The present study is an attempt to assess the India's nuclear power capability & where does it stand in the nuclear arm's race.

A brief review of related work

- Ralph C. Hassig (2009), provides an overview of the nuclear developments in North Korea & how it has emerged as the most powerful nuclear weapon development nation in the world. Its nuclear tests & missile launches are against the United Nations' resolutions. Demonstrations of the power of North Korea's weapons may also boost the pride of the ordinary North Korean, but according to some reports the people care little for their country's reputation in the international community.

- Barry M. Blechman (2010), elaborate on how nuclear technology in developing weapons has become a concern at the international community. He relates to emergence of North Korea as a nuclear weapon state and of Iran as a potential weapon state, concerns about the stability of another new nuclear power, Pakistan, and revelations about nuclear weapon programs in Libya, Syria and the rising danger of nuclear terrorism. He discusses about nuclear threat resulting in major danger for which international

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Table-1 – Countries with nuclear weapons

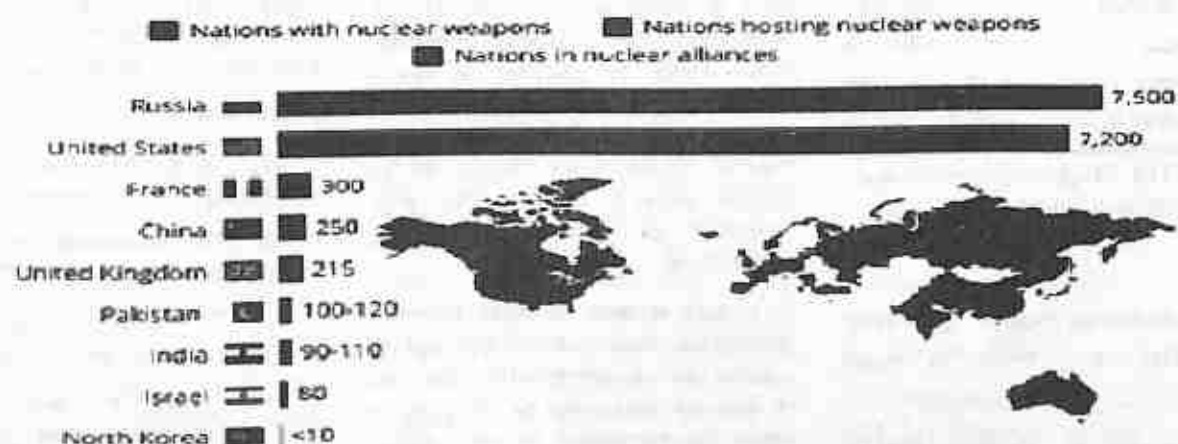
Countries with Nuclear Weapons	
Nations with Nuclear Weapons	USA, Russia, Britain, France, India, China, Israel, North Korea & Pakistan
Nations hosting Nuclear Weapons	Belgium, Italy, Germany, Netherlands, Turkey
Nations in Nuclear Alliances	Albania, Australia, Bulgaria, Canada, Croatia, Czech, Denmark, Greece, Hungary, Japan, Latvia, Luxembourg, Norway, Poland, Portugal, Slovakia, Spain, Romania, South Korea, Denmark

Source: International campaign to abolish nuclear weapons (ICAN), (<https://www.icanw.org/>)

Chart 1: shows the number of nuclear warheads across different countries in 2015.

The Countries With The Biggest Nuclear Arsenals

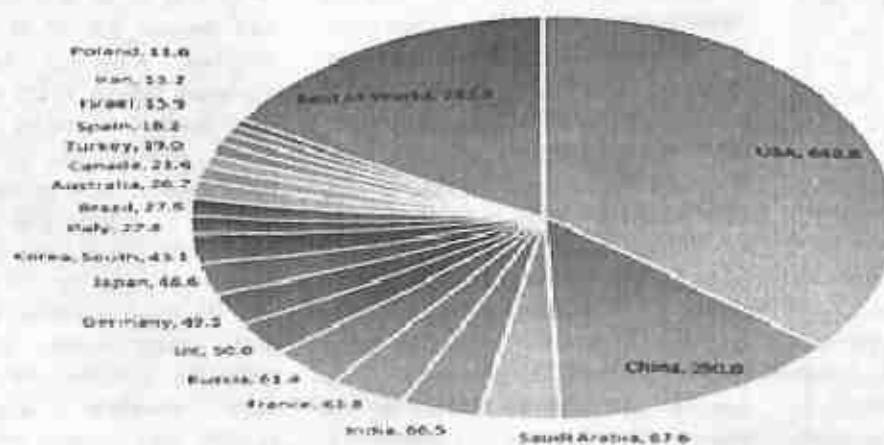
Number of nuclear warheads in countries worldwide in 2015



Source: International campaign to abolish nuclear weapons (ICAN), (<https://www.icanw.org/>)

Chart 2: shows the military expenditure by countries in 2018 in US billion \$.

Military Expenditures by Country
(in US\$ billions) 2018



Source: Stockholm International Peace Research Institute

Table-2 – The number of nuclear warheads possessed by the countries namely Russia, USA, France, China, UK, Pakistan, India, Israel & North Korea adding up to 14,935 nuclear warheads in 2017

World Nuclear Forces -2017		
S.No.	Country	No. of Nuclear Warheads
1	Russia	7000
2	USA	6800
3	France	300
4	China	270
5	UK	215
6	Pakistan	130-140
7	India	120-130
8	Israel	80
9	North Korea	10-20

Source: The Stockholm International Peace Research Institute (SIPRI), (2017).

policy measures such as non-proliferation treaty must be made effective.

- Thomas W. Graham (2011), speaks about the nuclear competition that existed in the 20th century between Soviet Union & USA. Gradually, UK, China, France & Israel joined to develop nuclear weapons. These countries have spent trillions of dollars on the development of nuclear infrastructure, weapons & delivery systems & also made huge investments. It also discusses on the evolution of nuclear doctrines in China, India & Pakistan.

- Nwanolue, B.O.G & Iwuoha, Victor Chidubem (2012), in their article on nuclear capabilities projects by Iran & North Korea examine the nuclear developments in these countries & explain the non-proliferation treaty (NPT) as these

countries have not signed the treaty. They have used qualitative data. They have said that the United Nations should take up stringent measures on NPT treaty as Iran & North Korea have been in the fore front of nuclear arms race.

- Pervez Hoodbhoy and Zia Mian (2014), have discussed about the growing conflicts between India & Pakistan & its impact on South Asian region. They opine that nuclear developments in India & Pakistan will be critical affecting their strategic relationships between USA & China. India & Pakistan are expanding & developing their nuclear arsenals, India wants to become a major nuclear power. It launched its first nuclear submarine in 2009. India cites as China is the reason for its nuclear tests & Pakistan has also increased its nuclear development expenditure.

- Gro Nystuen & Kjoly Egeland (2016), examine how the concept of legality can be introduced in the use of nuclear weapons by bringing it within the framework of international law. The article ascertains the legality of the possession & use of nuclear weapons under the international humanitarian law.

- Jirawat Chotipatoomwann (2016), analyses the growth of nuclear development in India, Pakistan, Argentina & Brazil. Both India & Pakistan have not signed the NPT because of hostile relations between them. The tensions between these countries have been escalating & both countries want to show to the world how nuclear powerful they are & citing that development of nuclear weapons is necessary for territorial security. He also discusses how nuclear co-operation in Latin America can be applied in South Asia on the basis of bilateral support & understanding which is unlikely to

happen between India & Pakistan countries.

- Shannon N Kile & Hans M Kristensen (2017), analyse the trends in nuclear development. According to them USA, UK, France, China, India, Pakistan, Israel & North Korea possess 14,935 nuclear weapons. All these countries do not want to give up their nuclear arsenals for their own security reasons. India & Pakistan have increased their military expenditure & nuclear weapons inventories, both these countries are not ready to sign the NPT treaty. North Korea is increasingly producing & modernizing its nuclear weapons on a regular basis.

Objectives

- To examining the reasons for developing nuclear weapons
- To understand the nuclear non-proliferation treaty (NPT)
- To analyse the India's growth in nuclear arm's race.

This study is based on the available secondary data

Analysis

a) Reasons for developing nuclear weapons: Nuclear weapons are those devices which destroy human beings as well as living organisms in no time-these weapons can destroy the whole world within seconds. A nuclear weapon is an explosive device which is destructive from nuclear reactions either fission or a combination of fission and fusion reactions. A nuclear weapon is a bomb or missile that uses nuclear energy to cause an explosion. An arms race is a competition between two or more countries to have the best armed forces. Each country competes with the other to produce more weapons, larger military strength with superior military technology. International conflict specialist

Theresa Clair Smith, defines the arms race as "the participation of two or more nation-states in apparently competitive or interactive increases in quantity or quality of war material and/or persons under arms". An arms' race is a competition between two or more states to have superior armed forces; a competition concerning production of weapons, the growth of a superior military & nuclear technology. In the academic literature, an "arms race" is defined as a competitive, reciprocal, peace-time increase or improvement in armaments by two states perceiving themselves to be in an adversarial relationship. Nuclear developments are considered to be the main cause of arms race concerns. Development of nuclear weapons indicate a sign of strength & being powerful. For a country, nuclear status is important to protect a country's sovereignty which has become indispensable with the growing technological and research developments.

One of the greatest challenges today is that countries want to acquire, develop and possess nuclear capabilities with the intentions of balancing power, fear and terror at the centre stage of global politics. Iran and North Korea have been in the fore front of arms race. The United States, Russia, the UK, France, China, North Korea, India, Pakistan, and Israel all control some nuclear weaponry. Russia and the US share 93 per cent of all nuclear warheads, but they have been asked to reduce the number of weapons they have under the new START treaty (Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms).

The chart (figure 2) shows the military expenditure by the countries in 2018, where USA spent 648.8 billions \$, China has spent 250

billion \$, Israel has spent 15.9 \$, UK has spent 50 billion \$, Russia 61.4 billion \$, India has spent 66.5 billion \$ & Iran 13.2 billion \$ respectively.

Table 2 shows the number of nuclear warheads possessed by the countries namely Russia, USA, France, China, UK, Pakistan, India, Israel & North Korea adding up to 14,935 nuclear warheads in 2017.

b) Nuclear Non-Proliferation Treaty

According to the theory there are nuclear weapon & non-nuclear weapons states. Nuclear weapons states are those that had conducted nuclear tests before January 1, 1967 — the United States, Soviet Union (now Russia), Britain, France and China. All other countries are non-nuclear weapon states. Under the non-proliferation treaty, the nuclear weapon states party to the agreement pledge not to transfer nuclear weapons or any other nuclear explosive devices (such as possible peaceful nuclear explosives for large scale excavations) to any recipient or to assist, encourage, or induce any non-nuclear weapon state to manufacture nuclear weapons or any other nuclear explosive devices. Non-nuclear weapon states party to the treaty pledge not to manufacture or receive nuclear weapons or any other nuclear explosive devices.

To verify that they are complying with these pledges, the non-nuclear weapon states agree to accept International Atomic Energy Agency (IAEA) inspections on all of their nuclear activities, an arrangement known as "full-scope safeguards." All parties to the treaty are prohibited from exporting nuclear equipment or materials to non-nuclear weapon states unless the exported items will be placed under IAEA inspection in the recipient country. In continuation, to persuade the nonnuclear states to agree to the treaty, the nuclear states

indicated that they would not use nuclear weapons in an attack on a non-nuclear state unless the state was allied with a nuclear power. Since then, Britain and the United States have stated that they might respond with a nuclear attack against a non-nuclear state that used chemical or biological weapons. The treaty currently has five (5) nuclear weapon state members, 187 non-nuclear weapon state members.

North Korea became a party to the treaty in 1985 but renounced it in 2003, exercising its rights under the treaty's withdrawal provisions. According to the 1968 nuclear NPT these countries are nuclear weapons nations namely United States (1945), Russia (1949), the United Kingdom (1952), France (1960) and China (1964). The NPT contains their commitments neither to transfer nuclear weapons nor to assist nonnuclear weapon states in acquiring nuclear weapon capabilities.

Three states never joined the NPT but possess nuclear weapons: Israel (1960), India (1974), Pakistan (1998), and North Korea (2006). The world is concerned about two nations namely Iran & Syria which can be termed as nuclear powerful. According to the UN General Assembly, an NWFZ has two essential components: the total absence of nuclear weapons within the zone and the presence of an international verification and control machinery. Regional Nuclear Weapon Free Zones (NWFZs) have been established to strengthen global nuclear non-proliferation and disarmament norms and consolidate international efforts towards peace and security. Mongolia has also unilaterally declared itself a nuclear weapon-free state while Antarctica is free of weapons of mass destruction (WMDs).

c) India's growth in nuclear arms race

India's nuclear programme was regarded as an instrument of economic development. India's interest in nuclear technology & nuclear research had started even before USA's first nuclear test. United States assisted India in building and fueling the Tarapur reactors. India's arms imports, the Indo-US Civil Nuclear Agreement of 2005 is often described as a turning point has further strengthened India's nuclear capability. According to Dr. A P J Abdul Kalam, energy independence should be India's first highest priority. India's ties with Israel have grown stronger, as Israel specializes in upgrading Russian equipment and is willing to transfer technology. Israel has replaced France and the UK as a supplier.

India conducted its nuclear test in 1971. In 2003, India conducted ten missile tests while Pakistan tested just four; in 2011 India conducted one test, while Pakistan conducted five. In 2003, 2004, and 2005, Indian tests exceeded Pakistani, but in 2006–2008 and 2010–2012, Pakistan tested more nuclear missiles than India. In 1998, India conducted five more nuclear tests, called Pokhran-II. India conducted three nuclear tests on May 11, followed by two more tests, two days later. Pakistan followed suit and conducted five nuclear tests at Chagai Hills on May 28.

As of 2016, India has 22 nuclear reactors in operation at seven sites, it has successfully test-fired the air variant of BrahMos missile. IAF is the first Air Force in the world to have successfully fired an air launched surface attack missile. India is concerned about Chinese activity in the Indian Ocean Region (IOR) as China is developing harbors & naval bases in South East Asia. Between 2011 & 2013 India has spent more on US arms than on Russian arms.

India is concerned about Chinese activity in the Indian Ocean Region (IOR) as China is developing harbors & naval bases in South East Asia.

Findings of the Study

India has developed a cruise missile 'Brahmos' with a range of more than 400 kilometres & can reach 2.8 times the speed of the sound. It was first inducted into the navy. The brainchild behind Brahmos was Dr. A P J Abdul Kalam when he signed an agreement with Russia in 1998. In 2013, it was successfully test-fired from Visakhapatnam in Bay of Bengal. Brahmos is a joint venture with Russia named after Brahmaputra & Moskva rivers. This missile strikes deep targets, deep inside the enemy territory & get away quickly. In 2011 India & South Korea signed a nuclear agreement for a nuclear expansion programmes. In 2014, Australia which is the third largest producer of uranium in the world agreed to supply to India. In 2015 India & UK have signed civil nuclear agreement & in 2016 India & Japan have entered into nuclear co-operative agreement. According to India Atomic Energy Programme, 7 nuclear reactors are under construction.

Conclusions

India is nuclear ambitious & nuclear modernisation is its priority. India and Pakistan are expanding their nuclear weapons stockpiles and developing missiles. While India's approach of nuclear development is towards its own protection, Pakistan poses a threat to the entire world in developing nuclear warfare and terrorism. North Korea competes with the USA & has 10–20 nuclear warheads, which is an increase on the estimates for previous years. North Korea carried out an unprecedented number of flight tests of different missile systems in 2016 & it still continues.

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