UNIT IV

INDIA–BURMA RELATIONS

Bilateral relations between Myanmar (officially the Republic of the Union of Myanmar or the Union of Burma) and the Republic of India encompass the political, economic and socio-cultural relations that exist between the two neighboring Asian countries. Political relations have improved considerably since 1993, overcoming tensions related to drug trafficking, the suppression of democracy and the rule of the military junta in Myanmar.[1] Political leaders from both countries meet regularly on a bilateral basis and within the ASEAN Plus Six community. Economic relations are considerable with India representing Myanmar's 4th largest export market and the country's 5th largest import partner.

The 1,600 km (990 mi) India–Myanmar border separates the Indian states of Mizoram, Manipur, Nagaland and Arunachal Pradesh in Northeast India from Kachin State, Sagaing Region and Chin State in Myanmar/Burma. In addition to the long land border, India and Myanmar also share a maritime border along India's Andaman Islands.[2]

Burmese ambassadors at Calcutta in 1882

India - Myanmar/Burmese relations date to antiquity and cultural exchanges included Buddhism and the Burmese script, which was based on the Indian Grantha script. In particular, Theravada Buddhism has tremendously influenced Burmese society and culture for millennia, with around 90% of Burma's population continuing to follow the religion.

Myanmar (formerly Burma) was made a province of British India by British rulers and again separated in 1937. It was in Japanese-occupied Burma that Indian nationalist Subhas Chandra

Bose delivered his "Give me blood and I will give you freedom!" slogan, and Prime Minister Narendra Modi highlighted Burma's role in the Indian independence movement.[3]

Jawaharlal Nehru with U Win, Burmese High Commissioner in India, on October 3,1947.

India established diplomatic relations after Myanmar's independence from Great Britain in 1948. For many years, Indo-Burmese relations were strong due to Myanmar previously having been a province of India, due to cultural links, flourishing commerce, common interests in regional affairs and the presence of a significant Indian community in Myanmar.[2] India provided considerable support when Myanmar struggled with regional insurgencies. However, the overthrow of the democratic government by the Military of Myanmar led to strains in ties. Along with much of the world, India condemned the suppression of democracy and Myanmar ordered the expulsion of the Burmese Indian community, increasing its own isolation from the world.[2][4] Only China maintained close links with Myanmar while India supported the pro- democracy movement.[2][5][6]

Prime Minister Narendra Modi and Myanmar President Thein Sein, 2014

A major breakthrough occurred in 1987 when the then-Indian Prime Minister Rajiv Gandhi visited Myanmar, but relations worsened after the military junta's reaction towards pro-democracy movements in 1988, which resulted in an influx of Burmese refugees into India.[2][5] However, since 1993 the governments of the Indian Prime Ministers P. V. Narasimha Rao and Atal Bihari Vajpayee changed course and began to establish warmer relations between the two nations, as part of a wider foreign policy of increasing India's participation and influence in Southeast Asia, in light of the growing influence of the People's Republic of China, an India-Myanmar joint operation destroyed several militant camps of Arakan Army on the Indo-

Myanmar border. The action averted a possible threat to the ambitious Kaladan transit and transport project which is important for improving the connectivity in the Northeast. Myanmar is important for India because of the geographic, historical, cultural and economic linkages/ties that span centuries as well as for the overall development of North-Eastern Indian states. India and Myanmar relationship officially got underway after the Treaty of Friendship was signed in 1951

Economic relations

India is Burma's 4th largest trading partner after Thailand, China and Singapore, and second largest export market after Thailand, absorbing 25 percent of its total exports.[7] India is also the seventh most important source of Burma's imports. The governments of India and Myanmar had set a target of achieving $1 billion and bilateral trade reached US$1.3 billion by 2017.[7] The Indian government has worked to extend air, land and sea routes to strengthen trade links with Myanmar and establish a gas pipeline.[5][7] While the involvement of India's private sector has been low and growing at a slow pace, both governments are proceeding to enhance cooperation in agriculture, telecommunications, information technology, steel, oil, natural gas, hydrocarbons and food processing.[5][7] The bilateral border trade agreement of 1994 provides for border trade to be carried out from three designated border points, one each in Manipur, Mizoram and Nagaland.[7]

Infrastructure initiatives[edit]

On 13 February 2001 India and Myanmar inaugurated 250 kilometre Tamu-Kalewa-Kalemyo highway, popularly called the **Indo-Myanmar Friendship Road**, built mainly by the Indian Army's Border Roads Organisation and aimed to provide a major strategic and commercial transport route connecting North-East India, and South Asia as a whole, to Southeast Asia.[2]

India-Myanmar-Thailand Friendship Highway[edit]

India and Myanmar have agreed to a 4-lane, 3200 km triangular highway connecting India, Myanmar and Thailand. The route, which is expected to have completed during 2016,runs from India's northeastern states into Myanmar, where over 1,600 km of roads were built or improved.

The route begins from Guwahati in India and connects to Mandalay in Myanmar, route continues to Yangon in Myanmar and then to Mae Sot in Thailand, which then continues to Bangkok.

India is undertaking two sections of the Trilateral Highway namely, (i) construction of Kalewa-Yagyi road section in Myanmar, and (ii) construction of 69 bridges on the Tamu-Kyigone- Kalewa (TKK) road section in Myanmar. The work on both these sections has been awarded on Engineering, Procurement and Construction mode and is underway since May 2018 for Kalewa-Yagyi section and November 2017 for the TKK section.[8]

The first phase connecting Guwahati to Mandalay will eventually be extended to Cambodia and Vietnam under Mekong-Ganga Cooperation within the wider framework of Asian Highway Network. This is aimed at creating a new economic zone ranging from Kolkata on the Bay of Bengal to Ho Chi Minh City on the South China Sea.[9]

Kaladan Multi-modal Transit Route[edit]

The Kaladan Multi-Modal Transit Transport Project will connect the eastern Indian seaport of Kolkata with Sittwe seaport in Myanmar by sea; it will then link Sittwe seaport to Lashio in Myanmar via Kaladan river boat route and then from Lashio on to Mizoram in India by road transport. The project was scheduled to be completed by 2014

according to [Governor of Mizoram](#) [Vakkom Purushothaman](#).,[10] but as of Nov 2014 it is likely to be completed by 2016.[11]

Visas[[edit](#)]

During a 2017 visit to [Nay Pyi Taw](#), Prime Minister Modi announced that India would offer gratis/no-cost [visas](#) to all Myanmar citizens visiting India.[12][13]

Strategic cooperations[[edit](#)]

India's move to forge close relations with Myanmar are motivated by a desire to counter China's growing influence as a regional leader[*dubious* – *discuss*] and enhance its own influence and standing.[2][5][14] Concerns and tensions increased in India over China's extensive military involvement in developing ports, naval and intelligence facilities and industries, specifically the upgrading of a naval base in [Sittwe](#), a major seaport located close to the eastern Indian city of [Kolkata](#).[2] India's engagement of the Burmese military junta has helped ease the regime's [international isolation](#) and lessen Burma's reliance on China.[2] Both nations sought to cooperate to counteract drug trafficking and insurgent groups operating in the border areas.[5] India and Myanmar are leading members of [BIMSTEC](#) and the [Mekong-Ganga Cooperation](#), along with Vietnam, Laos, Cambodia and Thailand, helping India develop its influence and ties amongst Southeast Asian nations.[2]

In 2013, India provided a loan of about US$500million.[15] to [Myanmar](#) for its development; India and Myanmar have also agreed to cooperate militarily in order to help modernize Myanmar's military.[*citation needed*]

In 2020, India gifted the [Myanmar navy](#) its first ever submarine, a [kilo class](#) ([INS Sindhuvir](#)) attack submarine which has been refurbished and modernised by [Hindustan Shipyard Limited](#).[16]

Security ties[edit]

Indian and Myanmar troops carried out jointly Operation Sunrise and Operation Sunrise 2 in 2019 in their respective territories to destroy several insurgent camps. However the threat to the Kaladan multi-modal transit transport project, India's gateway to Southeast Asia continues.[17]

Indian has also supported Myanmar in its efforts to combat Rohingya insurgent groups like the Arakan Rohingya Salvation Army (ARSA) and Aqa Mul Mujahideen (AMM), [18][19] after Indian intelligence agencies found the ARSA and AMM to have links with terror groups like the Lashkar-e-Taiba (LeT) and Jaish-e-Mohammed (JeM) as well as reported Rohingya terrorists fighting alongside Pakistani extremists in Kashmir.[20]

Disaster relief[edit]

India responded promptly and effectively in rendering assistance after natural disaster in Myanmar such as the earthquake in Shan state (2010) Cyclone Mora (2017), and Komen (2015). India offered to help in capacity building in disaster risk mitigation as well as strengthening Myanmar's National Disaster Response Mechanism.

Human rights[edit]

India was hesitant in reacting to the 2007 Burmese anti-government protests that had drawn overwhelming international condemnation.[14] India also declared that it had no intention of interfering in Burma's internal affairs and that the Burmese people would have to achieve democracy by themselves as it respects the sovereignty of Myanmar.[5] This low-key response has been widely criticised both within India and abroad as weakening India's credentials as a leading democratic nation.[2][5][14]

In contrast to much of the international community, Prime Minister Modi declined to criticize Suu Kyi's handling of the 2016–17 Northern Rakhine State clashes or Myanmar's government's treatment of its Rohingya people.[21][22]

India also announced plans to deport its Rohingya refugee population. Minister of State for Home Affairs Kiren Rijiju described the refugees as "illegal immigrants", echoing the Myanmar government position.[23][24] Although the Rohingya have fought deportation in the Indian courts (partly on humanitarian grounds), in September 2017 the Indian government responded that India did not sign the 1951 Refugee Convention and most Rohingya arrived in India before the August 2017 violence. Some Indian media have reported that the country's intelligence agencies suspect militant Royhinga leaders of conspiring with Pakistani terrorists and planning to incite violence in India.

2. IMPACT OF TERRORIS.

Terrorism is, in the broadest sense, the use of intentional violence for political or religious purposes.[1] It is used in this regard primarily to refer to violence during peacetime or in the context of war against non-combatants (mostly civilians and neutral military personnel).[2] The terms "terrorist" and "terrorism" originated during the French Revolution of the late 18th century[3] but gained mainstream popularity in the 1970s during the conflicts of Northern Ireland, the Basque Country and Palestine. The increased use of suicide attacks from the 1980s onwards was typified by the September 11 attacks in New York City and Washington, D.C. in 2001.

There are various different definitions of terrorism, with no universal agreement about it.[4][5] Terrorism is a charged term. It is often used with the connotation of something that is "morally wrong". Governments and non-state groups use the term to abuse or denounce opposing groups.[5][6][7][8][9] Varied political organizations have been accused of using terrorism to achieve their objectives. These include right-wing and left-wing political organizations, nationalist groups, religious groups, revolutionaries and ruling governments.[10] Legislation declaring terrorism a crime has been adopted in many states.[11] When terrorism is perpetrated by nation states, it is not considered terrorism by the state conducting it, making legality a largely grey- area issue.[12] There is no consensus as to whether or not terrorism should be regarded as a war crime.[11][13]

The Global Terrorism Database, maintained by the University of Maryland, College Park, has recorded more than 61,000 incidents of non-state terrorism, resulting in at least 140,000 deaths, between 2000 and 2014.[1]

Economic impact of terrorism[edit]

The economic impact of terrorism is calculated using IEP's cost of violence methodology.

The model includes both the direct and indirect costs, such as the lost life-time earnings, cost of medical treatments and property destruction from incidents of terrorism. The direct costs include those borne by the victim of the terrorist act and associated expenditure, such as medical spending. The indirect costs include lost productivity and earning as well as the psychological trauma to the victims, their families and friends.

The analysis presents conservative estimates of the economic impact of terrorism and does not include variables for which detailed appropriate data was not available. For instance, the analysis

does not include the impact on business, the cost of fear from terrorism or the cost of counterterrorism.[5]

The global economic impact of terrorism reached US$89.6 billion in 2015, decreasing by 15 per cent from its 2014 level.

There have been three peaks in the economic impact of terrorism since the year 2000 and they are linked to the three major waves of terrorism. The first large increase in the economic impact of terrorism happened in 2001, when the attacks of September 11 in New York City and Washington D.C. took place. The second peak was in 2007 at the height of the Iraq war. The 2007 increase is mainly attributed to al-Qa'ida affiliated terrorist groups and coincided with the coalition troop surge in Iraq. The third wave started in 2012 and is still continuing, with the economic impact of terrorism peaking at US$105.6 billion in 2014.[6] The increase in the last four years was mainly driven by increases in terrorism in Iraq, Syria and Afghanistan.[7]

Political violence

Terrorist acts frequently have a political purpose.[46] Some official, governmental definitions of terrorism use the criterion of the illegitimacy or unlawfulness of the act.[47][*better source needed*] to distinguish between actions authorized by a government (and thus "lawful") and those of other actors, including individuals and small groups. For example, carrying out a strategic bombing on an enemy city, which is designed to affect civilian support for a cause, would not be considered terrorism if it were authorized by a government. This criterion is inherently problematic and is not universally accepted,[*attribution needed*] because: it denies the existence of state terrorism.[48] An associated term is violent non-state actor.

The Task Force defines terrorism as "a tactic or technique by means of which a violent act or the threat thereof is used for the prime purpose of creating overwhelming fear for coercive purposes". It classified disorders and terrorism into six categories:[98]

- **Civil disorder** – A form of collective violence interfering with the peace, security, and normal functioning of the community.

- **Political terrorism** – Violent criminal behaviour designed primarily to generate fear in the community, or substantial segment of it, for political purposes.

- **Non-Political terrorism** – Terrorism that is not aimed at political purposes but which exhibits "conscious design to create and maintain a high degree of fear for coercive purposes, but the end is individual or collective gain rather than the achievement of a political objective".

- **Quasi-terrorism** – The activities incidental to the commission of crimes of violence that are similar in form and method to genuine terrorism but which nevertheless lack its essential ingredient. It is not the main purpose of the quasi-terrorists to induce terror in the immediate victim as in the case of genuine terrorism, but the quasi-terrorist uses the modalities and techniques of the genuine terrorist and produces similar consequences and reaction.[99][100][101] For example, the fleeing felon who takes hostages is a quasi-terrorist, whose methods are similar to those of the genuine terrorist but whose purposes are quite different.

- **Limited political terrorism** – Genuine political terrorism is characterized by a revolutionary approach; limited political terrorism refers to "acts of terrorism which are committed for ideological or political motives but which are not part of a concerted campaign to capture control of the state".

- **Official or state terrorism** – "referring to nations whose rule is based upon fear and oppression that reach similar to terrorism or such proportions". It may be referred to as **Structural Terrorism** defined broadly as terrorist acts carried out by governments in pursuit of political objectives, often as part of their foreign policy.

Other sources have defined the typology of terrorism in different ways, for example, broadly classifying it into **domestic terrorism** and **international terrorism**, or using categories such as vigilante terrorism or insurgent terrorism.[102] One way the typology of terrorism may be defined:[103][104]

Causes motivating terrorism

Specific political or social causes have included:

- Independence or separatist movements
- Irredentist movements
- Adoption of a particular political philosophy, such as socialism (left-wing terrorism), anarchism, or fascism (possibly through a coup or as an ideology of an independence or separatist movement)
- Environmental protection (ecoterrorism)
- Supremacism of a particular group
  - Preventing a rival group from sharing or occupying a particular territory (such as by discouraging immigration or encouraging flight)
  - Subjugation of a particular population (such as lynching of African Americans)
- Spread or dominance of a particular religion – religious terrorism
- Ending perceived government oppression

- Responding to a violent act (for example, tit-for-tat attacks in the Israeli–Palestinian conflict, in The Troubles in Northern Ireland, or Timothy McVeigh's revenge for the Waco siege and Ruby Ridge incident)

Causes for right-wing terrorism have included white nationalism, ethnonationalism, fascism, anti-socialism, the anti-abortion movement, and tax resistance.

Sometimes terrorists on the same side fight for different reasons. For example, in the Chechen–Russian conflict secular Chechens using terrorist tactics fighting for national independence are allied with radical Islamist terrorists who have arrived from other countries.[107]

Personal and social factors

Main article: Radicalization

Various personal and social factors may influence the personal choice of whether or not to join a terrorist group or attempt an act of terror, including:

- Identity, including affiliation with a particular culture, ethnicity, or religion

- Previous exposure to violence

- Financial reward (for example, the Palestinian Authority Martyrs Fund)

- Mental health disorder

- Social isolation

- Perception that the cause responds to a profound injustice or indignity

A report conducted by Paul Gill, John Horgan and Paige Deckert[*dubious – discuss*] found that for "lone wolf" terrorists:[108]

- 43% were motivated by religious beliefs

- 32% had pre-existing mental health disorders, while many more are found to have mental health problems upon arrest

- At least 37% lived alone at the time of their event planning and/or execution, a further 26% lived with others, and no data were available for the remaining cases

- 40% were unemployed at the time of their arrest or terrorist event

- 19% subjectively experienced being disrespected by others

- 14% percent experienced being the victim of verbal or physical assault

Ariel Merari, a psychologist who has studied the psychological profiles of suicide terrorists since 1983 through media reports that contained biographical details, interviews with the suicides' families, and interviews with jailed would-be suicide attackers, concluded that they were unlikely to be psychologically abnormal.[109] In comparison to economic theories of criminal behaviour, Scott Atran found that suicide terrorists exhibit none of the socially dysfunctional attributes—such as fatherless, friendless, jobless situations—or suicidal symptoms. By which he means, they do not kill themselves simply out of hopelessness or a sense of 'having nothing to lose'.[110]

Abrahm suggests that terrorist organizations do not select terrorism for its political effectiveness.[111] Individual terrorists tend to be motivated more by a desire for social solidarity with other members of their organization than by political platforms or strategic objectives, which are often murky and undefined.[111]

Michael Mousseau shows possible relationships between the type of economy within a country and ideology associated with terrorism.[example needed][112] Many terrorists have a history of domestic violence.[113]

Democracy and domestic terrorism

Terrorism is most common in nations with intermediate political freedom, and it is least common in the most democratic nations.[114][115][116][117]

Some examples of "terrorism" in non-democratic nations include ETA in Spain under Francisco Franco (although the group's terrorist activities increased sharply after Franco's death),[118] the Organization of Ukrainian Nationalists in pre-war Poland,[119] the Shining Path in Peru under Alberto Fujimori,[120] the Kurdistan Workers Party when Turkey was ruled by military leaders and the ANC in South Africa.[121] Democracies, such as Japan, the United Kingdom, the United States, Israel, Indonesia, India, Spain, Germany, Italy and the Philippines, have experienced domestic terrorism.

While a democratic nation espousing civil liberties may claim a sense of higher moral ground than other regimes, an act of terrorism within such a state may cause a dilemma: whether to maintain its civil liberties and thus risk being perceived as ineffective in dealing with the problem; or alternatively to restrict its civil liberties and thus risk delegitimizing its claim of supporting civil liberties.[122] For this reason, homegrown terrorism has started to be seen as a greater threat, as stated by former CIA Director Michael Hayden.[123] This dilemma, some social theorists would conclude, may very well play into the initial plans of the acting terrorist(s); namely, to delegitimize the state and cause a systematic shift towards anarchy via the accumulation of negative sentiments towards the state system.[124]

Religious terrorism

Main article: Religious terrorism

Terrorist acts throughout history have been performed on religious grounds with the goal to either spread or enforce a system of belief, viewpoint or opinion.[126][*dubious – discuss*][*irrelevant citation*] The validity and scope of religious terrorism is limited to an individual's view or a group's view or interpretation of that belief system's teachings.[*citation needed*][*needs context*]

According to the Global Terrorism Index by the University of Maryland, College Park, religious extremism has overtaken national separatism and become the main driver of terrorist attacks around the world. Since 9/11 there has been a five-fold increase in deaths from terrorist attacks. The majority of incidents over the past several years can be tied to groups with a religious agenda. Before 2000, it was nationalist separatist terrorist organizations such as the IRA and Chechen rebels who were behind the most attacks. The number of incidents from nationalist separatist groups has remained relatively stable in the years since while religious extremism has grown. The prevalence of Islamist groups in Iraq, Afghanistan, Pakistan, Nigeria and Syria is the main driver behind these trends.[127]

Four of the terrorist groups that have been most active since 2001 are Boko Haram, Al Qaeda, the Taliban and ISIL. These groups have been most active in Iraq, Afghanistan, Pakistan, Nigeria and Syria. Eighty percent of all deaths from terrorism occurred in one of these five countries.[127] In 2015 four Islamic extremist groups were responsible for 74% of all deaths from Islamic terrorism: ISIS, Boko Haram, the Taliban, and al-Qaeda, according to the Global Terrorism Index 2016.[128] Since approximately 2000, these incidents have occurred on a global scale, affecting not only Muslim-majority states in Africa and Asia, but also states with non-Muslim majority such as United States, United Kingdom, France, Germany, Spain, Belgium, Sweden, Russia, Australia, Canada, Sri

Lanka, Israel, China, India and Philippines. Such attacks have targeted both Muslims and non-Muslims, however the majority affect Muslims themselves.[129]

Terrorism in Pakistan has become a great problem. From the summer of 2007 until late 2009, more than 1,500 people were killed in suicide and other attacks on civilians[130] for reasons attributed to a number of causes—sectarian violence between Sunni and Shia Muslims; easy availability of guns and explosives; the existence of a "Kalashnikov culture"; an influx of ideologically driven Muslims based in or near Pakistan, who originated from various nations around the world and the subsequent war against the pro-Soviet Afghans in the 1980s which blew back into Pakistan; the presence of Islamist insurgent groups and forces such as the Taliban and Lashkar-e-Taiba. On July 2, 2013 in Lahore, 50 Muslim scholars of the Sunni Ittehad Council (SIC) issued a collective fatwa against suicide bombings, the killing of innocent people, bomb attacks, and targeted killings declaring them as Haraam or forbidden.[131]

In 2015, the Southern Poverty Law Center released a report on terrorism in the United States. The report (titled *The Age of the Wolf*) found that during that period, "more people have been killed in America by non-Islamic domestic terrorists than jihadists."[132] The "virulent racist and anti-semitic" ideology of the ultra-right wing Christian Identity movement is usually accompanied by anti-government sentiments.[133] Adherents of Christian Identity are not connected with specific Christian denominations,[134] and they believe that whites of European descent can be traced back to the "Lost Tribes of Israel" and many consider Jews to be the Satanic offspring of Eve and the Serpent.[133] This group has committed hate crimes, bombings and other acts of terrorism. Its influence ranges from the Ku Klux Klan and neo-Nazi groups to the anti-government militia and sovereign citizen movements.[133] Christian Identity's origins can be traced back to Anglo-Israelism, which held the view that the British people were descendants

of ancient Israelites. However, in the United States, the ideology started to become rife with anti-Semitism, and eventually Christian Identity theology diverged from the philo-semitic Anglo-Israelism, and developed what is known as the "two seed" theory.[133] According to the two-seed theory, the Jewish people are descended from Cain and the serpent (not from Shem).[133] The white European seedline is descended from the "lost tribes" of Israel. They hold themselves to "God's laws", not to "man's laws", and they do not feel bound to a government that they consider run by Jews and the New World Order.[133] The Ku Klux Klan is widely denounced by Christian denominations.[135]

Israel has had problems with Jewish religious terrorism even before independence in 1948. During British mandate over Palestine, the Irgun were among the Zionist groups labelled as terrorist organisations by the British authorities and United Nations,[136] for violent terror attacks against Britons and Arabs.[137][138] Another extremist group, the Lehi, openly declared its members as "terrorists".[139][140] Historian William Cleveland stated many Jews justified any action, even terrorism, taken in the cause of the creation of a Jewish state.[141] In 1995, Yigal Amir assassinated Israeli Prime Minister Yitzhak Rabin. For Amir, killing Rabin was an exemplary act that symbolized the fight against an illegitimate government that was prepared to cede Jewish Holy Land to the Palestinians. [142]

Perpetrators.

The perpetrators of acts of terrorism can be individuals, groups, or states. According to some definitions, clandestine or semi-clandestine state actors may carry out terrorist acts outside the framework of a state of war. The most common image of terrorism is that it is carried out by small and secretive cells, highly motivated to serve a particular cause and many of the most deadly operations in recent times, such as the September 11 attacks, the London underground

bombing, 2008 Mumbai attacks and the 2002 Bali bombing were planned and carried out by a close clique, composed of close friends, family members and other strong social networks. These groups benefited from the free flow of information and efficient telecommunications to succeed where others had failed.[143]

Over the years, much research has been conducted to distill a terrorist profile to explain these individuals' actions through their psychology and socio-economic circumstances.[144] Others, like Roderick Hindery, have sought to discern profiles in the propaganda tactics used by terrorists. Some security organizations designate these groups as *violent non-state actors*.[*citation needed*] A 2007 study by economist Alan B. Krueger found that terrorists were less likely to come from an impoverished background (28 percent versus 33 percent) and more likely to have at least a high-school education (47 percent versus 38 percent). Another analysis found only 16 percent of terrorists came from impoverished families, versus 30 percent of male Palestinians, and over 60 percent had gone beyond high school, versus 15 percent of the populace.A study into the poverty-stricken conditions and whether or not,terrorists are more likely to come from here,show that people who grew up in these situations tend to show aggression and frustration towards others. This theory is largely debated for the simple fact that just because one is frustrated,does not make them a potential terrorist.[32][145]

To avoid detection, a terrorist will look, dress, and behave normally until executing the assigned mission. Some claim that attempts to profile terrorists based on personality, physical, or sociological traits are not useful.[146] The physical and behavioral description of the terrorist could describe almost any normal person.[147] the majority of terrorist attacks are carried out by military age men, aged 16 to 40.[147]

International agreements

One of the agreements that promote the international legal anti-terror framework is the Code of Conduct Towards Achieving a World Free of Terrorism that was adopted at the 73rd session of the United Nations General Assembly in 2018. The Code of Conduct was initiated by Kazakhstan President Nursultan Nazarbayev. Its main goal is to implement a wide range of international commitments to counter terrorism and establish a broad global coalition towards achieving a world free of terrorism by 2045. The Code was signed by more than 70 countries.[

Outcome of terrorist groups

How terrorist groups end (n = 268): The most common ending for a terrorist group is to convert to nonviolence via negotiations (43 percent), with most of the rest terminated by routine policing (40 percent). Groups that were ended by military force constituted only 7 percent.[197]

Jones and Libicki (2008) created a list of all the terrorist groups they could find that were active between 1968 and 2006. They found 648. Of those, 136 splintered and 244 were still active in 2006.[198] Of the ones that ended, 43 percent converted to nonviolent political actions, like the Irish Republican Army in Northern Ireland. Law enforcement took out 40 percent. Ten percent won. Only 20 groups, 7 percent, were destroyed by military force.

Forty-two groups became large enough to be labeled an insurgency; 38 of those had ended by 2006. Of those, 47 percent converted to nonviolent political actors. Only 5 percent were taken out by law enforcement. Twenty-six percent won. Twenty-one percent succumbed to military force.[199] Jones and Libicki concluded that military force may be necessary to deal with large insurgencies but are only occasionally decisive, because the military is too often seen as a bigger

threat to civilians than the terrorists. To avoid that, the rules of engagement must be conscious of collateral damage and work to minimize it.

Another researcher, Audrey Cronin, lists six primary ways that terrorist groups end:[200]

1. Capture or killing of a group's leader. (Decapitation).

2. Entry of the group into a legitimate political process. (Negotiation).

3. Achievement of group aims. (Success).

4. Group implosion or loss of public support. (Failure).

5. Defeat and elimination through brute force. (Repression).

6. Transition from terrorism into other forms of violence. (Reorientation).

3. South Asian Association for Regional Cooperation(SAARC)

The **South Asian Association for Regional Cooperation** (**SAARC**) is the regional intergovernmental organization and geopolitical union of states in South Asia. Its member states are Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan and Sri Lanka. The SAARC comprises 3% of the world's area, 21% of the world's population and 4.21% (US$3.67 trillion)[3] of the global economy, as of 2019.

The SAARC was founded in Dhaka on 8 December 1985.[4] Its secretariat is based in Kathmandu, Nepal. The organization promotes development of economic and regional integration.[5] It launched the South Asian Free Trade Area in 2006.[6] The SAARC maintains permanent diplomatic relations at the United Nations as an observer and has developed links with multilateral entities, including the European Union.

Historical background[edit]

The idea of co-operation among South Asian Countries was discussed in three conferences: the Asian Relations Conference held in New Delhi in April 1947; the Baguio Conference in the Philippines in May 1950; and the Colombo Powers Conference held in Sri Lanka in April 1954.[7]

In the ending years of the 1970s, the seven inner South Asian nations that included Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka agreed upon the creation of a trade bloc and to provide a platform for the people of South Asia to work together in a spirit of friendship, trust, and understanding. President Ziaur Rahman later addressed official letters to the leaders of the countries of the South Asia, presenting his vision for the future of the region and the compelling arguments for region.[8] During his visit to India in December 1977, Rahman discussed the issue of regional cooperation with the Indian Prime Minister, Morarji Desai. In the inaugural speech to the Colombo Plan Consultative Committee which met in Kathmandu also in 1977, King Birendra of Nepal gave a call for close regional cooperation among South Asian countries in sharing river waters.[9]

After the USSR's intervention in Afghanistan, the efforts to establish the union was accelerated in 1979 and the resulting rapid deterioration of South Asian security situation.[9] Responding to Rahman and Birendra's convention, the officials of the foreign ministries of the seven countries met for the first time in Colombo in April 1981.[9] The Bangladeshi proposal was promptly endorsed by Nepal, Sri Lanka, Bhutan, and the Maldives but India and Pakistan were sceptical initially.[9] The Indian concern was the proposal's reference to the security matters in South Asia and feared that Rahman's proposal for a regional organisation might provide an opportunity for new smaller neighbours to re-internationalize all bilateral issues and to join with

each other to form an opposition against India. Pakistan assumed that it might be an Indian strategy to organize the other South Asian countries against Pakistan and ensure a regional market for Indian products, thereby consolidating and further strengthening India's economic dominance in the region.[9]

However, after a series of diplomatic consultations headed by Bangladesh between South Asian U.N. representatives at the UN headquarters in New York, from September 1979 to 1980, it was agreed that Bangladesh would prepare the draft of a working paper for discussion among the foreign secretaries of South Asian countries.[9] The foreign secretaries of the inner seven countries again delegated a Committee of the Whole in Colombo in September 1981, which identified five broad areas for regional cooperation. New areas of co-operation were added in the following years.[10]

In 1983, the international conference held in Dhaka by its Ministry of Foreign Affairs, the foreign ministers of the inner seven countries adopted the Declaration on South Asian Association Regional Cooperation (SAARC) and formally launched the Integrated Programme of Action (IPA) initially in five agreed areas of cooperation namely, Agriculture; Rural Development; Telecommunications; Meteorology; and Health and Population Activities.[11][12]

Officially, the union was established in Dhaka with Kathmandu being the union's secretariat-general.[13] The first SAARC summit was held in Dhaka on 7–8 December 1985 and hosted by the President of Bangladesh Hussain Ershad.[14] The declaration signed by King of Bhutan Jigme Singye Wangchuk, President of Pakistan Zia-ul-Haq, Prime Minister of India Rajiv Gandhi, King of Nepal Birendra Shah, President of Sri Lanka JR Jayewardene, and President of Maldives Maumoon Gayoom.[14]

Members and observers[edit]

Economic data is sourced from the International Monetary Fund, current as of December 2019, and is given in U.S. dollars.[15]

Members[edit]

The member states are Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka.[24]

The SAARC was founded by seven states in 1985. In 2005, Afghanistan began negotiating their accession to SAARC and formally applied for membership on the same year.[25][26] The issue of Afghanistan joining SAARC generated a great deal of debate in each member state, including concerns about the definition of South Asian identity because Afghanistan is a Central Asian country.[27]

The SAARC member states imposed a stipulation for Afghanistan to hold a general election; the non-partisan elections were held in late 2005.[27] Despite initial reluctance and internal debates, Afghanistan joined the SAARC as its eighth member state in April 2007.[27][28]

Observers[edit]

States with observer status include[29] Australia,[30] China, the European Union, Iran, Japan,[31] Mauritius,[32] Myanmar, South Korea, and the United States.[33][34]

On 2 August 2006, the foreign ministers of the SAARC countries agreed in principle to grant observer status to three applicants;[35] the U.S. and South Korea (both made requests in April 2006),[35] as well as the European Union (requested in July 2006).[36] On 4 March 2007, Iran requested observer status,[37] followed shortly by Mauritius.

Potential future members[edit]

Myanmar has expressed interest in upgrading its status from an observer to a full member of the SAARC.[38] China has requested joining SAARC.[39] Russia has applied for observer status membership of SAARC.[40][41][42] Turkey applied for observer status membership of SAARC in 2012.[40][41][42] South Africa has participated in meetings.[43]

Secretariat[edit]

Secretariat of the South Asian Association for Regional Cooperation in Kathmandu, Nepal

The SAARC Secretariat was established in Kathmandu on 16 January 1987 and was inaugurated by the late King Birendra Bir Bikram Shah of Nepal.[44]

Specialized Bodies[edit]

The SAARC Member States have created the following Specialized Bodies of the SAARC in the Member States which have special mandates and structures different from the Regional Centers. These bodies are managed by their respective Governing Boards composed of representatives from all the Member States, the representative of H.E. Secretary-General of the SAARC and the Ministry of Foreign/External Affairs of the Host Government. The heads of these Bodies act as Member Secretary to the Governing Board which reports to the Programming Committee of the SAARC.

Specialized Body	Location	Country	Website
SAARC Arbitration Council (SARCO)	Islamabad	Pakistan	www.sarco-sec.org
SAARC Development Fund (SDF)	Thimphu	Bhutan	www.sdfsec.org
South Asian University (SAU)	New Delhi	India	www.sau.int
South Asian Regional Standards Organization (SARSO)	Dhaka	Bangladesh	www.sarso.org.bd

Regional Centres[edit]

The SAARC Secretariat is supported by following Regional Centres established in the Member States to promote regional co-operation. These Centres are managed by Governing Boards comprising representatives from all the Member States, SAARC Secretary-General and the Ministry of Foreign/External Affairs of the Host Government. The Director of the Centre acts as Member Secretary to the Governing Board which reports to the Programming Committee. After 31 December 2015, there 6 regional centers were stopped by unanimous decision. These are SMRC, SFC, SDC, SCZMC, SIC, SHRDC.[45]

Regional Centre	Location	Country	Website
SAARC Agricultural Centre (SAC)	Dhaka	Bangladesh	Official website
SAARC Meteorological Research Centre (SMRC)	Dhaka	Bangladesh	
SAARC Forestry Centre (SFC)	Thimphu	Bhutan	
SAARC Development Fund (SDF)	Thimphu	Bhutan	Official website
SAARC Documentation Centre (SDC)	New Delhi	India	
SAARC Disaster Management Centre (SDMC)	Gandhinagar	India	Official website
SAARC Coastal Zone Management Centre (SCZMC)	Malé	Maldives	
SAARC Information Centre (SIC)	Kathmandu	Nepal	

SAARC Tuberculosis and HIV/AIDS Centre (STAC)	Kathmandu	Nepal	Official website
SAARC Human Resources Development Centre (SHRDC)	Islamabad	Pakistan	
SAARC Energy Centre (SEC)	Islamabad	Pakistan	Official website
SAARC Cultural Centre (SCC)	Colombo	Sri Lanka	Official website

Anthem[edit]

The SAARC does not have an official anthem like some other regional organizations (e.g. ASEAN).[46]

Apex and Recognized Bodies[edit]

The SAARC has six Apex Bodies,[47] they are:

- SAARC Chamber of Commerce & Industry (SCCI),

- South Asian Association for Regional Cooperation in Law(SAARCLAW),[48]

- South Asian Federation of Accountants (SAFA),

- South Asia Foundation (SAF),

- South Asia Initiative to End Violence Against Children (SAIEVAC),

- [Foundation of SAARC Writers and Literature](#) (FOSWAL)

[Esala Weerakoon](#) is the current Secretary General of SAARC.

The SAARC also has about 18 recognized bodies.[49]

SAARC Disaster Management Centre[edit]

The South Asian Association of Regional Cooperation (SAARC) Disaster Management Centre (SDMC-IU) has been set up at Gujarat Institute of Disaster Management (GIDM) Campus, Gandhinagar, Gujarat, India. Eight Member States, i.e., Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka are expected to be served by the SDMC (IU). It is entrusted with the responsibility of serving Member States by providing policy advice, technical support on system development, capacity building services and training for holistic management of disaster risk in the SAARC region. The centre also facilitates exchange of information and expertise for effective and efficient management of disaster risk.

Political issues[edit]

Lasting peace and prosperity in South Asia has been elusive because of the various ongoing conflicts in the region. Political dialogue is often conducted on the margins of SAARC meetings which have refrained from interfering in the internal matters of its member states.[50] During the 12th and 13th SAARC summits, extreme emphasis was laid upon greater cooperation between the SAARC members to fight terrorism.[51][52]

The 19th SAARC summit scheduled to be held in Pakistan was called off as India, Bangladesh, Bhutan and Afghanistan decided to boycott it.[53][54] It was for the first time that four countries boycotted a SAARC summit, leading to its cancellation.[55][56]

South Asian Free Trade Area[edit]

Countries under the South Asian Free Trade Area

The SAFTA was envisaged primarily as the first step towards the transition to a South Asian Free Trade Area (SAFTA) leading subsequently towards a Customs Union, Common Market and the Economic Union. In 1995, Sixteenth session of the Council of Ministers (New Delhi, 18–19 December 1995) agreed on the need to strive for the realization of SAFTA and to this end, an Inter-Governmental Expert Group (IGEG) was set up in 1996 to identify the necessary steps for progressing to a free trade area. The Tenth SAARC Summit (Colombo, 29–31 July 1998) decided to set up a Committee of Experts (COE) to draft a comprehensive treaty framework for creating a free trade area within the region, taking into consideration the asymmetries in development within the region and bearing in mind the need to fix realistic and achievable targets.

The SAFTA Agreement was signed on 6 January 2004 during Twelfth SAARC Summit held in Islamabad, Pakistan. The Agreement entered into force on 1 January 2006, and the Trade Liberalization Programme commenced from 1 July 2006. Under this agreement, SAARC

members will bring their duties down to 20 percent by 2009. Following the Agreement coming into force the SAFTA Ministerial Council (SMC) has been established comprising the Commerce Ministers of the Member States.[57] In 2012 the SAARC exports increased substantially to $354.6 billion from $206.7 billion in 2009. Imports too increased from $330 billion to $602 billion over the same period. But the intra-SAARC trade amounts to just a little over 1% of SAARC's GDP. In contrast to SAARC, in ASEAN (which is actually smaller than SAARC in terms of the size of the economy) the intra-bloc trade stands at 10% of its GDP.

The SAFTA was envisaged to gradually move towards the South Asian Economic Union, but the current intra-regional trade and investment relation are not encouraging and it may be difficult to achieve this target. The SAARC intra-regional trade stands at just five percent on the share of intra-regional trade in overall trade in South Asia. Similarly, foreign direct investment is also dismal. The intra-regional FDI flow stands at around four percent of the total foreign investment.[58]

The Asian Development Bank has estimated that inter-regional trade in SAARC region possessed the potential of shooting up agricultural exports by $14 billion per year from existing level of $8 billion to $22 billion. The study by Asian Development Bank states that against the potential average SAARC intra-regional trade of $22 billion per year, the actual trade in South Asia has been only around $8 billion. The uncaptured potential for intra-regional trade is therefore $14 billion per year, i.e., 68%.[59][60]

SAARC Visa Exemption Scheme[edit]

The SAARC Visa Exemption Scheme was launched in 1992. The leaders at the Fourth Summit (Islamabad, 29–31 December 1988), realizing the importance of people-to-people contact among

SAARC countries, decided that certain categories of dignitaries should be entitled to a Special Travel document. The document would exempt them from visas within the region. As directed by the Summit, the Council of Ministers regularly kept under review the list of entitled categories.

Currently, the list included 24 categories of entitled persons, which include dignitaries, judges of higher courts, parliamentarians, senior officials, entrepreneurs, journalists, and athletes.

The Visa Stickers are issued by the respective Member States to the entitled categories of that particular country. The validity of the Visa Sticker is generally for one year. The implementation is reviewed regularly by the Immigration Authorities of SAARC Member States.[61]

Awards[edit]

SAARC Award[edit]

The Twelfth (12th) Summit approved the SAARC Award to support individuals and organizations within the region. The main aims of the SAARC Award are:

- To encourage individuals and organizations based in South Asia to undertake programmes and activities that complement the efforts of the SAARC.

- To encourage individuals and organizations in South Asia contributing to bettering the conditions of women and children.

- To honour outstanding contributions and achievements of individuals and organizations within the region in the fields of peace, development, poverty alleviation, environmental protection, and regional cooperation.

- To honour any other contributions and achievement not covered above of individuals and organizations in the region.

The SAARC Award consists of a gold medal, a letter of citation, and cash prize of $25,000. Since the institution of the SAARC Award in 2004, it has been awarded only once and the Award was posthumously conferred upon the late President Ziaur Rahman of Bangladesh.[62]

SAARC Literary Award[edit]

The SAARC Literary Award is an annual award conferred by the Foundation of SAARC Writers and Literature (FOSWAL) since 2001[63][64] which is an apex SAARC body.[65] Shamshur Rahman, Mahasweta Devi, Jayanta Mahapatra, Abhi Subedi, Mark Tully, Sitakant Mahapatra, Uday Prakash, Suman Pokhrel and Abhay K are some of the prominent recipients of this award.[66]

Nepali poet, lyricist, and translator Suman Pokhrel is the only poet/writer to get this award twice.[67]

SAARC Youth Award[edit]

The SAARC Youth Award is awarded to outstanding individuals from the SAARC region. The award is notable because of the recognition it gives to the Award winner in the SAARC region. The award is based on specific themes which apply to each year. The award recognizes and promotes the commitment and talent of the youth who give back to the world at large through various initiatives such as Inventions, Protection of the Environment and Disaster relief. The recipients who receive this award are ones who have dedicated their lives to their individual causes to improve situations in their own countries as well as paving a path for the SAARC region to follow. The Committee for the SAARC Youth Award selects the best candidate based on his/her merits and their decision is final.[68]

Previous Winners:

- 1997: Outstanding Social Service in Community Welfare – Sukur Salek (Bangladesh)

- 1998: New Inventions and Shanu — Najmul Hasnain Shah (Pakistan)

- 2001: Creative Photography: South Asian Diversity – Mushfiqul Alam (Bangladesh)

- 2002: Outstanding contribution to protect the Environment – Masil Khan (Pakistan)

- 2003: Invention in the Field of Traditional Medicine – Hassan Sher (Pakistan)

- 2004: Outstanding contribution to raising awareness of TB and/or HIV/AIDS – Ajij Prasad Poudyal (Nepal)

- 2006: Promotion of Tourism in South Asia – Syed Zafar Abbas Naqvi (Pakistan)

- 2008: Protecting the Environment in South Asia – Deepani Jayantha (Sri Lanka)

- 2009: Outstanding contribution to humanitarian works in the aftermath of Natural Disasters – Ravikant Singh (India)

- 2010: Outstanding contribution for the Protection of Environment and mitigation of Climate Change – Anoka Primrose Abeyrathne (Sri Lanka)

Secretaries-General of the SAARC[edit]

#	Name	Country	Took office	Left office
1	Abul Ahsan	Bangladesh	16 January 1985	15 October 1989
2	Kant Kishore Bhargava	India	17 October 1989	31 December 1991
3	Ibrahim Hussein Zaki	Maldives	1 January 1992	31 December 1993

4	Yadav Kant Silwal	Nepal	1 January 1994	31 December 1995
5	Naeem U. Hasan	Pakistan	1 January 1996	31 December 1998
6	Nihal Rodrigo	Sri Lanka	1 January 1999	10 January 2002
7	Q. A. M. A. Rahim	Bangladesh	11 January 2002	28 February 2005
8	Chenkyab Dorji	Bhutan	1 March 2005	29 February 2008
9	Sheel Kant Sharma	India	1 March 2008	28 February 2011
10	Fathimath Dhiyana Saeed	Maldives	1 March 2011	11 March 2012
11	Ahmed Saleem	Maldives	12 March 2012	28 February 2014
12	Arjun Bahadur Thapa	Nepal	1 March 2014	28 February 2017
13	Amjad Hussain B. Sial	Pakistan	1 March 2017	29 February 2020
14	Esala Ruwan Weerakoon	Sri Lanka	1 March 2020	Incumbent

SAARC summits[edit]

Main article: List of SAARC summits

No	Date	Country	Host	Host leader
1st	7–8 December 1985	Bangladesh	Dhaka	Ataur Rahman Khan
2nd	16–17 November 1986	India	Bengaluru	Rajiv Gandhi
3rd	2–4 November 1987	Nepal	Kathmandu	King Birendra Bir Bikram Shah
4th	29–31 December 1988	Pakistan	Islamabad	Benazir Bhutto
5th	21–23 November 1990	Maldives	Malé	Maumoon Abdul Gayoom
6th	21 December 1991	Sri Lanka	Colombo	Ranasinghe Premadasa
7th	10–11 April 1993	Bangladesh	Dhaka	Khaleda Zia
8th	2–4 May 1995	India	New Delhi	P V Narasimha Rao
9th	12–14 May 1997	Maldives	Malé	Maumoon Abdul Gayoom

10th	29–31 July 1998	Sri Lanka	Colombo	Chandrika Kumaratunga
11th	4–6 January 2002	Nepal	Kathmandu	Sher Bahadur Deuba
12th	2–6 January 2004	Pakistan	Islamabad	Zafarullah Khan Jamali
13th	12–13 November 2005	Bangladesh	Dhaka	Khaleda Zia
14th	3–4 April 2007	India	New Delhi	Manmohan Singh
15th	1–3 August 2008	Sri Lanka	Colombo	Mahinda Rajapaksa
16th	28–29 April 2010	Bhutan	Thimphu	Jigme Thinley
17th	10–11 November 2011	Maldives	Addu	Mohammed Nasheed
18th	26–27 November 2014[69]	Nepal	Kathmandu	Sushil Koirala
19th	15–16 November 2016	Pakistan	Islamabad	Cancelled
20th	N/A	N/A	N/A	N/A

Current leaders[edit]

Country	President (Head of State)	Prime Minister
Afghanistan	Ashraf Ghani	
Bangladesh	Abdul Hamid	Sheikh Hasina
Bhutan	King Jigme Khesar Namgyel Wangchuck	Lotay Tshering
India	Ram Nath Kovind	Narendra Modi
Maldives	Ibrahim Mohamed Solih	
Nepal	Bidhya Devi Bhandari	KP Sharma Oli
Pakistan	Arif Alvi	Imran Khan
Sri Lanka	Gotabaya Rajapaksa	Mahinda Rajapaksa

4. INDIA;S NUCLEAR POLICY

Nuclear power is the fifth-largest source of electricity in India after coal, gas, hydroelectricity and wind power. As of March 2018, India has 22 nuclear reactors in operation in 7 nuclear power plants, with a total installed capacity of 6,780 MW.[1][2] Nuclear power produced a total of 35 TWh and supplied 3.22% of Indian electricity in 2017.[3][4] 7 more reactors are under construction with a combined generation capacity of 4,300 MW.

In October 2010, India drew up a plan to reach a nuclear power capacity of 63 GW in 2032.[5] However, following the 2011 Fukushima nuclear disaster there have been numerous anti-nuclear protests at proposed nuclear power plant sites.[6] There have been mass protests against the Jaitapur Nuclear Power Project in Maharashtra and the Kudankulam Nuclear Power Plant in Tamil Nadu, and a proposed large nuclear power plant near Haripur was refused permission by the Government of West Bengal.[6] A Public Interest Litigation (PIL) has also been filed against the government's civil nuclear programme at the Supreme Court.[6][7]

Nuclear power in India has suffered from generally low capacity factors. As of 2017, the lifetime weighted energy availability factor of the Indian fleet is 63.5%.[8] However, capacity factors have been improving in recent years. The availability factor of Indian reactors was 69.4% in the years 2015-2017.[9] One of the main reasons for the low capacity factors is lack of nuclear fuel.

India has been making advances in the field of thorium-based fuels, working to design and develop a prototype for an atomic reactor using thorium and low-enriched uranium, a key part of India's three stage nuclear power programme.[10] done in the fusion power area through the ITER initiative.

Early nuclear physics research[edit]

As early as 1901, the Geological Survey of India (GSI) had recognised India as potentially having significant deposits of radioactive ores, including pitchblende, uranium and thorianite. In the ensuing 50 years, however, little to no effort was made to exploit those resources.[13] During the 1920s and 1930s, Indian scientists maintained close links to their counterparts in Europe and the United States, and were well aware of the latest developments in physics. Several Indian physicists, notably Daulat Singh Kothari, Meghnad Saha, Homi J. Bhabha and R. S. Krishnan, conducted pioneering research in nuclear physics in Europe during the 1930s.

By 1939, Meghnad Saha, the Palit Professor of Physics at the University of Calcutta, had recognised the significance of the discovery of nuclear fission, and had begun to conduct various experiments in his laboratory related to nuclear physics. In 1940, he incorporated nuclear physics into the university's post-graduate curriculum.[14] In the same year, the Sir Dorabji Tata Trust sanctioned funds for installing a cyclotron at the University of Calcutta, but various difficulties likely related to the war delayed the project.[15] In 1944, Homi J. Bhabha, a distinguished nuclear physicist who had established a research school at the Indian Institute of Science, Bangalore, wrote a letter to his distant cousin J. R. D. Tata, the chairman of the Tata Group. He requested funds to establish a research institute of fundamental physics, "with special reference to cosmic rays and nuclear physics." The Tata Institute of Fundamental Research (TIFR) was inaugurated in Mumbai the following year.[16]

Establishment of atomic energy in India[edit]

Following the atomic bombing of Hiroshima in August 1945, R.S. Krishnan, a nuclear physicist who had studied under Norman Feather and John Cockroft, and who recognised the massive energy-generating potential of uranium, observed, "If the tremendous energy released from

atomic explosions is made available to drive machinery, etc., it will bring about an industrial revolution of a far-reaching character." He further noted, however, the difficulties in harnessing nuclear power for peaceful usage, "...a great deal more research work is needed before atomic power can be put to industrial use."[17]

In March 1946, the Board of Scientific and Industrial Research (BSIR), under the Council of Scientific and Industrial Research (CSIR), set up an Atomic Research Committee under Bhabha's leadership to explore India's atomic energy resources and to suggest ways to develop and harness them, along with establishing contacts with similar organisations in other nations.[18] At the same time, the University of Travancore's research council met to discuss Travancore's future industrial development. Among other matters, the council made recommendations for developing the state's resources of monazite, a valuable thorium ore, and ilmenite, with regard to their applications in atomic energy. The council suggested the project could be undertaken by an all-India programme.[18] This was followed by the deputation of Bhabha and Sir Shanti Swarup Bhatnagar, the Director of the CSIR, to Travancore in April 1947 and the establishment of a working relationship with the kingdom's *dewan*, Sir C. P. Ramaswami Iyer.[19]

Early in 1947, plans were made to establish a Uranium Unit under the Geological Survey of India, to focus on identifying and developing resources of uranium-bearing minerals.[20] In June 1947, two months before Indian independence, Chakravarti Rajagopalachari, then Minister for Industry, Supply, Education and Finance in the Interim Government of India, established an Advisory Board for Research in Atomic Energy. Chaired by Bhabha and placed under the CSIR, the Advisory Board included Saha, Bhatnagar and several other distinguished scientists, notably Sir K. S. Krishnan, the co-discoverer of the Raman effect, geologist Darashaw Nosherwan Wadia and Nazir Ahmed, a student of Ernest Rutherford. A Joint Committee comprising the

above scientists and three representatives of the Travancore government was set up to determine how best to utilise Travancore's resources of monazite.[21] Following the independence and partition of India, Travancore briefly declared itself independent before acceding to the new Dominion of India in 1949 after a period of intense negotiations, while Ahmad departed for Pakistan, where he would eventually head that nation's atomic energy agency.

On 23 March 1948, Prime Minister Jawaharlal Nehru introduced the Atomic Energy Bill in the Indian Parliament,[22] and it was subsequently passed as the Indian Atomic Energy Act. Modelled on the British Atomic Energy Act 1946, the Act granted sweeping powers to the central government over nuclear science and research, including surveying for atomic minerals, the development of such mineral resources on an industrial scale, conducting research regarding the scientific and technical problems connected with developing atomic energy for peaceful purposes, the training and education of the necessary personnel and the fostering of fundamental research in the nuclear sciences in Indian laboratories, institutes and universities.[16] Around the same time, the Government of West Bengal sanctioned the construction of a nuclear physics institute under the University of Calcutta; the cornerstone was laid in May 1948,[23] and the institute was inaugurated on 11 January 1950 by Irène Joliot-Curie.[14]

With effect from 1 June 1948, the Advisory Board for Research in Atomic Energy, together with its parent organisation the CSIR, was folded into the new Department of Scientific Research and placed directly under the Prime Minister. On 3 August 1948, the Atomic Energy Commission of India (AEC) was established and made separate from the Department of Scientific Research, with Bhabha as its first chairman.[24] In January 1949, the AEC met to formulate a uniform under- and post-graduate university syllabus for theoretical and fundamental physics and chemistry, to guarantee sufficient numbers of nuclear scientists and to ensure they would receive

consistent levels of training and education.[25] In the same year, the Tata Institute of Fundamental Research was designated by the CSIR as the hub for all major nuclear science research projects. In 1950, the government announced it would purchase all available stocks of uranium and beryllium minerals and ores, and declared large rewards for any significant discoveries of the same.[26][27] On 3 January 1954, the Atomic Energy Establishment, Trombay (AEET) was established by the Atomic Energy Commission to consolidate all nuclear reactor research and technology-related developments; on 3 August, the Atomic Energy Commission and all its subordinate agencies, including the Tata Institute of Fundamental Research and the nuclear research institute at Calcutta University, were transferred to the new Department of Atomic Energy and placed under the direct charge of the Prime Minister's Office.[16] In May 1956, construction began at Trombay on a uranium metal plant and a fuel element fabrication facility for the research reactors; the uranium plant came into operation in January 1959, followed by the fuel element facility in February 1960.[28][29] The AEET (renamed the Bhabha Atomic Research Centre in 1967, after Bhabha's death) was formally inaugurated by Nehru in January 1957.[28] With the expanding scope of Indian nuclear research, the 1948 Atomic Energy Act was amended in 1961, and was passed as the new Atomic Energy Act, coming into force in September 1962.[30][31][28]

Early research reactors[edit]

At a meeting of the Atomic Energy Commission on 15 March 1955, the decision was made to construct a small nuclear reactor at Trombay. The reactor would be used for training personnel for the operation of future reactors and for research, including experiments in nuclear physics, studying the effects of irradiation and the production of isotopes for medical, agricultural and industrial research.[32] In October 1955, an agreement was signed by the United Kingdom

Atomic Energy Authority and the Indian Department of Atomic Energy, under which Britain would supply uranium fuel elements for a swimming pool reactor to be designed by India.[32] The agreement further ensured the "close cooperation and mutual assistance between the Department and the Authority in the promotion and development of the peaceful uses of atomic energy," and provided for future design and collaboration in the construction of a high flux reactor at a later date.[33] Named *Apsara*, the reactor was housed in a 100 x 50 x 70 concrete building. India's and Asia's first nuclear reactor, *Apsara* reached criticality at 3:45 p.m on 4 August 1956 and was inaugurated by Prime Minister Nehru on 20 January 1957.[32][34][35]

In April 1955, the Canadian government under Prime Minister Louis St. Laurent offered to assist in building an NRX-type reactor for India under the Colombo Plan, of which both India and Canada were then members. Prime Minister St. Laurent expressed hopes the reactor would serve India well in the development of peaceful atomic research and development. On behalf of the Indian government, Nehru formally accepted the offer that September, stating the reactor would be made available to any accredited foreign scientists, including those from other Colombo Plan member states.[36][37][38] On 28 April 1956, Nehru and the Canadian High Commissioner to India Escott Reid signed an agreement for a "Canada-India Colombo Plan Atomic Reactor Project." Under the terms of the agreement, Canada would provide a 40 MW CIRUS reactor for solely research purposes, including the initial manufacture and engineering of the reactor, and would also provide technical expertise, including training Indian personnel in its operation. India would supply the reactor site and foundation, and would also pay all "internal" costs, including the construction of the reactor complex, the costs of local labour and any shipping and insurance fees.[39] Under Article II of the agreement, India would make the reactor facilities available to other Colombo Plan nations. Article III stipulated that the "reactor and any products resulting

from its use will be employed for peaceful purposes only;"[39] at the time, however, there were no effective safeguards to ensure this clause.[37][38] A further agreement was made with the United States government to supply 21 tons of heavy water for the reactor.[40] Construction of the reactor began later in 1956, with Indian technical personnel sent to Chalk River for training.[41] CIRUS was completed in early 1960 and after achieving criticality in July 1960, was inaugurated by Nehru in January 1961.[42] Construction of a third research reactor, ZERLINA (Zero Energy Reactor for Lattice Investigations and New Assemblies) began at Trombay in 1958; ZERLINA was also commissioned in 1961.[43]

Beginnings of commercial nuclear power[edit]

In September 1955, the question of building a commercial nuclear power station was raised in Parliament.[44] Shortly after the world's first commercial nuclear power plant came online at Obninsk in the Soviet Union, the Soviets invited a number of Indian experts to visit it; the United States concurrently offered training in atomic energy to Indian technical and scientific personnel.[45] In August 1957, members of the Gujarat Chamber of Commerce in Ahmedabad (then in Bombay State) requested an atomic power station for their city, by which time the Indian government was actively considering the construction of at least "one or more large Atomic Power Stations to generate electricity."[46] By November 1958, the Atomic Energy Commission had recommended construction of two nuclear power stations, each consisting of two units and able to generate 500 MW of power, for a total generating capacity of 1000 MW; the government decided that a minimum of 250 MW of electricity generated from nuclear reactors would be incorporated into the Third Five Year Plan (1961-1966).[47]

In February 1960, it was decided the first power plant would be erected in Western India, with locations in Rajasthan, near Delhi and near Madras noted for future commercial reactors.[48] In

September, the Punjab government requested a nuclear power station for their state.[49] On 11 October 1960, the Indian government issued a tender for India's first nuclear power station near [Tarapur, Maharashtra](#) and consisting of two reactors, each generating around 150 MW of electricity and to be commissioned in 1965.[50] In August 1961, the Indian and Canadian governments agreed to conduct a joint study on building a Canada-India nuclear power plant in [Rajasthan](#); the reactor would be based on the [CANDU reactor](#) at [Douglas Point](#) and would generate 200 MW of energy.[42] By this time, seven responses to India's global tender for the Tarapur power station had been received: three from the United States, two from the UK and one each from France and Canada.[51]

The agreement for India's first nuclear power plant at Rajasthan, RAPP-1, was signed in 1963, followed by RAPP-2 in 1966. These reactors contained rigid safeguards to ensure they would not be used for a military programme. RAPP-1 began operation in 1972. Due to technical problems the reactor had to be downrated from 200 MW to 100 MW.[*citation needed*] The technical and design information were given free of charge by [Atomic Energy of Canada Limited](#) to India.[*citation needed*] The United States and Canada [terminated their assistance](#) after the detonation of India's first nuclear explosion in 1974.

Recent developments[[edit](#)]

After successful commissioning of Kudankulam units 1 & 2, an agreement was made with Russia in June 2017 for the units 5 & 6 (2 x 1000 MW) with an estimated cost of INR 250 million (3.85 million US$) per MW.[52][53] Earlier, India had also entered in to an agreement with Russia in October 2016 for the units 3 & 4 (2 x 1000 MW) with an estimated cost of INR 200 million (3.08 million US$) per MW.[52]

Nuclear fuel reserves[edit]

India's domestic uranium reserves are small and the country is dependent on uranium imports to fuel its nuclear power industry. Since early 1990s, Russia has been a major supplier of nuclear fuel to India.[54] Due to dwindling domestic uranium reserves,[55] electricity generation from nuclear power in India declined by 12.83% from 2006 to 2008.[56] Following a waiver from the Nuclear Suppliers Group (NSG) in September 2008 which allowed it to commence international nuclear trade,[57] India has signed bilateral deals on civilian nuclear energy technology cooperation with several other countries, including France,[58] the United States,[59] the United Kingdom,[60] Canada,[61] and South Korea.[62] India has also uranium supply agreements with Russia,[63][64] Mongolia,[65] Kazakhstan,[66] Argentina[67] and Namibia.[68] An Indian private company won a uranium exploration contract in Niger.[69]

In March 2011 large deposits of uranium were discovered in the Tummalapalle belt in Andhra Pradesh and in the Bhima basin in Karnataka by the Atomic Minerals Directorate for Exploration and Research (AMD) of India. The Tummalapalle belt uranium reserves promises to be one of the world's top 20 uranium reserves discoveries. 44,000 tonnes of natural uranium have been discovered in the belt so far, which is estimated to have three times that amount.[70][71][72] The natural uranium deposits of the Bhima basin has better grade of natural uranium ore, even though it is smaller than the Tummalapalle belt.

In recent years, India has shown increased interest in thorium fuels and fuel cycles because of large deposits of thorium (518,000 tonnes) in the form of monazite in beach sands as compared to very modest reserves of low-grade uranium (92,000 tonnes).[73]

Kazakhstan is the largest supplier of uranium to India providing 5,000 tonnes during 2015-19.[74]

Nuclear agreements with other nations[edit]

As of 2016, India has signed civil nuclear agreements with 14 countries: Argentina, Australia, Canada, Czech Republic, France, Japan, Kazakhstan, Mongolia, Namibia, Russia, South Korea, the United Kingdom, the United States, and Vietnam.[75] The 48-nation NSG granted a waiver to India on 6 September 2008 allowing it to access civilian nuclear technology and fuel from other countries.[76] India is the only country with known nuclear weapons which is not a party to the Non-Proliferation Treaty (NPT) but is still allowed to carry out nuclear commerce with the rest of the world.[77]

India and Mongolia signed a crucial civil nuclear agreement on 15 June 2009 for supply of Uranium to India, during Prime Minister Manmohan Singh's visit to Mongolia making it the fifth nation in the world to seal a civil nuclear pact with India. The MoU on "development of cooperation in the field of peaceful uses of radioactive minerals and nuclear energy" was signed by senior officials in the department of atomic energy of the two countries.[78]

On 2 September 2009, India and Namibia signed five agreements, including one on civil nuclear energy which allows for supply of uranium from the African country. This was signed during President Hifikepunye Pohamba's five-day visit to India in May 2009. Namibia is the fifth largest producer of uranium in the world. The Indo-Namibian agreement in peaceful uses of nuclear energy allows for supply of uranium and setting up of nuclear reactors.[68]

On 14 October 2009, India and Argentina signed an agreement in New Delhi on civil nuclear cooperation and nine other pacts to establish strategic partnership. According to official sources, the agreement was signed by Vivek Katju, Secretary in the Ministry of External Affairs and Argentine foreign minister Jorge Talana. Taking into consideration their respective capabilities and experience in the peaceful uses of nuclear energy, both India and Argentina have agreed to

encourage and support scientific, technical and commercial cooperation for mutual benefit in this field.[79][80]

The Prime Ministers of India and Canada signed a civil nuclear cooperation agreement in Toronto on 28 June 2010 which when all steps are taken, will provide access for Canada's nuclear industry to India's expanding nuclear market and also fuel for India's reactors. Canada is one of the world's largest exporters of uranium[81] and Canada's heavy water nuclear technology is marketed abroad with CANDU-type units operating in India, Pakistan, Argentina, South Korea, Romania and China. On 6 November 2012, India and Canada finalised their 2010 nuclear export agreement, opening the way for Canada to begin uranium exports to India.[82]

On 16 April 2011, India and Kazakhstan signed an inter-governmental agreement for Cooperation in Peaceful Uses of Atomic Energy, that envisages a legal framework for supply of fuel, construction and operation of atomic power plants, exploration and joint mining of uranium, exchange of scientific and research information, reactor safety mechanisms and use of radiation technologies for healthcare. PM Manmohan Singh visited Astana where a deal was signed. After the talks, the Kazakh President Nazarbaev announced that his country would supply India with 2100 tonnes of uranium and was ready to do more. India and Kazakhstan already have civil nuclear cooperation since January 2009 when Nuclear Power Corporation of India Limited (NPCIL) and Kazakh nuclear company KazAtomProm signed an MoU during the visit of Nazarbaev to Delhi. Under the contract, KazAtomProm supplies uranium which is used by Indian reactors.[83][84]

South Korea became the latest country to sign a nuclear agreement with India after it got the waiver from the Nuclear Suppliers' Group (NSG) in 2008. On 25 July 2011 India and South Korea signed a nuclear agreement, which will allow South Korea with a legal foundation to

participate in India's nuclear expansion programme, and to bid for constructing nuclear power plants in India.[85]

In 2014, India and Australia signed a civil nuclear agreement which allows the export of uranium to India. This was signed in New Delhi during Australian Prime Minister Tony Abbott's meeting with the Indian Prime Minister Narendra Modi on 4 September 2014. Australia is the third largest producer of uranium in the world. The agreement allows supply of uranium for peaceful generation of power for civil use in India.[86][87]

India's Prime Minister Narendra Modi and UK Prime Minister David Cameron signed Civil Nuclear Agreement on 12 Nov 2015.[88]

Reactor agreements[edit]

After the Nuclear Suppliers Group agreed to allow nuclear exports to India, France was the first country to sign a civilian nuclear agreement with India, on 30 September 2008.[89] During the December 2010 visit of the French President Nicolas Sarkozy to India, framework agreements were signed for the setting up two third-generation EPR reactors of 1650 MW each at Jaitapur, Maharashtra by the French company Areva. The deal caters for the first set of two of six planned reactors and the supply of nuclear fuel for 25 years.[90] The contract and pricing is yet to be finalised. Construction is unlikely to start before 2014 because of regulatory issues and difficulty in sourcing major components from Japan due to India not being a signatory to the Nuclear Non-Proliferation Treaty.[91]

In November 2016 Japan signed a nuclear cooperation agreement with India. Japanese nuclear plant builders saw this as potential lifeline given that domestic orders had ended following

the Fukushima Daiichi nuclear disaster, and India is proposing to build about 20 new reactors over the next decade.[92]

Russia has an ongoing agreement of 1988 vintage with India regarding establishing of two VVER 1000 MW reactors (water-cooled water-moderated light water power reactors) at Koodankulam in Tamil Nadu.[93] A 2008 agreement caters for provision of an additional four third generation VVER-1200 reactors of capacity 1170 MW each.[94] Russia has assisted in India's efforts to design a nuclear plant for its nuclear submarine.[95] In 2009, the Russians stated that Russia would not agree to curbs on export of sensitive technology to India. A new accord signed in Dec 2009 with Russia gives India freedom to proceed with the closed fuel cycle, which includes mining, preparation of the fuel for use in reactors, and reprocessing of spent fuel.[96][97]

In October 2018, India and Russia signed an agreement to construct 6 nuclear reactors. Russian state-owned reactor manufacturer Rosatom stated that it would offer its third-generation VVER reactors. The agreement is not a firm contract, but rather an agreement to work toward a firm contract.[98]

The nuclear agreement with USA led to India issuing a Letter of Intent for purchasing 10,000 MW from the USA. However, liability concerns and a few other issues are preventing further progress on the issue. Experts say that India's nuclear liability law discourages foreign nuclear companies. This law gives accident victims the right to seek damages from plant suppliers in the event of a mishap. It has "deterred foreign players like General Electric and Westinghouse Electric, a US-based unit of Toshiba, with companies asking for further clarification on compensation liability for private operators."[99] On 5 October 2018, India and Russia signed an agreement to construct 6 Russian nuclear reactors in India.[98]

Nuclear power plans

As of 2009, India envisages to increase the contribution of nuclear power to overall electricity generation capacity from 2.8% to 9% within 25 years.[100] By 2020, India's installed nuclear power generation capacity was expected to increase to 20 GW.[101] But the 2020 capacity will not exceed 7 GW, as the 2018 operating capacity is 6.2 GW, and only one more reactor is expected on line before 2020. As of 2018, India stands 13th in the world in terms nuclear capacity. Indigenous atomic reactors include TAPS-3, and -4, both of which are 540 MW reactors.[102]

The Indian nuclear power industry is expected to undergo a significant expansion in the coming years, in part due to the passing of the U.S.-India Civil Nuclear Agreement. This agreement will allow India to carry out trade of nuclear fuel and technologies with other countries and significantly enhance its power generation capacity.[103] When the agreement goes through, India is expected to generate an additional 25 GW of nuclear power by 2020, bringing total estimated nuclear power generation to 45 GW.[104]

Risks related to nuclear power generation prompted Indian legislators to enact the 2010 Nuclear Liability Act which stipulates that nuclear suppliers, contractors and operators must bear financial responsibility in case of an accident. The legislation addresses key issues such as nuclear radiation and safety regulations, operational control and maintenance management of nuclear power plants, compensation in the event of a radiation-leak accident, disaster clean-up costs, operator responsibility and supplier liability.[105] A nuclear accident like the 2011 Fukushima Daiichi nuclear disaster would have dire economic consequences in heavily populated India as did the 1984 Union Carbide Bhopal disaster, considered among the world's worst industrial disasters.[106]

India has already been using imported enriched uranium for light-water reactors that are currently under IAEA safeguards, but it has developed other aspects of the nuclear fuel cycle to support its reactors. Development of select technologies has been strongly affected by limited imports. Use of heavy water reactors has been particularly attractive for the nation because it allows Uranium to be burnt with little to no enrichment capabilities. India has also done a great amount of work in the development of a thorium centred fuel cycle. While uranium deposits in the nation are limited there are much greater reserves of thorium and it could provide hundreds of times the energy with the same mass of fuel. The fact that thorium can theoretically be utilised in heavy water reactors has tied the development of the two. A prototype reactor that would burn Uranium-Plutonium fuel while irradiating a thorium blanket is under construction at Kalpakkam by BHAVINI.

Uranium used for the weapons programme has been separated from the power programme, using uranium from indigenous reserves. This domestic reserve of 80,000 to 112,000 tons of uranium (approx 1% of global uranium reserves) is large enough to supply all of India's commercial and military reactors as well as supply all the needs of India's nuclear weapons arsenal. Currently, India's nuclear power reactors consume, at most, 478 tonnes of uranium per year.[107] Even if India were quadruple its nuclear power output (and reactor base) to 20 GW by 2020, nuclear power generation would only consume 2000 tonnes of uranium per annum. Based on India's known commercially viable reserves of 80,000 to 112,000 tons of uranium, this represents a 40– 50 years uranium supply for India's nuclear power reactors (note with reprocessing and breeder reactor technology, this supply could be stretched out many times over). Furthermore, the uranium requirements of India's Nuclear Arsenal are only a fifteenth (1/15) of that required for power generation (approx. 32 tonnes), meaning that India's domestic fissile material supply is

more than enough to meet all needs for it strategic nuclear arsenal. Therefore, India has sufficient uranium resources to meet its strategic and power requirements for the foreseeable future.[107]

Former Indian President A. P. J. Abdul Kalam stated while he was in office that, "energy independence is India's first and highest priority. India has to go for nuclear power generation in a big way using thorium-based reactors. Thorium, a non-fissile material is available in abundance in our country."[108] India has vast thorium reserves and quite limited uranium reserves.[109][110]

The long-term goal of India's nuclear program has been to develop an advanced heavy-water thorium cycle. The first stage of this employs the pressurized heavy water reactors (PHWR) fueled by natural uranium, and light water reactors, which produce plutonium incidentally to their prime purpose of electricity generation. The second stage uses fast neutron reactors burning the plutonium with the blanket around the core having uranium as well as thorium, so that further plutonium (ideally high-fissile Pu) is produced as well as U-233. The Atomic Minerals Directorate (AMD) has identified almost 12 million tonnes of monazite resources (typically with 6-7% thorium). In stage 3, Advanced Heavy Water Reactors (AHWR) would burn thorium-plutonium fuels in such a manner that breeds U-233 which can eventually be used as a self-sustaining fissile driver for a fleet of breeding AHWRs. An alternative stage 3 is molten salt breeder reactors (MSBR), which are believed to be another possible option for eventual large-scale deployment.[75]

In June 2014, Kudankulam-1 became the single largest power generating unit in India (1000 MWe).[111][112]

Nuclear power plants[edit]

Currently, twenty-two nuclear power reactors have a total install capacity of 6,780 MW (1.8% of total installed base).[*citation needed*]

Kudankulam power plant while still under construction in 2009.

Operational nuclear power plants in India

Power station	Operator	State	Type	Units	Total capacity (MW)
Kaiga	NPCIL	Karnataka	PHWR	220 × 4	880
Kakrapar	NPCIL	Gujarat	PHWR IPHWR-700	220 × 2 700 × 1	1140

Operational nuclear power plants in India

Power station	Operator	State	Type	Units	Total capacity (MW)
Kudankulam[113]	NPCIL	Tamil Nadu	VVER-1000	1000 × 2	2,000
Madras (Kalpakkam)	NPCIL	Tamil Nadu	PHWR	220 × 2	440
Narora	NPCIL	Uttar Pradesh	PHWR	220 × 2	440
Rajasthan	NPCIL	Rajasthan	PHWR	100 × 1 200 x 1 220 × 4	1,180
Tarapur	NPCIL	Maharashtra	BWR PHWR	160 x 2 540 × 2	1,400
Total					7,480

Nuclear power plants and reactors under construction in India[114]

Power station	Operator	State	Type	Units	Total capacity (MW)	Expected Commercial Operation
Madras (Kalpakkam)[115]	Bhavini	Tamil Nadu	PFBR	500 × 1	500	2020[116]
Kakrapar Unit 4	NPCIL	Gujarat	IPHWR-700	700 × 1	700	2022[116]
Gorakhpur	NPCIL	Haryana	IPHWR-700	700 × 2	1,400	2025[116]
Rajasthan Unit 7 and 8	NPCIL	Rajasthan	IPHWR-700	700 × 2	1,400	2022[116]
Kudankulam Unit 3 and 4	NPCIL	Tamil Nadu	VVER-1000	1000 × 2	2,000[117]	2025-2026[116]
Total					**6,000**	

Planned nuclear power plants in India[117][118][119]

Power station	Operator	State	Type	Units	Total capacity (MW)
Jaitapur[120]	NPCIL	Maharashtra	EPR	1650 × 6	9,900
Kovvada[121][122]	NPCIL	Andhra Pradesh	AP1000	1100 × 6	6,600
Kavali[123]	NPCIL	Andhra Pradesh	VVER	1000 x 6	6000
Gorakhpur	NPCIL	Haryana	IPHWR-700	700 × 2	1,400[114]
Mahi Banswara[120]	NPCIL	Rajasthan	IPHWR-700	700 × 4	2,800
Kaiga	NPCIL	Karnataka	IPHWR-700	700 × 2	1,400

Chutka	NPCIL	Madhya Pradesh	IPHWR-700	700 × 2	1,400
Kudankulam Unit 5 and 6	NPCIL	Tamil Nadu	VVER-1000	1000 × 2	2,000[124]
Madras[120]	BHAVINI	Tamil Nadu	FBR	600 × 2	1,200
Tarapur			AHWR	300 × 1	300
Total					**33,000**

Note: Some sites may be abandoned if not found technically feasible or due to strategic, geopolitical, international and domestic issues.

The details of the nuclear power generation capacity in the country are given below :[125]

Fiscal Year	Total nuclear electricity generation	Capacity factor
2008–09	14,921 GW·h	50%
2009–10	18,798 GW·h	61%

Fiscal Year	Total nuclear electricity generation	Capacity factor
2010–11	26,472 GW·h	71%
2011–12	32,455 GW·h	79%
2012–13	32,863 GW·h	80%
2013–14	35,333 GW·h	83%
2014–15	37,835 GW·h	82%
2015–16	37,456 GW·h	75%
2016–17	37,674 GW·h	80%
2017–18	38,336 GW·h	70%
2018–19	37,813 GW·h	70%

Fiscal Year	Total nuclear electricity generation	Capacity factor
2019–20	44,720 GW·h	80%

Anti-nuclear protests

Following the March 2011 Fukushima nuclear disaster in Japan, populations around proposed Indian NPP sites have launched protests that had found resonance around the country.[6] There have been mass protests against the French-backed 9,900 MW Jaitapur Nuclear Power Project in Maharashtra and the Russian-backed 2,000 MW Koodankulam Nuclear Power Plant in Tamil Nadu. The Government of West Bengal initially refused permission to a proposed 6,000 MW facility near the town of Haripur that intended to host 6 Russian reactors.[6][126] But after stiff resistance from locals, the proposed Nuclear Power Plant planned in Haripur has been shifted to Kavali in Andhra Pradesh.[123] Interestingly, the Nuclear Power Plant planned at Kovvada in Andhra Pradesh was shifted from Mithi Virdi in Gujarat after locals in the Western state too showed resistance.[127]

A Public-interest litigation (PIL) has also been filed against the government's civil nuclear program at the Supreme Court. The PIL specifically asks for the "staying of all proposed nuclear power plants till satisfactory safety measures and cost-benefit analyses are completed by independent agencies".[7][128] But the Supreme Court said it was not an expert in the nuclear field to issue a direction to the government on the nuclear liability issue.[129]