Chapter IV

Evolution of Pakistan’s Nuclear Programme

“Dhamaka kar dein”¹, when the Prime Minister Nawas Sheriff said it on 18th May 1998, in fact, it was a glorious moment for the pro-nuclear lobby and the Pakistan Atomic Energy Commision (PAEC). This was an official decision of the government to carry out the nuclear weapon explosion. As Kissinger observes that the spread of nuclear weapons is indispensable, despite the international pressure and opposition Pakistan adhered to conduct the nuclear test. The Pakistan government and the leaders vehemently argued that under compelling reasons and circumstances, Pakistan had no other option but to conduct the test. The decision of the government to carry out the nuclear weapon programme was motivated by many factors in general as well as in particular². An analogy of the factors that led the nuclear states to nuclearisation shows that Pakistan was influenced by certain particular factors like ‘India factor, socio-political milieu, praetorian character of the state and religious extremism’. At the same time general factors such as security threat and national prestige forced it to go nuclear.

In general, the security and prestige of the nation was the major factors that encouraged Pakistan’s decision to carry out the nuclear programme. States shall not compromise with the security. It is quite natural that states may build up the military forces to avert the security threat. A strong military power is in fact inevitable in both defensive as well as offensive strategies. When the conventional military strength is not adequate to face the security threat, it is likely to opt for non conventional power. Nuclear weapons as the non – conventional power, seems to provide state with better security or feeling of better security. “Nuclear deterrence is obviously justified because it is considered as a necessary means of national defence in a world where other nations, especially the hostile ones, posses such weapons. The nuclear deterrence of Pakistan is a promise of military punishment to prevent an attack on oneself. Pakistan leaders have formally stated that they have invested in nuclear weapons for ‘defensive’ purposes, namely, to deter their military rivals (Sing; 2007: 8).
Loosing a war is a great humiliation to any nation. It is necessary to have adequate military strength to uphold the glory of the nation both by winning the war and by playing key roles in international politics. Military power is counted as a key element in determining international prestige and positions of a nation. Nations view nuclear weapon as an important factor that adds to the international power and position. The aspirations and decision of Pakistan to become a nuclear weapon state was greatly influenced by this factor. In its history before the nuclear tests, it had fought three wars with India. Defeat in all these three wars was a humiliation to the nation. In fact, the defeat in the war 1971 and the forceful break up of East Pakistan inflicted deep wounds to the national power and prestige.

The ‘India Factor’ out runs all other factors in its determination to acquire nuclear weapons. A prolonged enmity and unresolved disputes with India had always created a very serious threat to the security of Pakistan. The twin born states had even confronted each other in the ‘womb’. This continued confrontation had led to wars, immediately after their birth in 1948, then in 1965, 1971 and 1999. What was more horrible to Pakistan was these wars in fact proved the inferiority of Pakistan to India. Therefore, Pakistan perceived the Indian superiority of any kind, a grave threat to its very existence. “Pakistan’s quest to acquire nuclear weapons arose from an urgent need to deter political coercion or outright military attack by its powerful rival India, especially when Pakistan could no longer count on an offsetting security relationship with the United States” (Alagappa; 2009 : 215). Therefore, maintaining a strategic balance with India is at the heart of Pakistan’s concerns about nuclear weapons and shapes its assessment of any proposed arms control and disarmament measure. This doctrine of nuclear equalizer also played a significant role in the nuclear weapon ambition of Pakistan. Analysing the context under which Pakistan was motivated to an active nuclear programme, Ashok Kapur contents that it was the inability to gain Kashmir by force, its inability to segregate India and most importantly, its inability to defend itself by conventional armament against India in future war. The asymmetry particularly in the military build up produced the doctrine of nuclear equalizer in the 1980’s (Kapur; 1996: 148). Thus, nuclear weapons are seen as a way to balance both India’s nuclear and conventional forces (IPFM; 2010). An overall analysis of the ‘India Factor’ in the nuclear programme of Pakistan shows that Pakistan perceived the
Indian nuclear capability threat mainly on three areas. These fears include security threat to its very survival, loosing its role and position in the region and a threat to the religion of Islam. Both in the conventional and non-conventional areas, Pakistan found the Indian domination as a great menace to its survival.

Many Scholars perceive that defeat in all the wars fought with India had forced Pakistan to develop its nuclear capability. Pakistan began its peaceful nuclear programme in 1955 as part of the US Atom for Peace initiative. A turning point in Pakistani nuclear decision-making was the 1965 war with India, which showed the conventional military disparity between the two countries and endangered Pakistan’s security alliances with the West. Pakistan sees that unlike the war in 1947, the war clearly showed its inferiority to India even after fifteen years of independence. So, Pakistan earnestly activated its clandestine nuclear weapon programme soon. Another remarkable event that forced Pakistan to its nuclear programme was the war with India in 1971. Kanti Bajpai observes that Pakistan’s desire for nuclear weapons is rooted in its humiliation over the defeat in the 1971 war which resulted in the breakaway of East Pakistan with the Indian involvement (Bajpai; 2007: 32). It was more demeaning the Pakistani state. It was fought with a cause other than the Kashmir issue. Pakistan had viewed it as an intrusion into its domestic affairs by India. For the Pakistan decision-makers, nuclear weapon seemed to be an inevitable force to prevent such an act from India. Similar view has been shared by Narang. The genesis of Pakistan’s nuclear weapons program gives insight into Islamabad’s ultimate aim to avoid massive conventional defeat at the hands of the Indians as in 1971 (Narang; 2009: 48). The Indian conventional military superiority had already caused humiliation to Pakistan at different occasions. Pakistan lacks well-trained, adequately equipped and numerically sufficient armed forces vis-a-vis India and hence nuclear weapon deterrence plays a significant role in its security policy. Therefore, it is projected as an alternative to conventional weapon security (Pattanaik; 2003). The Pakistan decision makers perceived that the Indian nuclear capability would further challenge Pakistani status and security placing its military strength still far behind India. “The 1974 Indian nuclear explosion thus had a decisive impact on Pakistan’s perception of the need for nuclear weapons. The nuclear explosion reinforced Pakistan’s sense of urgency and its determination to build a nuclear
deterrence to counter India’s nuclear threat and intimidation” (Chakma; 2009: 22). A rumour of an Indian pre-emptive strike on Pakistan’s nuclear installations in the early 1980s and Indian military exercise along the Pakistan border in 1986 – 87 had further accelerated the nuclear weapon programme of Pakistan.

Pakistan has been concerned with India's expanding nuclear programme even prior to its "peaceful nuclear explosion" (Khalilzad; 1976). Pakistan had already begun its clandestine nuclear programme before the Indian test of 1974. Infact, India's May 1974 detonation of a nuclear explosive device only added urgency to Pakistan's hidden and ongoing nuclear weapons programme (Jones; 1998). Indeed, since independence, Pakistan had pursued a security strategy based on its deep suspicion that its bigger neighbour, India intended to undo the creation of Pakistan (Stocker; 2007). The Indian conventional superiority as well as nuclear weapon possibility inspired the Pakistani nuclear weapon programme and the Indian nuclear test in 1974 speeded up the materializing of the nuclear ambition. Pakistan viewed that acquiring nuclear weapons and ballistic missiles would increase the involvement of major powers in South Asia and thus provide a chance to Pakistan to raise the Kashmir issue before the international community which is against Indian stand on Kashmir (Jones; 1998: 69). India treats Kashmir issue as bilateral and requires no international meddling.

While analyzing the Indian factor, there are observations about the possibility of Pakistan’s nuclearisation even if India didn’t possess nuclear weapons. There was a view that if India had committed to nuclear weapon free zone, Pakistan might not have developed nuclear weapons. Some scholars have opined that there was an opportunity to avoid the nuclear weapon construction in the region when Pakistan proposed for a denuclearizing agreement in the 1970s and 1980s. Kanti Bajpai observes that ‘with India categorically out of the nuclear weapons hunt, the pressure on Islamabad to proceed with nuclearisation would have been largely absent’ (Bajpai; 2007: 31). However, what is more logical and acceptable is Pakistan would have gone nuclear anyway because of its seemingly permanent inferiority in conventional weaponry. Pakistan would develop the nuclear weapon to create a military equilibrium with India. Because the Indian conventional military superiority far exceeds Pakistan’s conventional military strength and the gap is increasing with the
Indian economic and geographical size. It is due to this strategic inequilibrium that Pakistan continues to perceive the possibility of limited or general war with India as the Kashmir and other disputes with India has not yet settled (Alam; 2007). Therefore, the possibility to match the Indian conventional military strength with nuclear weapons or a superior military strength with nuclear weapons to win the war can’t be discarded. Tracing the history of development of nuclear weapon by Pakistan, it could be seen that Pakistan was around half the way of their nuclear programme when India conducted the nuclear test in 1974. The Indian argument has been that Pakistan has always felt the need to match Indian capability in a variety of fields. In fact the Pakistani attempt was to overtake Indian nuclear competence well before the 1974 explosion. This was claimed by Z. A.Bhutto before his execution, and by his supporters thereafter (Marwah; 1981: 171). Here, the factors other than India such as international prestige, security threat from the north-west frontiers and the role of ‘Islamic Bomb’ need priority of the consideration.

It has been very often remarked by many scholars that the religious differences and religious functionaries had played a significant role in escalating the conflicts between these two nations. Moreover, many have assumed and found this religious intolerance as the root cause of the India Pakistan conflicts. In Pakistan’s view the partition of the British India was on the basis of religious criterion and they demand the Muslim dominated Jammu and Kashmir to be part of it (Dholakia; 2005: 98). This religious fanaticism did play significant role in the nuclear confrontation between India and Pakistan. Some scholars have viewed this confrontation as clash of two civilizations- Hindu dominated culture of India and Islam dominated culture of Pakistan. Umer Ghulam argues that though the India Pakistan disputes could actually be seen in the political and economic sense, the cultural factors seemed to dominate in some cases. The matter of fact is that the majority of Indians have supported the nuclear explosions, whereas, in Pakistan a wide section of population supported the explosion which shows Huntington’s theory proved to be right (Ahmar; 2001: 149). In the similar respect many scholars have attempted to relate the nuclear weapon capability of these two nations as ‘Hindu Bomb’ and ‘Islam Bomb’. However, Ali Ahmed is of the opinion that the India Pakistan nuclear rivalry could be viewed as a clash within a civilization. The common history of these two nations especially the
colonial regime over two centuries, shows that the influence of the difference in the civilization on the nuclear issue is very minute.

The nuclear ambition of Pakistan was also developed by its religious consideration. Pakistan viewed the dominance of a Hindu dominated India an undesirable menace to not only its existence but also to Islam. “India – Pakistan conflicts sometimes, assumes the proportions of a ‘Jihad’ or a ‘dharma yudha’ (religious or righteous war) – an extension of the millennium – old historical conflict between Hindus and Muslims – in a popular perception” (Dholakia; 2005: 104). Building up a nuclear bomb was inevitable to protect Islam, which is seen as the basis of Pakistan. There was also a notion that the nuclear capability would help Pakistan to assume the leadership in the Islamic world. The concept of Millat which requires loyalty of Muslim beyond its borders also gives hope for Pakistani Islamic bomb. It has been also expected that some Muslim populations of the sub continent will be influenced by Pakistani nuclear weapon power (Subramanyam; 1986: xi). The need for an Islamic bomb was expressed by many. Z. A. Bhutto expressed his deep concern for an Islamic bomb. He justified this need saying that the Christian, Jewish, Hindu civilizations and communist powers have the nuclear capability. Only the Islam civilization did not possess it and this position would be changed soon (Caldicott: 2002: 426). This statement in fact reveals now the Islamic sentiments would contribute to the nuclearisation process of Pakistan. Perhaps, this may be viewed as a card to justify the nuclear weapon programme. But this too motivated the leaders and people of Pakistan to go nuclear. Pakistan would be the first Muslim state to acquire atomic bombs. Such an eventuality would not only increase Pakistan's prestige and influence in the Muslim world, but would also undermine its other neighbour's (i.e., Iran's), conventional military superiority (Khalilzad; 1976). Pakistan's global strategy, as has been stated, includes the creation of a trans-Asia axis and to emerge as a formidable Muslim country of the world. Earlier, Bhutto was able to sell this idea of the Islamic bomb to gain financial support from Arab countries like Saudi Arabia, Iran and Libya (Weissman & Krosney; 1981). President Zia-ul-Haq in a July 1978 speech outlined, "China, India, the USSR, and Israel in the Middle-East possess the atomic arm. No Muslim country has any. If Pakistan had such a weapon,
"it would reinforce the power of the Muslim world". Pakistan was also able to get funds for its nuclear programme from many Islamic countries (Pattanaik; 2003).

The Indian nuclear tests were referred to as a 'Hindu bomb' to which only an 'Islamic bomb' could be an appropriate challenge. The regime by the Bharathiya Janath Party with the ‘Hindutva’ ideology was challenging change to Pakistan. The BJP in its campaign since 1995 had promised to strengthen India's defense with nuclear weapons. When the BJP came to power Prime Minister Atal Bihari Vajpayee announced that India would conduct a full-fledged defense review and, for the first time, set up a national security council. BJP's rise to power and these defense policies inevitably deepened Pakistani anxiety, and added urgency to Pakistan's defense planning (Jones; 1998:67). Some of the Pakistani elites argued that not only does the Indian threat necessitate nuclear tests but also, Pakistan's nuclear programme is a matter of pride for the Muslims and it is the Jewish and Christian lobbies that do not want to see a Muslim country possessing nuclear capability. After the nuclear tests, Prime Minister Nawaz Sharif, speaking outside Masjid-i-Shohda said, "Not only the whole nation, but the whole ‘Islamic Ummah’ hailed Pakistan for its great achievement and expressed their happiness over the decision" (Pattanaik; 2003).

The sprout of the nuclear ambition of Pakistan could be analysed on its threat perceptions, the prestige factor and the religious factor. The threat perception as Alagappa identifies, can be reviewed as (1) a threat from India, (2) Pakistan’s troubled Western Border lands, (3) Prospect of a Nuclear – Armed Iran’s internal instability and (4) the fear of preventive strikes. The external dynamics, where the security threat and lessening national status emanating from India at large, Iran and Afghanistan have vehemently forced Pakistan to develop the nuclear weapon. The unresolved border dispute with Afghanistan has created a troubled condition in its Western borders. Also, the Russian invasion on Afghanistan created a panic to Pakistan’s security. The influence of the migrants from Afghanistan had caused sectarian violence leading to internal instability in the state. Iran poses no direct threat to Pakistan. But Pakistan finds Iran’s promotion of Shiaist ideology creates sectarian violence. The growing relationship between Iran and India has been regarded by Pakistan as a threat to it.
Extra-regional and domestic determinants played an equally important role in the Pakistani decision to test the nuclear weapon. The nuclear non-proliferation regime could not restrict Pakistan’s nuclear development. Pakistan was conscious that the international community, particularly the declared nuclear weapons powers, the permanent five (P-5), treated the two South Asian states differently from other aspiring proliferators such as Iraq or North Korea. In the Indian context, its democratic credentials, geo-strategic significance and economic power, helped it to avert international pressure and actions against its nuclear programme. It is also seen that since the 1950s the international community had deliberately ignored India's nuclear ambitions. In the case of Pakistan, its fast-expanding nuclear weapon programme was neglected by the USA and its allies due to its close ties with the USA (Ahmed; 2000). In the final phases of its nuclear weapon construction, the US government remained passive, tolerating Pakistan’s nuclear ambition. This stand of the international non-proliferation regime in fact helped Pakistan to cross the red-line of the non-proliferation programme (Kapur; 1996: 154).

Analysing the internal dynamics in Pakistan it could be found that the pro-nuclear public perception was developed by the leaders by articulating the Indian nuclear threat. And this public wave for the nuclear power in the later period always prevented the ruling elite from stepping down from the nuclear development programme. In fact the ruling elite feared that such a step would lead to political backlash for them. Zafar Jaspal observes that any change in its nuclear policy is considered as a treasonable act. Even a slight change in the nuclear policy would lead to a political backlash for the ruling elite (Jaspal; 2006: 101). The Islamic Fundamentalist within and outside the state also vehemently argued for the nuclear bomb. The clergy and the Right–wing Muslim Legume party frequently quoted the Quran to convince Prime Minister Nawaz Sharif that he would be violating Sura Al-Anfal of the Quran if he did not test the device in answer to the Indian explosion (Ahmed; 2002: 71).

The notable forces in the internal dynamics of Pakistan are the Military, Bureaucrats and the Islamic clergy. A particular case with Pakistan is the praetorian character of the state and its influence on the nuclear programme. The role of military in the nuclear weapon programme in Pakistan is very evident. Benazir Bhutto, who
was elected Prime Minister in December 1988, was kept out of the loop. She was not even allowed to visit the Khuta facility during her first term as chief executive from December 1988 to August 1990 (Hussain; 2008: 160). Bush and Katyal argue that Nawaz Sharif faced unbearable pressure from the military to authorize the nuclear test. If he had refused it, there was a possibility that Sharif’s government would have fallen to an immediate military takeover (Katyal; 2002: 202). When India conducted the test Pakistan had an elected government, headed by Prime Minister Nawaz Sharif. Though the military had transferred power to the civilian government in 1988, it had retained control over sensitive areas of policy making, including the nuclear domain. Sharif government was pressurised by the civil-military bureaucracy to make retaliatory response to India as the protracted conflict was reinforced by the Indian nuclear tests (Ahmed; 2000).

Though, for peaceful purpose, it was during general Ayub Khan’s regime the nuclear programme of Pakistan began. The ‘military–mullah alliance during General Zia’s regime points the influence of the military and Islamic leaders in the decision making process. Michael Tkacik finds that ‘A.Q. Khan and other, (top level scientists) have made their affinity for Islamists concerns clearly (Tkacik; 2010). Since the early 1990s there had been demands from a small, though extremely vocal pro-nuclear lobby, consisting mainly of retired generals linked to the former military regime of General Zia and religious and right-wing parties, for Pakistan to openly declare its nuclear status as an affirmation of its national sovereignty (Farzana; 1994). While security and external imperatives influenced the Pakistani response, the decision to abandon nuclear ambiguity for a declared nuclear weapons posture was ultimately determined by domestic factors, particularly the nature of Pakistan's decision-making apparatus. Policy making in the realm of security, including the nuclear field, has been preserved by the Pakistani army with the assistance and willing collaboration of the civil bureaucracy, including the nuclear scientists (Ahmed; 2000).

The public perception and the political parties in Pakistan also supported the nuclear weapon programme. The Peoples Party cites the role of its founder, Zulfikar Ali Bhutto, in launching the nuclear weapons programme in 1972. The Muslim League takes credit for its leader, Nawaz Sharif, having ordered the nuclear tests in May 1998. Pakistan’s Islamist parties, the third major political force, are strong
supporters of nuclear weapons. Only Pakistan’s minority nationalist parties, progressive civil-society groups and some retired military officers oppose the nuclear programme and call for disarmament (IPFM; 2010). After the Indian nuclear test 1998, On May 25, a survey conducted was published showing that about 70% of the people favoured nuclear testing, versus 30% who advised restraint. The support for restraint increased to 40% when the issue of strict sanctions against Pakistan was raised. This support rose to 48% on the offer of incentives like the writing off loans (Rizvi; 2001). Even the economic aid could not ensure majority of opposition to the nuclear weapon programme.

In the internal environment, the decision of the Pakistan nuclear programme was effected by praetorianism, Islamic fanaticism and perceptions of political leaders. While in the external environment, the security threat particularly, perceived from India, Iran and Afghan frontier; and international power and status of nuclear weapons influenced the decisions to go nuclear.

Role of Leadership in the Nuclear Programme

In the political and technical sides some individuals have played a very significant role towards the present nuclear status of Pakistan. On the political side Z.A. Bhutto as Minister of Mineral Resources (1958 – 62), Foreign Minister (1963 – 66), President (1970 – 1973) and Prime Minister (1973 – 77); on the technical side Munir Ahamed Khan, a U.S. trained Scientist who was the chairman of the Pakistan Atomic Energy Commission (PAEC) from 1972 to 1991 and A.Q. Khan who is often remarked as the ‘Father of Pakistan Bomb’ are considered to be the key figures behind Pakistan’s nuclear programme (IISS; 2007). Z.A. Bhutto, the political leader, spent a major part of his political life for materializing the nuclear ambition of Pakistan. The military professionals were not much interested in nuclear weapon until the late 1970s or early 1980s. It was a civilian politician, Zulfiqar Ali Bhutto, who galvanized Pakistani interest in nuclear weapons and initiated the nuclear weapons programme (Jones; 1998)

Bhutto made very effective political bargain for the nuclear bomb. Though failed, he made the first attempt to construct a nuclear research reactor and establish nuclear research centres in 1958. It was Bhutto who was the key figure behind the
establishment of Pakistan Institute of Science and Technology (PINSTECH) and Centre for Nuclear Studies at Nelore (Matinuddin; 2002: 84 & Caldicott; 2002: 440). Initially, it was the Pakistan institute of Science and Technology which began the primary works of the nuclear programme. Pakistan’s nuclear programme got into a better pace in the 1960’s when Z.A. Bhutto was the Foreign Minister. It was during this time (in 1965) he made the famous remarks that if India developed an atomic bomb, Pakistan would develop one ‘even if they have to eat grass or leaves or to remain hungry’ (Caldicott; 2002: 438 & Rajain; 2006: 281). Bhutto preserved an imminent threat in the nuclear programme of India to Pakistan’s security and prestige. On the one side, his statement was to reveal that they were aware of Indian nuclear weapon programme and on the other side it was to discourage India from developing the nuclear bomb. As a political strategy, he made use of the anti-Indian feeling of the people towards developing the nuclear bomb. The first nuclear test of India (smiling Buddha) provided Bhutto an evident rationale to pursue the nuclear weapon programme. He made his commitment more vigorous and stated ‘Nobody will be able to stop Pakistan from pursuing this course of nuclear weapon construction then (Caldicott; 2002). Bhutto made use of the Indian threat and Islamic sentiments of the people for his political bargain for the nuclear programme. It was Z.A. Bhutto who introduced the notion of an “Islamic Bomb” in the late 1970 (Alagappa; 2009: 224).

Bhutto was the architect of Pakistan’s nuclear weapons capability. He was associated with the nuclear programme throughout his services in different positions such as minister for Natural Resources (1958-1963), Minister for Foreign affairs (1963-1966), President (1972-1977) and Prime Minister (Teresa; 2009: 131). Pakistan’s first nuclear research and power reactors PARR – 1 and KNUP (Karachi Nuclear Power Project) were established under his supervision. After assuming power in December 1971, he convened the controversial Multan meeting of the Pakistan nuclear scientists on 20th January 1972, when he reportedly asked them to deliver him the so called “Islamic Bomb” (Caldicott; 2002: 440). Bhutto made earnest attempt to make parity with India. Immediately after the nuclear test of India in 1974, Z.A. Bhutto reportedly took direct control of the nuclear programme (IISS; 2007). It was Z.A. Bhutto’s passion and commitment that transformed the peaceful nuclear programme into the weapon programme. Pakistan under Z.A. Bhutto marched to go
ahead of India with the nuclear weapon programme. Bhutto had expressed his individual motivation for the development of nuclear weapon before the Indian Test (Alam; 2007). According to General Ghulam Omar, who was Secretary, National Security Council under General Yahya Khan, Bhutto had been campaigning for Pakistani nuclear weapon capability since the mid of sixties. Bhutto wrote a book called “Myth of Independence” in 1969 in which he argued that only nuclear weapon countries were sovereign and others were not in the nuclearized international system. He found nuclear weapon as a mighty source of national security. Therefore he negotiated with China to transfer nuclear weapon technology which eventually succeeded in concluding a treaty in 1976. The nuclear policy of Pakistan though not documented or well drafted, could be traced from 1958 onwards, from about the time Z.A. Bhutto was the minister for Mineral Resource (Kaushik; 1980: 34).

Most analysts now believe that Pakistan's nuclear weapons programme gained momentum sometime between 1972-73, when then prime minister, Z. A. Bhutto, ordered the development of nuclear weapons to overcome the military defeat of 1971. Also, he concluded secret agreements with China and Libya to finance and technically support its nuclear programme (Shaikh; 2002). Bhutto had to fight with in the political circles for the nuclear programme. Because, he had to face opposition from within the government. According to Bhutto if there were no such opposition from these powerful ministers and bureaucrats he could have speeded up the weapon construction (Kaushik; 1980: 38). Zulfiqar Ali Bhutto wanted to become a leader of international stature and this motive also played a detrimental role in the nuclear development. Bhutto wanted to become the leader of the Muslim and third world through projecting Pakistan’s military powers. In his view if Pakistan obtains nuclear weapon capability, it would make Pakistan a world power (Siddiqa; 2001: 183).

Another notable personality, A.Q. Khan appeared on the scene with his letter to Z.A. Bhutto in 1974. A.Q. Khan performed a very significant role in the clandestine nuclear weapons capabilities. A.Q. khan found a special place as a nuclear scientist in military as well as civilian regimes. A.Q. Khan won the confidence of Z.A. Bhutto and earned a key place for himself in the nuclear bureaucracy. It was mainly because of this special relation that Zia did not remove Khan from his position after the military coup in 1977 (Siddiqa; 2001: 67). Also the nuclear weapon was
symbol of national glory and Khan’s service was essential for it. Because the key figure in organizing this venture was Abdul Quader Khan, a metallurgist by profession. He is called ‘the father’ of Pakistan’s nuclear bomb. It was he who before returning to Pakistan, copied all important but of private suppliers of crucial components for building of a centrifuge plant when working at the centrifuge enrichment plant operated by Urenco at Almedo in the Netherlands (Vanaik; 2001:110). Dr. Khan initially worked at a small centrifuge plant run by the PAEC at Sihala near Islamabad. Bhutto later separated the uranium enrichment project from the PAEC and made Dr. Khan its head. In July 1976, Dr.Khan founded the Engineering Research laboratory close to Islamabad which was later renamed as Khan Research Laboratory (Hussain; 2008: 156). The governmental support with sufficient resources and finance without audit restrictions helped him to develop the nuclear capability. Nevertheless, along with his scientific and technical know-how, his illegal activities, to a greater extend, helped Pakistan to achieve the nuclear weapon ambition. The PAEC initially choose the plutonium rout to develop the nuclear weapon. Since the KANNUP reactor was inefficient and the western powers blocked access to the plutonium reprocessing technology from spent fuel, the PAEC shifted to highly enriched uranium rout. Pakistan was in search of a uranium expert who could carry out the nuclear programme. M.A. Khan the chairman of PAEC was a plutonium expert. Under the circumstances Dr. A.Q. Khan proved to be a great blessing to the Pakistani nuclear weapon capability. He gave his all effort to accomplish the target of the project. Dr. Khan claims that he and his colleagues were working day and night, 12 to 13 hours per day and even on holidays and have made Pakistan self sufficient in uranium enrichment (Grover; 1995).

It was Dr. Khan’s knowledge on the list of companies which could supply the nuclear material and uranium centrifuge technology that helped Pakistan to develop the nuclear bomb. Dr. A.Q. Khan was responsible for providing with the technical secrets for building a gas centrifuge for uranium enrichment (Siddiqa; 2001: 67). Since uranium centrifuge technology unlike plutonium reprocessing, were widely used in industry, were not subject to international control. Like in the case of political leaders, while the nuclear weapon programme was going on Dr. Khan was very clever to keep the nuclear ambiguity. Through out the 1980’s he issued indignant statements
insisting that Pakistan’s programme was a peaceful one and had no military purpose. But after the 1998 test he became more optimistic. He said that he never had any doubts about attaining nuclear capability (Jones; 2002: 199).

Another notable scientist who had rendered a very significant contribution in the Pakistani nuclear programme is M.A. Khan. He was a US trained scientist who was the chairman of PAEC from 1972 to 1990. He served as IAEA Board Chairman from 1986 – 1987 (IISS; 2007). The Karachi Nuclear Power Plant was inaugurated by him in 1972. It was under his chairmanship the nuclear programme of Pakistan received a better momentum. His connection with the IAEA as a staff member and chairman could help Pakistan’s peaceful nuclear programme from which it began its weapon programme.

General Zia Ul Haq, the Military dictator, was also forced to support the nuclear programme in order to gain popularity and legitimacy. Almost all the leaders in Pakistan had to support the nuclear programme for the purpose of gaining popularity. Prime Ministers Benazer Bhutto, Nawaz Sharif, Sherbaaz Khan Mazari and Moen Qureshi, despite their varied ideological backgrounds and inclinations, also supported the nuclear programme (Siddiqa; 2001: 184). Pakistan acquired a nuclear capability during the tenure of Zia-ul-Haq as the head of state. General Zia was astute in purging Pakistan’s nuclear weapons programme amidst extreme international pressure. The Indian nuclear test had made the international environment really hostile to the Pakistani nuclear programme. Zia very skillfully fostered a Pakistani strategic posture of nuclear ambiguity, neither admitting nor denying the pursuit of a military nuclear programme (Chakma; 2009: 25). President Zia Ul Haq, speaking in Rawalpindi on July 27, 1979, said that the Pakistan’s nuclear programme is peaceful and that in view of the paucity of energy resources Pakistan has no option but to acquire nuclear technology (Caldicott; 2002: 421). This ambiguous strategy of Zia helped Pakistan to withstand the external pressure against the weapon programme. Zia could easily overcome the red tapism, especially from the audit department. The audit department had slowed down the purchase for nuclear weapon programme from abroad. However, Zia’s takeover helped to solve this obstruction in the nuclear programme (Sreedhar; 1986). His appointment of Tariq Mufata to the Atomic Energy Commision rescued the PAEC from the financial burden. The significance of Nawaz
Sheriff in the nuclear weapon programme can’t be discarded as the decision to conduct the test “Dhamka kar dein”, was taken by him. Of course, it was the political pressure and the military threat after the Indian Nuclear Test 1998 that forced Sharif to take such a decision (Katyal; 2002). In fact this decision was detrimental in changing the opaque nature of the nuclear weapon programme.

The role of pro-nuclear lobby and leadership charisma, in moulding and materializing the nuclear ambition thus occupies a very significant place in the Pakistani nuclear programme. Though Pakistan lacked powerful pro-nuclear leadership like that of Mrs. Indira Gandhi and scientists like Homi Baba in India, the role played by Bhutto, Zia, Nawaz Sheriff and A.Q. Kahn was in fact very decisive. The persistent and combined efforts of Prime Minister Zulfiqar Ali Bhutto, Dr. Abdul Salam, the eminent theoretical physicist, and Dr. I. H. Usmani, head of the Pakistan Atomic Energy Commission (PAEC), enabled Pakistan to achieve an adequate technical base (Khan; 2006). The leaders used the ‘anti – Indian’ feelings to propagate the necessity of Pakistan nuclear bomb. Ashok Kapur argues that Z.A. Bhutto’s terms of office as Prime Minister was unique not because he was successful in developing the bomb, but because the pattern of nuclear activities which occurred during the 1972 – 77 period had a clear anti India direction (Khan; 2009: 80). Bhutto and Zia, spread their nuclear ideology by invoking the Islamic sentiments of the people. Zia the successor of Bhutto, could succeed in continuing and passing the nuclear programme to the next government. Zia’s order to avoid audit check of purchasing network officer’s expenditure not only speeded up the buying of the equipment needed for the bomb but also made it easier to deal secretly (Subrahmaniy; 1986: 20). Even in a hostile international environment, (the Indian test 1974 culminated in wide international protest and for creation of NSG.), Zia pursued the nuclear weapon programme (Chakma; 2009: 250). In a different sense the political cultivation of nuclear weapon programme of Pakistan was planted by Bhutto, nurtured by Zia and harvested by Nawaz Sharif.

**Foreign Assistance and the Nuclear Programme**

Pakistan’s nuclear capability would have been no where if it did not receive the external assistance. From the very beginning of its nuclear programme Pakistan
heavily depended on the big powers for nuclear materials and technological assistance. It has been rightly remarked by many scholars that Pakistan began its peaceful nuclear programme drawing impetus from the US ‘atom for peace’. Thereafter, its nuclear programme received significant help from the countries like US, France, Canada, Germany, Japan, Netherlands and China. What is more interesting is there were both covert and overt assistance to the programme. “*Pakistan has relied significantly on outside sources of technology for its weapons programs. Pakistan has sought technical assistance in its ballistic missile programs from North Korea and China for over a decade*” (CRS Report; 2004). It had received uranium enrichment technology from Europe, blueprints for a small nuclear weapon and missile technology from China (Kerr & Nikitin; 2009: 2). To a greater extent, many of the deals were kept secret or ambiguous. Moreover major parts of these aids were given for the peaceful nuclear programme which Pakistan diverted for the weapon capability. Similarly the stolen technological know-how from abroad by Dr. A. Q. Khan was the basis of the weapon programme. The basis of Pakistan’s nuclear science and technology is the training that the Pakistani personnel received from abroad. From the late 1950s onward, Pakistan used to send students abroad for getting trained in nuclear physics and engineering (Khan; 2006). Also, Pakistan’s nuclear scientists and technicians have received training in countries such as Canada, France, USA, UK and also under the auspices of the IAEA (Salik Ahmed; 1996:93). The Pakistani personnel that are operating the KANUPP were trained in Canada (Khalilzad; 1976).

Cohen points out that Pakistan’s nuclear dreams began around 40 years ago when-under the auspices of the Central Treaty Organization the U.S. Army initiated a large-scale training of Iranian, Turkish, and Pakistani officers in armour, artillery, and other technical services. Hundreds of Pakistani officers attended U.S. schools between 1955 and 1958. The American nuclear experts frequently visited the training centres and helped the training with their nuclear expertise. They provided the latest know-how about the nuclear programme. Also, in Cohen's view, there is very much resemblance in the present day Pakistani nuclear planning and policy with the American thinking and western nuclear strategies. This is especially seen in Pakistan’s first-use policy and strategy of tactical use of nuclear weapon against conventional power (Cohen; 2004).
Financial assistance for the peaceful nuclear programme was in fact very essential as the state economy was in deep trouble. KANUPP, a 137 MW power plant located near Karachi, was financed through subsidized loans from Canada. Canada granted a soft loan of $23 million at a very low interest rate of 3% to 4% compared to a bank interest rate and a credit of another $24 million without charging any interests to cover the foreign exchange cost of the plant. Japan provided a credit of $3.6 million for a turbo-generator and its installation work was done by the Hitachi engineers (Khalilzad; 1976). As Pakistan lacked both the technology and the resources to carry out the nuclear programme the most part of the nuclear devices were bought from abroad. Many of the components for constructing the centrifuges themselves were purchased from suppliers in the Netherlands. Large numbers of high strength aluminium and extremely strong steel, for the crucial centrifuge rotors were purchased from the Dutch manufacturers like the Van Doorne Transmissie which received an order for 6500 tubes of especially hardened steel. Critical support components and subsystems were purchased from Switzerland and Germany. High vacuum valves and uranium hexafluoride gasification units were purchased from Vakuum Apparat Technik and CORA Engineering of Switzerland respectively. Vacuum pumps, gas purification equipment and thousands of specially formed aluminium parts were sold to Pakistan by the German manufactures (Jones; 1998).

The China Pakistan nexus in the nuclear programme indeed received wide attention as Pakistan turned to the weapon programme. Both in the production of the nuclear weapon and the delivery system, China rendered a huge support to Pakistan. China remains Pakistan’s next important supplier of missile related technologies (CEIP; 1998: 8). The Chinese technicians directly assisted the development of gas centrifuges at Kahuta (Nanda & Sharma; 2002: 174). By 1983 Pakistan was receiving considerable weapons-design assistance from China. This was likely to include a hard blueprint for a missile-mateable uranium fission design that China tested in 1966. These designs would have significantly accelerated Pakistan’s march toward nuclearization, as Pakistani scientists could conduct cold tests (testing the physics package without missile material) with near certainty that a fully assembled device would work when enough uranium had been enriched to weapons-grade level (Narang; 2009: 48). Pakistan has developed a series of ballistic missiles of which
Ghawri and Shaheen–I and II are nuclear capable. In fact, almost all these missiles were either acquired from China and North Korea or developed with their assistance (Kher; 2007: 323).

The IAEA report of 2010 exposes that in the early 1980’s China supplied Pakistan with a nuclear weapon design and enough highly enriched uranium for two nuclear weapons. Later, China is believed to have assisted Pakistan with the Kahuta uranium enrichment plant. In the 1990s, China also helped Pakistan with its reprocessing facility at Chasma. It was with the assistance of the China National Nuclear Corporation, the second nuclear power plant the first unit at Chasma (C-1) came on line in 2000 followed by the second unit C-2. There is a long term agreement between these two nations (IAEA; 2010). In 1995, China provided Pakistan with 5,000 ring magnets, a component part for using in a gaseous centrifuge uranium enrichment plant (Jones et al. 1998; 50 & Shuey and Kan 1995). Medeiros claims that behind the curtain of ring magnet transfer, there might be an export of sensitive technology by the Chinese companies without the authorization of the central government (Medeiros; 2005). Further, the Khushab reactor with capacity about 50-70 MW was constructed with the assistance of China (Kumar; 2007: 308). The 1990s transfers occurred after Pakistan is believed to have achieved a nuclear weapons capability and are not recorded as cases of sensitive nuclear assistance (Mathew; 2009). The pool type reactor in PINSTECH for uranium enrichment was installed by China in 1990 (Barnaby; 1993:76). As a whole there has been a continuous and huge flow of assistance from China to Pakistan.

The China Pakistan nexus, though in the nuclear domain, could be connected to the Indian factor. As India has border disputes as well as fought war with both these nations, a kind of veiled corporation between Pakisatn and China in dealing with India has been developed. India also considers this nexus as a threat to its national security. It is also important to observe that the India nuclear policy expresses that its nuclear weapon is after all to deal with nuclear China. For China nuclear Pakistan could be an added advantage in the nuclear confrontation as there has been protracted conflict between Pakistan and India. This Chinese interest might have helped in strengthening the China-Pakistan nexus.
The Genasis of Nuclear Programme in Pakistan

Like in the case, other nuclear weapon states, Pakistan also began its nuclear programme for peaceful purposes. The beginning of Pakistan’s nuclear programme could be traced back to 1954 with the establishment of High Tension and nuclear Research Laboratory for providing research facilities to students (Rajain: 2006: 281). The ambition for nuclear programme came from the US “Atom for peace” programme and PAEC was established to promote peaceful uses of atomic energy. Encouraged by the initiative taken by the United States, Pakistan established its first atomic energy institute in January 1955 (Matinuddin; 2002: 81). In October 1954, Pakistan's Minister for Industry announced the plan to set up a national atomic research unit as part of a new body for scientific and industrial research in Pakistan (Salim; 1957: 42 & Rajain; 2006: 281). A twelve-member Atomic Energy Committee headed by Dr.Nazir Ahmad was formed in January 1955 to work out a plan for launching a nuclear programme (Singh; 2006: 3 & Chakma; 2002). As per the recommendations of the Atomic Energy Committee, an Atomic Energy Council (AEC) was set up in March 1956. The AEC was composed of two organs: a governing body and an Atomic Energy Commission (Chakma; 2009: 11). Thus the PAEC- Pakistan Atomic Energy Commission was established in 1956 with the objective of peaceful use of nuclear energy. The major task of the Atomic Energy Committee was to focus on the Civilian uses of nuclear energy. To an extent, the functions of committee and the nuclear programme in the early phase until 1970’s was centred on civilian nuclear energy requirements (Singh; 2007: 302).

The PAEC had a very slow development in the early phases. Even then it finalised its plans in 1957 for the acquisition of a research reactor (Salik; 1996: 87). It required an able leader for the PAEC to march ahead with its nuclear programme. The dynamic leadership of Ishrat Usmani injected greater momentum to the working of the PAEC. Irshat became the chairman of the PAEC in 1960 (Chakma; 2009: 12). It was during this period, from 1961 to 1965, that the nuclear programme was included in the countries second five year plans (Singh; 2006: 4). Ishrat Usmani took up the responsibility of setting up many significant institutions and critical programmes that helped Pakistan to attain the nuclear weapon power. He started Pinstech (full name variously given as the Pakistan Institute of Nuclear Sciences and Technology, and the
Pakistan Institute of Science and Technology) and the Karachi Nuclear Power Plant. A very remarkable contribution of Usmani was training program for the young scientists under which brilliant young Pakistanis were selected and sent for training abroad. Also, it was during this period Bhutto, who was a strong supporter of the nuclear programme, became the Foreign Minister and this provided a greater impetus to the Pakistani nuclear programme. He was observing the regional security shifts as China moved closer to nuclear capability, and in response India's reaction in the same manner. He was right to expect that the Chinese nuclear test in 1964 drew India to the nuclear weapon programme.

Pakistan’s principal nuclear research facility is the Pakistan Institute of Science and Technology (PINSTECH) in Nilore, near Rawalpindi. PINSTECH was established in 1965 to implement Pakistan’s nuclear power programme, especially to provide research and training facilities for nuclear scientists and technicians (Rajain: 2006: 282 & Sreedhar; 1987: 161). It was US-supplied MW swimming pool type research reactor (PARR) and went critical only in 1965 (Salik; 1996: 87 & Paranjpe: 1987: 71). The first civilian research reactor, PARA-1, in Rawalpindi became operational in 1965 (IISS; 2007:15). In 1965 Pakistan’s nuclear energy programme took a very important step forward. The government reached an agreement with Canada to build a nuclear reactor known as KANUPP which became operational in 1971 (Jones; 2002: 197). The Karachi Nuclear Power Plant (KANUPP), the first nuclear power plant of Pakistan, was inaugurated by M.A. Khan in 1972(Khalilzad; 1976). Due to the Indian Peaceful test and the international protest, Canada ceased the cooperation and technical assistance to KANUPP. But by then, the Pakistani scientists and technicians have learned to run the plant efficiently (Chari, Cheema & Uzzaman; 1996: 94). Pakistan received the second research reactor (small with 27 KW capacity) from China in 1988 (Aslam; 1996: 162). The PAEC was reorganized in 1964, 1965 and in 1973, which helped to make it a statutory body with autonomy. In 1972 the PAEC was transferred from the Science and Technology Research division to the President’s Secretariat (PAEC; 2011). This was a very significant step in the nuclear development programme and it showed the priority assigned to the nuclear programme in Pakistan.
Pakistan’s early lack of interest in developing a nuclear weapons programme may also be explained by its close military links with the United States, which encouraged Pakistan’s military leader, Field Marshal Ayub Khan, optimistically to declare in 1963 that, ‘if India went nuclear we would buy nuclear weapons off the shelf somewhere’. Therefore, the nuclear programme was primarily dedicated to develop electricity. However, the PAEC had used the nuclear programme in the educational, agricultural and medical fields. The Genetic for nuclear studies established in 1969 provides graduate course in nuclear engineering. The first reactor school, called the Centre for Nuclear Studies was established in the vicinity of PINSTECH in 1969 with an annual capacity of training 100 plant engineers (Salik; 1996: 94). The PAEC established agricultural centres utilizing nuclear radiation in Faisalabad and Tandjan and Nuclear Institute for food and agriculture at Tarnab. The PAEC has also built up nuclear medical centres at Karachi, Lahore, Multan and Islamabad (Sreedhar; 1987: 161). At the beginning of 1965, the PAEC established eight medical and agricultural centres and trained some 350 nuclear scientists and engineers (Moshver; 1991: 100). During this period Pakistan's efforts in the nuclear field was modest and generally supported by the United States. The US support included using atomic energy for agricultural and medical purposes and establishing Pakistan's first Institute of Nuclear Science and Technology in 1962 (Farzana; 2002). In the initial phase, the nuclear programme thus was oriented for constructive and peaceful purposes. The nuclear technology was a tool for economic development that is to meet the energy requirements of the state and enhance its agricultural potential (Aslam; 1996: 161). Development of energy, education, agriculture and medical science were the focus of the nuclear programme. The international attitude to peaceful nuclear energy especially the U.S. atom for peace, the necessity of foreign assistance for the nuclear programme and poor socio economic conditions of the state compelled Pakistan to peaceful nuclear programme

The early peaceful nuclear programme of Pakistan was strongly helped and supported by the US and Canada. The U.S., as part of ‘Atoms for peace programme’ supplied the Pakistan Atomic Reactor almost free of charge. But it was put under the IAEA safeguards (Chakma: 2009). The Canadian collaboration in the nuclear programme indeed was very vital. They not only provided the reactor needed but also
supplied technical and material assistance. In addition to this technical and training assistance Canada also supplied natural uranium and heavy water for the operation of the plant. By the time India tested the nuclear device in 1974, Pakistan had made considerable advancement in the peaceful nuclear programme. It already had a 137 M.W nuclear power reactor, supplied by Canadians. There was also a 5 M.W. research reactor in Islamabad’s Institute of Science and Technology. A 600 M.W. reactor was being built on the banks of Indus at China. Pakistan also had substantial natural deposit of uranium (Sreedhar; 1987).

It is also important to note that some analysts and experts point out that Pakistan’s weapon programme had already activated along with this civilian programme. It was believed that by 1985 Pakistan had already possessed the nuclear weapon capability. The US intelligence agencies concluded in 1986 that Pakistan had acquired nominal capability sufficient to produce nuclear bombs each year (Hussein, 2008; 160). A.Q. Khan in a letter to the military ruler General Zia in 1982 admitted that he had enriched uranium and now wanted to build a warhead (Jones; 2002: 202). Hence what Pakistan required was the warhead and nuclear test to expose its nuclear weapon capability.

**Nuclear Weapon Programme**

An active clandestine nuclear weapon programme was begun by Pakistan after the defeat in the 1971 war with India. Though Pakistan made many statements about the need and status of nuclear weapon capability, especially to deter the Indian threat, an active development weapon programme took place only with the demeaning defeat of 1971. Z.A. Bhutto, then Prime Minister, availed this opportunity to accomplish this long cherished desire of the nuclear weapon capability. It was the famous meeting on 20 January 1972 in the Northern city of Multan between the then Prime Minister, Zulfikar Ali Bhutto and a gathering of the country’s top nuclear scientists and bureaucrats that the formal decision was taken to develop the nuclear weapon capability (Vanaik; 2001: 110 & Jones; 2002:196). Bhutto was well aware that India would acquire the nuclear capability soon and the Indian nuclear test in 1974 further provided the impetus to pace up the nuclear weapon programme. Pakistan had not installed a single safeguards free nuclear facility before 1974 and the first steps
towards the establishment of the uranium enrichment plant at Kahuta were taken in 1975’ (Alam; 2007: 112). It was an ultracentrifuge Enrichment plant. The PAEC was scurrying for resources and harnessing its nascent capacities when India detonated its first nuclear device on 18 May 1974. Linking to the Indian test Bhutto regarded it ‘‘a fateful event’’ in the history of Pakistan. This was the tipping point that transformed the ‘‘capability decision’’ into a ‘‘proliferation decision.’’ Bhutto presided over a formal Defense Committee of the Cabinet and made the decision to formally begin a nuclear weapons program on June 15, 1974 (Khan; 2006). As a response to the India nuclear test Pakistan seems to have adopted a dedicated-facilities approach to its nuclear weapons program. The centerpiece of that program was the attempt to acquire an independent source of fissile nuclear material. Even there were attempts to purchase plants for both the reprocessing of plutonium and the enrichment of uranium (Marwah; 1981: 169).

However, the Indian test caused more and more international restrictions on the Pakistan’s nuclear programme. India's nuclear detonation stimulated formation of the Nuclear Suppliers Group and a much stricter international nuclear export control system with sanctions against imports of chemical reprocessing and uranium enrichment technology (Jones; 1998). As Pakistan was denied the protection under the Chinese and U.S. umbrella after the Indian nuclear tests, it embarked energetically on a clandestine nuclear weapon programme and successfully imported technologies that have allowed it to achieve a degree of nuclear parity with India within a decade (Khan; 2009: 81). Bhutto’s ascendancy to the presidency in 1970 and the realization of the country’s military vulnerability, especially in the Indian hands as proven by the Bangladesh war, transformed Pakistan’s nuclear programme, which had hitherto focused on civilian energy production, into a military one (Hussain; 2008: 159).

Initially, Pakistan adopted a posture involving ambiguous nuclear capabilities, exploiting U.S. patronage and interests in Afghanistan in the late 1980s to compel U.S. intervention to defuse crises with India (Narang; 2009: 47). Pakistan followed two ways to acquire nuclear capability. One the overt plutonium rout—plutonium separation by chemical reprocessing of irradiated reactor fuel, for which it depended the assistance from France and China. The other path was the covert uranium enrichment rout led by A.Q. Khan and for which it depended on Holland (Jones;
1998: 69). The Chashma Project and the New Labs constituted the earlier attempts of Pakistan to produce plutonium (Paranjpe; 1987: 72). Plutonium separation by chemical reprocessing of irradiated reactor fuel was openly pursued by the Bhutto regime through a supply contract with France. In 1976, Pakistan signed an agreement with SGN of France to acquire a plutonium reprocessing plant. However, due to the perception Pakistan would misuse it to make the bomb there was very strong international pressure to cancel the deal. Ultimately, France cancelled the agreement in late 1978 on the basis of fresh evidence provided by the US that Pakistan might misuse the plant to make nuclear weapons (Caldicott; 2002: 444). By then, preliminary design information had been transferred, but no construction or special equipment transfer had begun. A pilot enrichment plant was constructed at Sihala near the proposed site of the main enrichment plant in 1978 (Salik Ahmed, 1998: 90). In 1991 PARR-I was indigenously redesigned and upgraded from 5MV to 10 MV by the Pakistani scientists (Chari, Cheema & Uzzaman; 1996: 91). The Khusab Reactor which went critical in 1998 is the major centre of plutonium production. It has the capacity to produce enough plutonium to make at least one bomb per year (Nanda and Sharma; 2002: 177).

Having closed the plutonium rout Pakistan now turned to the enriched Uranium rout. Pakistan secretly and illegally perceived uranium path. By the time France backed out of the agreement in 1978, Pakistan had already embarked on a clandestine effort to develop a uranium enrichment facility. A.Q. Khan, a metallurgist by profession, played very significant role in the uranium enrichment programme. A.Q. Khan joined the PAEC in 1975. The Khan network is, first and foremost, an elaborate and highly successful illicit procurement network that Khan created in the 1970s to supply Pakistan’s gas-centrifuge program, which has been used to produce weapons-grade uranium for Pakistan’s nuclear weapons programme (Albright & Hinderstein; 2005). Pakistan began its uranium enrichment project named ‘project-706’ in 1974 (Siddiq; 2001: 67). In the beginning the project was a part of the PAEC. But, later in 1976 the uranium enrichment project was separated from PAEC to Khan Research Laboratory with A.Q. Khan as the head of it. This was to provide more freedom to A.Q. Khan. The uranium rout seemed to be easy as A.Q. Khan had a better knowledge in it and it was free from the international safeguards. Therefore,
Pakistan aggressively switched on to the uranium enrichment project. Since 1979 the Kahuta research Plant has been providing training to Pakistani Scientist for constructing and operating gas centrifuges for uranium enriching (Barnaby; 1993: 77).

In 1976 Pakistan inaugurated what was later revealed to be the hub of its nuclear weapons programme in Kahuta, an installation dedicated to the production and enrichment of bomb-grade uranium (Farzana; 1994). The Kahuta Research Laboratories occupy a very significant place in Pakistan’s nuclear weapons capability. They are the main nuclear weapon laboratories of Pakistan. The primary Pakistani fissile material production facility is located at Kahuta, employing gas centrifuge enrichment technology to produce highly enriched uranium. Kahuta began producing HEU in 1986. As of 1986 it was reported that there were approximately 1000 Centrifuges operating at the facility (Nanda & Sharma; 2002: 174). It is believed to have first achieved the capacity to produce a significant quantity of HEU in the early 1980s and to have built up its enrichment capacity using P-2 centrifuges and later more advanced P-3 and P-4 designs (IPFM; 2009). Rizvi Askari has pointed out that Pakistan carried out first cold tests of weapon design in-between 1983 and 1984. By 1985, Pakistan was capable of hard testing a nuclear device (Askari; 2001).

The process of converting natural Uranium to Highly enriched Uranium was formidable challenge to Pakistan. Under the leadership of Dr. Aminnuddin, a team of dedicated scientists at the PAEC succeed in producing the Uranium tetra-flouride (UF 4) and converting the solid UF 4 to UF 6 which was later used by A.Q. Khan to produce highly enriched Uranium (Matinuddin; 2002: 101&102). Pakistan is likely to have received the plant at Dera Ghazi Khan for the conversion of uranium into gaseous form known as uranium hexafluoride (UF6) from a German business firm in between 1977 and 1980. However, Pakistan received the gasification and solidification plant from CORA Engineering of Switzerland in 1987 (Salik; 1998 & Cheema; 1996: 91). Therefore, despite the irregularities in the dates, it could be noted that by the end of the 1980’s Pakistan had already well advanced in the Uranium enrichment programme.

By 1981 U.S. intelligence had concluded that Pakistan’s uranium enrichment facility, Kahuta, was operational and seeking to “develop a nuclear explosives
capability” and that Pakistan had made advances in developing the trigger package (Narang; 2009). A.Q.Khan, father of the Pakistani nuclear bomb, disclosed Pakistan's nuclear capability in 1984. And in 1987, Khan admitted that Pakistan already possesses a nuclear bomb. In 1985 the US National Intelligence Council reported that Pakistan probably has a workable design for a nuclear explosive device (Kerr & Nikitin; 2009: 2). General Zia later supported this view but added a rider saying that though Pakistan had the capability it did not have the intention to make a nuclear weapon (Pattanaik; 2003). By the end of 1987, the United States had concluded that “Pakistan had produced enough fissile weapons-grade uranium for four to six atomic bombs” (Narang, 2009; 49). On 23rd August 1994, then Pakistan Prime Minister Nawaz Sharif unequivocally declared in a public meeting that ‘Pakistan possesses the atom bomb’ (Varun; 1996: 86).

The Indian test in May 1998 was very crucial to the Pakistan nuclear test. Pakistan waited almost two weeks after the Indian test to know about the international pressure and the discourse within and outside. Pakistan waited for two weeks before responding with its own tests although Abdul Quadir Khan informed the civilian and military leadership that Pakistan needed almost three days to carry out the test (Vanaik; 2001: 1). Immediately after the Indian tests Prime Minister Nawaz Sharif chaired a meeting of the Defence Committee of Cabinet to evaluate the security situations. The meeting decided to restrain from conducting a test soon so as to know the international response to the Indian test, particularly the sanctions could be imposed against India (Mahmood; 2000: 445). To Pakistan’s dismay the international response to the Indian nuclear test was very feeble. However it became clear to Pakistan's policy-makers within a week of India's nuclear explosions that the international community would not impose strict sanctions against India and that whatever measures they adopted in the initial stages would lose their sting over time (Synnott; 1999). There are varied opinions about the time when the preparation for the test started. It was reported that the test preparation began before the Indian tests. But almost all the nations knew that it won’t be very late that Pakistan would conduct the test. On 28th May at 3.16 p.m the chief scientific officer Muhammad Arshad pushed the button stating “All praise be to Allah” and Pakistan unveiled the curtains of nuclear opacity (Katyal; 2002: 213). The test was conducted at the place called
‘ground zero’. The first test named Chagai – I was conducted at 10:16:15.8, 28 May 1998 at Ras Kosh Mountains, Chagai district in the Baluchistan Province 28.79° N and 64.94° E. It was a multiple device test in an underground horizontal tunnel of 1000m length. The test yield was assessed approximately 9 Kt though chained yields range from 18 Kt. to 40 Kt. The second test named Kaharan – I was held at 6:55, 30 May 1998 at Kharan in Chagai district, Baluchistan Province 28.43 ° N and 63.86 ° E (Katyal; 2002). Pakistan conducted its sixth nuclear test at Kharan, a flat desert valley 150 kms to the South of the Ras Koh Hills. This was a miniaturized device giving a yield which was 60 per cent of the first test (Azarn; 2000). With first five tests Pakistan had equalized the Indian tests in 1998. However, it conducted one more. Either it wanted to go beyond the parity or it was to equalise with the the entire Indian test including the first Indian test of 1974. Now the total number of tests held by both of these states are equalised with each state conducting 6 tests each. Pakistan had little choice but to follow the suit. Testing six uranium fission devices (three were of subkiloton yield), demonstrated the functionality and reliability of Pakistan’s nuclear designs (Narang; 2009: 56).

In response to the Pakistan’s nuclear tests on 6 June 1998, UN Security Council adopted the Resolution 1172 calling on India and Pakistan to refrain from further tests and resume the peace dialogue over the disputed territory of Kashmir. The western world reacted to a step ahead, imposing stringent economic and military sanctions (Farzana; 2002: 30). There are no reliable sources that provide the real nuclear weapon strength of Pakistan. Different scholars and experts have put it in varied quantities. Current estimates suggest that Pakistan has nearly 60 nuclear weapons, stored in at least different locations throughout the country (Jagadish; 2007: 227 and Kerr & Nikitin; 2009: 1). Now Pakistan has well advanced in its nuclear capability. Both Plutonium and Uranium technologies and their productions are accessible and affordable to Pakistan. Also, Pakistan has turned out to be a nuclear capable nation which can export its technology.

**Pakistan and the Non-Proliferation Regime**

In Pakistan’s Opinio the CTBT has been killed by the US. Nevertheless, if India agrees to sign it, Pakistan will sign it. Moreover, Pakistan does not intend to
restart nuclear testing. Pakistan is interested in keeping some basic provisions of NPT (such as safeguards), but will not accept to adhere to a discriminatory regime. Pakistan agrees to a ban of production of fissile material but not limited to weapon-grade material. Pakistan is interested in developing CBMs with India. Contrary to the official decision to notify missile test, Pakistan does not notify India the tests. Nuclear Weapon Free Zone has been proposed by Pakistan in 1974, with no success. This was rejected by India as irrational without global nuclear free zone. Pakistan’s official stand is it will not transfer missile technology to other states following MTCR criteria. Also, Pakistan claims its missile production is indigenous. On BMD, Pakistan is seriously concerned about possible acquisition of BMD technology by India.

Delivery System

Development of missile capability is in fact very essential for the nuclear deterrence to be credible. Missiles capable of carrying nuclear bombs to the desired targets are needed for the nuclear weapon capability to be effective. Pakistan started an active missile development programme by 1980s. There are differences of opinion about the missile development programme. It is said that the PAEC and A.Q. Khan had different routes of acquiring the missile technology. While the PAEC looked to China, A.Q. Khan approached North Korea. China follows a dual policy towards non-proliferation. It has played a prominent role in building up Pakistan's missile technology. Despite the US involvement to reduce the Chinese support to Pakistan China has been continuing it assistance in this regard (Farzana; 2002: 33). The Ghawri missiles which A.Q. Khan worked out are Pakistani assembled versions of North Korean Nodong missiles (IISS; 2007: 68).

Pakistan, according to many observers, has two clearly distinct missile development programs. The first program is run by the Pakistan National Development Complex (PNDC) in collaboration with the Pakistan Space and Upper Atmosphere Research Commission (SUPARCO) and the Pakistan Atomic Energy Commission (PAEC) and has focused since the early 1980s on solid-fuelled ballistic Missiles. The second development programme has been headed by Khan Research Laboratories. One report has suggested that these competing ballistic missile development efforts were aligned with competing nuclear warhead efforts, that is, the
team developing a plutonium warhead for Pakistan’s bomb, the PAEC, worked
towards developing Chinese-derived nuclear-capable missiles, while the HEU team
(KRL), collaborated with North Korea on liquid-fuelled missiles derived from Scuds
(CRS Report; 2004 : 8).

Pakistan has two types of delivery vehicles for nuclear weapons: aircraft
controlled by the Pakistan Air Force and surface-to-surface missiles controlled by the
Pakistan Army (Kerr & Nikitin; 2009: 27). “Some reports suggest that Pakistan has
developed two different weapons, one for aircraft delivery and another for missile
delivery. “The weapons are widely believed to be of an implosion design, with a
fissile core of highly enriched Uranium 235 weighing approximately 15 to 20
kilograms. The fissile cores are reportedly surrounded by spherical Beryllium/U-238
shields fitted with HMX explosive lenses. This data suggests a high degree of
sophistication in the Pakistani design” (Jagadish; 2007: 227). In addition to its
indigenous missile production, which includes short–range and intermediate range
missiles such as the Half series and Shaheen series respectively, Islamabad is known
to have received M–11  missiles with a range of 300 km from China in the early
1990s. The Shaheen series’ design is based on the Chinese–supplied M–11 missiles,
while the Ghawri series is based on the North Korean Nodong missile design (Khan;
2009: 77). In 1992, there was a transfer of M–11 short range ballistic missile
components between China and Pakistan, and in August of the next year, China
shipped additional equipment related to the M–11 missiles (Kher; 2007: 323). The
transfer of M–11 missiles from China to Pakistan in 1993 had been admitted by the
Pakistan government in its senate and also by some Chinese authorities (Datta; 2002:
217). Ghawri–1 was tested in April 1998, claimed to have a range of 1500 kms. In
December 1993, Pakistan Prime Minister General Bhutto initiated deal with North
Korea for no-dong missile technology (IISS; 2007: 68). In February 1989, General
Aslam Beg announced that two versions of the Hatfs had been successfully tested.
Hatf-I was tested in April 1988. The Shaheen–1 has a range of 500 kilo meters and
was first tested in 1999. Shaheen–2 has a range of 2500kms (Jones; 2002). Hatf-I and
Hatf-II are indigenously developed short range missiles with a reach of 80 km and
300km respectively, and are capable of carrying a payload 500 kilograms each (Salik; 1996 :98). Now the Pakistan operational ballistic missiles include the Ghawari
(Hatf–3), the Shaheen–1 (Hatf–4) and the Ghawri (Hatf–5). Pakistan has tested the Shaheen–II (Hatf–6) in 2004 with a range of 2000 to 2500 kms (Strategic Security Blog; 2007). Pakistan has been actively developing two cruise missiles – Babur (Half – 7) derived from Chinese DH–10 and Hatf–8 (Tkacik; 2010: 186).

Mirage III and V aircrafts could also be used to carry nuclear devices although within a limited range. Pakistan has modified the F-16s purchased from the United States to deliver its nuclear weapons (Kerr & Nikit; 2009: 27). Pakistan would prefer to use the F–16 and its modified version 32 F–16 for the delivery of nuclear weapons because of its long range capability. But at the same time, it has given a considerable effort to ballistic and Guise missiles for the delivery of nuclear weapons. Although Pakistan may also have modified its Mirage-V and A–5 aircrafts to deliver nuclear weapon; the F–16 is the next survivable of its aircraft and thus probably the primary platforms for air–delivered weapons (Tkacik; 2010: 184). On September 30, 2006 an agreement was signed between the US and Pakistan providing provision for an additional aircraft. This would help Pakistan to upgrade its F-16A or16B model aircrafts. But it is uncertain what portion of the expanded Pakistan’s F-16 fleet will be capable of a nuclear mission (Kerr & Nikitin; 2009: 36).

Like in other defence programmes, the Pakistani missile programmes also were primarily oriented against India. The Ghawri was meant to a range of 2000 kms, which could hit any target in India. In the missile programme too Pakistan attempted to compete with India. Three important shifts that led in a forward leap in the nuclear programme were Nazir Ahmad’s chairmanship, statutory status of the PAEC and budget allotment for nuclear programme by Ayub Khan’s government. The international safeguards, poor scientific back ground and poor economy are again proved to be a stubborn block in the nuclear programme. At the same time, Pakistan has also proved that even amidst these hindrences it could develop a very strong nuclear weapon capability with substantial delivery sytem.

**Conclusion**

What could be found in the first phase of peaceful nuclear programme are: (1) It was entirely concentrated on constructive purposes, i.e, to support the socio – economic sectors, generation of electricity at cheap and reliable source was the prime
concern of the nuclear programme during this period. (2) The nuclear programme was at snails pace due to economic constraints, bureaucratic complexities and scientific backwardness. Zulfikar Ali Bhutto, the premier of the nuclear programme once complained about the internal operations that some powerful ministers and bureaucrats were against the nuclear programme (Bhutto; 1979: 137). On the technical side and components, Pakistan had to heavily depend on the foreign assistance which was strictly regulated and often denied. The father of the Pakistani Bomb, A.Q. Khan has admitted that Pakistan had to depend heavily on the western powers and their market for carrying out the nuclear programme without which it would not have been a reality (Jones; 2002: 302).

Maintaining a strategy of ambiguity and recovering the foreign aid, Pakistan attained the nuclear weapon capability. From its inception in the 1970s, Pakistan's nuclear weapons programme had been shrouded in the grab of ambiguity, neither adopting nor rejecting a nuclear weapons capability. This ambiguity helped Pakistan to withstand international non-proliferation pressures even as it expanded its nuclear weapons infrastructure (Ahmed; 2000). To carry out the nuclear programme it is necessary for Pakistan to maintain the opacity of the weapon programme. The separation of the weapon programme from the PAEC, tight security provided on the nuclear sites and the statements on various occasions by the leaders were meant to hide the nuclear weapon programme from the international attention. “Dr. Munir Ahmed Khan, Chairman of PAEC, stated that Pakistan would neither acquire nor develop nuclear weapons (Kaushik; 1980: 41). When the cameras at the Kanup reactor failed in 1979 and 1980, it was accused that Pakistan had diverted the spent fuel and acquired plutonium (Datta: 2002; 176).

Therefore, the dual strategy followed by Pakistan in their nuclear weapon programme had primarily two aims. One was to avert the Indian threat by pronouncing that they are already nuclear capable and the other to cover the weapon programme from the attention of the international community. It was essential for Pakistan to avoid the dissatisfaction of the big powers like the U.S., Britain and France because, Pakistan heavily depended on these powers to build up its economy. And on the Indian threat, it wanted to carry out its long standing claim for Kashmir.
Hence, the role of foreign assistance, political and scientific leaders and the strategy of ambiguity were the major factors that helped Pakistan to attain the nuclear bomb. Today, Pakistan has nuclear arsenal of about 100 weapons and more weapon grade material. It has multiple delivery options, both air crafts and missiles. Pakistan is still developing and strengthening both the nuclear arsenal as well as the nuclear weapon delivery capabilities. It is planning to develop nuclear triad. Both in the energy spectrum and in the military field the nuclear programme is flourishing. A blend of the indigenous and foreign technology has been applied in the nuclear programme. Pakistan lays greater significance to nuclear weapons particularly against existential threat arising from India. Therefore it has been expanding its nuclear capabilities, quantity quality and delivery devices. It has one of the fastest growing nuclear stockpiles in the world. The estimates, based on 2011, indicate that Pakistan possesses between 90 and 110 nuclear weapons (Kristensen and Norris; 2011: 4). The International Panel on Fissile Materials concluded in 2011 that Pakistan has stockpiled approximately 2.75 tons of highly enriched uranium (HEU) and 135 kg of weapons-grade plutonium (Global Fissile Material Report; 2011).

NOTES

1) ‘Dhamka Kar dein’ were the exact words used by the Prime Minister Nawaz Sheriff to inform the decisions of the government to conduct the nuclear test on 18th May, 1998, to the chairman of the PAEC (Katyal; 2002 :207).

2) Analysing the motive behind nuclear weapon development of the nuclear weapon states it would be seen that there are certain common factors that induced almost all these nuclear weapon states. Nuclear weapons not only enhance state's military capabilities but also they are symbols of status that enhance national prestige and protect state sovereignty. It was true for the nations like Soviet Union, China, India, and Pakistan (Allison; 2004: 59). They are indeed the general factors. These states also had certain particular reasons that force them to nuclear weapon development.

3) There were rumours in the 1980s about Indian pre-emptive attack on Pakistan’s Nuclear Sites. As India had acquired the nuclear weapon capability in 1974 with
its first test, many expected that India would attempt to prevent Pakistan from obtaining nuclear bomb (See. Chakma; 2009: 28).

4) In his famous work Clash of Civilization and the Making of World Order, Samual P. Huntington argues that in the post cold war era the main source of conflicts will be cultural and religious identities. He says that fall line between civilizations will be the battle lines in the future (Huntington; 1996). This could be seen in the Indo-Pakistani confrontations.

5) In December 1953 the U.S. announced its ‘Atom for peace’ programme under which it promised to help other countries develop nuclear power programmes (Greeville Rumble; 1985).

6) Dr. Nazir Ahmad was the head of the 12 member Atomic Energy Committee and was the first Chairperson of the Pakistan Atomic Energy Commission (Chakma: 2009).

7) The Atomic energy law made the PAEC an autonomous statutory body. Though not big, the second national five year plan (1960 – 65) allocated Rs.46.5 million for the development of nuclear programme (Jones; 2002 & Chakma; 2009). Also it was for the first time government allotted such a big amount.

8) There is no clear evidence about when the uranium enrichment programme was started. However, it could be assumed that the project originally began as project 706 in late 1974. The project got a momentum only with its separation from PAEC in 1976 and A.Q. Khan as its head (Chakma; 2009 & Siddiqa; 2001).

9) Gas centrifuge: A method and a device by which the isotopes of uranium can be separated from each other. As the centrifuge rotator, the lighter isotopes of uranium (U-235) are moved towards the outer edges of the centrifuge, while the heavier isotopes (U – 238) remains in the centre (Newton; 2008: 126).
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