

CHAPTER 3: THE NUCLEAR WEAPON OPTION: INCENTIVES AND DISINCENTIVES FOR NUCLEAR WEAPONS

3.1 Introduction

After reviewing the theoretical macro-perspective framework in which the concepts of proliferation and non-proliferation are defined and managed, the focus in this chapter shifts to the identification of possible motivations and disincentives for a nuclear weapon capability. Before a government can, however, decide on obtaining a nuclear weapon capability, it should have the economic and technological expertise; or at least be able to obtain the expertise. It is necessary, therefore, to identify the factors that could serve as the prerequisites for nuclear proliferation. Thereafter factors influencing government's decisions to obtain or not to obtain a nuclear weapon capability will be examined by identifying the incentives and disincentives for nuclear weapons. A broad range of factors influence such decision making, ranging from global strategic factors to, sometimes, solely domestic issues. A number of these factors remain highly speculative and even sometimes contradictory. Although some of these incentives would be present when a decision is taken to obtain nuclear weapons, in general triggering factors would precipitate such a decision.

This theoretical study of prerequisites for proliferation, incentives, disincentives and triggering factors will be augmented by a brief look at four cases focussing on China, India, Israel and Sweden. In these studies some specific political, security and domestic influences will be mentioned that prompted the decisions whether or not to pursue a nuclear weapons policy. In Chapter 5 the South African case will be investigated with a view to addressing the question of whether the incentives and disincentives mentioned in this chapter were present in South Africa's decisions to obtain a nuclear weapon capability and later to dismantle it.

3.2 National Prerequisites for Proliferation

Before nuclear weapons can be developed, the country developing them needs to be economically and technically capable to conduct such a programme. These essential conditions are needed not only in

terms of physical resources but especially also with respect to project management skills. Such resources and capabilities are, however, not only restricted to the industrialised states but also present in some of the larger developing countries. While it remains impossible to infer intent from the manufacturing capability that a state possesses, a certain level of economic wealth and technological knowledge is needed, and this has to be backed by political will. Defining exactly what constitutes prohibitive costs and the needed expertise for a nuclear weapon programme remains difficult.¹

The technological hurdles (referring to the mechanical and applied sciences aspects of building a nuclear device) that inhibit countries from producing nuclear weapons will be referred to only in general terms. In many cases, non-technical considerations, rather than technical ones, may determine not only whether a state decides to pursue nuclear weapons but also its probable success in doing so. According to the United States' Office of Technology Assessment some of these factors, which may vary from country to country, include:

- ❑ “the ability of a government to organise, manage, and carry through complex, long-term projects involving a large scientific and technological infrastructure, and to keep state secrets;
- ❑ a country's foreign business contacts, trade, and supply of hard currency; and
- ❑ the domestic and international costs of getting caught, including possible diplomatic isolation and potential loss of trade, of technology transfer, or of foreign assistance.”²

There are three key technological requirements that must be met in order to build any kind of nuclear weapon, namely: access to sufficient quantities of fissile materials; a reasonable level of skills in working with high explosives, nuclear materials and fuses; and a design for a device. Since the commencement of the nuclear age it has been recognised that designing a nuclear device and acquiring the non-nuclear components of such a device are much easier than obtaining weapons-grade materials in sufficient quantities.³ Practical expertise in the management of the nuclear fuel cycle is of vital importance in a nuclear weapon development plan. Although the technical difficulty in building a sophisticated device

should not be overestimated, it should also be made clear that the project requires a concentrated technological effort that many states are probably not able to muster.

The five recognised nuclear weapon states (NWS) as well as the three *de facto* nuclear weapon states Israel, India and Pakistan first developed military nuclear capabilities and only afterwards turned to peaceful nuclear developments. Any new entrants will probably need to use civilian nuclear capabilities as starting points and then manage their weapons related by-products, in particular the production of plutonium.⁴ This is so because of growing multilateral actions to limit the export of nuclear weapon materials, equipment and technologies, which have become more stringent since the late seventies. The development of these controls and the influence on the non-proliferation norm will be described in more detail in Chapter 4.

3.2.1 The Nuclear Weapon Decision

As Stephen Meyer states, “...nuclear weapons do not generate spontaneously from stockpiles of fissile material”. Motivations and intentions need to be identified and analysed so as to explain proliferation.

⁵ This can, however, still not be fully understood unless the process of decision making is taken into account. A state exists and acts as it does only in so far as the people composing it act as they do, and a state’s behaviour is determined by the way in which a situation is defined subjectively by those charged with the responsibility for making choices. Although it could be stated that concepts such as national interests, national power and national gain play an important role in foreign policy and security decision making, it should be noted that these factors “...proceed in large part from the individual decision - maker’s conception of them, and a substantial plank of idiosyncratic factors must be built into the analysis of foreign-policy formulation to explain the decision maker’s own view of what is happening and what policy-making is about.”⁶ This is not to deny the impact of system and role constraints for the decision maker.⁷

Choices are justified and criticized by reference to the content of the available options, the consequences of action. Consequences are usually stated in terms of the impact on the conditions of life of the population affected by an action. The instruments used to make these choices are produced

by generalising past experience.⁸ In further understanding decision making it is necessary to take into account three distinct elements which can be regarded as interdependent and simultaneously interconnected variables, namely the decision makers and their international and domestic environments. The image held by the decision makers of these environments is an intervening variable between them.⁹ In essence the decision making process could be described as “... processes of choice, as an interplay between the decision makers and the relevant environments in which they endeavour to pursue their values and to attain their objectives by finding suitable means and by dealing with the restraints and obstacles encountered.”¹⁰ On a practical level the foreign-policy decision makers must take into account firstly “the reservoir of persons, roles, rules, agencies and functions from which a particular decisional unit is formed and within which it operates”, secondly, “the society and culture; resources, technology, groups, elite, public opinion, mass media, the political climate, cultural values, social wants and needs” of the state; thirdly “the international systems: friends; allies; neutrals; enemies; international organisation; diplomatic rules; bilateral and multi-lateral relationships; relevant international factors in other nations; policies of other states” that impinge upon them and finally the situation itself.¹¹ As explained later, these factors will have an impact as incentives and disincentives for the so-called “nuclear weapon decision”.

This nuclear weapon decision is of special importance for the purposes of this study. It is the decision some governments take to obtain a nuclear weapon capability. It remains considerably easier to state that the study of decisions to go nuclear is important, than it is to articulate exactly why those decisions were made. This task is further complicated by the fact that these decisions usually take place in total secrecy. It also remains difficult to identify the point at which a nuclear weapon decision occurs. The convention of labelling a country as a nuclear power following a nuclear test explosion is a convenient and diplomatically important way of distinguishing between nuclear and non nuclear states. But the decision to conduct a test can be a relatively automatic step in a long chain of events that begin years before.¹² Stephen Meyer presents nuclear decision making as a three-stage process, beginning with an explicit government decision to develop a latent capacity, followed by a decision to transform the latent capacity into an operational capacity, followed by a decision to begin an operational nuclear weapon programme.¹³ The second stage is regarded as the proliferation decision. It occurs when the latent capacity to build a nuclear device coincides with the motivational factors influencing such a government

to obtain a nuclear weapon capability.

In practice, however, it remains possible to maintain a significant nuclear weapon capability without testing a nuclear device. Great strides in the development of super computers significantly assisted in the development of nuclear weapons without testing. The strengthening of the norm against testing, as well as the implications of contravention of the Comprehensive Test Ban Treaty (CTBT), limited the capacity to test to only a very few countries not subscribing to the current non-proliferation commitments and obligations.¹⁴

Despite the above mentioned technological prerequisites necessary for the assembly of a nuclear weapon, it is generally accepted that the technical and economical barriers to proliferation are declining as nuclear technology and nuclear weapon material becomes more easily available.¹⁵ This is especially the case since the collapse of the USSR and increasing concern about the security of nuclear weapon relevant fissile materials in CIS countries.¹⁶ Perceptions remain an integral part in government's decisions regarding this issue. While the nuclear decision is usually taken if a government views such a capability as being, on balance, in the country's interest,¹⁷ such a decision may have a negative impact on security if the government's calculations are wrong. This might especially be relevant in the case of states that are involved in serious international or regional tensions. These governments will probably tend to see in their adversary's capabilities a true measure of intent, and will react accordingly, possibly resulting in pressure to develop similar or comparable capabilities.¹⁸ This is the case in many circumstances because military and strategic decision makers tend to view opponents through a realist perspective, tending rather to overestimate an opponent's intentions than to underplay them. Interstate tensions are tending to create a gap between intentions and information, making more stringent security decisions than necessary, a possibility.

Nuclear weapon decisions, whenever they are made, are characteristically the product of secret consultations and deliberations. This has been the case in all states which have developed a nuclear weapon capability, because of the sensitive nature of such endeavours. In general no state wants information on its programme made public and usually wishes to keep potential adversaries initially ignorant of its programme. Since the creation of the NPT this is even more the case, since a nuclear

weapon capability being developed by a state party to this treaty would trigger international sanctions and other punitive measures.

A wide array of factors influence any decision to go nuclear or not. Such factors include international security considerations, forces in domestic politics and the distribution of bureaucratic power. The study of nuclear weapon decision making thus forces the scholar to consider the interplay of reasons, interests and perceptions, which makes many conclusions tentative.¹⁹ Despite this complexity, it is possible to identify some broad incentives and disincentives that a decision maker is faced with, in deciding whether or not to develop a nuclear weapon capability.

3.2.2 Incentives and Disincentives

William Potter identifies one method to organise the different pressures for, and constraints on, decisions to develop or obtain a nuclear weapon capability. This is to group them into four broad clusters of proliferation incentives and disincentives. These clusters were formed by grouping the incentives and disincentives according to the relative importance they ascribe to internal or external considerations and military or political-economical objectives. For the purposes of this study these clusters could be labelled as factors of international security, international politics, domestic security and domestic politics.²⁰

3.2.2.1 International Security Incentives

The international security incentives for nuclear weapons include a wide range of factors namely; deterrence, capability to make war, weapons of last resort and instruments of coercion.

The desire to deter external threats by developing and acquiring a nuclear capability may be the most significant international security incentive. According to this argument, an operational nuclear weapon capability will deter a nuclear or conventional attack or even blackmail by a superpower or a regional adversary. A nuclear deterrent is regarded as having the same stabilising influence on regional balances as it is alleged to have had on US - USSR relations during the Cold War.²¹ Nuclear deterrents also

have the potential to function on a level where only smaller nuclear stockpiles are operational because of the devastation potential of even only one nuclear weapon. A small nuclear arsenal would, however, only be a believable deterrent against a country armed with conventional weapons or a comparable nuclear capability, and not necessarily against a superpower. The issue role deterrence in nuclear proliferation has been covered more comprehensively in Chapter 2.

The possession of nuclear weapons capability may be a means of achieving advantages in warfare, should deterrence fail. It has been suggested particularly that certain small and middle range powers might require tactical nuclear weapons in order to defend themselves against nuclear or conventional attacks by a more powerful state or regional adversaries, particularly in the absence of credible security guarantees by a nuclear power. 'Tactical' weapons could thus be perceived as feasible defence mechanisms for countries in a vulnerable security position.²² Up to date nuclear weapons have never been used again in a conflict since the Second World War. International reactions to and measures against states using such weapons remain unpredictable. During the Cold War such an eventuality would have had a major impact on the relationship between the two superpowers and could conceivably have brought the world to large scale destruction. After the end of the Cold War international opposition to the possible use of such weapons grew, as is illustrated by the evolution of the non-proliferation norm. Nevertheless the possible use of tactical nuclear weapons formed part of some states' military doctrines, and could conceivably be regarded as options even in some of the current nuclear armed states. The probability of use in war fighting will, however, remain low.

Nuclear weapons could also be regarded as weapons of last resort. In this context a nuclear weapon would only be used if a country was on the brink of total destruction and defeat.²³ The possible use of a weapon in such circumstances could be regarded as more believable than to use it for military advantage. The attractiveness of such a capability would increase if a state was politically isolated or surrounded by enemies which could possibly wish its demise.²⁴

Nuclear weapons could also be regarded as an instrument of coercion. Nuclear blackmail, intimidation of non-nuclear regional adversaries, and even the use of nuclear weapons in so-called preventative first

strikes may be perceived as desirable policy options for irrational leaders.²⁵ Again the success of such coercion could be dubious, if the use of such a weapon is not believable. If a leader of a country is regarded as irrational such a blackmail threat could be useful. This incentive thus seems to be mostly relevant in the case of countries ruled by despotic leaders. More subtle forms of coercion may, however, occur in which a nuclear weapon capability plays a role, although it is not so pronounced.

3.2.2.2 International Security Disincentives

On the international security level some disincentives against states obtaining nuclear weapons can be identified. These disincentives include potential hostile reactions by adversaries and allies against such a capability, the creation of a strategic credibility gap, the absence of a perceived security threat and changed perceptions on the utility of nuclear weapons.

Potential hostile reactions of a military nature, but also diplomatic and economic actions by adversaries and allies, could serve as a disincentive. The anticipated response of an adversary might range from the threat of military action to overt military operations designed to destroy an incipient nuclear weapon force and production capability. Another possibility is that a neighbouring state could be provoked to launch a nuclear weapon programme also, resulting in the costly escalation of an arms race. Allies could react by retracting security guarantees or by halting conventional military or economic assistance.²⁶

Nuclear weapons could also create a strategic credibility gap. The difficulty of obtaining the technical conditions usually associated with a credible nuclear deterrent (eg. secure second strike forces, effective systems of command and control, and reliable delivery vehicles) may diminish the attraction of nuclear weapons for potential proliferators. In this regard a developing nuclear force could be an incentive for a preemptive strike and thus a potential source of instability.²⁷

The absence of a perceived security threat could also be a disincentive to possess nuclear weapons. The absence of a hostile regional and international environment, or more specifically the perception of such a condition by the state's leadership, could be regarded as a significant disincentive to acquire

nuclear arms.²⁸ If the international and/or regional situation are more threatening, confidence in the security guarantees of a powerful ally may be sufficient to reduce the international and domestic pressure for an independent nuclear deterrent and to ensure a framework for stability.²⁹

The perceived utility of some weapons has changed in modern strategic thought. For all a nuclear weapon's destructiveness, such weapons have become virtually unusable in the military operations of the NWS especially.³⁰ It could also be claimed that certain security considerations argue more strongly against the acquisition of nuclear weapons than for it. A state acquiring a nuclear weapon may win a great psychological victory, but possession of a single device is likely to jeopardise its security by making it a tempting target for a preemptive attack. Even if a country has several weapons, they may not serve as a credible deterrent, if they are perceived to be vulnerable to attack; an enemy may believe it more prudent to launch a preemptive strike than to allow a modest nuclear arsenal to grow. Thus a state which is serious about incorporating a nuclear component into its military strategy must consider the development not only of nuclear weapons, but also of a means of protecting them from attack.³¹

3.2.2.3 International Political Incentives

International political incentives for nuclear weapons include the increased international status and influence that these weapons potentially could provide to a state. The "demonstration effect" according to which states follow the example of a state that decided to obtain such a capability could also be a compelling incentive for a nuclear weapons programme.

Nuclear weapons can be regarded as a symbol of scientific expertise and technological development which will increase the international status of the country.³² Nuclear weapons are almost synonymous with great power status and are viewed by some states as a source of international prestige, independence and autonomy.³³

Aside from its largely symbolic importance and relevance for North/South politics especially a nuclear weapon capability may also be sought to enhance intra-alliance influence, as well as to ensure greater international freedom of action. A country with a nuclear capability, may expect to exert significant

influence on regional security arrangements and international political forums.³⁴ The fact that the five official NWS are also the five Security Council members at the UN, is also strengthening the perception that a nuclear weapon capability can increase a state's international status and influence.

The “demonstration effect” could also be a significant incentive. Governments could decide to obtain nuclear weapons just because other states have obtained such a capability, thereby assuring similar technological and military prowess to the first state that obtained such a capability.³⁵ The perception that a state may be left behind on the field of nuclear technology to such an extent that it would be impossible to catch up with a potential future opponent (especially if such an opponent might decide to obtain a nuclear weapon capability), would be a compelling reason to develop that state's nuclear infrastructure at least.

3.2.2.4 International Political Disincentives

International political disincentives include international norms and international measures to enforce those norms. International norms remain a significant international political disincentive for such weapons. Non-proliferation is one of the few areas which has been developing international norms over the past few decades, because of growing international consensus that the use of such weapons would have devastating consequences for humanity's continued existence on earth. The strengthening of the non-proliferation norm meant that the development of nuclear weapons is increasingly being delegitimised. Today the development of nuclear weapons is more likely to evoke international condemnation than admiration.³⁶ The NPT remains the basis of the developing international non-proliferation regime. This treaty authoritatively spells out the non-proliferation norm and has been strengthened by pro-active and intrusive measures such as the IAEA safeguards (especially the implementation of the Protocols to existing safeguards) and export controls which are implemented by most nuclear supplier nations. The development of the non-proliferation norm will be discussed in more detail in its historical context in Chapter 4.

The fear of political, economic, scientific and technological reprisals, especially sanctions, could also serve as a disincentive for potential proliferators. Such measures are, however, notoriously difficult

to organise effectively, and will probably not influence the state's efforts which are aimed at developing such weapons.³⁷ It is difficult to obtain international consensus to organise and implement such measures because of the diversity of views held in sovereign states, many with clashing national interests. In this regard, the level of dependence on foreign economic and technological assistance would be an important indicator of such a state's vulnerability.

3.2.2.5 Domestic Security Incentives and Disincentives

No real domestic security incentives for acquiring a nuclear weapons capability can be identified. The use of nuclear weapons against internal opponents would have dire consequences for any state. The risk of unauthorised seizure of nuclear weapons, however, may be a domestic security disincentive, especially for countries subjected to frequent political upheavals and domestic turmoil.³⁸

3.2.2.6 Domestic Political Incentives

Domestic political incentives include perceptions of positive economic spillover from a nuclear weapon programme, the role of pressure groups or individuals and the influence of technological momentum. Some economic spillover for the nuclear scientific community of a nuclear weapon possessing country could be regarded as an incentive for obtaining such a capability. If the total cost of a nuclear weapon programme is taken into account, it casts doubt on the validity of such a perception, but nevertheless it remains conceivable that such a perception would be held by some decision makers. In terms of the US situation specifically many products and processes with useful economic applications resulted from the nuclear weapon programme.³⁹ The civilian nuclear industry had been generally regarded in the fifties and sixties as a potentially valuable resource with many economic spin-offs. The slump in the nuclear energy market, especially with regard to environmental concerns, currently makes this a less relevant incentive.

Graham Allison researched bureaucratic politics that characterise domestic political processes.⁴⁰ The self-interested actions of bureaucratic politics remain relevant to the proliferation debate. In this regard Scott Sagan developed a model specifically for the nuclear proliferation issue, based on the bureaucratic

model. He highlighted the role of organisations in the sphere of nuclear decision making. He explains that while government leaders may intend to behave rationally, they are sometimes influenced by powerful domestic organisations whose decisions often conflict with the decisions taken by political leaders.⁴¹

A number of domestically orientated pressures to go nuclear can be identified which may be difficult to justify either militarily or economically from a state's perspective.⁴² These could include pressures from various industrial, scientific and military groups that would stand to benefit from an expensive nuclear programme;⁴³ the ambition and persuasiveness of leading scientists attracted by the technological challenge; broad-based public support for an independent nuclear force; and pressure from politicians anxious to divert attention from other domestic and foreign policy failures.

Focussing on the domestic milieu in proliferation decision making, it is also relevant to refer to the cognitive and psychological approaches that are highlighted by some scholars. In this regard the concept of belief systems can be applied to the proliferation phenomena. The basic assumption is that beliefs and actions are linked. For the observer to be fully able to understand foreign policy decision-making (for instance the role of irrationality in this regard) the beliefs of the decision maker must be taken into account. Irrational behaviour could, for example, more easily occur in crisis situations when the decision makers tend to simplify the complexities involved in the situation. Such simplification could lead to a situation where valid information is ignored because it contradicts the decision makers' belief system. Decision makers can also presume that others share their world view, which could lead to totally unexpected consequences and reactions from these decision makers.⁴⁴

Peter Lavoy addresses the cognitive and psychological approaches specifically in relation to nuclear proliferation decision making, and develops the so-called "myth maker" model. He investigated the question why, despite the uncertainty surrounding nuclear weapons as well as the disastrous consequences if they should be used, proliferation continues. This happens, according to Lavoy, because those national elites who want the state to obtain such a capability, emphasise the country's security problems and the military as well as political strength that it will provide. They create what he calls a "nuclear myth". Seeing that most of the security related concepts associated with nuclear

weapons have never been tested, beliefs about these weapons are based on “logic and faith” and therefore constitute myth rather than fact. But this approach could also be used to explain non-proliferation policies. Lavoy argues that the myth is likely to be perpetuated until well-placed and talented individuals challenge it and spread another myth - the myth of nuclear insecurity.⁴⁵

It has been suggested that the development of nuclear weapons may also result from technological momentum in which the technological feasibility of the programme takes precedence over the military or political necessity of the task, and in which a formal decision to go ahead may in fact be lacking. The phenomenon of “technological creep” may also be in effect, in which significant progress toward a nuclear weapons capability is achieved by incremental advances in different fields of nuclear engineering without a formal decision being taken to develop a nuclear explosive.⁴⁶

3.2.2.7 Domestic Political Disincentives

Domestic political disincentives include the high financial burden associated with a nuclear weapon programme, technological constraints and the influence of domestic public opinion against such a programme.

Domestic political disincentives include the cost of developing and maintaining a nuclear weapons programme. The cost may be prohibitive for developing countries especially. This cost is apt to involve not only the absolute level of expenditures, but also the opportunity cost of diverting monetary and manpower resources from economic and social projects to a nuclear weapon programme.⁴⁷ The US for example spent US 5,5 trillion dollars (1996 value) on its nuclear weapons capability from 1940 to 1996.⁴⁸

Just as the real cost of developing nuclear weapons is probably greater than previously believed, the technical difficulties involved may be tougher to surmount than expected. Countries seeking to enter the nuclear arena still require long lead times - typically a decade or more - to advance from the decision to pursue a nuclear capability to completion. The technical precision required for enrichment, reprocessing, and weapons fabrication demands advanced technology. The spheres of fissile material

used in a nuclear weapon, for example, must be perfectly round; the slightest imperfection could cause the weapons to fizzle. Such precision is usually far beyond the capability of most states.⁴⁹

In some countries adverse domestic opinion may serve as a constraint on the acquisition of nuclear weapons. In others without a strong democratic tradition the fear of adverse public opinion might be expected to be marginal.⁵⁰ Bureaucratic politics may be expected to work as a disincentive as well as an incentive to the development of nuclear weapons. Some bureaucratic actors may, for parochial organisational reasons, be opposed to the creation of new institutional actors and potential competitors. The military, or at least certain branches of it, for example, might oppose a nuclear weapons programme, if it was perceived as likely to interfere with the funding of preferred weapon systems or to shift the distribution of the military service budget. Key individuals in the decision-making process may also play a significant role in opposing or supporting a nuclear capability.

Etel Solingen, however, takes the cardinal role played by domestic politics in proliferation decision making further by suggesting that positive spinoffs from domestic processes, that played a role in non-proliferation successes, could also apply on the global level.⁵¹ She specifically refers to the role that democratisation, liberalisation, and decentralisation can play on the international level.⁵² The effect of domestic values and norms is thus projected to the international level, strengthening the global norms.

3.2.2.3 Summary

From this discussion it is clear that a significant array of factors influences the decision making processes of a government regarding a possible nuclear weapon capability. No conclusive evaluation of why states take such a decision can be made, seeing that circumstances influencing the decision-making remain unique in many cases. In most cases both incentives and disincentives are present, but what remains important is to what extent the one set of factors attains precedence over the others. In practical situations these factors would be integrated with all the other national and international factors influencing security related decision-making at the time.

3.2.3 Situational Variables

These incentives and disincentives should not be seen in isolation and Potter identified two sets of sufficient conditions, namely “... the balance between underlying proliferation incentives and disincentives” as well as “... the presence of one or several situational factors that might precipitate a decision to go nuclear whenever incentives outweigh constraints.”⁵³ These “situational variables” or “trigger events” include the following factors:

- ❑ International crisis situations could strengthen incentives to acquire nuclear weapons. This could especially be the case if a neighbouring country and / or strategic opponent obtains such weapons.
- ❑ The weakening of security guarantees by NWS might lead to a revision of national security calculations and a decision to acquire nuclear weapons for deterrence purposes.
- ❑ Increased accessibility of necessary technology and materials might trigger a decision to initiate a nuclear weapon programme.
- ❑ Continued and / or perceived vertical proliferation by the NWS is making it easier for proponents of proliferation in non nuclear weapon states (NNWS), especially in developing states, to advance their views.
- ❑ Domestic transformation or crisis could also trigger decisions to go nuclear. New leaders might attempt to capitalize on a nuclear weapons decision to divert domestic attention and restore popular confidence in the government. This could also involve the elevation to power of individuals committed to a nuclear weapons programme.⁵⁴

3.3 Cases

The theoretical assumptions on prerequisites, incentives, disincentives and triggering factors need to be further developed by referring to practical cases in order to reach a provisional view regarding the

relevance of these issues. The model proposed by Potter, enhanced by the views of other scholars as discussed previously, seems to cater for most factors which might possibly influence governments' decisions to obtain, or not to obtain, a nuclear weapon capability. Before the South African experience is described in more detail in Chapter 5, a few other cases will be briefly looked at. The aim will be to examine and highlight some of the factors that influenced certain governments to develop a nuclear capability. The motives of some states that were technologically capable of developing such weapons, but decided against doing so, will also be relevant. These studies will not be performed with the aim of comparing the different situations and interaction of incentives and disincentives, but only to identify particular circumstances relevant to the issue of nuclear weapon decision making. It could be stated that each case is unique and that it would be difficult to identify a long list of universal truths in terms of nuclear decision making from them. Despite this, the interplay of factors that, in a broad sense, was also applicable in the South African case, can be identified.

It is impossible to analyse all the possible cases. Except for the eight states currently possessing nuclear weapons (US, UK, France, Russia, China, India, Israel and Pakistan), many other states either have had a nuclear weapons programme or considered developing or obtaining such a capability. Apart from South Africa, the following states fall into this category: Australia, Argentina, Brazil, Canada, Greece, Switzerland, Romania, Sweden, Libya, Egypt, Iran, Iraq, and Saudi Arabia. This list is probably not complete, as rudimentary studies to obtain such a capability may have been conducted in secret by even more states.

The scope of this study is too limited to focus on all the states' motivations to develop nuclear weapons. China, India, Israel and Sweden were chosen as examples for this study. China will be the only official NWS which serves as an example in this study. It was chosen because of the isolation in which it developed its nuclear capability, its unique initial view on the proliferation of nuclear weapons and its hesitancy to fully support the non-proliferation norm. China's decision to develop a capability was also closely linked to the interaction of powerful states during the Cold War. It was also the first developing state to acquire a nuclear weapons capability. Despite the end of the Cold War and the change in its government's view about the proliferation of nuclear weapons, China has not indicated that it will consider disarmament in the short to medium term.

The case of India will also be under scrutiny. India has been one of the states opposed to the nuclear norm because of the discriminatory nature of the NPT. Growing security threats from China and Pakistan also increased the government's perception of threats. India was also the first country to test a nuclear device after the NPT came into force, placing India on a collision course with states supporting the non-proliferation norm. Pakistan also developed a nuclear weapon capability outside the ambit of the NPT. In general Pakistan's nuclear weapons policy is a reaction to Indian nuclear weapons developments. For this reason Pakistan will not be included in the following studies.

Israel also developed a nuclear weapons capability outside the non-proliferation regime. Nuclear weapons were developed in Israel in the midst of strong threat perceptions, because of the conflict with the Arab population of Palestine and the neighbouring Arab states. The pariah status of Israel also had an impact on these decisions and Israel's role in the Cold War resulted in only muted opposition from the US to Israel's nuclear weapon programme.

A number of countries are technically capable of building nuclear weapons but have refrained for political or moral reasons. Australia, Canada, Belgium, Germany, Italy, Japan, the Netherlands, Norway, Sweden, and Switzerland are some of the countries that have chosen not to develop nuclear weapons. Of these, Sweden offers one of the most interesting examples of the technically capable states which has no nuclear weapons, because it once had a nuclear weapons programme and abandoned the programme.⁵⁵ Technological constraints as well as the developing non-proliferation norm both had a significant impact on this decision by the Swedish government.

3.3.1 China

3.3.1.1 Introduction

China gradually developed a fully-fledged nuclear weapons infrastructure and a strategic and tactical nuclear arsenal, after its first tested a nuclear weapon in 1964. China's nuclear arsenal is estimated to consist of approximately 400 warheads.⁵⁶ By the NPT definition, China is one of the five *de jure* NWS because it declared and tested a nuclear weapon before 1967.⁵⁷ Although China's stance on non-

proliferation has been ambiguous and at times even negative, its policy began to change after the middle of 1991. Since then China has shifted from avoidance to participation in non-proliferation treaties and agreements, and acceded to the NPT in 1992.⁵⁸ However, China's official policy on nuclear non-proliferation, as measured by its willingness to join or at least adhere to the norms of existing arms control and non-proliferation regimes, has been, and in many respects remains, ambivalent.⁵⁹ China's commitment to non-proliferation remains suspect because of continuing concerns that its nuclear weapon related assistance to Pakistan especially has not fully ceased.⁶⁰

3.3.1.2 National Prerequisites for Proliferation

China's interest in nuclear energy and nuclear arms was established soon after the People's Republic came into being in 1949. Nuclear technology assistance from the USSR started in 1955 and increased after the USSR/China October 1957 agreement on new technology for defence. This agreement included the USSR's providing China with a sample nuclear device and technical data for its manufacture.⁶¹ The cooperation between the USSR and China included the construction of a heavy water experimental reactor, and the installation of a cyclotron by March 1958. In addition dozens of Chinese engineers went for training to the USSR. In 1958 the Chinese claimed to have mastered the enrichment of uranium. On 20 June 1959 the USSR unilaterally abrogated this agreement and refused to provide a sample of a nuclear weapon and technical data for its production.⁶² Despite this refusal of further nuclear assistance from the USSR, China had sufficient human and material resources to establish itself as a nuclear weapon power and continued to modernise its inventory of nuclear weapon systems, which now includes over a hundred warheads deployed operationally in medium range ballistic missiles (MRBMs), intermediate range ballistic missiles (IRBMs) and inter-continental ballistic missiles (ICBMs). Chinese officials have declared a policy of "no first use" repeatedly, and have stated that China's nuclear arsenal is for self-defence only.⁶³

3.3.1.3 Incentives and Disincentives

3.3.1.3.1 International Factors

The main incentives for China to develop such a weapon can be identified as international security incentives, strengthened by international political incentives. China was at first rhetorically and ideologically committed to nuclear proliferation as a rallying point for anti-imperialism.⁶⁴

China's view of the role of nuclear weapons was at first limited to the view that such weapons could be regarded as types of conventional weapons, with the ability to kill more people than ordinary conventional weapons.⁶⁵ A typical early Chinese view on nuclear weapons can be illustrated by the later Chinese leader Mao Zedong's statements in August 1945, immediately after the US bombed Japan with two nuclear devices. He stated that: "The atom bomb is a paper tiger which the US reactionaries use to scare people. It looks terrible, but in fact it isn't. Of course, the atom bomb is a weapon of mass destruction, but the outcome of a war is decided by the people, not by one or two new types of weapons."⁶⁶ With the view that the huge casualties resulting from a nuclear war could be absorbed by China and the developing world, the Chinese leaders believed that any sovereign state had a legal right to develop nuclear weapons for self-defence, just as it could develop any conventional weapon.⁶⁷

China decided to develop nuclear weapons in the mid 1950s. The then Prime Minister, Zhou Enlai, stated that: "Since many countries are developing them, surely China has to do the same. We would hope nuclear weapons could be banned, but until then we will still have to develop them."⁶⁸ China's decision to develop a nuclear weapons capability was partly due to its security concerns about the US, and later the USSR.⁶⁹ The US for example used nuclear threats against China in 1950, 1953 and 1958.⁷⁰ China's diplomatic isolation from these and other states also contributed to this decision.⁷¹ Moreover, China regarded its development of nuclear weapons as support for the world's "oppressed people."⁷² At that time China seemed to favour "a kind of multilateral nuclear deterrence" with statements suggesting that if all countries had nuclear weapons, the possibility of nuclear wars would decrease.⁷³

During the years of isolation from the developed world, China's posture thus kept on favouring nuclear weapon proliferation, especially for socialist states. At that stage, China purposely avoided assuming non-proliferation obligations, supporting the arguments of some countries of the Non-Aligned

Movement (NAM) that these regimes were inherently biased in favour of those already possessing such capabilities, because the non-possessing states had no role in formulating regime norms and rules. As a developing country, China also felt the need to demonstrate solidarity with other states that were economically and politically at a disadvantage.⁷⁴

Through the 1970s, China's policy was not to oppose nuclear proliferation, which it still saw as countering the US and USSR nuclear capability. After China began to open itself to the developed world, its rhetorical position gradually shifted to one opposing nuclear proliferation, explicitly so after 1983.⁷⁵ The reasons for China's more positive change towards non-proliferation in particular remain to some extent speculative. Following the gradual downgrading of China's strategic importance in Western especially American perception during the 1980s, and particularly following the collapse of the USSR, China was compelled to reassess its international political position. The US also reaffirmed its position as the dominant superpower after the Gulf War in an international system which had become altogether more fluid than it had been for the previous forty years.⁷⁶

Technology and arms related sanctions imposed by the US against China resulted in escalated economic cost but also negatively impacted on China's access to technology. Given these factors, together with the impressions given to the world by the Tienanmen Square actions of the Chinese government in 1989 and their aftermath, China's leaders had reason to fear that it might become the target for a non-violent but politically potent Western and US strategy undermining the strength and cohesion of the Chinese regime.⁷⁷

China still perceives a security need to retain nuclear weapons for deterrence purposes, even after the end of the Cold War. The government acknowledges that China's security situation has improved greatly since the end of the Cold War but believes the US has not abandoned its ambitions of seeking world hegemony. The US policy of first use deterrence is regarded as a threat to China, justifying China's capability.⁷⁸ The Chinese Government argues that although the "necessary defence capabilities" should be maintained, China "... has unilaterally adopted a series of measures aimed at disarmament." These measures include reduction of military personnel, reduction in defence spending and the implementation of more strict controls over sensitive materials, technology and military

equipment.⁷⁹ Some of these reductions were, however, restricted to the redeployment of military capabilities to para-military forces. Any commitment to the reduction of nuclear forces, however, is not at this stage on the Chinese government's agenda. Deteriorating relations with the US increase the significance of military questions about China's small nuclear force's ability to survive a pre-emptive strike, and about the ability of the warheads to reach targets if other nuclear powers developed and deployed anti-missile systems.⁸⁰

3.3.1.3.2 Domestic Factors

Domestic security and political factors played a less significant role in China's decision to develop a nuclear weapon option. The initial view of the Chinese Government was that because of its large population and land area, China would be able to survive a nuclear attack. Initially, nuclear weapons were seen as a type of weapon that could be used in conventional warfare. Although this view changed and a "no first use" doctrine was implemented by China, the continuing stalemate with Taiwan (which is regarded as a domestic issue) also has a nuclear weapon implication. Despite the fact that such weapons could be used against Taiwan, this remains unlikely. This is so because of Chinese insistence that Taiwan is part of China, as well as the economic value of Taiwan to China and caution regarding the US reaction.⁸¹

3.3.1.4 Summary

China's decision to develop nuclear weapons was influenced by perceptions of security threats; the memory of experiences in the Second World War; as well as by the communist revolution. China's nuclear weapon capability was also an instrument of international prestige, playing a role in ensuring Security Council status as well as nearly universal diplomatic recognition at the expense of the Republic of China on Taiwan. Initially nuclear weapons were also seen as an instrument of influence for the developing world against the then dominant superpowers. Although China is tentatively subscribing to the developing international norm against nuclear proliferation, no reduction of the Chinese nuclear arsenal can be foreseen at this stage.

In China's case security issues, strengthened by a strong ideological view, have been a paramount incentive for its nuclear weapon capability. Even China, which followed an independent policy regarding its nuclear weapon capability, is not totally immune to the influence of the non-proliferation norm. Although its commitment to measures such as export control is still limited it seems China is moving into the direction of future compliance with the non-proliferation regime, which appears to indicate that, when given time, no nuclear weapon programme globally would be totally immune from international influences.

3.3.2 India

3.3.2.1 Introduction

India demonstrated a nuclear weapon capability in May 1974 by detonating a nuclear device underground in what it called a "peaceful nuclear experiment." Until the 1998 nuclear test explosions, India officially claimed that it did not possess, and had no plans to develop, nuclear weapons. India is not a signatory of the NPT, describing the Treaty as discriminatory against developing states. India maintained an active nuclear weapon development programme while following a nuclear posture of ambiguity from the early 1970s. India also actively pursued the development of space launchers and nuclear-capable ballistic missiles for over three decades.⁸²

3.3.2.2 National Prerequisites for Proliferation

Among the countries of the developing world, India is one of the most advanced in nuclear technology.⁸³ Despite the stated political commitment to global nuclear disarmament, India's nuclear weapon programme began early after the launch of its civilian nuclear programme. India made full use of the early availability of nuclear technology in the late 1950s and 1960s when there was no effective bilateral or international safeguard system to control the transfer of nuclear materials, equipment and technology.⁸⁴ While initially dependent upon the US and Canada for early reactor construction and enriched uranium fuels in particular, India achieved autonomy in most areas of design and construction later.⁸⁵ India has a relatively large cadre of capable nuclear scientists and substantial resources of

uranium and thorium. Thorium is the raw material for uranium-233, a fissionable material which can be used both in reactors and for weapons production.⁸⁶

The economic costs of the tests were weighed by the Indian government, but it apparently concluded that these costs were ultimately outweighed by the political prestige and perceived security value of an overt nuclear capability.⁸⁷ According to Bharat Karnad, in the worst case the “real cost” of India’s nuclear weapon capability is nearly Rs 270 000 crores (US\$ 62 billion, 2000 value) in the time frame 1999 to 2030. This was calculated at Rs 60 000 crores (US\$ 13 billion, 2000 value) for nuclear weaponisation and Rs 210 000 crores (US\$ 49 billion, 2000 value) in opportunity costs of lost trade and investments.⁸⁸

3.3.2.3 Incentives/Disincentives

3.3.2.3.1 International Factors

The precarious regional security situation in South Asia remains the main incentive for the Indian nuclear weapon capability. Pakistan and India have fought three major wars and have yet to resolve their problems over the Kashmir-Jammu region.⁸⁹ Tensions between India and Pakistan, encompassing historic, border and religious issues, result in a highly volatile relationship between these two states. Samuel Huntington, describing the global security system after the Cold War, predicted that the most fundamental source of conflict in the new world order would be cultural. The long running conflict between India and Pakistan has an important religious and cultural element, but it would be an oversimplification to state that this conflict and the consequent nuclear weapon capability of India and Pakistan could mainly be attributed to civilization power struggles.⁹⁰ Regional security issues are of greater significance. The apparent power vacuum left in South Asia by the end of the Cold War brought discomfiting changes in the regional environment, centred on, among other things, the rise of China as a new great power, military and economically.⁹¹

Although strained relations with Pakistan form the basis of India’s external threat perception some analysts as well as the Indian government claim that greater concerns exist with regard to the strategic

threat associated with China⁹². According to Amitabh Mattoo there is one major strategic rationale for the development of a credible and effective Indian nuclear weapon posture, namely to “...provide a hedge - an insurance policy - against the possibility of a belligerent China in an uncertain anarchic world.”⁹³

Since independence in 1947, India has regarded nuclear weapons as weapons of mass destruction and not weapons of war. A nuclear-weapons-free-world was regarded to be in the interests of India and the world for their security. In the absence of universal and non-discriminatory disarmament, India declared the non-acceptance of the NPT, because it created, according to India, an arbitrary division between nuclear haves and have-nots. The sovereign right of every state to make a judgement regarding its supreme national interests and to exercise its sovereign choice is acknowledged by India.⁹⁴ India's former Foreign Minister, Jaswant Singh has stated that “... India's nuclear policy remains firmly committed to a basic tenet: that the country's national security in a world of nuclear proliferation lies in global disarmament or in exercise of the principle of equal and legitimate security for all.”⁹⁵

India's perceptions regarding the usefulness of nuclear weapons were not restricted to security concerns only. Nuclear weapons remain a key indicator of state power, according to influential Indian views.⁹⁶ The purpose of acquiring the weapons is not regarded solely as military deterrence but also as a means for political influence. While it seems that the earlier incentives for Indian nuclear capabilities were strategic superiority over Pakistan and, after the 1964 nuclear test by China, a deterrent against China, later the potential political power stemming from such a capability also became important. A nuclear weapon was seen as an instrument to restore and attain a position of regional and global influence for India.⁹⁷

The indefinite extension of the NPT in 1995 is also mentioned as a watershed in the evolution of the South Asian political situation. According to India the extension was forced on the international community and contributed to India's decision to proceed with the overt acquisition of nuclear arms. This is so because India believed that the Sino-Pakistani nuclear weapons collaboration has continued, which is a violation of the NPT. India argued that the NPT thus collapsed in India's neighbourhood. It was further argued that since the NPT is unamenable, the legitimisation of nuclear weapons implicit

in the unconditional and indefinite extension of the NPT is also irreversible.⁹⁸ According to Denise Groves, India's inability to lay claim to political or economic means to what it believes is its rightful place in the international system, caused India to make "... its presence known in the loudest possible voice."⁹⁹

3.3.2.3.2 Domestic Factors

The Indian nuclear programme has traditionally been widely supported by the Indian population. Amitabh Mattoo states that the nuclear issue has been related in the popular Indian perception - since for at least the late 1980s - to issues of "national self-esteem" and "national pride". In addition, according to Mattoo, psychologically, "standing up" to international pressure, especially perceived Western coercion, has a deep resonance in the popular Indian psyche. At the same time assertions of India's "great power status" and slogans of India having found its "rightful place in leadership of the community of nations" have been immensely popular.¹⁰⁰ A survey conducted just after India's 1998 nuclear tests established that 91 percent of Indians "approved" of the tests and only seven percent disapproved. Eighty two percent felt that India "should now build nuclear weapons" and 78 percent felt more "secure and safe" after the tests.¹⁰¹

Taking Peter Lavoy's "nuclear myth-maker" concept into account, it is also possible to identify a leading figure in India's nuclear weapon programme. Such a person was Homi Bhabha, leading nuclear physicist and founder of the Tata Institute of Fundamental Research. Bhabha had a significant influence on Prime Minister Nehru with regard to the early development of the Indian nuclear infrastructure.¹⁰² Influential Indian individuals in the nuclear, industrial and scientific sectors have pressured Indian decision makers for decades, in favour of a nuclear capability. Without these pressures, India would not have been able to position itself to test nuclear weapons or to assert itself as a nuclear weapon possessing state. The ground had been laid not just by former Prime Minister P.V. Narasimha Rao's preparations for a nuclear test in 1995 but also by a series of technical and political decisions over the five decades prior to his government.¹⁰³ Some analysts argue that with the electoral success of the Hindu nationalistic party, the Bharatiya Janata Party (BJP) in 1998, a cadre of more conservative or "hawkish" leaders assumed power and supported an open nuclear weapons policy that previous Indian

governments resisted. In this view it was party politics that mattered rather than any security considerations.¹⁰⁴ Within India, tensions along caste and Hindu-Muslim lines, secessionist movements, misgovernment, and structural economic flaws potentially affect national strength and security far more than the nuclear arsenals of Pakistan and China.¹⁰⁵

3.3.2.4 Summary

India's nuclear weapon programme, while initially probably a response to the Chinese nuclear weapon capability, is a product of multiple motives. A primary driving force has been a mixture of the need for strategic defensive capability and India's military ambitions, including its desire to project its influence over the entire Indian Ocean region, from eastern Africa to Australia. Domestic support for such a capability, and especially the effective political management of such, support also played a significant role in the eventual development of India's nuclear capability. India currently views its capability as a means of obtaining political stature in the global and regional context, both as a military and a political tool.¹⁰⁶ India will continue to reject nuclear non-proliferation so long as no progress is made with the establishment of a total nuclear disarmament accord which includes all nuclear weapon capable states.

India illustrates that a regional security dilemma must be settled before the issue of nuclear non-proliferation can be advanced. In the case of India settling the regional security problems would possibly not be sufficient. The inherent unfairness of the current non-proliferation regime that allows the five official NWS to have a nuclear weapon capability, needs to be changed, according to Indian views. Despite changed global power configurations that have arrived with the end of the Cold War it should be noted that this change did not imply universal acceptance of issues such as non-proliferation.

3.3.3 Israel

3.3.3.1 Introduction

Although Israel has not overtly demonstrated a nuclear weapon capability it is generally regarded as

a nuclear weapon capable state with potentially between 100 and 200 nuclear weapons.¹⁰⁷ In the late 1950s Israel started work on a nuclear weapon capability and reportedly completed its first two nuclear devices on the eve of the 1967 Six Day War.¹⁰⁸ No Israeli government has either admitted or denied possession of nuclear weapons.¹⁰⁹ Israel is not a signatory of the NPT. The declared policy of Israel has long been that it would not be the first to introduce nuclear weapons into the Middle East. The threat perception by Israel that other Middle Eastern countries plan or have already introduced weapons of mass destruction in their arsenals remains high. Israel has, however, been careful to maintain a studied ambiguity between its declared nuclear policy and its nuclear capabilities. Apparently, it wishes to maintain an implicit nuclear deterrent while avoiding an open confrontation on the nuclear issue with its neighbours.¹¹⁰ Israeli reactions to allegations regarding Israel's nuclear capability mostly suggest that all speculation about such a capability is idle, yet also reinforces the impression that most of the preparatory work for any weapons acquisition had already been accomplished.¹¹¹

3.3.3.2 National Prerequisites for Proliferation

Soon after the creation of the Israeli state in 1948, the potential value of nuclear energy was realized by the government. Israel's Atomic Energy Commission was founded in 1952. In the period 1955 to 1957 the feasibility and desirability of the nuclear weapon option were fiercely debated within the small scientific and policy community in Israel. When the purchase of the Dimona reactor was finalised in 1957, and significant French assistance was secured, the then prime minister David Ben - Gurion gave the go-ahead to the nuclear weapon programme.¹¹² As early as 1960 Israel had begun work on this unsafeguarded reactor at Dimona, which became operational in 1963.¹¹³ With initial French assistance Israel trained a core group of scientists and technicians with the necessary competencies to develop Israel's nuclear capability. Although French assistance decreased after 1960 the reactor as well as the basis provided by French assistance ensured the technological prerequisites for proliferation.¹¹⁴

3.3.3.3 Incentives and Disincentives

3.3.3.3.1 International Factors

Fundamental incentives for the development of nuclear weapons by Israel were regional security incentives, especially related to strategic tensions within the Middle East between Israel and its Arab neighbours.¹¹⁵ Given Israel's holocaust trauma and the threats it faced from its neighbouring states, its decision in the late 1950s to acquire a nuclear capability was perceived as a sacred matter of national survival. According to Avner Cohen "... the only way to grant Israel the deterrence it needed - Israel must be in a position to inflict a holocaust to prevent another holocaust."¹¹⁶

The drive towards Israel's nuclear capability was spearheaded by David Ben - Gurion, Israel's then prime minister and defence minister, with a brief interruption from 1948 to 1963. Ben - Gurion viewed the development of the nuclear bomb as crucial to Israel's security. When Gamal Abdel Nasser came to power in 1952, his favourable stance on Pan - Arabism was perceived as a threat by Israel. Israel viewed the US as an important role player in its security because of the US Jewish population's generous support of Israel. Ben-Gurion endeavoured for years without success to obtain a nuclear security assurance from the US.¹¹⁷ The final decision to develop nuclear weapons was triggered by the large USSR-Egypt armaments deal of 1955/1956 and the Israeli threat perception in the wake of the Suez crisis. French assistance for a nuclear weapon capability was sought in 1957. Hereafter, nuclear weapons and other weapons of mass destruction were initially seen in the Middle East as a remedy for weakness in conventional armaments.¹¹⁸ Israel's development of a nuclear capability as a "deterrent for national survival" has been based primarily on two factors. Firstly Israel lacks strategic depth territorially, which makes it difficult to absorb a conventional attack and respond effectively. Secondly the "preponderance of men and equipment" enjoyed by Israel's Arab neighbours, almost all of whom have been hostile at one time or another, contributed to the decision.¹¹⁹

3.3.3.3.2 Domestic Factors

Despite overwhelming popular support for the development of a nuclear weapon capability, the views of some minority opposition groups were prominent enough to attract attention. A citizen lobby, known as the Committee for the Denuclearisation of the Middle East, was founded in the summer of 1962 with the tacit support of World Zionist Organisation's president Nahum Goldman. The ten to twenty member group lobbied for the support of Israel's political and intellectual leadership. The Committee's

premise was that “...the atomic bomb was a distinct type of weapon with the potential to destroy the entire Zionist experiment.” The accidental loss of Israeli weapons to Arab hands would be disastrous for Israeli security. In any event, an Israeli nuclear advantage would be short-lived, and would only result in the Arab states developing a nuclear capability of their own.¹²⁰ The opponents of this view, including Shimon Peres, Moshe Dayan and Ben - Gurion, expounded the idea that long-term deterrence would eventually bring about peace. Because of limited financial and human resources, nuclear weapons were seen as the only effective deterrent and “...would eventually convince the Arabs to come to political terms with the reality of Israel.”¹²¹

3.3.3.4 Summary

The precarious security situation in which Israel found itself since its creation in 1948, coupled with the experience of the Jewish people in the Second World War, played the dominant role in the decision makers’ opting for nuclear weapons. The Israeli state regarded a nuclear capability as vital for the survival of Israel in a hostile region. The pariah status of Israel amongst the Arabs and to a large extent, within the NAM context is enhancing the Israeli government’s threat perception.

In the case of Israel, the nuclear capability is being viewed by the Israeli government as vital not only for the security of the state but also to the very survival of the state. If this view is held by the decision makers, non-proliferation would fail to be regarded as a policy option. Despite the end of the Cold War, the regional tension in the Middle East continues to perpetuate the presence of nuclear weapons in these states, and even possibly an arms race including weapons of mass destruction in this region.¹²² A political solution to such problems would, however, enhance the possibility of Israel’s eventual adherence to the non-proliferation norm.

3.3.4 Sweden

3.3.4.1 Introduction

While Sweden's basic security ambition was, and is, similar to that of most countries namely to survive

as a sovereign state, Sweden was one of the countries to abandon its nuclear weapon ambitions in the late 1960s.¹²³ Although extensive work was done on the development of tactical nuclear weapons none were manufactured and since Sweden acceded to the NPT in 1968, Sweden has been a prominent and leading state in global non-proliferation and disarmament efforts.

3.3.4.2 National Prerequisites for Proliferation

Sweden's nuclear weapons research was carried out at its national defence research institute, the Forsvarets Forskningsanstalt (FOA), starting in the late 1945. The work was at first undertaken on the orders of the supreme commander of the armed forces. In 1947, AB Atomenergi was formed to develop a Swedish nuclear power industry. In 1949, a collaborative agreement between the FOA and Atomenergi ensured cooperation between research for military and civilian purposes. A decision was made to design, and build indigenously, a heavy water research reactor. The one-megawatt reactor, designated R-1, became operational in July 1954. It used Sweden's natural uranium resources and gave Swedish scientists experience in producing plutonium, although not in quantities sufficient for nuclear explosives.¹²⁴

The construction of a nuclear infrastructure continued, but after Atomenergi accepted a US offer to build an enriched uranium research reactor at a very low cost to Sweden, it became increasingly difficult to obtain the appropriate nuclear weapon relevant infrastructure for Pu-239 production, especially. The thirty-megawatt reactor, which became operational in May 1960, did not enhance the nuclear weapon development programme, for two reasons. Firstly, it was safeguarded, which allowed the use of its nuclear materials only for peaceful purposes. Secondly, because it used enriched uranium fuel, it was not an ideal plutonium producer.¹²⁵

In January 1958, Atomenergi submitted a report, requested by the FOA, on reactors for production of weapons-grade plutonium. Later in the year, a 200-megawatt heavy water reactor, Marviken, was planned. It would produce enough plutonium to build a small stockpile of nuclear weapons. The Marviken reactor had unexpected design problems, requiring the developers to switch to slightly enriched fuel. In turn, this required that fuel be imported, which meant that safeguards would be

attached. New plans to build an independent plutonium production capability would have been too expensive, politically and financially.¹²⁶

While Sweden undoubtedly had the necessary prerequisites to develop a nuclear weapons capability, international and domestic disincentives resulting in political, technological and financial handicaps made it difficult to successfully exploit the capacity to develop nuclear weapons.

3.3.4.3 Incentives and Disincentives

3.3.4.4 International Factors

Sweden's security position was precarious after the Second World War. The perception of threat from the USSR was acute, while no alliance with any state owning nuclear weapons was in force. If these concerns had been the only factors taken into account Sweden would probably have decided to acquire these weapons.¹²⁷

Perceptions of the international and regional security threats facing Sweden, as well as issues of how to appropriately counter these threats, led to the evolutionary development of Swedish policy on nuclear weapons. In the early 1950s nuclear weapons were generally regarded as only more powerful "conventional" weapons, without special political meaning. The current hesitation to use nuclear weapons at all was not so pronounced at the time. Therefore, it was argued that Sweden, as a modern and developed country with significant defence forces, should acquire atomic weapons in due time. It was also argued that the Swedish armed forces should not be in a position of having inferior weapons to those of a potential enemy.¹²⁸

In the operational context, it was considered obvious by the Swedish decision makers that the ability of the Swedish armed forces to impede an invader would be greatly improved, if they were equipped with nuclear weapons. A specific argument was that if Sweden had no nuclear weapons of its own and was invaded by an enemy with such weapons, Sweden would be forced to spread out its military units to avoid annihilation, while the enemy would have decisive advantages by concentrating its forces.

Sweden's defence planners took it for granted at the time that an invader having nuclear weapons would also use them if militarily convenient. Political actors arguing in favour of a Swedish nuclear force assumed that Sweden could afford one nuclear system only, and that system would be a tactical nuclear force to support its defences against invasion across the land border or from the sea. It was also clear that the Swedish atomic bomb would have to be based on plutonium produced in domestically-built nuclear reactors, as domestic production of weapons grade uranium would be out of the question for economic reasons, if using the enrichment methods known at the time. An independent strategic deterrent was indeed also discussed but never seriously proposed. The reason for the latter was purely economic.¹²⁹

In the late autumn of 1958, the Social Democratic Party set up an internal committee to investigate the nuclear weapon issue. The resulting report suggested that Sweden should not acquire nuclear weapons because of the ongoing disarmament negotiations among the major powers, and should thus postpone its final decision on the issue. The report also suggested that research on protection against a possible nuclear attack should continue and be expanded. This "nuclear option policy" made possible a postponement of the final decision whether to go nuclear or not by several years, until the civil nuclear power programme was further developed - up to 1964 it was estimated - without losing time, if the decision was negative¹³⁰.

At the time, it was argued by some that Sweden would lose credibility by promoting non-proliferation and pursuing a nuclear option policy at the same time. Experience, however, showed the opposite. The competence of the Swedish negotiating teams, based on the nuclear weapon research effort, created valuable respect for them among both the non-aligned states and the nuclear weapon states.¹³¹

The Swedish final strategic conclusion on this issue was that the country should not acquire a nuclear force. Assuming the continued dominance of the two military blocs in Europe and also assuming their continued high nuclear threshold (flexible response) doctrine, realistic Swedish defence planning dictated that a nuclear strike force, in addition to the necessary conventional defence, would not be possible within any conceivable peacetime level of Swedish defence expenditures. This analysis prevailed and became the basis for the strategic decision in 1968 to assume an international commitment

to go non-nuclear.¹³² It could also be argued that the nuclear security guarantee extended to NATO by the US had an influence on the Swedish decision as well. Despite Sweden's policy of neutrality, Mitchell Reiss states that Sweden's strategic value and geographical proximity to the NATO countries ensured that the US nuclear guarantee extended to Sweden in much the same manner as it did to the US's European allies.¹³³

3.3.4.3.2 Domestic Factors

Cole suggests that the explanation for Sweden's abandoning its nuclear weapon issue "lies more in Swedish political culture than its technical capability" and was "a consequence of the cumulative effect of a number of small decisions and actions over two decades."¹³⁴ Swedish involvement in international disarmament treaties control also helped to promote non-proliferation decision making. These disincentives were further strengthened by the realisation that developing a nuclear weapon capability would result in unacceptably high financial expenditures.

3.3.4.4 Summary

Sweden's ultimate decision to abandon its nuclear weapons programme resulted from a variety of factors. Politically, the notion of a Swedish nuclear arsenal was rejected by many, particularly those who envisioned a neutral Sweden actively pursuing disarmament and an end to nuclear testing. Economically, weapons were rejected by some as not being a cost-effective defence. Others said that Sweden's nuclear forces would be useless against the more heavily nuclear-armed states and would actually have the effect of inviting nuclear attack. Finally there were serious technical problems that essentially forestalled Sweden's capability to acquire plutonium. In the absence of a clearly successful plutonium production programme, objections to the effort were more likely to forestall budget allocations and construction of facilities.¹³⁵ Crucial to Sweden's decision was that information was made available to the Swedish elite and a genuine debate, although it dragged on for two decades, was allowed to take place. Had the decision been taken by only a few political and or military leaders, or conducted in secret, the outcome might have been quite different.¹³⁶ The participation of Swedish officials in the interactions that led to the establishment of the non-proliferation regime also assisted in

the eventual decision against a nuclear weapon capability and to support non-proliferation actively.

3.4 Conclusion

In summarising this chapter, it is possible to draw certain conclusions. Despite the fact that the factors that influenced nuclear decisions are relatively easy to identify, knowing exactly why states “go nuclear” remains obscure. Decision making involves a large number of variables and the interplay of reasons, interests and perceptions makes most conclusions tentative. It is apparent from the cases studied that the impact of some factors will vary from country to country.¹³⁷ It is, however, much more difficult to determine which of those factors was crucial in any particular decision, and still more difficult to develop appropriate policies for the prevention of future proliferation.¹³⁸ By taking the foregoing and other historic cases into account it is possible to make some observations regarding factors leading to a decision for nuclear weapons that will be useful in evaluating South Africa’s experiences in this regard.

The prerequisites for the development and manufacture of nuclear weapons are present in many countries, including the more advanced developing countries. The political will to develop these skills, however, remains vital for managing a successful programme. The political will is also a vital component to ensure that the necessary financial resources are mobilised for such a programme. The presence of a civilian nuclear industry or the parallel development of a civilian programme may also assist such a programme significantly. This is particularly important seeing that an essential prerequisite for the manufacture of nuclear weapons is fissile material, and its acquisition is far more difficult than the design and manufacture of the triggering device.¹³⁹

It is possible to deduce from the given cases that international security and political factors played a dominant role in decisions to develop a nuclear weapon capability. In most cases a specific regional security threat or perceived threats were identified as the main reason for the development of nuclear weapons. Although this threat was perceived to be nuclear in the case of India, it was the quantitative conventional threat in Israel which, inter alia, influenced the decision makers to develop a nuclear weapon capability. Such a perceived threat thus does not need to be nuclear in nature. Even in the case of Sweden, where the decision was taken to abandon the programme, the security implication of the

nuclear weapon superiority of the USSR as a potential threat was a significant factor in making that decision. The absence of credible security assurances during the Cold War was a significant contributor to nuclear proliferation, for politically isolated states, in particular.

International political factors related to the prestige value of a nuclear weapon capability, have proved to be a significant factor in, for example, the case of India. This remains, however, a contributing factor directly or indirectly linked to the governing elite's perception of the country's strategic position. During the Cold War period this was regarded as a significant factor. The role of globalisation and growing perceptions of interdependence are factors limiting the influence of international political factors in the aftermath of the Cold War.

In most cases the impact of domestic political factors on nuclear weapon decision-making seems limited, probably related to the secrecy surrounding such decision-making as well as poor democratic traditions in some of these countries. Although it is not possible to reliably ascertain public support in some of these countries for the nuclear development programme, some indications exist in Israel and India, for example, that significant domestic support for such programmes exists. Domestic incentives and disincentives seem to be more prominent in industrialised countries. In the case of Sweden's decision not to develop nuclear weapons, the role of domestic factors (political, technical and economic) has had a significant impact in the decision not to develop a nuclear weapon capability.

The role of prominent so-called "myth makers", usually within the nuclear scientific environment, however, seems to be an important domestic factor in driving a nuclear weapon development programme. Although the initiative in most cases was taken in the context of security considerations, it can also be assumed that in some cases the exact nature and role of nuclear capability were not fully conceived at the start of the programme.

In identifying some of the factors influencing decision-making regarding the development of a nuclear weapon capability, it is already possible to identify the dilemmas that need to be faced in non-proliferation efforts. Nuclear non-proliferation policies can focus on either demand - attempts to build political-military barriers to a decision to develop nuclear weapons - or supply - efforts to restrict

technical capabilities to build such weapons. For Germany, Japan, most of the industrialised world, South Korea, and other countries, the principal tools used to restrict demand for nuclear proliferation have been security arrangements and guarantees that obviate the necessity for nuclear weapons. In the case of the former West Germany, NATO made nuclear weapons defence available but with multinational control. Likewise, the US nuclear umbrella over South Korea has been central to that country's restraint on the nuclear option. Without the umbrella, South Korea could possibly have decided to continue with its nuclear weapon programme.¹⁴⁰

The restrictions on technical capabilities are also influenced by nuclear specific certainties. For almost all of the existing nuclear powers, the construction of nuclear weapons was undertaken as a military project, and the construction of a peaceful atomic energy programme was a secondary benefit believed to accompany the development of a fundamentally military technology.¹⁴¹ A contemporary problem for non-proliferation is that the non-proliferation regime was developed by relying on the nuclear weapon experience of the NWS, and that since then the shifts of technology and even energy economics should be taken into account.¹⁴² With international controls on civilian nuclear power this is now reversed and the focus of non-proliferation is very much on the potential development of a capability with the materials, facilities and personnel originally devoted to peaceful nuclear purposes such as the generation of electricity and basic nuclear research for industrial and other applications.

The development and spread of civilian nuclear technology has nowhere been nearly as rapid as was predicted in the wake of the oil crisis in 1973, neither in the industrialised nor in the developing world. The spread of this technology in the developing world was and still is hampered by the high costs of nuclear energy, the lack of adequate networks for its efficient distribution, and the lack of qualified manpower.¹⁴³ In the developed world, concern regarding the environmental impact especially, because of the health and safety aspects concerning civilian nuclear use, negatively influenced the potential growth of the civilian nuclear industry. These concerns were fuelled by the Chernobyl nuclear accident in 1986 as well as by the impact of the global environmental lobby since the seventies. Since then the nuclear industry has never fully recovered. Current energy planning foresees the modernising of fossil-fuel facilities, along with the development of commercially viable solar or fusion power in the twenty first century.¹⁴⁴

It could thus be assumed that countries will lose convenient pretexts for nuclear weapons programmes if nuclear power continues to wane as a cost-effective source of electricity. In the newer non-official NWS (especially India, Pakistan and Israel), civil nuclear programmes have served as a cover under which these states have conducted undeclared nuclear weapons work. Yet as plutonium fuels prove especially non-competitive, and the declared NWS move to ban further unsafeguarded production of this material, the capacity of other states to conduct clandestine nuclear weapons programmes will decrease.¹⁴⁵

It could on the other hand also be expected that, despite the downward interest in nuclear power in the industrialised countries especially, there can be hardly any doubt that nuclear power will continue to play a significant energy role in future decades. Even with a new strengthened safeguard system, no non-proliferation regime is in all circumstances capable of preventing the clandestine diversion of nuclear material, or the military exploitation of a nuclear option resulting from a peaceful nuclear energy programme. A safeguards system is primarily a political symbol. Restricting and rolling back proliferation would remain highly difficult in areas of high regional tension.

The ultimate goal of any non-proliferation regime must therefore, be to inspire basic international confidence through a generally observed code of behaviour and a meaningful control and surveillance mechanism. Such confidence, however, is largely a product of perceptions. At least four different sets of perceptions are relevant in this respect. Firstly, the perceptions of the nuclear states concerning the proliferation issue, which have not been identical, often inconsistent, and in the past clearly conflicting. Secondly, the perceptions within and among the nuclear threshold countries of what they are searching for, which varies from a desire to develop basic nuclear technology skills to the quest for a nuclear weapon. Thirdly, the perceptions by its neighbours of a threshold state's motivations, which will almost certainly not be identical with the real intentions harboured by these near-nuclear countries. Finally, there are the perceptions of the international community at large as the rules of the game change. Only a common perception of the equity and desirability of the rules can give to a non-proliferation regime the indispensable seal of legitimacy that makes it acceptable to individual countries. If the rules of the game are not seen as equitable and legitimate, efforts to halt the spread of nuclear weapons will fail.¹⁴⁶ In this regard a view still commonly held in the developing world is that the lack of demonstrably serious

commitment by the NWS to achieving any substantial limitation of, let alone reduction in their nuclear arsenals despite nearly thirty years of arms control negotiation, serves as a standing invitation to others to proliferate.¹⁴⁷

Significant progress has, however, been made in developing a rudimentary common view on the non-proliferation norm. In particular the UN Security Council's growing commitment to halting the spread of nuclear weapons has created an international environment that is unusually conducive to the strengthening of the non-proliferation regime.¹⁴⁸ The evolutionary development of this norm will be the focus of the next chapter of this study.

3.5 Notes

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