

Recent developments in the non-proliferation of nuclear weapons

Safeguards by the International Atomic Energy Agency

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The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) has played a central role in sustaining the non-proliferation system. The effectiveness of the NPT has been secured by verifying its obligations through the safeguards of the International Atomic Energy Agency (IAEA) that have been in place since the treaty entered into force in 1970. However, its limitations came to be known through unprecedented cases which surfaced after the end of cold war in the early 1990s. The purpose of this article is to examine how effective the NPT has been in preventing nuclear proliferation by analysing the course of events through the 1990s.

The proliferation of nuclear weapons is defined as the process by which an entity (whether state, sub-national body, or person) acquires the credible means to possess, use, threaten, or attempt to use fissile nuclear material that could produce significant physical or radiological damage (most seriously in the form of an explosive device) [1]. Since 1945, the international nuclear non-proliferation system has maintained several instruments, such as technology controls, export/import control, physical protection, measures against illicit trafficking, disarmament, restraints on testing, and some special initiatives (United Nations Special Commission for overseeing the elimination of weapons of mass destruction and ballistic missiles in Iraq, UNSCOM; United Nations Monitoring, Verification and Inspection Commission, UNMOVIC; and Korean Peninsula Energy Development Organisation, KEDO) [2].

In order to determine the effectiveness of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) in preventing nuclear proliferation, this article examines basic characteristics of the NPT first and then summarises how the International Atomic Energy Agency (IAEA) safeguards were strengthened in the 1990s to secure the implementation of the treaty. Lastly, it goes on to discuss the effectiveness of the NPT by mentioning the examples of South Africa, Iraq, the Democratic People's Republic of Korea (DPRK) and Iran.

Treaty on the Non-Proliferation of Nuclear Weapons (NPT)

On 1 July 1968 the NPT was opened for signatories and it entered into force on 5 March 1970. As of January 2005, it had a membership of 188 countries [3], making it one of the largest existing international treaties.

The NPT consists of a preamble and eleven articles. Article 1 provides that each Nuclear-Weapon State (NWS) Party shall not transfer to any Non-Nuclear-Weapon State (NNWS) nuclear weapons or other nuclear explosive devices and shall not assist any NNWS to manufacture nuclear weapons or other nuclear explosive devices. Article 2 prohibits the receipt, manufacture, and/or development of nuclear weapons or other nuclear explosive devices. For the purposes of the NPT, a NWS is one which has manufactured and exploded a nuclear weapon or any other nuclear explosive device prior to 1 January 1967 (Article 9 III), i.e. US, Russia, UK, France and China.

Furthermore, the treaty establishes IAEA safeguards as a main measure to verify the fulfilment of its obligations. Each NNWS undertakes to accept the safeguards, as set forth in the agreement to be negotiated and concluded with the IAEA in accordance with the Statute of the IAEA (the "Statute") and its safeguards system. This is for the exclusive purpose of verifying the fulfilment of obligations assumed under the Treaty with a view to preventing the diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. The safeguards required by this Article are to be applied on all source or special fissionable material in all peaceful nuclear activities within the territory of the State, under its jurisdiction, or carried out under its control (Article 3 I).

Pursuant to Article 10 II, in May 1995, twenty-five years after the entry into force of the Treaty, the NPT Review and Extension Conference was held and adopted the indefinite extension of the NPT.

IAEA safeguards

Before the NPT

Soon after World War II, the international community turned its eye to setting up an international atomic energy organisation with the authority to make world-wide inspections. This idea fell in line with the United Nations Atomic Energy Commission, the American Baruch draft, the Russian Gromyko draft, and a speech entitled 'Atoms for Peace' made by then American President Dwight D. Eisenhower. The idea of the IAEA was presented to the United Nations General Assembly (UNGA) in 1953. Further arguments led to the adoption of the Statute of the IAEA, including safeguard provisions, during the tenth UNGA on the 23rd of October, 1956. The Statute came into effect on the 29th of July 1957, thereby establishing the IAEA.

Article 2 of the Statute provides that the IAEA shall ensure, so far as it is able, that assistance provided by it or at its request or under its supervision or control, is not used in such way as to further any military purpose. For this reason, Article 3 V establishes safeguards to ensure that nuclear materials are not used in such a way as to further military purposes. Article 12 provides the IAEA's rights and responsibilities in applying safeguards, remedial actions to any non-compliance or failure if any, a right to report any non-compliance to the

UNGA and the Security Council of the United Nations (UNSC) as well as corresponding sanctions.

In reality, even after the IAEA was established, setting the safeguard procedures in accordance with these provisions progressed at a snail's pace. This could be attributed to the fact that no state requested the IAEA to apply its safeguards. Most states sought for bilateral agreements that provided for not only the supply of nuclear materials and facilities but also bilateral safeguards, following the American model of refusing mediation by an international organisation for fear of nuclear proliferation resulting from peaceful nuclear activities, although the US was both the first advocate of the IAEA and the main actor in global nuclear activities.

The first State that requested inspection by the IAEA was Japan. Although poor in natural energy resources, Japan had to cope with increasing demands for electricity as a result of rapid economic growth and thus turned its attention to nuclear power generation. However, due to political concerns, it decided to accept inspections by an international organisation rather than establish a bilateral relationship with specific States such as the United States or the United Kingdom [4]. One of the reasons for Japan's initiative was the international circumstances of the time: among the many States that launched massive nuclear power generation projects, US, UK, USSR, and France were not obliged to accept inspections as being NWSS, while many European countries such as West Germany and Italy hoped for inspections by the EURATOM.

The Board of Governors of the IAEA (BOG) adopted the first safeguard agreement INFCIRC/26 in January 1961, then INFCIRC/26/Add.1 in February 1964, followed by a new document INFCIRC/66 in 1965. From this point, safeguards which had been applied according to bilateral agreements were to be gradually placed under the control of the IAEA.

Safeguards required in connection with the NPT

INFCIRC/66-type safeguard agreements leave a broad scope of practical decisions to the IAEA as well as to the discretion of its inspectors. The agreement does not strictly define its target nor the inspectors' duty to maintain confidentiality, while allowing a broad frequency of inspections. The NPT came into force on the eve of large-scale nuclear power generation, when states such as Japan and West Germany, which had high expectations of nuclear power generation, strongly feared that NWSS would abuse the safeguard system to infringe industrial secrets. Thus, those states claimed to revise INFCIRC/66 as soon as it became clear that the NPT applied IAEA safeguards. Hence, the revision put an emphasis on not inflicting a loss on the technological and economic aspects of NNWSS, while maintaining its original function of non-proliferation [5]. Article 4 of the NPT, which provides inalienable rights to use nuclear energy for peaceful purposes, was the strength of this argument.

Consequently, in March 1971, the 'Structure and Content of Agreements between the agency and States required in connection with the treaty of the non-proliferation of nuclear weapons' (INFCIRC/153) was adopted. According to INFCIRC/153 (Paragraph 1), inspections are applied to all source or special fissionable material in all peaceful nuclear activities. However, in practice the frequency of inspections is based upon the quantity of nuclear material each state possesses. Therefore, it targeted mainly industrialised NNWSS such as western European countries, Japan and Canada.

Meanwhile, the five NWSS concluded voluntary offer agreements (VOA) with the IAEA to accept its safeguards. A VOA is usually an INFCIRC/153-type agreement, but what form it takes

is ultimately up to each individual state. As stated above, the NPT system was settled by gaining verification measures to secure its implementation under an international organisation, the IAEA. As of 1991, 180 safeguard agreements had been concluded between the IAEA and 105 countries.

Strengthened safeguards

Controversial points of INFCIRC/153

As mentioned above, the implementation of the NPT is secured by the IAEA according to INFCIRC/153-type agreements, but INFCIRC/153 has two major controversial points.

Firstly, the IAEA was not designed to be an organisation for verification of the NPT, so that the objectives of the NPT are not always consistent with those of the IAEA. As a result, there are some variations between the scope of the NPT and that of the IAEA safeguards. In reality, the IAEA cannot work on the verification of the receipt of nuclear weapons among the duties imposed on NNWS as provided in Article 2 of the NPT. Also, whereas the NPT aims to prevent proliferation of nuclear weapons or other nuclear explosive devices in general (NPT Article 1 and 2), the IAEA aims solely to prevent nuclear energy from being diverted to 'any military purpose' (the Statute Article 2). This means that the NPT requires verification of not only nuclear materials for peaceful purposes but also military not-nuclear-explosive devices (e.g., nuclear fuel for nuclear-powered submarines), while at the same time the application of IAEA safeguards is limited to nuclear materials used exclusively for peaceful purposes [6].

The other point is that the provisions require the safeguards to be applied on 'all source or special fissionable material in all peaceful nuclear activities' (NPT Article 3, INFCIRC/153 Paragraph 2), whereas in practice the safeguards are applied only on nuclear materials 'declared' voluntarily by each State.

The above mentioned points have been pointed out with regard to INFCIRC/153. However, it was only after issues in Iraq and the DPRK occurred in the 1990s when its revisions were accelerated. Details of these cases are given below.

Practice of special inspection

A special inspection (INFCIRC/153 Paragraph 73 and 77) is an inspection designed to examine reports from a concerned State or to fulfill responsibilities of the IAEA in the event or suspicion of abnormal situations, apart from routine inspections [7]. There have been indications for some time that utilising special inspections is necessary. However, these indications have been unsuccessful because none has ever been done. It was not until after it was revealed that Iraq had pursued nuclear weapons in 1991 that the IAEA started a full-scale review of the special inspection provision.

Later, in November 1991, the IAEA Secretariat prepared a paper on strengthening the IAEA safeguards GOV/2554 to be reviewed at the BOG in February 1992. The BOG 'reaffirmed the IAEA's right to undertake special inspection in Member States with comprehensive safeguards agreements, when necessary and appropriate, and to ensure that all nuclear materials in peaceful nuclear activities are under safeguards'. It further 'reaffirmed the IAEA's right to obtain and to have access to additional information and locations in accordance with its Statute and all comprehensive safeguards agreements' [8].

Here, provisional terms ‘in agreement with the State’ (Paragraph 77) raise a controversy about whether the State Party which concludes a INFCIRC/153-type safeguard agreement has an obligation to accept the special inspection, or whether it allows the State to refuse the special inspection.

This point is not clarified in the paper on strengthening the IAEA safeguards (GOV/2554), and there is an argument to be made for the obligation of accepting special inspections [9]. However, Article 12 C of the Statute provides that the BOG ‘shall’ report the non-compliance to all members, the UNSC, and the UNGA [10], while Paragraph 19 of INFCIRC/153 provides that the BOG ‘may’ make the reports. From these terms, it follows that it is possible for the BOG not to report non-compliance even when a State Party refuses to accept the special inspection, meaning that refusing special inspections does not always equal non-compliance. Therefore, it can be said that there is no obligation to accept special inspections.

Taking account of the fact that the BOG is entitled to decide whether or not to report each individual case, it was not unreasonable for the BOG to reaffirm its rights to implement special inspections in February 1992.

Improving the reporting system

Although the right to implement special inspections was reaffirmed as above, questions still remain about the effectiveness of IAEA safeguards if the IAEA is given insufficient information on undeclared nuclear activities. To secure information that can help finding undeclared nuclear activities, the IAEA has also improved the reporting system related to its safeguards.

Firstly, early submission by states of design information with respect to nuclear facilities was debated. INFCIRC/153 stipulates that design information of nuclear facilities shall be provided ‘as early as possible before nuclear material is introduced into a new facility’ (Paragraph 42), but does not give specific time limits. Thus, the BOG on February 1992, which reaffirmed the right of special inspection, stated that design information on new facilities and on changes to existing facilities shall be provided to the IAEA as soon as possible.

Secondly, the BOG of February 1993 adopted a Universal Reporting System. Under this system, each member state provides voluntary information on the import/export of nuclear materials, specified nuclear related equipment, and non-nuclear materials to the IAEA. It covers a wider scope than INFCIRC/153 as it encourages member states to provide relevant information on specified ‘equipment and non-nuclear materials’, not just specific nuclear materials.

As the system equally encourages NNWSS, which concluded INFCIRC/153-type safeguard agreements, and NWSS, which concluded the VOA, to voluntarily provide information it enabled the IAEA to have a much clearer view of the global flow of nuclear-related equipment and thus enlarged the possibility of detecting undeclared nuclear activities, by providing a chance for the comparison and analysis of the flow.

Programme 93+2

The IAEA Secretariat recognised the need for a comprehensive and systematic approach to strengthen its safeguards in the course of discussions triggered by the issues in Iraq and the DPRK in the early 1990s and proposed ‘Programme 93+2’ to the BOG in December 1993. For the next two years, it worked to assemble a proposal on ‘Strengthened Safeguards System (SSS)’ [11].

This system was worked out in two separate parts: part one examines various available actions under the authorisation of the current INFCIRC/153-type safeguard agreements; and part two examines other actions that would be available only if additional legal authority was given to the IAEA. Part one was approved by the BOG in June 1995 to be implemented in 1996 [12].

Features of part one include obtaining further information, enhancing on-site inspection and adapting existing systems to improve efficiency. To obtain further information, part one proposes the early submission of design information on nuclear facilities, as mentioned above, while stretching its objective to encompass information on nuclear activities prior to the entry into force of safeguard agreements, the status of nuclear fuel cycles, and the operational conditions of nuclear facilities. In regard to on-site inspections, part one enabled inspections on uranium processing plants, nuclear power stations, and other related facilities without advance notice other than sites which indicated that nuclear material was present as provided for by INFCIRC/153. Part one also proposed procedural improvements including simplifying the procedures of appointing inspectors and permitting multi-visas for more flexible and efficient inspections.

Additional protocol INFCIRC/540

Part two of the SSS was transformed into a different proposal by the Secretariat, after part one was implemented. After careful discussions within the BOG's drafting committee, a special BOG session adopted the 'Model Protocol Additional to the Agreement(s) between State(s) and the IAEA for the Application of Safeguards' (INFCIRC/540) by consensus on 15 May 1997 [12].

The new measures contemplated by INFCIRC/540 are of three general types: information related, access related, and those related to administrative arrangements. For all of these measures, INFCIRC/540 dared to stretch their range or enhance their implementation. It is especially noticeable that access to related sites including places where nuclear material is not present was permitted, as it allowed complementary access to undeclared nuclear activities (Article 5) [14].

INFCIRC/540 is distinct from both the NPT and INFCIRC/153 as it requires both NNWSs and NWSS which have NPT membership to apply, whereas the NPT places only NNWSs under an obligation to conclude safeguard agreements [15]. As of August 2003, it was signed by 74 states and entered into force in 35 states and EURATOM. It is expected that INFCIRC/540 will bring improved transparency of each state's nuclear activities, increasing the accuracy and completeness of IAEA safeguards in future.

Integrated safeguards

Integrated Safeguards are defined as the optimum combination of all safeguard measures available to the IAEA under INFCIRC/153-type safeguard agreements and additional protocols to it (INFCIRC/540). These safeguards achieve the maximum effectiveness and efficiency within available resources in fulfilling the IAEA's right and obligation in paragraph 2 of INFCIRC/153 [16].

Integrated safeguards shall be implemented in a State only when the IAEA has drawn the conclusion that there is an absence of undeclared nuclear materials and activities in that State, and only after taking IAEA safeguards under an INFCIRC/153-type safeguard agreement and its

additional protocols. Furthermore, under integrated safeguards, safeguarding measures may be applied at reduced levels at certain facilities, compared with the measures that would have been applied without this conclusion.

Traditional INFCIRC/153-type safeguard agreements in practice focused solely on the quantity of nuclear materials possessed by each State and left little room for independent decisions by the IAEA. On the contrary, under the integrated safeguards system, the IAEA can make independent decisions based solely on its past experience. Research and developments are being made towards the speedy realisation of integrated safeguards. The IAEA General Conference (GC) has supported the Secretariat's challenge to strengthen the effectiveness and improve the efficiency of safeguards ever since it commenced. It had also urged the Secretariat to continue studying integrated safeguards in the context of implementation since 2000 [17].

If applied with integrated safeguards, states could enjoy more international credibility and benefits from nuclear activities as a result of decreased costs for conventional safeguards. This means the NPT and IAEA safeguards could step forward into a new era.

Case studies

South Africa

Discovery of a uranium mine in the suburb of Johannesburg in 1944 led the South African government to enact the Atomic Energy Act and establish the Atomic Energy Board (AEB) [18] in 1948. Since then, South Africa has become a forerunner in the field of nuclear studies backed by its abundant uranium resources. With the establishment of the IAEA in 1957, it was listed as one of the original member states, and had also concluded INFCIRC/66-type safeguard agreements with the IAEA in which it had transferred bilateral safeguard systems to the IAEA.

In the mid 1970s, South Africa started nuclear development from political necessity. In 1975, Angola, which is adjacent to Namibia, and Mozambique, border countries to South Africa, gained independence from Portugal. In both Angola and Mozambique, civil war broke out between pro-USSR governments and anti-government guerrilla groups, and South Africa interfered in these civil wars by supporting guerrilla groups from fears that communism would raise its head in Southern African countries. Suffering from the influences of the cold war and domestic power struggles in South Africa, Angola turned into a fierce battlefield in the end and the Cuban army was deployed to help its government. Such a situation was said to be a direct factor in South Africa rushing to develop nuclear weapons.

After the USSR pointed out South Africa's nuclear development in 1977, followed by similar indications from the US in 1979, the UNGA of December 1982 requested that South Africa stop nuclear development and place all of its nuclear activities under the control of the IAEA safeguards. At the same time, the UNGA requested that the IAEA suspend all assistance to South Africa on nuclear activities [19]. In June 1987, pursuant to Article 19 B of the Statute, the BOG submitted a recommendation to suspend South African privileges and rights of membership as a member state of the IAEA to the General Conference (GC). However, the GC of September 1987 postponed this subject for one year as South Africa was considering changing its policy on nuclear activities and joining the NPT in the near future. The issue was revisited many times by the GC in an effort to see the Cold War end [20], and on 10 July 1991 South Africa acceded to the NPT as a NNWS and concluded an INFCIRC/153-type safeguards agreement with the IAEA on the 16th of September. For verification of the initial report South

Africa submitted to the IAEA pursuant to the agreement, South Africa was keen to co-operate with the IAEA in accepting access to 'any place, any time', including enrichment facilities, which had been missing from prior safeguards [21].

On 24 March 1993, then South African president Frederik Willem de Klerk announced that his government had developed six nuclear weapons in the past but had destroyed all of them. The information was later verified by IAEA inspectors who had been invited by the South African government [22].

It may be reasonable to conclude that South Africa abandoned nuclear development because security concerns vanished at the end of the Cold War. In any event, what transpired was that a strong political leadership took the initiative to rejoin the international community and achieve economic development by restoring its international credibility through membership with the NPT. It symbolises the *raison d'être* of the NPT system in the international community.

Consequently, South Africa became the one and only state to abandon nuclear weapons voluntarily and played a key role in supporting the indefinite extension of the NPT at the NPT Review and Extension Conference in 1995.

Iraq

UNSCOM

Following the Iraqi invasion of its neighbouring country Kuwait in August 1990, the UNSC adopted Resolution 660 which demanded immediate and unconditional withdrawal. When Iraq failed to comply with this resolution, the Multinational Coalition Force attacked Iraq in January 1991, otherwise known as the Gulf War. The end of the Gulf War was declared by UNSC Resolution 687 on 3 April, which demanded that Iraq reaffirm its obligations under the NPT, place its fissionable materials under the exclusive control of the IAEA, accept IAEA inspections to verify the destruction of the materials stated above, and permit inspections and monitoring for extended periods, all of which Iraq accepted officially. Following this resolution, the UNSC established the United Nations Special Commission for overseeing the elimination of weapons of mass destruction and ballistic missiles in Iraq (the UNSCOM) on 1 May 1991 to inspect and eliminate weapons of mass destruction in Iraq. The resolution also called upon the IAEA to carry out inspections of Iraqi nuclear weapons under the assistance and co-operation of UNSCOM. Places to be inspected by the IAEA were identified based on sites that Iraq indicated in the report submitted in accordance with Resolution 687 and sites which UNSCOM chose based on other information. The IAEA inspectors were guaranteed to have unconditional and unlimited access to any region, facility, equipment, record and means of transportation [23].

UNSCOM's extensive and intensive inspections discovered Iraq's nuclear development programme later on. The fact that nuclear development projects had been carried out in an undeclared facility in the same premises where the IAEA had made routine inspections according to an INFCIRC/153-type safeguards agreement in connection with the NPT between Iraq and the IAEA (INFCIRC/172; entered into force on 29 February 1972) without there having been official non-compliance records prior to that time, had a great impact on the IAEA. This case unearthed questions over the effectiveness of IAEA safeguards, which depend on declarations from a State.

On this point, then IAEA Director General Hans Blix proposed that this arrangement raises concerns about the scope and effectiveness of current non-proliferation control [24].

Meanwhile, UNSCOM Chief Rolf Ekeus called for more efforts by the IAEA to make special inspection of undeclared facilities, to gather more information from governments, and to work more closely with the UNSC. Mr. Ekeus also expected that the UNSC could play a vital role in comprehensive non-proliferation [25].

UNMOVIC

While the IAEA began to strengthen its safeguard system after this incident as mentioned above, Iraq announced in October 1997 that it would no longer co-operate with UNSCOM and in October 1998 decided to suspend all assistance to UNSCOM. Following this move, the UNSC (with full assent) adopted Resolution 1205 on 5 November 1998 which held Iraq non-co-operative and called for resumed co-operation on inspections. Although Iraq temporarily declared the unconditioned acceptance of inspections, it remained unco-operative. Thus, in December 1997, the US and UK bombed Iraq on a scale not seen since the Gulf War because Iraq's co-operation with inspections was insufficient. This forced UNSCOM to suspend its monitoring and verification operations and close down its office in Iraq.

To break the standstill, the UNSC adopted Resolution 1284 on 17 December 1997 which established the United Nations Monitoring, Verification and Inspection Commission (UNMOVIC). UNMOVIC replaced UNSCOM and aimed to establish and implement a strengthened system of continuous monitoring and verification in Iraq. Although preparations for inspection were continuously pushed forward with former IAEA Director General Hans Blix taking office as Chief of UNMOVIC on 1 March 2000 and an organisational plan for UNMOVIC being adopted by the UNSC on 13 April, no inspections were made in Iraq because it had not agreed to accept inspections.

On 8 November 2002, the UNSC adopted Resolution 1441 giving Iraq a 'last chance' to implement its obligation to disarm. The resolution stated that UNMOVIC and IAEA should make inspections of chemical/biological weapons/missiles and nuclear development programmes respectively, giving them drastically improved authority for instant, unconditional and unlimited access to various sites including the president's facilities. As Iraq announced that it would accept the resolution on 13 November, IAEA and UNMOVIC inspectors resumed their activities on 27 November which eventually extended to include the whole country. However, as the US began bombing Iraq in March 2003, such inspections were suspended four months after resumption.

On 15 October 2003, the UNSC adopted Resolution 1511 on post-war reconstruction of Iraq by common assent, and IAEA Director General Mohamed ElBaradei urged the resumption of inspections the next day [26].

IAEA and the UNSC in Iraq's case

In this case, the IAEA worked closely with UNSCOM and UNMOVIC in the verification of nuclear weapons in Iraq under UNSC resolutions arising from Iraq's violations of international law by invading Kuwait. Since the verification was not based on a INFCIRC/153-type safeguards agreement but on related UNSC Resolutions, it had far greater authority than that under the agreement, and helped inspectors to detect previously undetected nuclear weapons programmes in Iraq.

Some have jumped to the conclusion that this case indicates the limits of IAEA safeguards and the entire NPT system, but we must take into consideration that most likely it was impossible to conclude a safeguards agreement between the IAEA and Iraq that would have allowed the same level of authority for the IAEA as was given by UNSC Resolutions. Therefore, it is not realistic to evaluate IAEA verification measures generally based on this case, in which verification was carried out under the authority of the UNSC.

What should be stressed here is the benefit gained from the close relationship between the IAEA and the UNSC. The NPT entrusts its verification to the IAEA, in part due to its close relationship with the UNSC, making it possible to improve its verification system with other IAEA activities under the UNSC (although as a result). As mentioned above, the IAEA made several attempts to strengthen its safeguard system hereafter these events with Iraq.

Democratic People's Republic of Korea

NPT withdrawal in 1993

On the 12th of December 1985 the DPRK became a party to the NPT. On the 30th of January 1992 it signed an INFCIRC/153-type safeguards agreement (INFCIRC/403), which entered into force on the 10th of April, with the end of the Cold War and the Declaration on the Denuclearisation of the Korean Peninsula as its backdrop [27]. The IAEA began inspections to verify the DPRK's initial report and found inconsistencies between its findings and the DPRK's declarations [28]. In parallel with the request for a special inspection in the DPRK on the 9th of February 1993, the special BOG adopted Resolution 2636 calling upon the DPRK for full cooperation with the IAEA [29]. However, the DPRK refused a special inspection to specified facilities claiming them to be non-nuclear military facilities, and on the 12th of March the DPRK announced its withdrawal from the NPT pursuant to Article 10 [30].

The BOG of the 18th of March adopted Resolution 2639 [31] which affirmed that the safeguards agreement between the IAEA and the DPRK remained in force and requested the Director General to continue efforts and talks. However, on the 1st of April, Resolution 2645 [32] was adopted which concluded that the DPRK was in non-compliance with the safeguards agreement. This resolution also directed that a report of the DPRK's non-compliance and its failure to verify the non-diversion of nuclear materials under IAEA safeguards would be made to all member states, the UNSC, and the UNGA, in accordance with the Statute 12 C and Article 19 of INFCIRC/403. In line with this decision, the IAEA submitted a Director General's detailed report on the DPRK's non-compliance to the United Nations [33].

Following the submission of this report, the UNSC adopted Resolution 825 on the 11th of May, calling upon the DPRK to reconsider its withdrawal from the NPT and to comply with the safeguard agreement. Shortly after this, the US began bilateral talks with the DPRK beginning in June 1993. Due to these attempts, the DPRK suspended its withdrawal from the NPT on the 11th of June, a day before the scheduled date of its entry into force, under the condition that it would determine the scope of IAEA inspections in the future through DRPK-US talks. This condition was based on the DPRK's claim that it stood in 'unique status' because of the suspension of its withdrawal from the NPT, and thus IAEA inspections in the DPRK are not completed according to the safeguards agreement [34].

The IAEA continued talks with the DPRK in order to carry out inspections, but to no satisfactory extent [35]. Then in May 1994, concerns once again arose as the DPRK started to

draw fuels out of its nuclear reactor. Soon after this on the 10th of June 1994, the BOG concluded that the DPRK continued to widen its non-compliance with the safeguards agreement and called upon the DPRK to co-operate with the IAEA urgently and fully. It also adopted a Resolution to suspend all non-medical technical assistance to the DPRK in accordance with the Statute Article 12 C [36]. This was the first time the IAEA applied sanctions [37]. On the 13th of June 1994 the DPRK announced its immediate withdrawal from the IAEA (Statute Article 18) [38].

NPT withdrawal in 2003

In October 1994, negotiations between the US and the DPRK led to the 'Democratic People's Republic of Korea-United States of America: Agreed Framework to Negotiate Resolution of the Nuclear Issue on the Korean Peninsula' (21 October 1994). Under this framework the DPRK was set to freeze and dismantle its nuclear reactors and other related facilities under IAEA monitoring in exchange for light-water reactors and alternative energy resources available until the reactor was built. With regard to the NPT, the Agreed Framework stipulated that the DPRK retain its membership in the NPT and accepted the implementation of safeguards agreements with the IAEA. However, it also provided that instead of being required to immediately comply with the safeguards agreement, the DPRK were to be given time to come into full compliance with the agreement before the key nuclear components were delivered to the site, once the main section of the project had been completed.

On the 9th of March 1995 Japan, the US, the Republic of Korea (ROK) signed an agreement establishing the Korean Peninsula Energy Development Organisation (KEDO) to support the project. A Supply Agreement was concluded on the 12th of December 1995 to kick off the KEDO project, allowing a resumption of IAEA safeguards in the DPRK's nuclear facilities which were not frozen or dismantled.

In reality, however, delays in compliance with the US-DPRK Agreed Framework prevented IAEA inspections. In January, when US President Bush took office, the US revised its DPRK policies and put an end to the bilateral relationship between the US and the DPRK. In President Bush's State of the Union address in January 2002 he referred to the DPRK, Iraq and Iran as 'the axis of evil', making the situation much worse.

Bilateral talks were resumed in October 2002, during which the DPRK allegedly acknowledged that it had a programme to enrich uranium for nuclear weapons, instead of plutonium which had been frozen under the Agreed Framework [39]. Subsequently, on the 26th of October 2002, Japan, the US and the ROK announced a joint communiqué concluding the DPRK's programme infringed the NPT, the IAEA safeguards agreement and the US-DPRK Agreed Framework [40]. Then in November 2002 the BOG urged the DPRK to abandon all nuclear weapons programme [41]. At the same time the KEDO Board decided to suspend the supply of heavy oil beginning in December.

The DPRK asserted the US had unilaterally made the claim that the DPRK had acknowledged it had a nuclear programme. The DPRK then announced the freezes on its nuclear facilities were lifted pursuant to the US-DPRK Agreed Framework in light of KEDO's suspension of the heavy fuel oil supply [42]. This was followed by an order calling on IAEA inspectors, who were in charge of monitoring in the DPRK, to leave the country. At the end of December 2002, IAEA inspectors left the DPRK. After the BOG of January 2003 a resolution was adopted criticis-

ing the DPRK in the strongest of terms [43]. The DPRK again announced its withdrawal from the NPT on the 10th of January 2003 (NPT Article 10 I). With no outstanding progress in negotiations, the KEDO Board decided to temporarily suspend the KEDO project for one year's time on the 4th of November 2003.

IAEA and the UNSC on DPRK

The DPRK's non-compliance with the IAEA safeguards agreement triggered its withdrawal from the NPT, followed by bilateral negotiations between the US and the DPRK and then the establishment of KEDO. It was also the first time for the IAEA to request a special inspection, which was affirmed in February 1992 during its standstill in Iraq. However, this request was denied by the DPRK and actually drove the DPRK out of the NPT in the end. The IAEA started working closely with the UNSC after this event, but with the IAEA's first sanction the DPRK announced its withdrawal from the IAEA as well. The DPRK's current legal status under the NPT is not clear and still invokes various arguments [44]. It also serves to raise new issues concerning the effectiveness of the NPT.

Although the IAEA sanctions were insufficient in this case, it is fair to conclude that the IAEA fulfilled its responsibilities by reporting the DPRK's non-compliance to the UNSC and by dealing with the issue in close co-operation with the UNSC. Issues beyond this point should be recognised as belonging to the UNSC.

The DPRK's decision to withdraw from the NPT has nothing to do with the effectiveness of the NPT, since any state is entitled to withdraw from any treaty. Any treaty that has the membership of almost all states in the world can be recognised as customary international law, thus binding even non-member states. However, treaties to which some states are persistently and continuously opposed do not receive this same type of recognition. It is especially so when a state with important interests in the subject matter of the treaty is opposed. Based on the fact that international peace and security has been recognised as the core of customary international law, one might say that nuclear proliferation violates customary law. However, considering the peculiarity of the NPT, which provides different obligations on NWSS and NNWSs respectively, the criticism that the NPT is an unequal treaty due to this peculiarity, and opposition from India and Pakistan, it is still too early to conclude that the provisions of the NPT form a part of customary international law.

The situation with the DPRK highlighted the importance of co-operation between the IAEA as a verification organisation of the NPT and the UNSC in terms of resolving conflicts. However, it should also be seen as a challenge to the nuclear non-proliferation system, which is centred around the NPT and not as a challenge to the effectiveness of the NPT.

Iran

Iran gained membership in the IAEA in 1958, signed the NPT on the 1st of July 1968, and ratified it on the 2nd of February 1970. Iran's safeguards agreement with the IAEA, in connection with the NPT, entered into force on the 17th of May 1974 [45].

In August 2002, an Iranian anti-governmental organisation announced that the Iranian regime had a nuclear weapons programme [46]. This sparked much controversy that continues to this day. At the IAEA GC held in September 2002, Iran announced that it was planning on constructing nuclear facilities twenty years hence, emphasising they would be used for peaceful

purposes and denying any existence of nuclear weapons programmes. However, undeclared imports of related materials and construction plans for previously unknown nuclear facilities [47] were revealed leading the BOG of June 2003 to urge Iran to submit accurate information under the safeguards agreement [48]. The IAEA has issued the same requests calling for the implementation of the safeguards agreement.

After concluding that Iran's report was unsatisfactory, the GC of September 2003 called upon Iran to take all necessary steps to show its compliance with the safeguards agreement by the end of October 2003. The GC also requested that Iran suspend the enrichment of uranium and sign an additional protocol to secure transparency in regards to its nuclear programme [49]. Although Iran stressed that it did not renounce the right to enrich uranium, it announced that uranium enrichment would be suspended, signed an additional protocol, and stated it would act in full co-operation with the IAEA in implementing the safeguards agreement on the 21st of October 2003. On the 23rd of October 2003 Iran submitted a report on its nuclear programmes and on the 10th of November 2003 it officially announced the suspension of uranium enrichment and the acceptance of the additional protocol, emphasising again that it had no intention of developing nuclear weapons. It is stated that the report clearly indicated Iran's non-compliance with the safeguard agreement, but this remains unclear.

Issues in Iran are centred on its non-compliance with IAEA safeguards agreement in connection with the NPT, as in the case of the DPRK. While IAEA inspection under the safeguards agreement revealed unknown nuclear activities in the DPRK, in Iran the IAEA took actions after the suspicion was aroused by a third party and spread through the media.

As stated above, IAEA safeguards are, in principle, based on information declared by the state party. Complementary inspection authority in regards to undeclared activities is granted to the IAEA only under the Additional Protocol. Therefore, if a state party in which the Additional Protocol is not entered into force submits unsatisfactory reports, as in Iran's case, the IAEA has no option but to persistently negotiate with the state while following normal procedures, such as calling for the BOG and the GC to adopt requests or report to the UNSC. The future of this case is still unknown, but it is time to discuss an international framework for the IAEA which would allow it to collect more objective information if the aim is to improve the effectiveness of the NPT [50].

Conclusion

As discussed above, the end of the Cold War in the early 1990s led to a situation in which the non-proliferation of nuclear weapons came to affect more than a limited number of industrialised nations. Since then, the NPT has been frequently questioned in terms of its effectiveness.

The South African case indicates that the mere existence of the NPT has some significance. South Africa launched a nuclear weapons programme under the influence of the Cold War, subsequently abandoned its programme voluntarily, and sought membership of the NPT in order to build confidence in the international community. Also, through the cases in Iraq and the DPRK, IAEA safeguards have been improved by strengthening connections between the UNSC and the IAEA, the verification organisation of the NPT. Along with the IAEA, which is looking to strengthen its safeguard measures through Additional Protocols being adopted in more countries while searching for more effective and efficient safeguards through integrated

safeguards, the NPT remains effective with possibilities of becoming even more effective in the future.

One of the pressing questions for the NPT is not its verification measures but the means of withdrawal as chosen by the DPRK. It is not the NPT's failure but rather the failure of the whole nuclear non-proliferation system that India, Pakistan and Israel – which is claimed to have nuclear weapons – do not have NPT membership. However, withdrawal from the NPT by any member state must be avoided since such a move virtually deprives the NPT of its material effectiveness irregardless of how effective it might formally be.

The indefinite extension of the NPT decided in the NPT Revision Conference held in 1995 in accordance with the NPT Article 10 II symbolises its huge membership and the expectations about the NPT, although the decision did not accept the current situation. Most of the discussion fell upon the negotiations for nuclear disarmament centred on Article 6, which provides that each of the Parties undertakes to pursue negotiations in good faith on effective measures relating to the cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control [51]. It is essential for NWSs to pursue negotiations both in good faith and to maintain voluntarily practical effectiveness of the NPT in the future, encompassing the criticism that it is substantially an unequal treaty by dividing between NWSs and NNWSs.

Notes

1. Carlton Stoiber, *Nuclear Non-Proliferation: Historical & Policy Dimensions*, Montpellier, 2003, p. 2.
2. *Ibid.*, p. 13.
3. Israel, India and Pakistan, all of which are suspected of possessing nuclear weapons, have not acceded to the NPT but respectively concluded INFCIRC/66-type safeguard agreement with IAEA.
4. Japan showed its positive attitude to the IAEA, for example it got some fuels through the IAEA in 1959. Ryukichi Imai, *IAEA inspection and Nuclear Proliferation (IAEA sasatsu to kaku kakusan)*, Tokyo, 1994, p.35.
5. *Ibid.*, pp. 44 and 56-58.
6. Article 14 is relevant here; however this article has not been applied so far.
7. Paragraph 73a also provides another special inspection in order to verify the information contained in special reports; however, I use the term 'special inspection' of paragraph 73b in this article, which is most relevant here.
8. IAEA Press Release, PR92/12, 26 February 1992; and IAEA Bulletin 34 (1) (1992) 47.
9. Hans Blix, *IAEA Safeguards: New Challenges, Disarmament* 15 (2) (1992) 42.
10. The same provision is provided in Article 3II of the UN-IAEA agreement.
11. GC(37)/RES/619 (1993), GC(38)/RES/10 (1994) and GC(39)/RES/17 (1995).
12. GOV(39)/17; GOV/2807; and Bruno Pellaud, *Safeguards: the evolving picture*, IAEA Bulletin 38 (4) (1996).
13. GOV/OR/914, 15 May 1997; GC(41)/22, 17 September 1997; and Laura Rockwood, *Strengthening the Effectiveness and Improving the Efficiency of the IAEA Safeguards System*, Nuclear Law Bulletin No. 60, OECD Nuclear Energy Agency, 1997.
14. Laura Rockwood, *Systems of Security Control*, Montpellier, 2003, pp. 8-9.
15. Five NNWS declared respectively in the BOG to adopt the Additional Protocol that it would take some steps required in NFCIRC/540. GOV/OR.913, 15 May 1997.

16. Laura Rockwood, *The IAEA Safeguards System*, Montpellier, 2003, p. 29.
 17. GOV(44)/RES/19; GOV(45)/RES/13; GOV(46)/RES/12; and GOV(47)/RES/11.
 18. It was reorganised to establish Atomic Energy Corporation (AEC) in 1983.
 19. IAEA, *Annual Report for 1982*, Vienna, 1983, p.16, para. 63.
 20. IAEA, *Annual Reports for 1987*, p. 15 para. 41; for 1988, p. 10, para. 39; and for 1989, p. 7, Vienna.
 21. IAEA, *Annual Report for 1992*, Vienna, 1993, pp.4-5; David Fisher, *History of the IAEA: The First Forty Years*, IAEA, 1997, pp. 109-110.
 22. IAEA, *Annual Report for 1993*, Vienna, 1994, p. 157; David Fisher, *History of the IAEA: The First Forty Years*, IAEA, 1997, p.111.
 23. Mitsuru Kurosawa, *Disarmament International law (Gunsyuku kokusai hou)*, Tokyo, 2003, p.149.
 24. Hans Blix, *Verification of Nuclear Non-proliferation: The Lesson of Iraq*, *Washington Quarterly* 15 (4) (1992) 58.
 25. Rolf Ekeus, *Minimising the Risk of Proliferation*, United Nations, *Non-Proliferation and Confidence-Building Measures in Asia and the Pacific*, *Disarmament Topical Papers* 10, 1992, pp. 47-48; Rolf Ekeus, *The Iraqi Experience and the Future of Nuclear Non-proliferation*, *Washington Quarterly* 15 (4) (1992), p. 73; and see [23; pp. 149-150].
 26. See <http://www.iaea.org/worldatom/Press/Focus/IaeaIraq>.
 27. See [23; p. 154].
 28. UN doc. A/48/133(S/25556), 16 April 1993. pp. 4-6.
 29. IAEA doc. GOV/2636, 26 February 1993.
 30. SIPRI Yearbook, 1994, p. 630.
 31. IAEA doc. GOV/2639, 18 March 1993.
 32. IAEA doc. GOV/2645, 1 April 1993.
 33. See [23; p. 155].
 34. Masahiko Asada, *Controversial Points in International Law with respect to the DPRK case concerning Nuclear Weapons (Kitachosen wo meguru kokusaihou jyou no mondaiten-kakuheiki mondai wo cyushin ni)*, *Hogaku Kyoshitsu*, No. 274 (2003), p. 51.
 35. See [23, pp. 155-156].
 36. IAEA Press Release, PR/94/25, 13 June 1994.
 37. Regarding discussions on UN sanctions to be applied to the DPRK, see [23; pp. 156-157].
 38. INFCIRC/447, 21 June 1994. DPRK was a member of IAEA since 1974. Withdrawal by a member from the IAEA shall be done by a notice in writing to that effect given by the depositary Government, but shall not affect its contractual obligations entered into force pursuant to Article 11 or its budgetary obligations for the year in which it withdraws (Article 18 of the Statute).
 39. See [34; p. 51].
 40. Joint US-Japan-ROK Trilateral Statement, Los Cabos, Mexico, October 26, 2002.
 41. GOV/2002/60, 29 November 2002.
 42. Its re-operation was confirmed in February 2003.
 43. IAEA, *Media Advisory* 2003/04, 6 January 2003.
 44. The Preparatory Meeting in April-May 2003 decided not to make a discussion on the status of this DPRK for a moment.
 45. INFCIRC/214. Iran also concluded INFCIRC/66-type safeguard agreement.
 46. See <http://www.iaea.org/worldatom/Press/Focus/IaeaIran/index.shtml>.
 47. IAEA doc. GOV/2003/40, 6 June 2003.
 48. IAEA *Media Advisory*, 2003/72, 19 June 2003.
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49. IAEA doc. GOV/2003/69, 12 September 2003.
 50. In the DPRK case, the US provided some information to the IAEA, which constitutes most part of the information the IAEA relies on. The IAEA should be careful with the information not provided by itself nor by the country concerned. See [23; p. 159].
 51. International Court of Justice, Legality of Threat or Use of Nuclear Weapons, ICJ Reports, 1996, pp. 224-267.
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