

FFI RAPPORT

WEAPONS OF MASS DESTRUCTION FREE ZONES IN THE MIDDLE EAST

HOLØIEN Linda Mari

FFI/RAPPORT-2006/02488

**WEAPONS OF MASS DESTRUCTION FREE
ZONES IN THE MIDDLE EAST**

HOLØIEN Linda Mari

FFI/RAPPORT-2006/02488

FORSVARETS FORSKNINGSINSTITUTT
Norwegian Defence Research Establishment
P O Box 25, NO-2027 Kjeller, Norway

P O BOX 25
 NO-2027 KJELLER, NORWAY
REPORT DOCUMENTATION PAGE

SECURITY CLASSIFICATION OF THIS PAGE
 (when data entered)

1) PUBL/REPORT NUMBER FFI/RAPPORT-2006/02488	2) SECURITY CLASSIFICATION UNCLASSIFIED	3) NUMBER OF PAGES 38
1a) PROJECT REFERENCE FFI-V/3423/917	2a) DECLASSIFICATION/DOWNGRADING SCHEDULE -	
4) TITLE WEAPONS OF MASS DESTRUCTION FREE ZONES IN THE MIDDLE EAST (2 nd Ed.)		
5) NAMES OF AUTHOR(S) IN FULL (surname first) HOLØIEN Linda Mari		
6) DISTRIBUTION STATEMENT Approved for public release. Distribution unlimited. (Offentlig tilgjengelig)		
7) INDEXING TERMS IN ENGLISH:		
a) <u>Weapons of mass destruction</u>		IN NORWEGIAN:
b) <u>Nuclear weapon free zones</u>		a) <u>Masseødeleggelsesvåpen</u>
c) <u>WMD free zones</u>		b) <u>Kjernevåpenfrie soner</u>
d) <u>Middle East</u>		c) <u>Masseødeleggelsesvåpenfrie soner</u>
e) <u>Disarmament</u>		d) <u>Midtøsten</u>
		e) <u>Nedrustning</u>
THESAURUS REFERENCE:		
8) ABSTRACT <p>The Middle East is the only region in the world where weapons of mass destruction (WMD) have been used after 1945. There have been some efforts to establish weapon of mass destruction free zones (WMDFZ) in the region, but none of them have succeeded so far. There are no WMDFZs in the world today, but there are several nuclear weapon free zones. These zones provide important lessons for the establishment of a WMDFZ, and the prohibitions it should include. A zone should include all states in the Middle East, but alternatives for a gradual approach should be considered. It is possible to start with some countries while allowing others delayed entry. All states in the Middle East have in principle agreed to the establishment of a WMDFZ in the regional Forum for Arms Control and Regional Security (ACRS). The ACRS forum was unable to create any agreement between the parties, and has not been active since 1995. This report suggests that the ACRS negotiations should be re-established, and that a step-by-step procedure towards a WMDFZ will be necessary.</p>		
9) DATE 2007-02-08	AUTHORIZED BY This page only Jan Ivar Botnan	POSITION Director

ISBN 978-82-464-1069-2

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE
 (when data entered)

CONTENTS

	Page	
1	INTRODUCTION	7
2	BACKGROUND: THE NUCLEAR DISARMAMENT REGIME	8
2.1	The Non-Proliferation Treaty (NPT)	8
2.2	Nuclear Weapon Free Zones (NWFZs)	8
2.3	Regimes and Characteristics	9
2.4	Security Guarantees and Safeguards	10
3	NUCLEAR WEAPON FREE ZONES – HOW DO THEY WORK?	14
3.1	Reasons for Entering	14
3.2	Solving Security Issues	14
3.2.1	International Guarantees	14
3.2.2	Solving the Security Dilemma	14
3.3	Challenges Yet to Overcome	15
4	WEAPONS OF MASS DESTRUCTION IN THE MIDDLE EAST	16
4.1	WMD Challenges	16
4.2	Why NPT and NWFZ Is Insufficient in the Middle East	17
4.3	Middle East Initiatives	18
5	ALTERNATIVE MODELS FOR A WMDFZ IN THE MIDDLE EAST	19
5.1	WMDFZ in the Middle East: a Suggested Framework	19
5.2	The Scope of Prohibition for a Middle East WMDFZ	22
5.2.1	Nuclear Weapons	22
5.2.2	Chemical and Biological Weapons	23
5.3	The Geographical Scope	24
5.3.1	The Gulf Model	24
5.3.2	The Levant Model	26
5.3.3	The “All at Once” Model	27
6	PROSPECTS AND BARRIERS	28
6.1	Abandoning Weapons of Mass Destruction	28
6.2	Establishment of ACRS	29
6.2.1	Divergence of Interests and Objectives	30
6.2.2	States Outside the ACRS Negotiations	31
6.2.3	Challenging the Culture of Opacity	31
6.2.4	Creating Hopes for Successful Negotiations	32
7	SUMMARY AND CONCLUSIONS	32
7.1	Overcoming the Barriers: Realization of a WMDFZ	32

7.2 Conclusions

34

References

35

WEAPONS OF MASS DESTRUCTION FREE ZONES IN THE MIDDLE EAST

1 INTRODUCTION

This report focuses on the possibilities for creating a zone free for weapons of mass destruction (WMDFZ) in the Middle East. It presents options for arrangements that can make such a zone attainable.

The report first discusses the current nuclear disarmament regime. Nuclear weapon free zones (NWFZ) are an important disarmament mechanism in the world today, and Latin America, Africa, parts of Asia and Oceania are covered by treaties declaring them free of nuclear weapons. There is no existing example of a WMDFZ, which makes it important to learn from the NWFZs in order to present possible arrangements for a Middle East WMDFZ.

A NWFZ framework generally defines prohibitions, security guarantees and nuclear safeguards. This makes such zones effective for the purpose of regional non-proliferation. They have a positive impact on regional security for two reasons: (I) the negative security guarantees provided by the nuclear states and (II) the ability to foster regional cooperation – preventing situations where states proliferate out of fear of others' capabilities.

Several states in the Middle East are under suspicion for having weapons of mass destruction (WMD), that is, they may have nuclear, biological or chemical weapons either in their arsenal or under development. This report shows that a WMDFZ in the Middle East therefore will have several advantages compared to a NWFZ. The motivation behind the establishment of a Middle East WMDFZ must be the prospect of a region free of all WMD.

With a few exceptions, the existing NWFZs did not have to handle the problem of pre-existing nuclear weapons in their region. In the Middle East, the presumed pre-existence of WMD makes it important to include a WMD reversal program. To facilitate WMD reversal, measures must be taken to create a fundamental trust between the parties. This can partly be done by regional dialogues, safeguard activities and a continuous exchange of reports. Special bilateral agreements between states who find it especially hard to trust each other should be considered. Another challenge is to create a trustworthy verification regime, and this should preferably be done based on existing verification regimes.

The report discusses prohibitions and models for geographical limitations in a prospective WMDFZ, and presents the prospects and obstacles for a WMDFZ. Despite the existence of severe obstacles in the Middle East today, the conclusion is that a WMDFZ might be possible with a step-by-step procedure and a long-term perspective.

2 BACKGROUND: THE NUCLEAR DISARMAMENT REGIME

2.1 The Non-Proliferation Treaty (NPT)

The Disarmament Regime is based on the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) from 1968, and the Comprehensive Nuclear-Test-Ban Treaty (CTBT) from 1996 (Shapiro 2004). The NPT aims for total nuclear disarmament for all parties, but provides an unequal foundation for states when it comes to tolerance of their nuclear capabilities: While an overwhelming majority of the states are prohibited any possession of nuclear weapons, the traditional nuclear powers (the United States, Russia, the United Kingdom, France and China) are allowed to possess nuclear weapons for an undefined period of time. The nuclear weapon states may assist each other in nuclear development and testing; they may receive nuclear weapons from any state; and they may decide for themselves to what degree they wish to accept international control on their peaceful nuclear activities.

The main provisions stated in the NPT are: (1) the non-transfer and non-acquisition of nuclear weapons, (2) nuclear safeguards, performed by the International Atomic Energy Agency (IAEA), (3) the right to peaceful nuclear energy, and (4) obligations to disarm. All states are obliged under the UN Charter to refrain from using force or threatening to use force, but other than this, there are no specific obligations in the NPT to ensure the security of the non-nuclear-weapon states. According to a UN resolution from 1968, the Soviet Union, the US and the UK pledged immediate assistance to non-nuclear states party to the NPT which were victims of or threatened by aggression with nuclear weapons (Goldblat 1994: 77- 83).

2.2 Nuclear Weapon Free Zones (NWFZs)

Nuclear weapon free zones (NWFZs) constitute another disarmament mechanism that may increase the possibilities for denuclearization and peace. They are based on the 1968 NPT which encourages such zones. NWFZs aim to prevent new nuclear weapon states from occurring, and to remove regional causes for proliferation. NWFZs can serve as a “guarantee” to states and convince them that their neighbour does not intend to get nuclear weapons. NWFZs will lessen the security dilemma states experience since confidence building and improving trust and transparency between states are important steps in the creation of a NWFZ (Shapiro 2004).

In 1975 the UN reached a consensus on basic principles regarding NWFZs: (I) A NWFZ may include a large or a small number of states, entire continents or other large geographical areas, but may also be a single country. (II) The arrangement of such a zone must ensure that the zone remains free of all nuclear weapons. (III) States within the region should be the initiators, and participation in the NWFZ should be voluntary. (IV) The participation of militarily significant states, preferably all states in the region, would enhance the effectiveness of the zone. (V) To ensure that all states live up to the agreed obligations, effective systems of verification must be included in the zone arrangement. (VI) Economic, scientific and technological development among zone members should be promoted through international

cooperation for peaceful use of nuclear energy. (VII) A treaty that establishes a NWFZ should be of unlimited duration (Goldblat 1994: 148).

A treaty that declares a zone non-nuclear is more than just a ban on nuclear weapons. It also provides the zone with a guarantee that nuclear states never will use, or threaten to use, their nuclear forces against its member states. To increase the transparency, the UN's nuclear-monitoring branch IAEA is allowed to conduct both ad hoc and special inspections in the zones (Shapiro 2004).

2.3 Regimes and Characteristics

The existing nuclear weapon free zones in populated areas cover Latin America (Treaty of Tlatelolco 1967) (CNS 2005a), Australia, New Zealand and the South Pacific Forum (Treaty of Rarotonga 1985) (CNS 2003a), Southeast Asia (Treaty of Bangkok 1995) (CNS 2005b), Africa (Treaty of Pelindaba 1996) (CNS 2006b) and Central Asia (signed 2006) (CNS 2006a). This implies that over 100 states in four different continents are covered by negotiated NWFZ arrangements. The treaty of Pelindaba is still to be ratified by enough countries to enter into force, but the three other zones are signed and in force. There is also an example of a single state declaring itself a NWFZ: In 1992, Mongolia proclaimed itself nuclear weapons free. The UN General Assembly accepted Mongolia's nuclear weapon free status in 1998, and in 2000 the status entered into force (Rauf 2000, CNS 2003b).

The Treaty of Tlatelolco is based on a draft resolution made under the Cuban missile crisis in 1962. The draft resolution was presented by Brazil in the UN General Assembly, but it was not put to vote. A year later, five Latin American countries declared that they were about to sign a multilateral agreement, stating their position as nuclear weapon free states; this time the proposition was on Mexico's initiative. The UN General Assembly accepted this announcement, which led to the negotiation and finally the signing of the Treaty of Tlatelolco by fourteen Latin American countries in 1967 (Goldblat 1994: 148-149).

The Treaty of Tlatelolco was the first of its kind in populated areas,¹ and it stated an example for others to follow. The prohibitions in the agreement included:

“[...] testing, use, manufacture, production or acquisition by any means as well as the receipt, storage, installation, deployment and any form of possession of nuclear weapons in Latin America. Encouraging or authorizing or in any way participating in the testing, use, manufacture, production, possession or control of any nuclear weapon is equally prohibited.” (Goldblat 1994:149)

¹ The 1959 Antarctic Treaty declared that the Antarctica was to be used solely for peaceful purposes. Any military establishment and manoeuvres are prohibited. The exception is the use of military personnel or equipment for peaceful purposes (Goldblat 1994: 142-144).

2.4 Security Guarantees and Safeguards

The Treaty of Tlatelolco included extra protocols open for signature by extra-zonal states: (I) External countries internationally responsible for territories within the zone are pledged to undertake the same nuclear weapon free status in their territories within the zone. (II) Nuclear states were asked to respect the denuclearized status and thereby promise not to use or threaten to use nuclear weapons against the zone. Both protocols were signed and ratified by all states in question. The second protocol ensures states with negative security guarantees. Such protocols are a part of the goal and purpose of any NWFZ in order to make a nuclear attack against the zone less likely and unjustifiable. If this goal is to be achieved, it is also necessary to remove all nuclear weapon related support facilities that are serving the nuclear strategic systems of the great powers. The different treaties have chosen different strategies: The Treaty of Rarotonga forbids all kind of nuclear activities, including peaceful, except material for peaceful nuclear use under the NPT and the IAEA, while the Treaty of Tlatelolco does not specifically ban nuclear weapon related support facilities (Goldblat 1994: 148-158).

The treaties do not only have protocols that ensure security guarantees. In order to be properly enforced, all NWFZ treaties of have some kind of additional safeguards. This usually means IAEA safeguards. The Latin American states established OPANAL: the Council of the Agency for the Prohibition of Nuclear Weapons. If one party to the treaty suspects another of violating the treaty, it will report to OPANAL. The council also worked on requests from countries which had been suspected of violations to give them the possibility of proving their innocence. In 1992, OPANAL's role was reduced and IAEA's role enhanced. The IAEA got exclusive power to carry out special inspections, while the OPANAL was reduced to performing inspections on IAEA's request. This change was supposed to facilitate the full entry into force of the treaty. Still, it may have unfortunate consequences, since countries experiencing international tensions might be unwilling to entrust the protection and security interest to an international organization (Goldblat 1994: 148-158).

Additional enforcement mechanisms are included in the different zones in order to secure the goals and intentions of each nuclear-weapon-free zone. The Treaty of Rarotonga and the Treaty of Bangkok complement the IAEA safeguards with exchanging reports and information within the NWFZ. The Treaty of Bangkok includes a fact-finding mandate that gives each State Party the right to ask another State Party for clarification and fact-finding to resolve doubts about compliances. If any divergence from the treaty is found, the State Party will be given a reasonable time to bring itself into full compliance with the treaty. Should the country fail to do this, the Commission shall decide on any appropriate measure for the given situation. This includes submission of the matter to the IAEA and if there is a danger to international peace and security, to the Security Council and the General Assembly of the United Nations.

In the Treaty of Pelindaba it was decided to form the African Commission on Nuclear Energy to ensure compliance with the undertakings of the treaty. The commission collects reports on Member States' nuclear activities and other matters related to the treaty. It arranges both consultations and conferences on issues regarding the implementation of the treaty, and it

reviews application to IAEA safeguards regarding nuclear activities. If a party has reason to complain on another party, it shall bring the matter to the suspected party's attention, and if the complaint is not resolved, it is brought to the Commission. The Commission will bring the subject to the IAEA's attention and call for an inspection. If the Commission becomes aware of issues in conflict with the treaty, the Parties will arrange an extraordinary session to discuss the matter. In the end, the United Nations Security Council may be involved by the Organization of African Unity.

The Treaty of Pelindaba also mandates a nuclear weapon reversal program. This implies that the Parties undertake the destruction of all capabilities for the manufacture of nuclear devices. They shall dismantle and destroy any previously manufactured nuclear explosive devices and any facilities for their manufacture. If possible the devices are to be converted into peaceful use, and the IAEA shall verify the dismantling process. Peaceful activities are allowed, and the requirement is IAEA verification of the peaceful character of such activities. The Treaty of Pelindaba encourages mutual cooperation for peaceful use of nuclear energy (CNS 2006b). The treaty also stipulates that "each party undertakes not to take, or assist, or encourage any action aimed at an armed attack by conventional or other means against nuclear installations..." It is the only treaty to include such a provision (Umebayashi 2004).

Table 2.1 provides a brief summary of the existing NWFZs.

Comparative Table: Nuclear Weapon Free Zones

Treaty	Zone of Application	Basic Prohibitions	Significant Differences	Special Protocols		Enforcement
				Protocol	Signed	
Treaty of Tlatelolco: -Signed: 1967 -In force: 1968 -Duration: Indefinite	Mexico, the Caribbean, Central America and South America	- testing, use, manufacturing, production or acquisition of nuclear weapons - receiving, storing, installing, deploying or possessing nuclear weapons in any way	- allows Peaceful Nuclear Explosions in conformity with the treaty articles that ban nuclear weapons	I: Application of denuclearized status to states with territories in the zone	France, the Netherlands, UK, US	Bilateral or multinational agreements with IAEA ² for safeguard activities. OPANAL ³ ensures that conditions are met.
				II: Respect for denuclearized status: no use or threat to use NWs against the zone	France, China, UK, US, USSR	
Treaty of Rarotonga -Signed: 1985 -In force: 1986 -Duration: Indefinite	Australia, Cook Islands, Fiji, Kiribati, Nauru, New Zealand, Niue, Papua New Guinea, Solomon Islands, Tonga, ⁴ Tuvalu, Vanuatu and Western Samoa	- manufacturing, acquiring, possession or control of any nuclear device inside or outside the treaty zone - to encourage the above, no fissile material or related equipment provided to NWS or NNWS unless under IAEA regulations - no radioactive storage or dumping at sea or elsewhere	- prohibits all nuclear activity, included peaceful with the exception of export of material for peaceful use under NPT and IAEA	I: Application of denuclearized status to NWS with territories in the SPNFZ ⁵	France, UK, US*	Exchanging reports and information; IAEA safeguards.
				II: NWS shall not use or threaten to use nuclear explosive devices at any territory located within the zone	France, China, UK, US*, USSR	
Treaty of Bangkok: -Signed: 1995 -In force: 1997 -Duration: Indefinite	Brunei Darussalam, Indonesia, Malaysia, Philippines, ⁶ Singapore, Thailand, Viet Nam, the Lao People's Republic, Cambodia and Myanmar	- development, manufacture, acquisition, possession or having control over nuclear weapons - testing or using nuclear weapons inside or outside the treaty zone - manufacture or provision of fissionable material or equipment to any NWS or NNWS, unless under NPT and IAEA regulation. - no radioactive dumping or storage	- allows peaceful safeguarded nuclear programs - states decide for themselves whether to allow foreign nuclear weapons passage through their territory	A protocol is <i>open for signing</i> : The NWS would undertake to a) respect the treaty, and not contribute to any act in violation with the treaty; b) not to threaten or to use nuclear weapons against the zone	None	Reports by members, exchange of information and application of IAEA safeguards. Fact-finding mandate between State Parties.

² International Atomic Energy Agency

³ Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean

⁴ Not ratified.

⁵ South Pacific Nuclear-Free Zone

⁶ Not ratified.

Treaty of Pelindaba: <i>-Signed:</i> 1996 <i>-In force:</i> Requires 28 ratifications; has yet to be entered into force <i>-Duration:</i> Indefinite	Africa, island state members of PAU/AU	- research, development, production, acquisition, assistance, control, testing of nuclear explosive devices - assistance, or encouragement of the point above - armed attack of nuclear installations - the treaty mandates reversal of nuclear capabilities according to IAEA procedures	- Mandates nuclear weapon program reversal.	I: NWS shall not use or threaten to use nuclear explosives against any Party to the treaty	France, China, UK, US*, Russia*	Exchange of report by members. African Commission on Nuclear Energy ensures compliance with the undertakings of the treaty.
				II: NWS shall not test or assist/ encourage testing of any nuclear explosives within the zone	France, China, UK, US*, Russia*	
				III: Countries with a de jure or de facto responsibility for territories within the zone should apply to the provisions of the treaty	France ⁷	
The Central Asian Nuclear-Weapon-Free Zone: <i>-Signed:</i> 2006 <i>-In force:</i> Has yet to be entered into force <i>-Duration:</i> Indefinite	Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan		All members required to comply fully with the Comprehensive-Test-Ban-Treaty. (CTBT)			Enhanced IAEA safeguards on nuclear materials.

Table 2.1 Existing Nuclear Weapon Free Zones. NWS and NNWS are short for “nuclear weapon states” and “non nuclear weapon states,” respectively. The table is based on CNS 2006a, 2006b, 2005a, 2005b, 2003a, 2003b and 2002.

⁷ Spain neither signed nor ratified.

* Not ratified

3 NUCLEAR WEAPON FREE ZONES – HOW DO THEY WORK?

3.1 Reasons for Entering

States which enter a NWFZ are motivated by an interest in ensuring that their neighbourhood is free from nuclear weapons (Blix et al. 2006). NWFZs improve trust and transparency by providing confidence building measures and non-proliferation norms (Shapiro 2004). NWFZs reduce the likelihood of war, they reduce the costs of preparing for war, and finally they reduce the costs of war.

A NWFZ is a complementary element to the non-proliferation regime established by the NPT. It represents a higher level of commitment and constitutes a normative structure beyond the NPT. NWFZs are therefore important in building and maintaining non-proliferation norms. NWFZs block the further development of nuclear weapons by fencing entire regions off from such weapons. It provides transparency and verification measures and makes nuclear weapons easier to live without. NWFZs effectively hinder horizontal proliferation including the deployment of nuclear weapons controlled by nuclear states in non-nuclear states. Another advantage has been the prevention of nuclear tests in a region, which was an important motivation for both the Treaty of Pelindaba and the Treaty of Rarotonga (Parish & du Preez 2006).

3.2 Solving Security Issues

First of all, NWFZs will reduce the likeliness for a state to become involved in a nuclear conflict. There is an objective of general and complete disarmament, but there is also an immediate objective to consolidate the security of the member states. This can be done by a complete prohibition of nuclear weapons in the region and negative security assurances from the nuclear states (Román-Morey 1997).

3.2.1 International Guarantees

If a NWFZ is to be effectively fenced off from the world of nuclear weapons, it is important to obtain security guarantees from the nuclear powers (Parish & du Preez 2006). Thus, all treaties that declare a NWFZ contain special protocols open for signing by the nuclear weapon states. By giving the NWFZ negative security assurances, that is, a non-use obligation, the nuclear weapon states promise to respect the denuclearized status of the zone. This makes it illegitimate to use or threaten to use nuclear weapons against states within the zone (Goldblat 1994: 148-158).

3.2.2 Solving the Security Dilemma

Regional security dilemmas, where states proliferate out of fear of the neighbour's capabilities, can be reduced by introducing effective means of confidence building in the zone. A NWFZ

will foster a broader regional cooperation between the states (Parish & du Preez 2006). Implementation of IAEA safeguards and exchange of information are important steps towards an increasing level of transparency and confidence, removing a state's fear for its neighbours' nuclear capabilities: "While NPT seeks to achieve that States around the world commit themselves to a non-nuclear status, NWFZ seek to assure that neighbours in a region are committed" (Blix 1997).

3.3 Challenges Yet to Overcome

There are still shortcomings in existing NWFZs. According to Parish and du Preez (2006), nuclear weapon states are unlikely to support NWFZs in regions where they have security interests themselves. The establishment of the Central Asian NWFZ is complicated by US and Russian security interests which make it harder to carry the treaty off. None of the nuclear weapon states have signed the Treaty of Bangkok. The protocols of the other treaties are signed by the nuclear powers, but both the Treaty of Rarotonga and the Treaty of Pelindaba are yet to be fully ratified by all nuclear powers. The Treaty of Pelindaba also lacks ratification by states within the zone, and it will not enter into force until at least 28 states (out of 54 African states) have ratified the treaty (CNS 2003a, Shapiro 2004, Parish & du Preez 2006).

The lack of signing and ratification is for the case of the US based on some general demands which are decisive for their support of a NWFZ. First of all, the impact on security and national interests is considered. Then there are six criteria that judges whether the US are to support such a treaty or not: (I) The initiative has to come from the region concerned. (II) All important states must be involved. (III) The arrangement must provide for adequate verification of compliance. (IV) The zone must enhance regional and international security, and not be detrimental to existing security arrangements. (V) The zonal treaty should not interfere with existing rights of its parties under international law, such as transit privileges, port calls or overflights of nuclear powered and capable ships and aircrafts from non-party nations. (VI) The zone must not impose restrictions on the exercise of rights under international law, as high seas freedom of navigation and overflight, including the right of innocent passage of territorial seas (Scheinmann 2005).

The creation of new NWFZs can be even harder in the future since analysts have suggested that the existing NWFZs were the "easy zones." The existing zones are mainly located in parts of the world where there are no nuclear weapons, and where the incentives to obtain such weapons are low. It is unlikely that nuclear weapon states would want to deploy nuclear weapons in the existing NWFZs. The regions not included in NWFZs today are countries in South Asia, Northeast Asia, the Middle East, North America and Europe: What they all have in common is that they either include nuclear weapon states or border on them. There is also a core problem with the NPT: Some of the NPT states are allowed to possess nuclear weapons while others are not. The regions not covered by NWFZ treaties today stand out from the established NWFZs: They often not only need treaties assuring that they keep the weapons out but will also need disarmament agreements. Verification measures must then be more intrusive

than in the existing zones: it is hard to imagine that IAEA safeguards and additional protocol will be sufficient (Parish & du Preez 2006, Shapiro 2004).

4 WEAPONS OF MASS DESTRUCTION IN THE MIDDLE EAST

4.1 WMD Challenges

The Middle East is the only region where WMD has been used after 1945 (Alani 2005). Existing weapons of mass destruction in the Middle East are likely to include nuclear, biological and chemical weapons. Several states in the Middle East have not signed and/or ratified the Chemical Weapons Convention (CWC) and the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction (BTWC). Israel is the only state in the Middle East which is not a party to the NPT.

The CWC entered into force in 1997, and it completely bans the development, production, stockpiling and use of chemical weapons. The CWC also contains strict verification measures, and all future development, production, stockpiling, transfer and use of chemical weapons are prohibited. The CWC requires all participants to destroy all of their chemical weapons by 2007, with a possible extension to 2012. The CWC has not been signed by Egypt, Iraq and Syria, and it has not been ratified by Israel. Iran and Saudi Arabia are parties to the CWC.

The BTWC was signed in 1972 and entered into force in 1975. The development, production, stockpiling and acquisition of biological and toxin weapons are banned, and the destruction of such weapons and delivery means are required. Biological weapons are outlawed by the treaty, and a heavy international stigma follows the acknowledgment of such weapons. No states in the Middle East acknowledge the existence of biological weapons within their borders. The BTWC states the right to retain biological agents and toxins for peaceful and protective purposes, and the absence of verification measures makes it hard to determine whether any given biological agents are intended for offensive purposes or not. The BTWC has not been signed by Israel, and it has not been ratified by Egypt and Syria. Iran, Iraq and Saudi Arabia are parties to the BTWC (Blix et al. 2006: 39-40, 114-115, OPCW 2005).

The country most likely to possess nuclear weapons is Israel; even though the state has never officially admitted to having such weapons. According to unofficial estimates, the Israeli stockpile could be larger than the British and include both fission and fusion bombs. Israel has a non-safeguarded plutonium reactor as well as non-safeguarded reprocessing capabilities and possibly uranium enrichment capabilities, along with various other uranium processing facilities. Israel is the only state in the Middle East which is not party to the NPT. No other countries in the Middle East are believed to possess nuclear weapons, but there are suspicions about an Iranian early stage nuclear program. The Iraqi nuclear weapons programs was attacked by Israel in 1981 and UN forces in 1991, and it was later completely destroyed under

	Weapons	Weapon programs	Research and development	Treaty / convention	Not ratified
Nuclear weapons	Israel	—	Egypt, Syria, Iran	NPT	Israel*
Biological and Toxin Weapons	—	Syria, Iran	Egypt, Israel	BTWC	Israel*, Egypt, Syria
Chemical Weapons	—	Egypt, Syria, Iran	Israel	CWC	Egypt*, Irak*, Syria*, Israel

* Not signed

Table 4.1 Existing WMD in the Middle East and status of the relevant treaties. The table is based on Shtauber & Shapir (2006) from Jaffee Centre for Strategic Studies (JCSS).

IAEA supervision. The Comprehensive Nuclear-Test-Ban Treaty is not signed by Syria and Saudi Arabia, and it is not ratified by Egypt, Iran and Israel (Blix et al. 2006: 39).

Table 4.1 summarises the current WMD status in the Middle East.

4.2 Why NPT and NWFZ Is Insufficient in the Middle East

The NPT may not be the best way to enhance non-proliferation in troubled regions for two reasons:

(I) A NWFZ agreement will go further than the NPT because it eliminates some important motivations for retaining huge and flexible arsenals. States are reassured that no new nuclear weapons states will emerge, and there will be less need for nuclear weapons as the ultimate guarantee for national security. A NWFZ also provides legally binding negative security assurances not found in the NPT. A zonal agreement will provide more security combined with reduced motivation for countering perceived threats by nuclear means.

(II) The NPT has not been ideally adapted to the particular political and strategic conditions in certain regions. This can be exemplified by the Treaty of Tlatelolco, which was established to impose more far-reaching commitments than the NPT regime. In troubled regions like the Middle East, a zonal agreement will help organizing the regional security environment in a way that will make abandoning WMD more feasible (Müller 1997).

The conditions in the Middle East call on a further widening of the concept of NWFZs. The problems in the Middle East do not only concern nuclear weapons; all three categories of WMD are represented in the region. Nuclear, biological and chemical weapons will have to be

equally addressed, thereby creating a Weapons of Mass Destruction Free Zone (WMDFZ). The most important motivation behind entering such a zone is to ensure that your neighbourhood is free of WMD. States are not likely to give up their WMD if they have reason to believe that any such weapons exist in other states in the region: Syria, for example, is believed to maintain chemical weapons to compensate for Israel's nuclear capability (Jones 2005).

4.3 Middle East Initiatives

All states in the Middle East have supported a WMDFZ for a long time, even though the conflict level in the area makes the realization of such a zone difficult. There have been some initiatives from countries in the Middle East, and the need to establish a WMDFZ (not just a NWFZ) is emphasized in all of the initiatives:

- A NWFZ in the Middle East was first proposed by Egypt and Iran in 1974, and in 1990 President Hosni Mubarak of Egypt proposed a WMDFZ. The WMDFZ would be based on three important components: (I) The prohibition of all WMD without exception. (II) The equal and reciprocal commitment of all states in the region without exception. (III) The establishment of verification measures and modalities to assure full compliance by all states in the region (Shaker 1997). The mounting evidence of the existence of chemical and biological weapons and Israel's apparent interpretation of its own nuclear capability as a deterrent against these weapons convinced the Egyptian president that a WMDFZ would be better than a NWFZ (Baumgart & Müller 2004-2005).
- In 2003 Libya unexpectedly dismantled their nuclear and chemical weapons program. There are a few other cases of countries deciding to abandon WMD programs of their own political will, but Libya is the only one that did not partly happen as a result of a major regime change or domestic political transformation. President Muammar al-Qadhafi's decision to dismantle may have far-reaching significance both in the region as well as in the rest of the world. Libya's WMD were considered a great threat to Israel, and the voluntary dismantlement combined with international inspections is an obvious net gain for Israeli security considerations (Cohen in Russel 2006).
- In 2004 the Gulf Research Centre (GRC) in Dubai presented an initiative to create a WMDFZ in the Gulf region. A meeting in Stockholm, where government representatives from all Gulf countries were brought together, ended with a commitment from all the countries to present the Gulf WMDFZ to their governments. The countries included in this initiative are Bahrain, Oman, Kuwait, Saudi Arabia, Qatar, United Arab Emirates, Iraq, Iran and Yemen. A WMDFZ in the Gulf could provide the groundwork for a subsequent arrangement encompassing the entire Middle East (Alani 2005).

5 ALTERNATIVE MODELS FOR A WMDFZ IN THE MIDDLE EAST

5.1 WMDFZ in the Middle East: a Suggested Framework

The existing NWFZs provide some basic ideas that may be used as a basis for a WMDFZ in the Middle East. According to Director General Mohamed ElBaradei of the IAEA (in Siegel 2005), NWFZs have an important function as regional security fora. Reasons for insecurity vary from region to region, and the NWFZs do not represent a “one size fits all” package. Therefore, regional dialogues taking place under a NWFZ may prove to be useful. Regional talks may enhance transparency and verification measures, thereby making the security dilemma in the Middle East manageable. A regional, governmental expert group should be convened with the purpose of producing consensus documents on the transparency and verification elements of a potential WMDFZ. All NWFZs are based on the creation of a fundamental trust between the participating states, and this must also be part of the basis for a WMDFZ in the Middle East. The existing NWFZs rely largely on the IAEA to perform safeguard activities, thereby ensuring other states in the zones that the agreed conditions are met. Reports and other information are commonly exchanged between states to enhance the transparency. Similar measures could prove useful also in the Middle East. It will be crucial to establish a process towards WMD disarmament in which no vital interests of any party are compromised (Baumgart & Müller 2004-2005). Any WMDFZ presupposes agreement upon transparency and verification measures, and this may induce all relevant states to sign and ratify the NPT, the CWC and the BTWC. For this purpose, the inclusion of a fact-finding mandate should also be considered.

Another way to reduce WMD concerns between states enduring longstanding hostility in the Middle East may be specific bilateral agreements. Brazil and Argentina have a history of nuclear concerns: in 1970 they started programs that could eventually have led to the production of nuclear weapons. Using bilateral agreements and understandings, these two states have chosen instead to renounce nuclear weapons and to cooperate on peaceful uses of nuclear energy (Blix et al. 2006).

Leonard & Prawitz (1999) suggest two extra protocols for regulating the relationship to states outside the zone: (I) Negative security guarantees by the nuclear weapon states. This implies that they will guarantee not to use or threaten to use nuclear weapons against zonal states. (II) A protocol open for signature by neighbouring states not parties to the WMDFZ. Thereby, these states will commit themselves to support the zone regime and to assist in its implementation, particularly regarding border policies. Both protocols should include a commitment not to direct prohibited missiles against targets in the zone. (III) In addition to this, a protocol signed by important non-state actors like the PLO, Hamas and Hezbollah is conceivable. These organizations should be asked to accept and respect the WMD free status of the zone and undertake to follow the general obligations of the treaty.

While the IAEA verifies the non-existence of nuclear weapons, the non-existence of chemical weapons is to be verified by the Organisation for the Prohibition of Chemical Weapons (OPCW). The CWC requires the elimination of all chemical weapons under universally applied international control. When it comes to biological and toxin weapons, no such verification measure has been organized, despite the fact that biological and toxin weapons are banned (Blix et al. 2006: 34). This is partly because dual use complicates the control, detection and prohibition of proliferation relevant exports. Nearly all materials and equipment used to make chemical and biological agents are dual-use products. The dual use of equipment and materials is a challenge for the verification regime. The verification regime also has to manage the problem of easily accessible chemical warfare agents: They are easy to manufacture, and there exists open scientific literature on the topic (Tucker 2001).

A BTWC verification regime will have to manage several difficult issues in order to be successful. Microorganisms and toxins that could be employed as biological warfare agents are widely available both from the natural environment and from culture collections. Nutrient media are widely traded, and bacteria multiply exponentially under optimal conditions, making it possible to produce a biological or toxin arsenal in a matter of weeks. Dangerous pathogens have become commercial products. This makes the dual-use problem of biological agents even more severe than the dual use of chemical agents. Possible verification and transparency measures for biological weapons are further complicated because technological advances have made it possible to produce large quantities of biological agents in small facilities and to remove all telltales of biological weapons in a matter of hours (Tucker 2001).

According to Tucker (1998) some countries favour using the basic elements of the CWC verification regime in a verification regime for biological weapons. This can partly be done, but he emphasizes important differences between chemical and biological weapons which should be considered when creating such a regime. While militarily significant quantities of microbiological and toxin agents are measured in kilograms, chemical nerve agents are measured in tons. The production of a chemical arsenal requires a large industrial plant, while biological and toxin agents only require a pilot-scale facility. Cheating is easier for biological weapons than for chemical. Distinguishing permitted research from prohibited research is a great challenge under the BTWC. To create an efficient verification regime based on the CWC, these differences must be kept in mind. Tucker (1998) has suggested the following for a verification regime for biological and toxin weapons:

- Mutually reinforcing measures ranging from facility declarations to on-site inspections must be implemented. The on-site activities should be based on a combination of short-notice routine visits (no more than 24 hours notice) and occasional challenge inspections.
- A “carrots and sticks” system should also be implemented in order to reward states that comply with the treaty and punish those not performing according to the provisions.
- Absolute quantitative ceilings for possession of biological and toxin agents are not feasible.
- Safeguarding national security is a necessity; inspectors should be screened and held accountable for the protection of privileged information.

- Sampling and analysis is harder for biological and toxin agents than for chemical; still techniques are available to allow inspectors to analyse samples on site without compromising proprietary information.
- Investigators should be allowed to investigate allegations of use and unusual outbreaks of diseases. They should also be guaranteed access to all relevant areas for this purpose.
- Biological export controls should minimize restrictions on dual-use biotechnological products important for health, agriculture and the economic growth of developing countries.
- Finally, a separate BTWC monitoring agency (like the OPCW) should implement the compliance protocol, including processing data declarations and conducting on-site inspections. This agency should share administrative and support services with the OPCW in The Hague.

An ad hoc working group of the parties to the BTWC was established in 1991. This group was designed to identify and examine potential verification measures for the BTWC. The group started its work in 1995, and in 1997 it transitioned a rolling text for a protocol to strengthen the regime. After 1999 the group focused on the final framework for the Protocol, and its proposal was completed in 2001. This document was up for approval the same year, but the US revised its opinion and did not support it after all (BTWC 2006, Bulletin of the Atomic Scientists 2002). The rolling text is without the prejudice of the positions of the delegations, thus there are still many issues to be resolved.

The rolling text for a Protocol to the BTWC has many similarities to the Verification Annex of the CWC, and it includes the following key elements:

- Compliance measures:
 - Lists and criteria of agents and equipment
 - Declarations of relevant facilities and biological and toxin programmes
 - Declarations of vaccine production facilities, biological containment facilities and work with listed agents and/or toxins
 - Declarations of international transfers of biological agents and toxins, and relevant equipment
 - On-site visits at declared facilities
 - Investigations to address concerns of non-compliance with the Convention
 - Declarations and investigations of unusual outbreaks of disease
- Confidentiality provisions to ensure that sensitive information is protected
- Assistance and protection against biological and toxin weapons
- Scientific and technological exchange for peaceful purposes
- Confidence-building measures
- Establishment of an organisation similar to the OPCW to implement the Protocol

In conclusion, verification measures of the rolling text for a Protocol to the BTWC may serve as the foundation to develop and agree on a coherent model for a verification regime for biological and toxin weapons to be implemented in the Middle East WMD/FZ.

5.2 The Scope of Prohibition for a Middle East WMDFZ

A treaty that establishes a WMDFZ in the Middle East should be based on the NPT, the BTWC and the CWC and share the general objectives of those treaties. The general treaty design should be tailor-made to ensure three important measures in the Middle East: (I) The non-possession of prohibited weapons by the zonal states; (II) the non-stationing of prohibited weapons by any state within the geographical area of the zone; and (III) the non-use or non-threat of use of prohibited weapons throughout the zone or against targets within the zone (Leonard & Prawitz 1999).

5.2.1 Nuclear Weapons

Like in the case of the NWFZs, the prohibition of nuclear weapons in the Middle East should be based on the NPT. This includes allowing IAEA safeguards for the purpose of verification of obligations, as well as undertakings not to transfer, receive or manufacture nuclear weapons or other nuclear explosive devices. Research and development and the use of peaceful nuclear energy is encouraged (NPT 2005). In the NPT, the term “nuclear weapon” is understood as nuclear bombs and warheads, but beyond this, the NPT does not define nuclear weapons. NWFZs have therefore adapted definitions on their own. The definitions serve as a foundation for prohibitions and allowances, as is apparent from the existing definitions:

The Treaty of Tlatelolco (1967), Article 5:

“For the purpose of this Treaty, a nuclear weapon is any device which is capable of releasing nuclear energy in an uncontrolled manner and which has a group of characteristics that are appropriate for warlike purposes. An instrument that may be used for transport or propulsion of the device is not included in this definition if it is separable from the device and not indivisible part thereof.”

The Treaty of Pelindaba (1996), Article I(c):

““Nuclear Explosive device” means any nuclear weapon, or other explosive device capable of releasing nuclear energy, irrespective of the purpose for which it could be used. The term includes such a weapon or device in unassembled and partly assembled forms, but does not include the means of transport or delivery of such a weapon or device if separable from and not an indivisible part of it.”

The last definition is the most common, and it is also used in the Treaty of Rarotonga and the Treaty of Bangkok (Shaker 1997).

The treaty of Pelindaba can serve as a good example since it is the only zone where nuclear weapons actually have existed. Since the Treaty of Pelindaba and a WMDFZ in the Middle East will partly overlap or at least share a border, it will be favourable with some cooperation. A Middle Eastern WMDFZ should particularly note the prohibition of armed attacks on nuclear installations, for which none of the other zones provide regulations.

The possibility to aim for a prohibition of all nuclear activities, including peaceful activities (except for export of equipment and materials for peaceful nuclear use under the NPT and the IAEA), should be considered. This has been done in the Treaty of Rarotonga, and it can prevent situations where states doubt another state's peaceful intentions.

5.2.2 Chemical and Biological Weapons

The 1925 Geneva Protocol is a principal international instrument against the use of chemical and biological weapons. Even if the protocol bans the use of such weapons, it does not ban their production or possession. It eventually failed to cope with the recent development within areas like production, use, acquisition and stockpiling. Later, the CWC and the BTWC have completely banned chemical and biological weapons (Blix et al. 2006: 34).

A WMDFZ will be essential in the Middle East, despite the pre-existing ban on chemical and biological weapons:

- A WMDFZ will be designed to provide credible verification and transparency measures across all existing categories of WMD. If states confirm mutual non-proliferation of WMD, it can help to solve the current deadlock these states are in. No states in the Middle East today want to take the first step against non-proliferation, and this is a severe obstacle for the prohibition of WMD.
- A trade-off system between various weapon systems and the purposes of the weapon systems are one requirement for arms control. The trade-offs do not have to be equal, but the trade-off process needs to produce a situation of equal and enhanced security once the process has led to an agreement. The goal is to attain a situation of balance and equal security even if the abandoned weapons do not constitute an equal force (Jones 1997). Egypt's position is that it will only consider accession to the CWC if Israel accesses the NPT, and this is supported by several other states in the region. Some Israeli politicians have indicated that chemical and biological weapons in hostile regional countries would be a justification for a nuclear deterrent (Baumgart & Müller 2004-2005). This suggests that a WMDFZ in the Middle East can represent such a trade-off system; it will provide a framework for the abandonment of WMD in different countries. The eventual objective is a situation of improved security, and it will ultimately benefit the Middle East as a whole.
- Combined with the transparency and the verification measures discussed above, the negative security guarantees, promises of greater international support and the entry of non-proliferation norms may induce states in "difficult" regions to participate in non-proliferation activities.

The existing prohibitions under the CWC and the BTWC should also be used in a WMDFZ. The CWC prohibitions in article I-1 include "(a) To develop, produce, otherwise acquire, stockpile or retain chemical weapons, or transfer, directly or indirectly, chemical weapons to anyone; (b) To use chemical weapons; (c) To engage in any military preparations to use chemical weapons; (d) To assist, encourage or induce, in any way, anyone to engage in any activity prohibited to a State Party under this Convention." The CWC also includes several definitions which together with the general prohibitions can build a basis for chemical

weapons prohibitions in a WMDFZ in the Middle East (OPCW 2005). The parties are required to declare any chemical weapons related activities and to destroy any stockpile of chemical weapons. They are obliged to inactivate and eliminate any chemical weapons production capacity within their jurisdiction. The verification is carried out by the OPCW (Blix et al. 2006: 34).

BTWC article I includes a prohibition not to “develop, produce, stockpile or otherwise retain: (1) Microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes; (2) Weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.” Transferring agents, toxins, equipment or means of delivery, as well as assisting or encouraging the manufacture or acquisition of such are also prohibited (BTWC 1972).

Applying prohibitions similar to those in existing NWFZs should also be considered. For example, a prohibition of armed attack on suspected or de facto chemical and biological installations could be included.

5.3 The Geographical Scope

It is important to aim for the inclusion of all states that are of primary security relevance to each other. Since most states in the Middle East experience some regional security issues, the problem with this approach is that it will have to include a very large number of states, which in turn makes a WMDFZ harder to realize (Leonard & Prawitz 1999). The first two models presented below start out with a small core of states, and they must be designed for later expansion: The Gulf Model and The Levant Model are both based on the realization that the geographical scope of a Middle East WMDFZ should grow out of a core that includes only a few states. A realistic zone regime should start out small and later finally encompass the entire basic area, a realization also made by Leonard and Prawitz (1999). The last model below is the “All at Once” model. In this model, the important conflict lines in the Middle East are used as a foundation to propose a zone that will embrace all Middle Eastern states with regional security issues. Figure 5.1 shows possible zonal arrangements in the Middle East.

5.3.1 The Gulf Model

According to the Gulf model, a WMDFZ should grow out of an existing initiative. Such an initiative already exists in the Middle East; in 2004 Gulf States representatives meeting in Stockholm agreed to present a WMDFZ initiative to their governments. It was initiated by the Gulf Research Centre, and the argument was that the Gulf States can play a critical role in the start-up phase of a WMDFZ. It is also based on the argument that WMD have not only been made for use in the Arab-Israeli conflict. They have also been created for use in conflicts among Arabs, or Arabs versus Iran (Jones 2005). The Gulf Model includes Saudi Arabia, Kuwait, Bahrain, Qatar, Yemen, Oman, the United Arab Emirates, Iran and Iraq. It will provide the groundwork for an arrangement eventually encompassing the entire Middle East.



Figure 5.1 Suggested WMDFZs in the Middle East. The grey area shows the countries included in the Gulf Model, and the white area shows the Levant Model. The countries of both these areas together constitute the “All at Once” Model. The map is modified from one found on www.maps.com.

Initiatives on models including the whole Middle East have not been successful so far. The zone created in the Gulf Model will have an “open-door policy” to encourage the accession of other states. A WMDFZ in the Gulf may be a step on the way to security in the wider Middle Eastern region (Alani 2005).

Geographically, this zone will be designed to ease the inter-Arab and Arab-Iranian conflicts in the Gulf first. According to Buzan and Wæver (2003) the Gulf security complex was formed after the British withdrawal from the area in 1971. It is centred on a triangular rivalry among Iran, Iraq, and the Gulf Arab states led by Saudi Arabia. A peripheral rivalry between Saudi Arabia and Yemen has generated a lot of local wars. The Gulf Arabs consist of Saudi Arabia, Kuwait, Bahrain, Qatar, the United Arab Emirates and Oman, and in 1981 they formed the Gulf Cooperation Council (GCC). The GCC was a weak sub-regional strategic partnership, formed in a response to the Iran-Iraq war, thus excluding those two; probably out of fear for them. Iran and Iraq have fought over several border disputes, rivalry of power leader’s power ambitions, problems with Kurdish minorities, and the fate of the Shiite population in the south of Iraq. The Iranian – Saudi Arabian rivalry got a sharp ideological edge after the 1979 revolution in Iran.

Iran is one of the greatest concerns for the realization of a WMDFZ in the Gulf today. Destruction of Saddam's regime in Iraq meant a security gain for Iran, but the American presence next door is likely to make the Iranians uncomfortable. When Iraq initiated the use of chemical weapons against Iran, a clear violation of the Geneva Protocol, the international community failed to come to Iran's aid. This has created a sense in Iran that security guarantees will not be sufficient in a possible WMD attack against Iran (Jones 2005). The hope is that the many advantages of a WMDFZ, including negative security assurances, increased transparency, norms building and confidence-building measures, will induce Iran to participate in a WMDFZ. It is also important to remember that both the African NWFZ and the Latin American NWFZ started out with only a few states. According to Jones (2005), the zone may have to wait for changes in the political circumstances, similar to the earlier case of the Latin American NWFZ. The ideas and norms created under a WMDFZ show other states that such a zone can be created, and make it more likely that they will take part later. This model might seemingly start out small, but in the long run it can prove to be a successful way to handle the non-proliferation questions in the Middle East.

Nations with various levels of nuclear capabilities will be incorporated in a long-term process as they did in Latin America, where a zone was established between a few states while other states were allowed delayed entry. It will be important that Middle Eastern states which delay entry are firmly linked to the treaty, and they must be committed to taking no further actions contrary to the treaty's objectives. In the Treaty of Tlatelolco there is a separation between contracting states and signatory states, and this should provide useful lessons for the Middle East (Redick 1998-2000). If states outside the zone can be convinced to support the regime, and assist in its implementation, the road toward a WMDFZ including the entire Middle East may be an obtainable goal.

Regional dialogues to establish bilateral and multilateral agreements between the contracting states and the signatory states should be a continuous process. This will be important in order to create a foundation for confidence building measures, exchange of reports and information, fact-finding mandates and transparency between the states that are allowed a delayed entry.

5.3.2 The Levant Model

The Levant Model is based on the recognition that the most acute states need to be included first. A UN study from 1990⁸ separated "core countries" from "peripheral countries." The argument was that the Middle Eastern countries involved in the conflict between Israel and the Arabs should be included first. The remaining states in the area did not necessarily have to take part in the zone from the beginning, but could be included later (Shaker 1997). Leonard and Prawitz (1999) support the claim that such a zone will have to include the states that experience the Middle Eastern security dilemma. They also admit that this will have to cover a large number of states. They maintain that a WMDFZ in the Middle East should at least

⁸ A/45/435: Establishment of a Nuclear-Weapon-Free Zone in the Region of the Middle East, Report of the Secretary General, 10 October 1990.

include all actors central to the conflicts there, and that the most publicized conflict is the Arab-Israeli conflict.

The Levant Model is based on “core countries” and “peripheral countries,” and in this context the Arab-Israeli conflict represents the “core.” The Levant model will start out with an even smaller number of states than the UN study and is based on Buzan & Wæver’s (2003) definition of the Levant. Buzan & Wæver have argued that the Levant sub complex has its centre based on the conflict between Israel and its Arab neighbours. This struggle started out between Israel and the neighbouring states in 1948, but the conflict set up a wider hostility against Israel both in the Levant and the Arab world. The Levant sub-complex includes Israel, Egypt, Syria, Lebanon and Jordan. In this model the inclusion of non-state actors like the PLO, Hamas and Hezbollah will be important to create a stable and transparent environment for non-proliferation. Just like in the Gulf model, neighbouring, non-signatory states’ support will be an important measure in order for a successful zone. States that should give such guarantees include the Gulf States, but also states in North Africa may be included.

Israel is also in conflict with Iraq, Iran, and Saudi Arabia in the Gulf (Buzan & Wæver 2003). The Levant represents the heart of the conflict in the Middle East; the many enemies and the several wars rooted in the Arab-Israeli conflict suggest that a WMDFZ should start in the Levant. If a WMDFZ can be created in the Levant, it is likely to have the greatest impact on non-proliferation in the Middle East. Non-proliferation in the heart of the Middle Eastern conflict may have massive spill-over effects in the Arab world and Iran, and remove an important incentive to keep WMD.

Despite the effectiveness of a Levant zone, the Gulf Model is the more realistic of the two. The conflict level and the lack of definite initiatives in the Levant today make it hard to imagine that a WMDFZ can grow out of the that particular region.

5.3.3 The “All at Once” Model

This model recognizes that a WMDFZ in the Middle East is impossible without the simultaneous entrance of all the states. Based on Buzan & Wæver’s (2003) definition of the two security complexes,⁹ this zone includes Saudi Arabia, Kuwait, Bahrain, Qatar, Yemen, Oman, the United Arab Emirates, Iran, Iraq, Israel, Egypt, Syria, Lebanon and Jordan. Guarantees from Hezbollah, PLO and Hamas can be a constructive contribution. This suggestion of an “All at Once” zone coincides with IAEA’s suggestion from 1989 (Othman & Abdulrahim 2004), with the exception of Libya, which was termed “essential states” in the IAEA proposal. In this definition the existing tension and the ability to develop WMD was taken into account. Notice that Egypt according to this model (and the Levant model) will be the only country with a membership in two zones. This is wise for two reasons: (1) Egypt can serve a mediating role between the two zones; (2) According to Buzan & Wæver (2003) Egypt

⁹ Buzan & Wæver (2003) also operates with a third security complex in the Middle East: the Mahgreb in North Africa.

belongs to the security complex in the Levant because there is a security interdependence between Egypt and the other states in the Levant.

The Middle East region is characterized by both inter-Arab rivalries and the Arab-Israeli rivalry. Inter-Arab rivalries have risen on the basis of competition for leadership, interpretation of Arabism and traditional rivalries over territory, water and ideology. In addition to this, Israel is perceived as an enemy by most Arab states. The main rule in the Middle East is that the Arab versus non-Arab conflict line takes precedence over the inter-Arab, with a couple of exceptions. The Arab-Israeli conflict defines the transnational qualities of Arab nationalism. But the construction of Arab nationalism has also created conflicts; the Islamic state of Iran is seen as a threat by several of its neighbours. The geographical proximity of the Gulf complex and the Levant complex means that there are a lot of crossovers between the two regions, despite local struggles and rivalries. Nearly all the Arab countries are in conflict with Israel, and they support the conflict rhetorically, financially and sometimes militarily. Syria is a rival both to Israel and Iraq, even though Iraq and Syria are allied against Israel. Gulf Arabs play a financially significant role in the conflict against Israel (Buzan & Wæver 2003). This complex security interdependence in the Middle East suggests that one big zone will be the best.

The entrance of all states in this model must be the ultimate goal. But the Gulf model should be considered an important step towards this goal. A small functional zone is a better start than a large and complicated one. Even in the long run it seems unlikely that all states in the Middle East will enter into a WMDFZ without a small zone first setting an example. It should also be noticed that the treaty of Pelindaba is still awaiting enough signatories to enter into force. It is not likely to be any easier in the Middle East than in Africa: it will be an immense task to manage all the conflicts before the “All at Once” model can enter into force.

6 PROSPECTS AND BARRIERS

6.1 Abandoning Weapons of Mass Destruction

According to Hamel-Green (2005), the barriers against new WMDFZ can be both internal and external. The level of regional conflict, the lack of regional forums and the pre-existence of WMD are all examples of internal barriers that must be overcome in order to create a WMDFZ.

One important, but difficult, question in the Middle East is how to abandon WMD successfully. A WMDFZ in the Middle East will have to include a WMD reversal program. An understanding of the nuclear reversal program of Pelindaba might prove helpful in this process. It can also be helpful to study countries that voluntarily have removed weapons of mass destruction and explore the reasons for their choices. The example of Libya is already mentioned as a unique example of a country leaving their WMD program behind.

Weapons reversal should be thought of as a process which unfolds over a period of time, not as an instant event. A realistic treaty design of a Middle Eastern WMDFZ should not be based on an all or nothing approach. Jones (2005) argues that states should be allowed a period of “hedging.” WMD programs usually do not “end” at a definite moment, and there are often considerable uncertainties as to the way forward and its potential implications. Even if decision makers are aware that their WMD policies are not as beneficial as expected, they often do not know what to do about the situation.

To understand the background for weapons reversal, it is worth taking a look at South Africa. In 1991, the South African decision to forego the six nuclear weapons the country had developed was presented by President Frederik de Klerk. Several factors are likely to have contributed to this decision:

- The end of the cold war and apartheid resulted in fewer threats against South African security: The risk of Soviet sponsored threats was gone, in Angola a cease-fire had been negotiated, and Namibia had been granted independence in 1988 (Sagan 1996-1997).
- Promises of international support and guarantees convinced South Africa that nuclear weapons were no longer needed. It was important for South Africa to get the greater powers (preferably the United States) on its side, but the lack of support drove the country into the nuclear option. The weapons were primarily meant to lure the western powers to come to their assistance if needed (Sagan 1996-1997).
- The existence of powerful international norms: South Africa gained support in the NPT, and could join the international mainstream as an advanced state in such areas as nuclear energy and space technology. When the NPT was extended indefinitely in 1995, South Africa played a pivotal role. By entering the NPT, South Africa was able to regain prestige in the international community by peaceful means (Paul 2000: 115-117, Jones 2005).
- The decision to dismantle the bomb came from President Frederik de Klerk in 1989, immediately after he was elected president. This was before the cold war ended, which suggests the importance of domestic political changes (Sagan 1996-1997).

The South African example suggests that reversal of WMD in the Middle East is more likely to happen with the help of a WMDFZ. The contributions of a WMDFZ to achieve weapons reversal is its ability to reduce the level of perceived threats because of good verification mechanisms and confidence-building measures, international guarantees and support, and its ability to transfer powerful non-proliferation norms to an area.

6.2 Establishment of ACRS

In October 1991 the Multilateral Working Group on Arms Control and Regional Security in the Middle East (ACRS) was established. Changes in the context of the Arab-Israeli conflict made this possible: A regional forum including both the Arab states and Israel implied the recognition of the state of Israel and made such a forum unacceptable earlier. ACRS was to contribute to the peace process in two ways: (1) bilateral negotiations between Israel and its immediate neighbours, (2) promotion of multilateral and regional issues that affect all states in

the region. In this regional institution, regional security was to be discussed and negotiated (Cohen in Schneider 1999, Karawan in Schneider 1999).

The ACRS working group held expert-level meetings and focused on confidence-building measures. In 1995, due to Egyptian and Israeli disagreement on the question of when to place a discussion of a WMDFZ on the agenda of the ACRS, the multilateral talks were put on hold, and since 1995 there has not been any formal meeting between the parties (CNS 2003c).

6.2.1 Divergence of Interests and Objectives

All governments in the Middle East have expressed their support for the establishment of a WMDFZ in the region. Israel has supported the NWFZ resolution in the UN since 1980. The resolution has been unanimously adopted each year since then (Cohen in Schneider 1999). If a WMDFZ is to be established, there is a need to separate political realities from diplomatic games.

At the ACRS negotiations, the fundamental divergence emerged. The Arab states focused primarily on Israel's adherence to the NPT and their abandonment of nuclear weapons. Egypt's WMDFZ proposals were built on NPT and IAEA's universal mechanisms. As opposed to this, Israel viewed a NWFZ as an alternative to IAEA and the NPT – which they consider inadequate. Despite the apparent agreement on non-proliferation, there was a considerable deadlock built on opposing interests. The basic problem was how to address the arms control issue. While Israel stressed the need for regional security and peace in advance of a zone, Arab leaders primarily wanted Israel to sign the NPT. In the ACRS negotiations, the Arab states focused on isolating the nuclear issue from the security agenda as much as possible; bringing an end to Israel's nuclear superiority in the Middle East was the main reason for the Egyptian WMDFZ proposals. Egypt therefore wants to enter into negotiations as early as possible through IAEA and the NPT. For this purpose, Israel must first ease its nuclear ambiguity and accept a certain level of transparency on their nuclear capability (Cohen in Schneider 1999).

Israel, on the other hand, rejects any obligations to nuclear non-proliferation before peace is established. Giving up the nuclear weapons, in their view, should not be a way towards regional peace and security; it should be the final stage. After regional peace and security is established, Israel will be ready to dismantle their nuclear weapons. This implies that any step towards a WMDFZ must be linked with political progress on the peace front, and that the nuclear issue cannot be isolated from the political peace agenda (Cohen in Schneider 1999).

The Israeli opacity and the lack of transparency is an obvious barrier to successful WMDFZ negotiations. The nuclear opacity is viewed by Israel as vital for its national security. According to Cohen (in Schneider 1999) Israeli defence sources have stated that the “nuclear option” will be even more important in peacetime; some consider the need for a strong and effective deterrent to preserve the peace important.

The challenges which arise from the divergence of interests and objectives can be summed up as follows: Israel considers that the Arab states, led by Egypt, overemphasize the nuclear issue and the significance it should have in the peace process. The Arab states, on their side, want to challenge the Israeli opacity. The dismantling of Israeli nuclear weapons combined with transparency measures should trigger the peace process. According to Baumgart & Müller (2004-2005: 49), “Arabs and Iranians do not see Israel’s nuclear weapons as a defensive precaution under which Israel can explore possibilities for peace.”

Further negotiations on a WMDFZ (as opposed to a NWFZ) will have several advantages that can help resolve this deadlock of opposing interests. Mediating between the opposing interests will have to take place. States in the Middle East need to recognize that without some kind of trade-off, a WMDFZ is not feasible and neither is peace. A WMDFZ, and the process towards such a zone, will have valuable contributions as a framework for trade-off. A step-by-step procedure towards a WMDFZ can create common ground between opposing interests. One of the first and greatest challenges will be to design a system for verification and transparency under which all parts feel secure. Lessons need to be drawn from the existing regimes under the NPT and the CWC, but without adjustments they are likely to be inadequate in the Middle East. Parties need to report all WMD in their possession. When the parties have agreed on credible verification measures, the challenge is to halt all WMD development. The last step on the way towards a WMDFZ will be the total abandonment and the dismantling of the weapons. The process will have to take time, and the framework discussed above and the lessons from existing NWFZ should be taken into consideration.

6.2.2 States Outside the ACRS Negotiations

Disagreement between the parties at the ACRS negotiations represents one obstacle to progress; the parties that *did not* take part represent another obstacle. Iran and Iraq were not invited to the ACRS forum of peace and non-proliferation negotiations. Iraq used to be a major WMD concern, and Iran’s nuclear intentions are highly questioned. Both Iran and Iraq are parties to the NPT. According to Cohen (1999), one problem with the NPT is that it was not designed as a mechanism to detect and reveal clandestine activities. Its main purpose was to verify and trace diversions of declared assets. If one of these states has a program for developing forbidden weapons, it may reach advanced stages before it is discovered.

6.2.3 Challenging the Culture of Opacity

Israel’s policy is to keep their nuclear weapons a secret, but at the same time to use this state of uncertainty as a deterrence. This is known as “opacity,” and it was intended to restrain the Arab side while retaining Israel’s deterrence. The Israeli nuclear proliferation has created a nuclear asymmetry to a degree not seen in other NWFZs. To reduce this asymmetry, Iraq, Iran and (previously) Libya have made efforts to create a nuclear counter-deterrence. Syria and Egypt have created counter-deterrence with chemical and biological weapon programs. The Israeli opacity combined with the attempts to create counter-deterrence is a major challenge to a WMDFZ (Baumgart & Müller 2004-2005, Redick 1998-2000).

Cohen (1999) suggests that the Israeli opacity can be challenged by a cut-off proposal. A Fissile Material Cut-off Treaty (FMCT) will halt the production of fissile material. This will include verification measures for unsafeguarded plutonium and highly enriched uranium used for making bombs. This means that international safeguards must be accepted on Israeli nuclear facilities. Such a proposal will offer benefits for both sides, and it will also leave the WMD non-proliferation issue open for further progress. It can also (I) legitimize the Israeli nuclear weapons, and (II) open a discussion about “fissile material” without referring to the actual weapons.

Even if this proposal will not be the final solution to the WMD problems in the Middle East, it can start the process towards the ultimate goal in the Middle East: a zone free of all weapons of mass destruction.

6.2.4 Creating Hopes for Successful Negotiations

After the ACRS negotiations ended in 1995, no progress on the establishment of a nuclear or a WMD free zone has been achieved, and only marginal progress with regard to confidence-building measures (Shaker 1997). Despite this, such a working group can serve an important role in the process of realizing a WMDFZ. A working group should start out by reaching agreements on limited goals. Evidently, a shortcut to the establishment of a WMDFZ is hard to find, but a long time perspective and a cautious approach can be the prescription for a final solution. The re-establishment of the ACRS as a regional working group may be vital, since internal and regional barriers preferably should be overcome by regional measures.

The establishment of a WMDFZ is the ultimate objective, but smaller steps towards this objective must be appreciated. “The nuclear deadlock cannot be resolved by looking at the end result of the process – a NWFZ – but rather by breaking the process down into smaller and more manageable issues” (Cohen in Schneider 1999: 91). One of the steps can for example be a cut-off proposal as suggested by Cohen (in Schneider 1999).

7 SUMMARY AND CONCLUSIONS

7.1 Overcoming the Barriers: Realization of a WMDFZ

This report has used experience from existing NWFZs in order to outline suggestions for a WMDFZ in the Middle East. The main challenges appear to be to convince the states to halt the further development of WMD and to find a way to eliminate existing weapons. This may be considered a realizable goal if the following points are taken into consideration:

I: Efforts to enhance transparency and verification:

- a) Enhance regional dialogues. For this purpose, the ACRS' role should be reinforced. A regional, governmental expert group can make contributions to the production of consensus documents.
- b) Create a system for continuous exchange of reports and information.
- c) Improve safeguard activities. They are vital to create the sorely needed fundamental trust and ensure common compliance to the agreements. The IAEA and OPCW safeguard activities are likely to be insufficient in a WMDFZ in the Middle East, but can serve as a foundation for a safeguard regime.
- d) Make special efforts in order to create a verification regime for biological weapons. According to Tucker (1998), it is possible to create such a regime.

II: Design of a system for weapons reversal:

- a) Weapons reversal must be thought of as a process, not just a moment in time. Avoid all-or-nothing approaches.
- b) A WMD reversal program (like the nuclear weapons reversal program in the Treaty of Pelindaba) should be established. Lessons should be drawn from countries which have successfully removed their WMD.

III: Agreements and protocols:

- a) As a start, bilateral (or multilateral) agreements between hostile states / parties can help solve hostility that needs to be overcome before a zone can be established. This was done between Brazil and Argentina in order to establish the Treaty of Tlatelolco.
- b) Extra protocols will regulate the relationship to outside powers, both nuclear weapon states and neighbouring states. The possibility for extracting some security guarantees from non-state actors in the Middle East should be considered.

IV: Scope of prohibition:

- a) Nuclear weapons: the existing NWFZs provide a foundation for such prohibitions.
- b) Chemical and biological weapons: The CWC and the BTWC should provide the basis.
- c) The trade-off value of prohibiting all WMD should be specially noticed.

V: The geographical scope: three suggestions:

- a) The Gulf Model: A WMDFZ should grow out of an existing initiative.
- b) The Levant Model: The most acute states must be included first.
- c) The "All at Once" Model: A WMDFZ is not possible without a simultaneous entrance of all states which experience the regional conflict.

VI: Steps for overcoming regional barriers

- a) Agree on the long-term goal, and keep a long time perspective.
- b) Split the process into small and manageable pieces.
- c) Include all relevant parties in regional talks.

7.2 Conclusions

Even though the prospect for a WMDFZ in the Middle East does not look bright today, one should not give up on a Middle Eastern WMDFZ. It is most important to keep a long-term perspective and acknowledge that the process towards the realization of a WMDFZ will be long-lasting. It is important to set small and feasible goals. The inclusion of all parties in regional negotiations is crucial during the early parts of the process. The participants at the negotiations must aim for the creation of a lasting and stable regime in the long run.

References

- Alani, Mustafa (2005): The Case for a Gulf Weapons of Mass Destruction Free Zone, *Security & Terrorism*, 1, 7-9.
- Baumgart, Claudia & Harald Müller (2004-2005): A Nuclear Weapons-Free Zone in the Middle East: A Pie in the Sky?, *The Washington Quarterly* **28**, 1, 45-58.
- Blix, Hans et al. (2006): Weapons of Terror - Freeing the World of Nuclear, Biological and Chemical Arms, The Weapons of Mass Destruction Commission (WMDC), Stockholm.
- Blix, Hans (1997): The IAEA full scope safeguards Agreements and Compliance with them by Parties to the Nuclear Weapon-Free Zones. Found on: OPANAL: <http://www.opanal.org/Articles/Aniv-30/blix.htm>.
- BTWC (1972): The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, Found on: <http://www.opbw.org/>.
- BTWC (2006): Strengthening the Regime, Found on: <http://www.opbw.org/strength/strength.html> Biological and Toxin Weapons Convention (BTWC).
- Buzan, Barry & Ole Wæver (2003): Regions and Powers - The Structure of International Security, Cambridge University Press, Cambridge, 187-218.
- Bulletin of the Atomic Scientists (2002): Going it alone, *Bulletin of the Atomic Scientists*, **58**, 4, 36-37.
- CNS (2002): Nuclear-Weapons-Free Zones: Comparative Chart. Found on: Center for Non-Proliferation Studies (CNS): <http://cns.miis.edu/pubs/inven/index.htm>.
- CNS (2003a): South Pacific Nuclear-Free Zone (SPNFZ) Treaty of Rarotonga. Found on: <http://cns.miis.edu/pubs/inven/index.htm>.
- CNS (2003b): Nuclear-Weapon-Free Status of Mongolia. Found on: <http://cns.miis.edu/pubs/inven/index.htm>.
- CNS (2003c): Arms Control and Regional Security in the Middle East (ACRS). Found on: <http://cns.miis.edu/pubs/inven/index.htm>.
- CNS (2005a): Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Tlatelolco Treaty). Found on: <http://cns.miis.edu/pubs/inven/index.htm>.

CNS (2005b): Southeast Asian Nuclear-Weapon-Free-Zone (SWANWFZ) Treaty (Bangkok Treaty). Found on: <http://cns.miis.edu/pubs/inven/index.htm>.

CNS (2006a): Central Asia Nuclear-Weapon-Free-Zone (CANWF). Found on: <http://cns.miis.edu/pubs/inven/index.htm>.

CNS (2006b): African Nuclear-Weapon-Free-Zone (ANWFZ) Treaty (Pelindaba Treaty). Found on: <http://cns.miis.edu/pubs/inven/index.htm>.

Cohen, Avner (1999): Regional Security and Arms Control in the Middle East In: *Middle East Security Issues - In the Shadow of Weapons of Mass Destruction Proliferation* (Ed: Barry R. Schneider), Air University Press, Alabama, 77-109.

Cohen, Avner (2006): Continuity and Change in Israeli Strategic Thinking: Reflections in the Wake of Operation Iraqi Freedom, In: *Proliferation of Weapons of Mass Destruction in the Middle East - Directions and Policy Options in the New Century* (Ed: James Russel), Palgrave McMillan, New York, Hampshire, 33-50.

Goldblat, Jozef (1994): Arms Control - A guide to Negotiations and Agreements, International Peace Research Institute (PRIO), Oslo, 77-83, 148-158.

Hamel-Green, Michael (2005): Regional Initiatives on Nuclear- and WMD-Free Zones, UNIDIR, Geneva, 25-32.

Jones, Peter (1997): New Directions in Middle East Deterrence: Implications for Arms Control, *Middle East Review of International Affairs (MERIA)*, **1**, 4.

Jones, Peter (2005): A Gulf WMD Free Zone within a Broader Gulf and Middle East Security, Policy Paper by Gulf Research Centre.

Karawan, Ibrahim A. (1999): Arab Perspectives on Middle Eastern Security In: *Middle East Security Issues - In the Shadow of Weapons of Mass Destruction Proliferation* (Ed: Barry R. Schneider), Air University Press, Alabama, 61-77.

Leonard, James F. & Jan Prawitz (1999): The Middle East as a NWFZ or WMDFZ, *Pacifica Review* **11**, 3, 263-264.

Müller, Harald (1997): Nuclear Weapon Free Zone: Their Meaning for a Nuclear Weapon Free World. Found on: OPANAL: <http://www.opanal.org/Article/Aniv-30/Muller.htm>.

NPT (2005): Non-Proliferation of Nuclear Weapons (NPT). Found on: <http://www.un.org/events/npt2005/npttreaty.html>.

OPCW (2005): Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction. Found on:

http://www.opcw.org/html/db/cwc/eng/cwc_frameset.html.

Othman, Ibrahim & Maha Abdulrahim (2004): Establishment of a Zone Free of Mass Destruction Weapons in the Region of the Middle East: Requirements and Constraints, In: UNIDIR (2004): *Building a Weapons of Mass Destruction Free Zone in the Middle East - Global Non-Proliferation Regimes and Regional Experiences*.

Parrish, Scott & Jean du Preez (2006): Nuclear-Weapon-Free Zones: Still a Useful Disarmament and Non-Proliferation Tool? Weapons of Mass Destruction Commission (WMDC), Stockholm.

Paul, T.V. (2000): Power versus Prudence- Why Nations forgo Nuclear Weapons, McGill-Queen's University Press, Quebec, 113-155.

Rauf, Tariq (2000): Towards Nuclear Disarmament. Found at: UNIDIR:

<http://www.unidir.org/pdf/articles/pdf-art177.pdf>.

Redick, John R. (1998-2000): Tlatelolco and Regional Non-Proliferation initiatives. Found on: OPANAL: <http://www.opanal.org/Articles/cancun/can-Redick.htm>.

Román-Morey, Enrique (1997): Nuclear Weapon Free Zones, on the Footsteps of the Treaty of Tlatelolco. Found on: OPANAL: <http://www.opanal.org/Articles/Aniv-30/Roman.htm>.

Sagan, Scott D. (1996-1997): Three Models in Search for a Bomb, *International Security* **21**, 3, 54-86.

Scheinmann, Lawrence (2005): A US Perspective, *Security & Terrorism*, 1, 12-14.

Shaker, Mohammed I. (1997): The Middle East Issue; Possibilities of a Nuclear-Weapons-Free Zone. Found on: OPANAL: <http://www.opanal.org/Articles/Aniv-30/shaker.htm>.

Shapiro, Adam (2004): Nuclear-Weapon-Free Zones - The Solution to Nuclear Disarmament? *UN Chronicle Online Edition*.

Shtauber, Zvi & Yiftah S. Shapir (2006): The Middle East Strategic Balance 2004-2005, TJ International, Padstow, Cornwall, 180.

Siegel, Jonas (2005): In The Zone, *Bulletin of the Atomic Scientists* **61**, 4, 38.

Tucker, Jonathan B. (1998): Verification Provision of the Chemical Weapons Convention and Their Relevance to the Biological Weapons Convention. Found on: Henry Stimson Centre: <http://www.stimson.org/pubs/cfm?ID=29>.

Tucker, Jonathan B. (2001): The Proliferation of Chemical and Biological Weapons Materials and Technologies to State and Sub-State Actors. Found on: Center for Nonproliferation Studies (CNS): <http://www.cns.miis.edu/research/cbw/ttuck2.htm>.

Umebayashi, Hiromichi (2004): A Northeast Asia Nuclear Weapon-Free Zone (NEANWFZ). Found on: Nautilus Institute: <http://www.nautilus.org/napsnet/sr/2005/0566NEANWFZ.pdf>.