

The Treaty on the Prohibition of Nuclear Weapons (TPNW) and its Scientific Advisory Group (SAG)



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INRAG Spring Meeting 2023

Overview

Background on nuclear arms control and the TPNW

TPNW main clauses

First “Meeting of States Parties” of TPNW (1MSP)

The TPNW Scientific Advisory Group

Humanitarian Impacts of Nuclear Weapons Conference (HINV22, Vienna, June 2022)

Background on nuclear arms control and the TPNW

Multilateral nuclear arms control treaties

1. **Partial Test Ban Treaty PTBT (1963)**
Prohibits nuclear weapon tests in the atmosphere, outer space, under water 125 member states, superseded by the CTBT (except India, Pakistan who are not in CTBT)
2. **Nuclear Non-Proliferation Treaty NPT (1968/1970)**
191 member states
3. **Comprehensive Nuclear Test Ban Treaty CTBT (1996)**
177 member states (186 signed), not in force yet
4. **Fissile Material Cut-Off Treaty FMCT (proposed)**
under discussion since 1993, negotiations since 2009, currently blocked by Pakistan
5. **Treaty on the Prohibition of Nuclear Weapons TPNW**
in force since 1/2021, 68 member states

Non-Proliferation Treaty NPT

- ▶ Negotiated in the 1960ies, in force since 1970
- ▶ Three pillars (a kind of balance between interests of NNWS and NWS):
 1. Only P5 allowed to own NW
 2. Guarantee for peaceful use and support for that
 3. Obligation of complete nuclear disarmament for P5, but no concrete pathway or schedule
- ▶ IAEA (verification and peaceful use)
- ▶ Almost universal. Missing: Israel, Pakistan, India, DPRK (withdrawal 2003)
- ▶ 1995 indefinite extension (thanks to perestrojka)
- ▶ Since 2010 no progress, especially for disarmament (Art 6). Frustration of NNWS.
Iran.

Comprehensive Test Stop Treaty CTBT

- ▶ Prohibits any nuclear explosion (except actual use in war)
- ▶ Strong verification component: 321 stations all over the globe (seismics, hydroacoustics in the ocean, infrasound & radionuclides in the atmosphere), central data processing
- ▶ (Provisional) Technical Secretariat in Vienna
- ▶ Special clause for EIF: Annex II – List of 31 states who had nuclear reactors in 1996. Still missing: USA, China, Israel, Iran, Egypten, as well as non-signatories India, Pakistan, DPRK
- ▶ De-facto moratorium for tests, except DPRK (tested 2006-2017)
- ▶ Frustration because of lack of progress with Annex II ratifications
- ▶ Nevertheless functioning in most respects

TPNW - Short history

- ▶ Motivation: lack of progress with disarmament acc to Art. 6 NPT. “rebellion of NNWS”
- ▶ NPT RevCon 2010: Resolution on humanitarian consequences of nuclear war
- ▶ “Humanitarian Initiative”: Conferences in Oslo, Nayarit (MX), Vienna (2014), with strong participation of Red Cross, science, NGOs
- ▶ 2014 Austrian Pledge (later Humanitarian Pledge) at HINV14
- ▶ Mandate by UN-GA for negotiations (circumventing CD)
- ▶ Negotiations lead by Austria, Mexico, Thailand and others
- ▶ 2017 Conclusion of Treaty. Strong pressure from US on allies and other states not to join or even withdraw signature!
Strong objection by P5 except China
Peace Nobel Prize 2017 for International Campaign for Abolishing Nuclear Weapons (ICAN)
- ▶ January 2021 EIF with 50 SPs. Today: 68 SP, 92 signatories

Overview of TPNW

TPNW: Details of prohibitions

Art. 1 – Prohibition

- ▶ Develop, test, produce, manufacture, otherwise acquire, possess or stockpile nuclear weapons or other nuclear explosive devices
- ▶ Transfer NW or control over such weapons
- ▶ Receive the transfer
- ▶ Use or threaten to use
- ▶ Assist, encourage or induce anyone to engage in any activity prohibited
- ▶ Seek or receive any assistance
- ▶ Allow any stationing, installation or deployment

TPNW: Obligation to declare, Safeguards

Art. 2 – Declaration about nuclear weapons

Each State Party has to declare whether

- ▶ it owned, possessed or controlled NW and eliminated its NW programme
- ▶ it owns, possesses or controls any NW
- ▶ there are any NW in its territory or in any place under its jurisdiction or control owned or controlled by another State.

Art. 3 – Safeguards

- ▶ SP have to fulfill their obligations with IAEA, NNW-states need “comprehensive safeguards agreement”
- ▶ no obligation for IAEA “additional protocol” – *weakness of the Treaty.*
- ▶ not explicitly, but CTBT verification system is considered part of the TPNW verification

TPNW: Disarmament of NWS

Art. 4 – Elimination of nuclear weapons.

NWS have two options:

- a) Accede the TPNW after elimination of their NWs and NW programme.
⇒ the *competent international authority* has to verify it.
 - b) Eliminate their NW & NW programme after accession within a given time frame.
⇒ *competent international authority* has to negotiate the elimination plan including time frame.
- ▶ This applies also to nuclear weapon sharing, with shorter time frame.

It is generally assumed that NWS will not unilaterally take this step, but rather first negotiate among themselves, maybe conclude a “Nuclear Weapons Convention” for details of a stepwise disarmament.

Art. 5 – National implementation requires SP to put in place national legislation to enforce the prohibitions of Art. 1.

Art. 6 – Assistance to victims and environmental remediation

- ▶ adequately provide age- and gender-sensitive assistance, without discrimination, including medical care, rehabilitation and psychological support, as well as provide for their social and economic inclusion.
- ▶ areas contaminated as a result of activities related to the testing or use of NW, ... environmental remediation of areas so contaminated.
- ▶ without prejudice to the duties and obligations of any other States (those having caused the damage)

TPNW: Positive obligations 2

Art. 7 – International cooperation and assistance

- ▶ Cooperation among States Parties
- ▶ SPs have right to seek and receive assistance from other States Parties
- ▶ each SP in a position to do so shall provide technical, material and financial assistance to States Parties affected by nuclear-weapons use or testing
- ▶ ... provide assistance for the victims of use or testing
- ▶ provided, inter alia, through the UN, international, regional or national organizations or institutions, NGOs, ICRC or national Red Cross, or on a bilateral basis
- ▶ a State Party that has used or tested nuclear weapons or any other nuclear explosive devices shall have a responsibility to provide adequate assistance to affected States Parties

TPNW Inhalt: Procedural rules (selection)

▶ **Art. 8: SP meetings**

- ▶ 1st meeting after one year
(postponed from 1/2022 to 6/2022, Vienna)
- ▶ then every other other year
(next one end of Nov 2023, New York)
- ▶ review conferences every 5 yrs (= period of office for the SAG)
- ▶ all UN organisations, Red Cross / Half Moon and NGOs admitted as observers

▶ **Art. 12 Universality:**

- ▶ Each SP shall encourage States to sign, ratify, accept, approve or accede to the Treaty, with the goal of universal adherence

▶ **Art. 15: EIF:**

90 d after 50th ratification: *happened on 22 Jan 2021*

▶ **Art. 17: Withdrawal:**

- ▶ if extraordinary events have jeopardized supreme interests
- ▶ shall include a statement of the extraordinary events .
- ▶ shall only take effect 12 months after
- ▶ If SP is a party to an armed conflict, shall continue to be bound by the obligations of this Treaty until end of conflict

First “Meeting of States Parties” (1MSP)



1st President: Ambassador Alexander Kmentt (Austria)

Credit: Alexander Papis / ICAN

Vienna Declaration (ICAN's summary)

- SPs expressed their alarm and dismay at threats to use NWs, and condemned unequivocally “any and all nuclear threats, whether they be explicit or implicit and irrespective of the circumstances.”
- **SPs resolved to “move forward with its implementation, with the aim of further stigmatizing and de-legitimizing NWs and steadily building a robust global peremptory norm against them.”**
- The Declaration reiterated the humanitarian basis of the treaty and the moral, ethical and security imperatives which inspired and motivated its creation and which now drive and guide its implementation.
- **SPs resolved to move ahead with implementing all aspects of the treaty, including the positive obligations** aimed at redressing the harm caused by NWs use and testing.
- They also reaffirmed the complementarity of the treaty with the international disarmament and nonproliferation regime, including the NPT, and undertook to continue to support the NPT and all measures that can effectively contribute to nuclear disarmament.
- The Declaration concluded that “In the face of the catastrophic risks posed by NWs and in the interest of the very survival of humanity, we will not rest until the last state has joined the Treaty, the last warhead has been dismantled and destroyed and NWs have been totally eliminated from the Earth.”

Some pictures



Credit: Alexander Papis / ICAN

The Scientific Advisory Group (SAG)

Created by decision in the 1MSP, based on
TPNW/MSP/2022/WP.6

“Institutionalizing scientific and technical advice for the effective
implementation of the TPNW”

SAG Terms of Reference (abridged)

- ▶ Report about developments in scientific and technical fields
- ▶ Support capacity-building, including through engagement with scientists, academia and civil society organizations, including communities affected by NWS, about the technical issues, humanitarian consequences and risks, humanitarian response challenges;
- ▶ Provide scientific and technical advice on matters related to the Treaty and nuclear disarmament and non-proliferation more widely, as well as on the humanitarian consequences of and risks and related humanitarian response challenges;
- ▶ Provide advice and make recommendations to be considered at MSP/RC;
- ▶ Assess and report on the scientific and technical merit of proposed methodology for implementation of the Treaty;
- ▶ Coordinate scientific or technical working groups temporarily established by the SAG;
- ▶ Provide an annual report to the President for circulation among SPs prior to MSP / RC

SAG Membership

- ▶ up to 15 members
- ▶ in personal capacity, but nominated by SPs (not necessarily SP nationals)
- ▶ selected and appointed by the President of the MSP in consultation with SPs
- ▶ have 2 co-chair, 1 year office period
- ▶ High Representative for Disarmament Affairs appoints a secretary for the Group
- ▶ first period of office until RC1, then reassessment

First SAG Meeting

- ▶ Took place this week on 1 March, convened by MSP2 President
- ▶ Elected Zia Mian (Princeton) and Patricia Lewis (Chatham House) as co-chairs
- ▶ Will concentrate in the first year on
 1. a first scientific review report
 2. starting to build up a network of experts and institutions
 3. the annual activity report to MSP2
 4. probably form topical subgroups
- ▶ Possible future activities
 - ▶ Support for verification according to Art. 4
 - ▶ Organise new scientific studies on the impacts of nuclear war, especially with integrated systems analysis (contamination, climate, agricultur, health, economy, and so on)
 - ▶ Support for communities affected by NW tests
 - ▶ Produce a larger scientific report including all topics relevant for TPNW

There will be options for engagement!

2022 Vienna Conference on the Humanitarian Impact of Nuclear Weapons 20 June 2022

 Federal Ministry
Republic of Austria
European and International
Affairs



Vienna Conference on
the Humanitarian Impact
of Nuclear Weapons
June 20, 2022



Day before the 1MSP, 800 participants

Most of the material is online (slides, video, ...)!

<https://www.bmeia.gv.at/en/european-foreign-policy/disarmament/weapons-of-mass-destruction/nuclear-weapons/2022-vienna-conference-on-the-humanitarian-impact-of-nuclear-weapons/>

Photo credit: [to check] Alexander Papis / ICAN or BMEIA


Panel “What we know” – Key Facts

- ▶ James Reville, WMD Programme at UN Institute for Disarmament Research (UNIDIR): **An Illusion of Safety - Challenges of Nuclear Weapon Detonations for UN Humanitarian Coordination and Response - Revisited**
Response will also suffer from political environment and fear of further explosions
- ▶ Patricia Lewis, Chatham House, UK: **What Close Calls Can Teach Us About Nuclear Weapons Risks** *Strength of single person matters, intelligence, education, self-confidence – where are they today?? People say, “system worked” but system failed!*
- ▶ Mary Olson, Nuclear Information and Resource Service (NIRS) (ret.): **Atomic Radiation is More Harmful to Girls and Women than to Boys and Men**
Girls 2× more cancer than boys if exposed 0-5 a. Adults factor 1.5. Reason unknown, maybe reproductive tissues. see <https://genderandradiation.org>

Panel “What we know” – Discussion

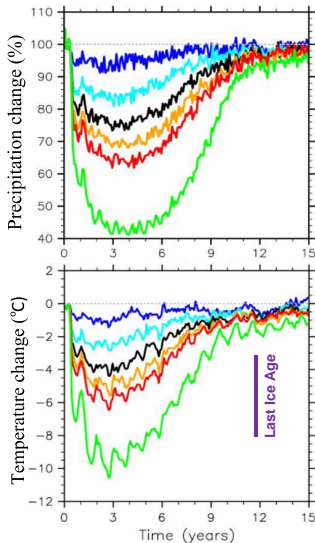
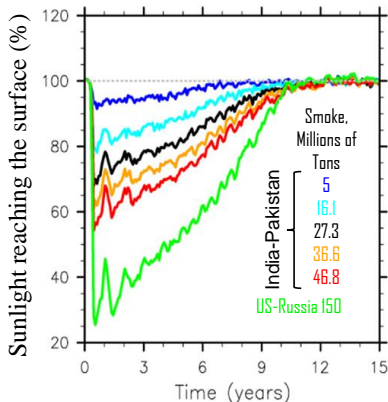
- ▶ Taboo not to threaten with use of NW – now broken. Cold war: two parties, same logic, some understanding. Now, NW definitely source of **in**security.
- ▶ Similarity Global warming – NW: Ignorance, denial, do nothing, too little, too late.
- ▶ Izumi: UNSG says we are now in qualitative NA race, quantitative one may follow. HI enormous help.
Realism: Humanitarian focus is based on *evidence*, security based on NW is an *assumption*
- ▶ Lewis: Cold war – different time. Risk vs benefit changed, but doctrines not changed. Credibility of NW ↓, likelihood of use ↑
- ▶ Izumi: New technologies (cyber, outer space, etc) but not sufficiently regulated. Diplomats require scientific training. Civil society - knowledge; should be empowered.
Two threats for climate: GC + NW
- ▶ Olson: Future research topics ¹What causes differences in radiation-induced cancer between sexes?,
²Total consequences of nuclear testing (>2000 explosions!)

Panel “Consequences”

- ▶ Chair Rebecca Jovin, UNODA Vienna. Wears 
- ▶ Moritz Kütt, IFSH Hamburg:
“There are no *small* NWS.”
Smallest: 1 kt = 100× biggest conventional.
Nuclear explosion today: All media would be full of terrible pictures and movies – mental health globally? path to escalation? (PS: cf. Ukraine!)
US Pentagon war game: even a minor starting point led to global nuclear war in the end!

Consequences: Nuclearer winter – Michael Mills (NCAR)

Sunlight, temperatures, and rainfall reductions

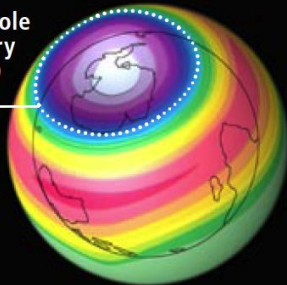


Toon et al., *Rapidly expanding nuclear arsenals in Pakistan and India portend regional and global catastrophe*, Science Advances, (2019).

Global ozone hole after regional nuclear war

TYPICAL OZONE DISTRIBUTION
(October 2008)

Ozone hole
boundary
(220 Du)



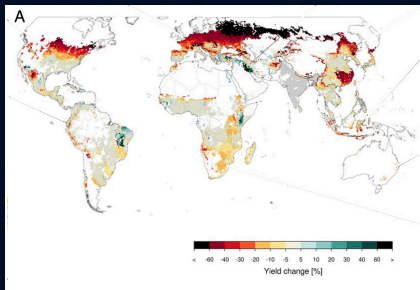
OZONE 17 MONTHS
AFTER WAR

5 million
tons



Ozone Concentration (Dobson units)

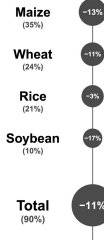
CROP PRODUCTION



Jägermeyr et al., (2020) PNAS

5-YEAR
AVERAGE
REDUCTION

5 Mt
soot



- ▶ 11 % reduction global production (2× historical fluctuation)
- ▶ 3.7 billion people suffer a staple crop reduction of more than 10%
600 million people suffer a staple crop reduction of more than 30%
- ▶ Global nuclear war (50-150 Mt used):
global catastrophe (2-5 billions threatened by hunger)

Consequences – NW Tests, new results

- ▶ Alex Glaser, Sébastien Philippe, Princeton: **Reconstructing the radiological impact from past nuclear tests.**
Mururoa. Atmospheric transport and doses modelled: previously underestimated by factor 2–10 , 90 % > 1 mSv/a (people entitled to compensation acc to French law)
- ▶ Togzhan Kassanova, Center for Policy Research, SUNY-Albany: **Soviet Nuclear Testing in Kazakhstan: The Continued Legacy**
There was a good monitoring project, but results were suppressed. She dug out some of it. Lessons:
 - ▶ transparency of data on the past nuclear tests
 - ▶ open, published research
 - ▶ formal recognition of the harm caused
 - ▶ domestic legislation in countries affected should be up-to-date
 - ▶ comprehensive assistance beyond direct medical, incl socio-economic development

Panel: The Risks of NWS, the Threat of Use and Nuclear Deterrence: New Developments and Findings, and the Limits of Our Knowledge

- ▶ Hans M. Kristensen, Director, Nuclear Information Project, Federation of American Scientists: **Nuclear Weapons Upheaval: Arsenals and Policies In Flux**
 - ▶ Nuclear competition and risks are increasing:
 - ▶ Rhetoric: collaborative → combative and subdued → overt.
 - ▶ Trend to reduce numbers and role of NW ended, reaffirm value and role, modernizing nuclear arsenals, new types, increasing the size of the arsenals.
 - ▶ Doctrines are being updated, reaffirming salience and importance of NW, and in some cases increasing role of regional, tactical scenarios.
 - ▶ Advanced conventional weapons and more offensive deterrence postures → increased risk , new pathways to NW use
- ▶ **Tytti Erästö (SIPRI):** (nuclear or conv or cyber) strikes against NW, survivability (Russian torpedo), hypersonic, ICBMs obsolete? Use or loose? Anti-Satellite warfare.

- ▶ Daryl G. Kimball, Exec. Director, Arms Control Association
The Nuclear Risk Dimension of the War in Ukraine
 - ▶ Risk to last for months or years, not weeks as in Cuba missile crisis. Not possible to measure the risk. Nuclear war could cause hundreds of millions of deaths
 - ▶ Lesson learnt: NW support attacks by NWS, and make wars more dangerous. They don't prevent wars!
 - ▶ War in Ukraine has derailed strategic nuclear arms process
- ▶ Eva Lisowski. Asia-Pacific Leadership Network & Consultant to the *Joint Project on Nuclear Weapon Use Risk Reduction*:
**Possible Nuclear Use Case in Northeast Asia:
Implications for Reducing Nuclear Risk**
15 (27) scenarios for nuclear escalation in Korea. Report is online.

Risks of Nuclear Weapons, Threat of Use, Deterrence / 3

- ▶ Zia Mian, Co-Director, Program on Science and Global Security, Princeton Univ: **What we Know, Don't know, Won't Know, Can't Know: Lessons from South Asia on Nuclear Risks as Complex and Incomprehensible**
 - ▶ Example of India – Pakistan. *Best watch the recording!*
 - ▶ Historical and psychological background, will be felt when things become serious
 - ▶ Illusion of control
 - ▶ *“States make war, war makes monsters of people”*
 - ▶ Structures lack responsibility
 - ▶ Population never asked whether they want to be defended by mass murder. Even in NWS, public opinion prefers NW-free world.

Final discussion (just two of the statements)

- ▶ Collapse of USSR, British Empire, Austro-Hungarian Monarchy – all sudden and unexpected.
- ▶ Surprises to come almost sure.