# The humanitarian imperative to eliminate nuclear weapons: progress and prospects

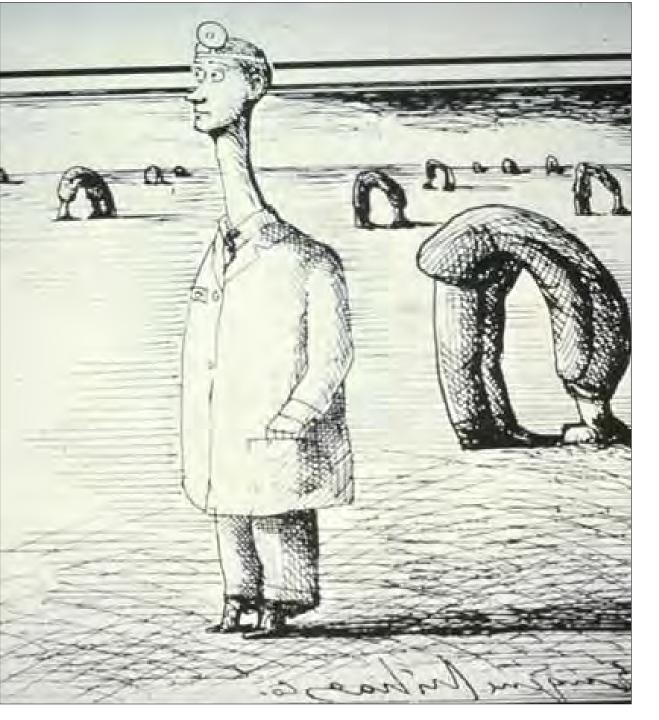
Tilman Ruff AO

International Campaign to Abolish Nuclear Weapons (Nobel Peace Prize 2017)
International Physicians for the Prevention of Nuclear War
(Nobel Peace Prize 1985)
Nossal Institute for Global Health, University of Melbourne

Consultant: WHO

Curtin 9 August 2019

Thanks: Alan Robock, Mike Mills, Ira Helfand



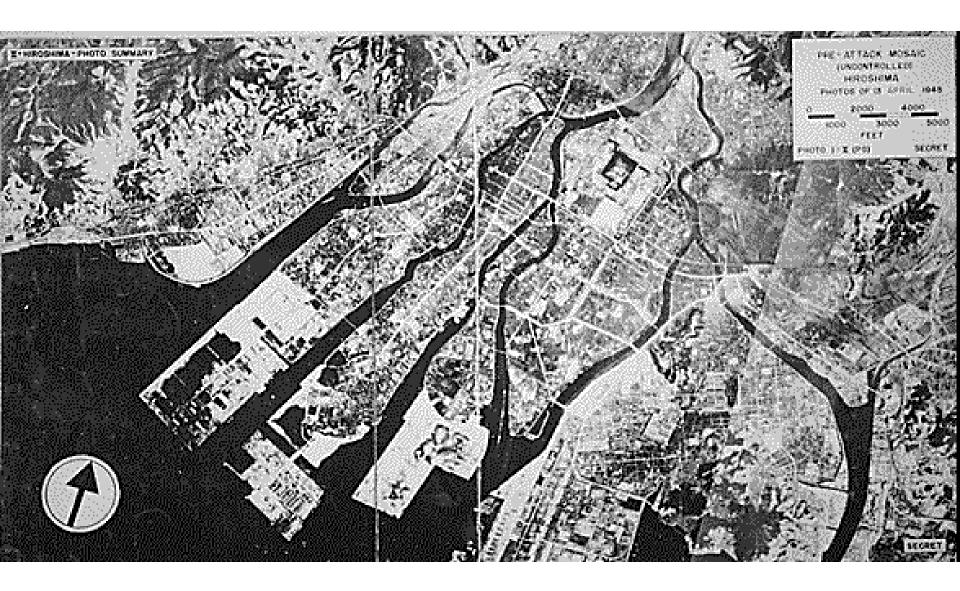
"Those who have the privilege to know have the duty to act."

"The unleashed power of the atom has changed everything save our modes of thinking, and thus we drift towards unparalleled catastrophe."

Albert Einstein 1946

### Nuclear numbers 2019

- Explosives in all wars >10 Mt
- Largest nuclear test explosion 50 Mt 30 Oct 1961
- Peak nuclear arsenal 1986: 70,300 weapons
- Current arsenal May 2019:
  - 13,890 weapons, 91% Russian and US
  - 3750 deployed
  - 1800 Fr, Ru, UK, US warheads on high alert
  - Average size: 200 kt
- Largest deployed warhead on Chinese DF-5A land-based missiles, 13,000 km+ range, up to 5 Mt





### Hiroshima

### 6 August 1945 A 15 kT bomb killed 140,000 people

Note: 15 kT = 0.015 MT = 1/1,000,000 of the 1985 world arsenal= 3/1,000,000 of the current world arsenal

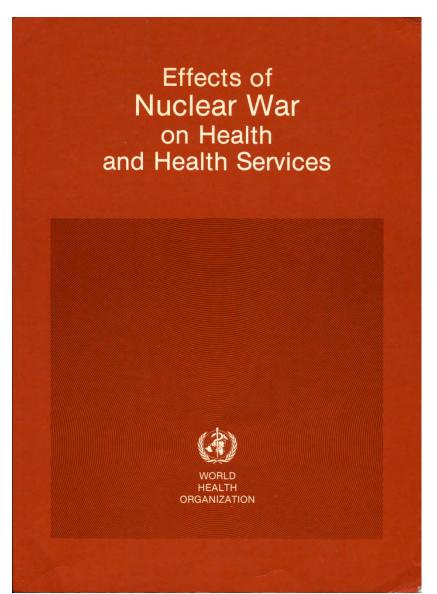
If one Hiroshima-sized bomb were dropped every *two hours* from the end of World War II to today, it would still not use up the current arsenal



### WORLD HEALTH ORGANIZATION

World health Assembly Resolution WHA 36.28 16 May 1983

### Effects of nuclear war on health and health services, WHO 1984



- "It is obvious that no health service in any area of the world would be capable of dealing adequately with the hundreds of thousands of people seriously injured by blast, heat or radiation from even a single 1-megaton bomb."
- "... the only approach to the treatment of the health effects of nuclear explosions is primary prevention of such explosions, that is, the primary prevention of atomic war."



### Nuclear weapon induced fires

"Even the smallest of nuclear weapons, such as the ~15 kt weapon used on Hiroshima, exploding in modern megacities would produce firestorms that would build for hours, consuming buildings, vegetation, roads, fuel depots, and other infrastructure, releasing energy many times that of the weapon's yield."

 Mills MJ, et al. Multidecadal global cooling and unprecedented ozone loss following a regional nuclear conflict. Earth's Future, 2014. doi:10/1002/2013EF000205

**Hiroshima**: fires released ~1000 times the energy of the explosion



### Perth





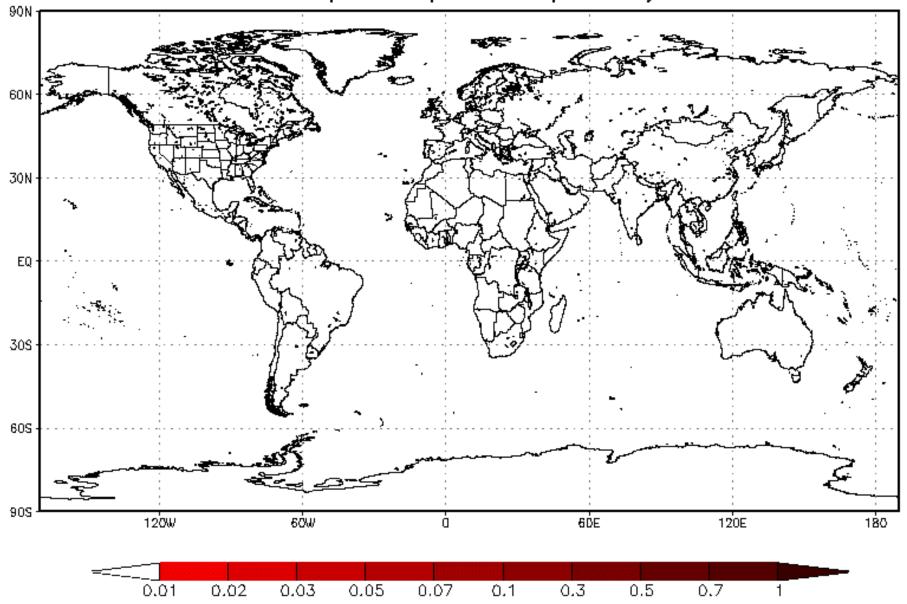
### "Small" regional nuclear war

- 100 Hiroshima-size bombs
   India Pakistan
  - Contested Kashmir border with daily shooting, 4 wars since independence, mobilised up to 1 million troops twice more
  - India "Cold Start" invasion plans, Pakistan plans early use of nuclear weapons in a war with India
  - Nuclear weapons use considered in crisis Feb 2019
  - Estimated 6 million tons of smoke

- 44 million casualties including > 21 million deaths in major cities in India and Pakistan
- Radioactive contamination across South Asia
- Global climate disruption from smoke and soot

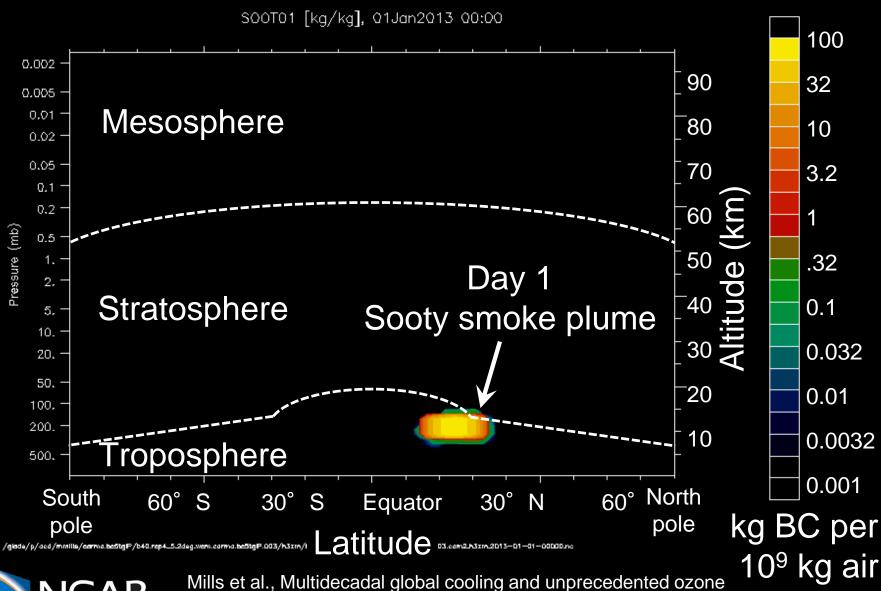
0.4% of global nuclear weapons, 0.07% of total yield

#### BC Absorption Optical Depth May 14th



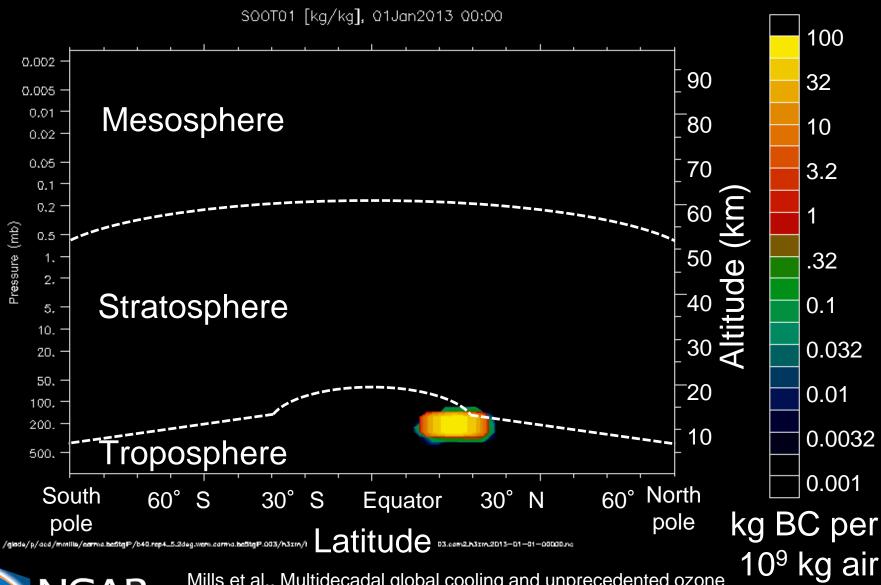


### Black carbon mass mixing ratio



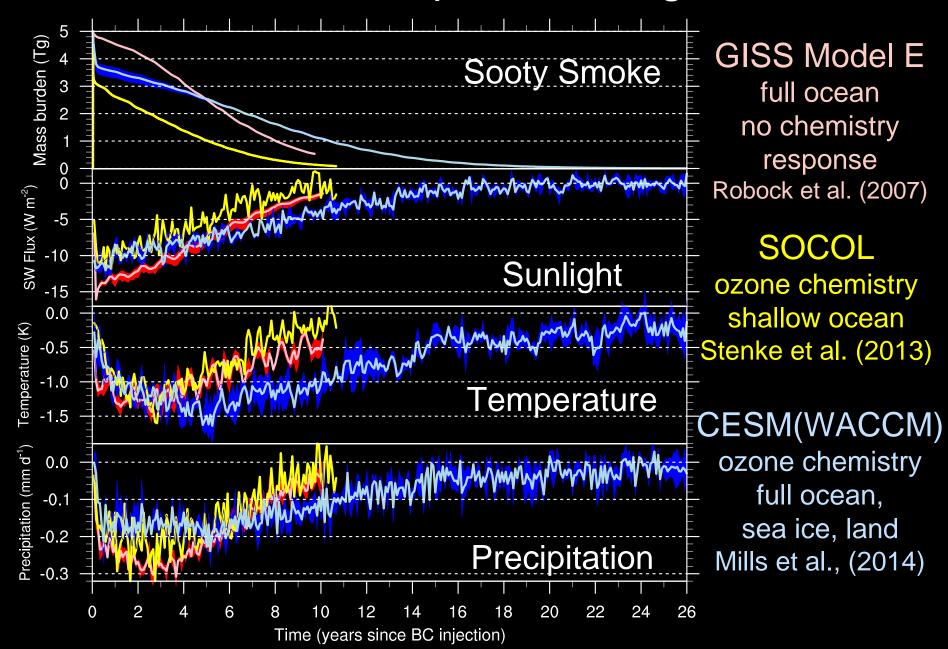
Mills et al., Multidecadal global cooling and unprecedented ozone loss following a regional nuclear conflict, *Earth's Future*, 2014.

### Black carbon mass mixing ratio

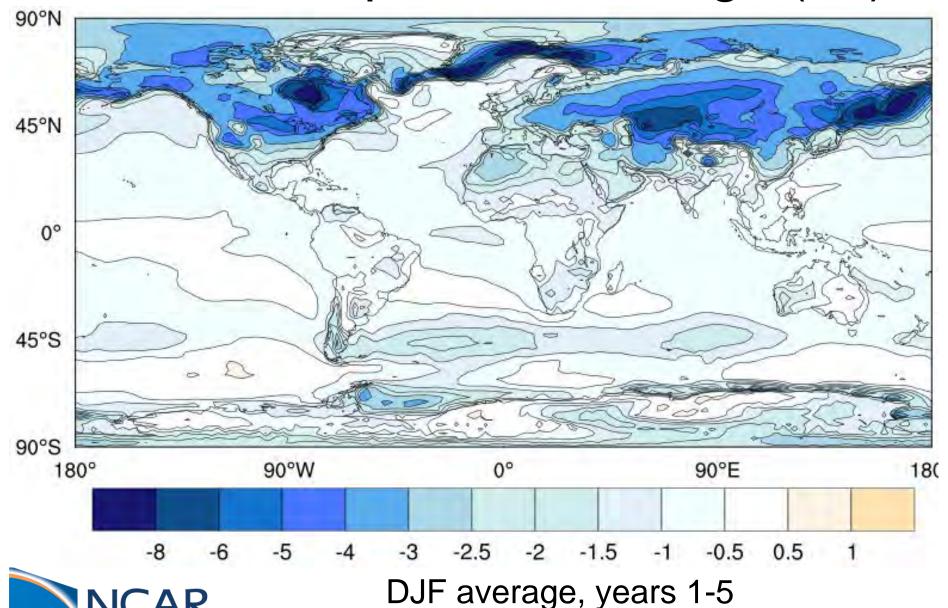


Mills et al., Multidecadal global cooling and unprecedented ozone loss following a regional nuclear conflict, *Earth's Future*, 2014.

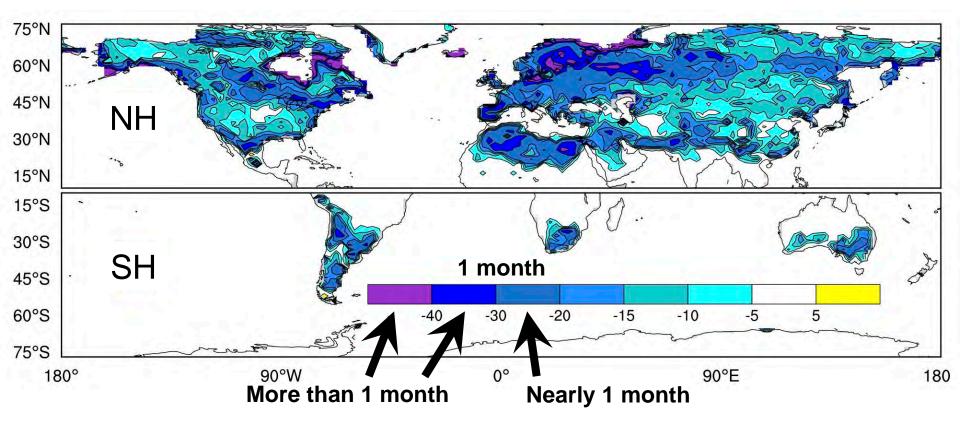
### Global climate response to regional war



### Surface temperature change (°C)

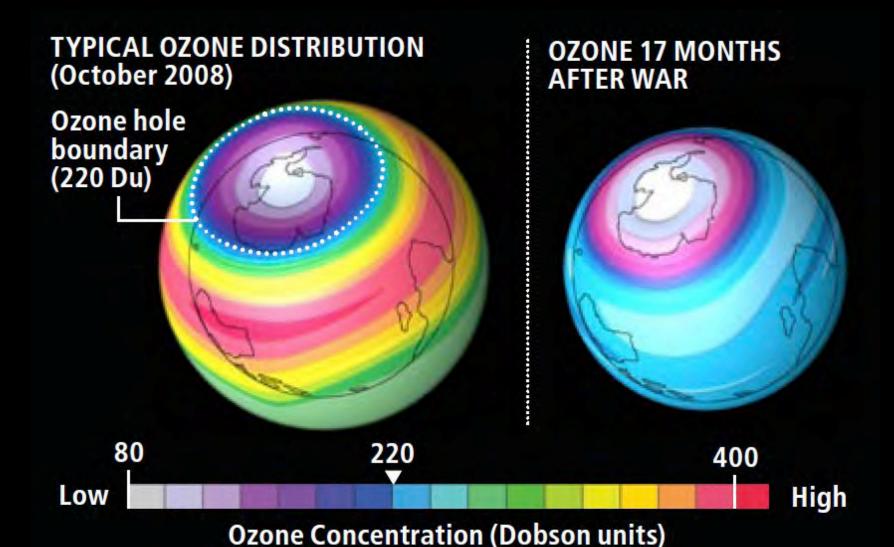


# Change in growing season (days), years 2-6 average





### Global ozone hole after regional nuclear war





Mills et al., Massive global ozone loss predicted following regional nuclear conflict, Proc. Nat. Acad. Sci., 2008

### Consequences of severe ozone loss







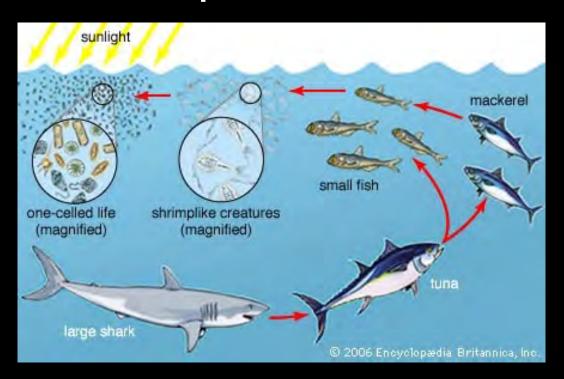
See discussion and references in Pierazzo, et al., Ozone perturbation from medium-size asteroid impacts in the ocean, Earth and Planetary Science Letters, 2010.

Increased susceptibility to insects and pathogens





### Consequences of severe ozone loss



Aquatic ecosystems supply more than 30% of the animal protein consumed by humans

The combined effects of elevated UV levels alone on terrestrial agriculture and marine ecosystems could put significant pressures on global food security



### Ways agriculture can be affected by a nuclear war

- Colder temperatures
  - shortened frost-free growing season
  - cold spells during growing season
  - slower growth → lower yield
- Darkness
- Less rainfall
- Enhanced ultraviolet radiation from ozone
- Radioactivity
- Toxic chemicals in atmosphere, soil, and water
- Lack of water supplies
- Lack of fertilizer
- Lack of fuel for machinery
- Lack of pesticides (but not of pests)
- Lack of seeds (and those that do exist are genetically engineered for the current climate)
- Lack of distribution system

Currently being modeled



# Following a nuclear war between India and Pakistan, reduced global temperatures, precipitation, and sunlight reduce food production globally

	First 5 years	Second 5 years
US maize	- 20%	- 10%
US soybeans	- 15%	- 10%
China maize*	- 15%	- 12%
China middle season rice*	- 26%	- 21%
China spring wheat*	- 26%	- 20%
China winter wheat*	- 38%	- 23%



Özdoğan et al., Impacts of a nuclear war in South Asia on soybean and maize production in the Midwest United States, *Climatic Change*, 2012, 116, 373.

\*Xia et al., Decadal reduction of Chinese agriculture after a regional nuclear war, *Earth's Future*, 2015; 3, 27-48.



### **Chronic malnutrition today**821.6 million people in 2018

People experiencing moderate or severe food insecurity (SDG Indicator 2.1.2)

2018: 2.014 billion

2014: 1.696 billion

(FAO 2019)



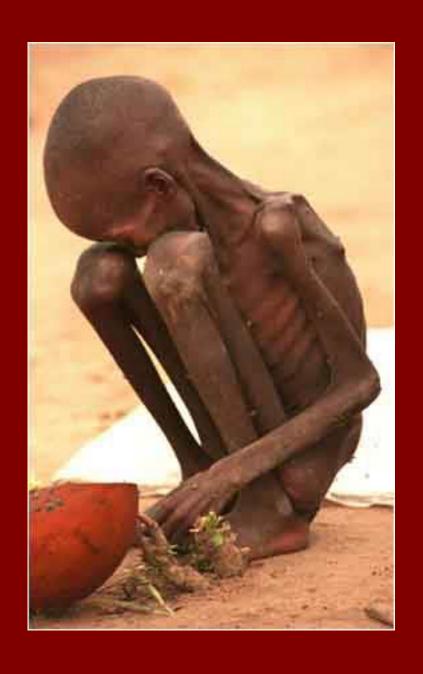
### Global food supply

Global cereal ending stocks 2018/19 forecast: 115 days utilisation

Based on FAO Cereal Supply and Demand Brief 4 April 2019

People dependent on imported food for >50% energy intake:

>300 million



# Limited regional nuclear war with low yield weapons:

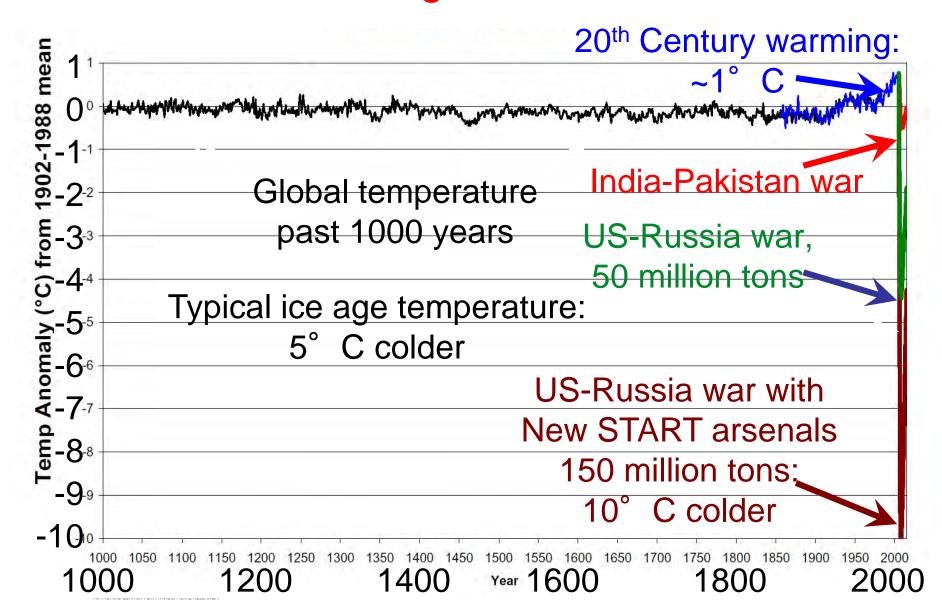
2 billion victims of starvation from nuclear famine?

+ epidemics, conflict





### Surface temperature after global conflict drops to ice age conditions



# Bulletin of the Atomic Scientists

#### IT IS 5 MINUTES TO MIDNIGHT



Feature

### Self-assured destruction: The climate impacts of nuclear war

**Alan Robock and Owen Brian Toon** 

Bulletin of the Atomic Scientists
68(5) 66–74
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DOI: 10.1177/0096340212459127
http://thebulletin.sagepub.com



Nuclear weapons are global suicide bombs

#### Disarmament is ... in reverse

### Not disarming:

- No nuclear-armed state is disarming
  - No negotiations underway (except ?N Korea)
- Agreements abrogated/violated ABM, JCPOA (Iran), INF
   Treaty ... ? New START, CTBT ...

### **But arming:**

- All nuclear-armed states investing massively in indefinitely retaining and modernising their arsenals, adding new capacities
  - > US\$105 billion/y increasing
  - USA:
    - currently warhead spending at all-time record level
    - US\$ 1.5-2 trillion over next 30y

### Accidental nuclear war



9 November 1979 USA/NORAD training tapes appeared to show real Soviet strike



3 June 1980
USA/SAC faulty computer chip shows Soviet missile launches



26 September 1983 – Stanislav Petrov incident Sunlight reflects off clouds towards Soviet monitoring satellite



Soviet leadership mistakenly concluded that a large scale NATO exercise, Able Archer 83, was the cover for a planned surprise attack



25 January 1995 – Norwegian rocket incident Russia detects USA/Norway scientific rocket launch off Norway coast

#### Planned nuclear war

- First use considered and threatened by almost all nucleararmed states since Japan 1945
  - eg US at least 25 times (Ellsberg D. The doomsday machine. 2017)
    - USSR Berlin 1948,58, 61,7; Suez 56; Cuba 62; Arab-Israel 73; Iran 80
    - N Korea 1950,1,3, 1968, 76, 95, 2003, 17
    - Vietnam 1954, 68, 9-72
    - Egypt 1956
    - China 1953,4/5,8
    - Iraq 1958, 1991, 98, 2002
    - Libya chemical weapons facility 1996
- Recent escalation of threats coupled with more aggressive deployments, exercises
  - US/NATO Russia
  - India-Pakistan
  - Israel
  - North Korea US



"Humanity now faces two simultaneous existential threats, ... nuclear weapons and climate change – were exacerbated this past year ...

It's a state as worrisome as the most dangerous times of the Cold War, ...

The global nuclear order has been deteriorating for many years, ... The architecture of nuclear arms control built up over half a century continues to decay, while the process of negotiating reductions in nuclear weapons and fissile material stockpiles is moribund. The nuclear-armed states remain committed to their arsenals, are determined to modernize their capabilities, and have increasingly espoused doctrines that envision nuclear use."

# 2019: It is still2 minutes tomidnight

BAS Board of Sponsors

– 15 Nobel laureates



"The existential threat that nuclear weapons pose to humanity ... disarmament is the only guaranteed means to prevent nuclear war ...."

Antonio Guterres, UN Secretary General, 24 May 2018 "We are living in dangerous times.

We are on the brink of a new cold war.

... a resurgence of civil conflict, after more than two decades of decline.

Global military spending has more than doubled in inflation-adjusted dollars since the end of the cold war.

Morally repugnant weapons ... have been repeatedly used.

Arms control agreements have been abandoned or disrupted."



Select Committee on International Relations

7th Report of Session 2017-19

### Rising nuclear risk, disarmament and the Nuclear Non-Proliferation Treaty

"We are now dangerously close to a world without arms control agreements, paving the way for a new arms race and for increased risk of nuclear weapons use.

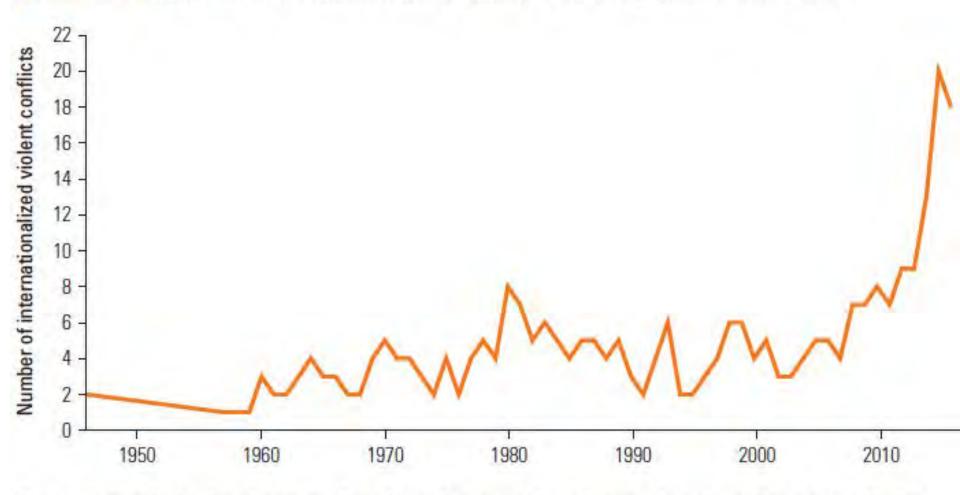
...the risk of nuclear weapons being used is now greater than it has been since the end of the Cold War."

# United States intelligence community annual assessment of worldwide threats 29 January 2019

warned that:

the effects of climate change and environmental degradation increase stress on communities around the world and intensify global instability and the likelihood of conflict, causing the danger of ... nuclear war to grow

FIGURE 1.5 Number of Internationalized Violent Conflicts, Global, 1946–2016



Source: Uppsala Conflict Data Program and Peace Research Institution Oslo (Allansson, Melander, and Themnér 2017; Gleditsch et al. 2002).

### Cyberwarfare and nuclear weapons



US National Security Agency computers hacked 2017

US National Cybersecurity and Communications Integration Center, Arlington Va, NYT 29.4.15

### Fissile materials global stockpiles – Jan 2017

Weapon yield	Plutonium	Highly enriched uranium
1 kiloton	1 - 3 kg	2.5 - 8 kg
20 kiloton	3 - 6 kg Nagasaki bomb 6 kg	5 - 16 kg
IAEA "significant quantities"	8 kg	25 kg
Modern nw	4 kg US declassified	12 kg

## Highly enriched uranium (HEU)

- •1340 (±125) tons HEU
- •99% in n armed states
- •India, Pak, Ru, DPRK producing
- •>74,400 1<sup>st</sup> gen implosion nw @ 18 kg

### Separated plutonium

- •520 (± 10) tons growing
- •230t military, 290t civilian
- All weapons usable
- •India, Pak, Israel, DPRK prod for nw
- •~130,000 nw @ 4 kg

www.fissilematerials.org

"We the peoples of the United Nations determined to save succeeding generations from the scourge of war ..."

### UN General Assembly Resolution 1.1, 1946



Figure 3.1. The first meeting of the United Nations General Assembly, London, January 1946. Passed on 24 January 1946, General Resolution 1.1 established a commission to draw up a plan "for the elimination from national armaments of atomic weapons." Source: United Nations Photo.

### The obligation to disarm

### Nuclear non-proliferation Treaty(NPT)

- 191 states parties
- entered into force 1970

#### Article VI

"Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament ...."

#### International Court of Justice

Advisory Opinion 8 July 1996, unanimously:

"...there exists an obligation to pursue in good faith and bring to conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control."



# Indiscriminate inhumane weapons banned by international treaty



- [Expanding bullets 1899]
- Biological weapons1972
- Chemical weapons 1993
- Landmines 1997
- Cluster munitions 2008

- The main basis for bans on all these has been humanitarian – unacceptable harm with any use
- Proven process: stigmatise prohibit eliminate

### Norms matter

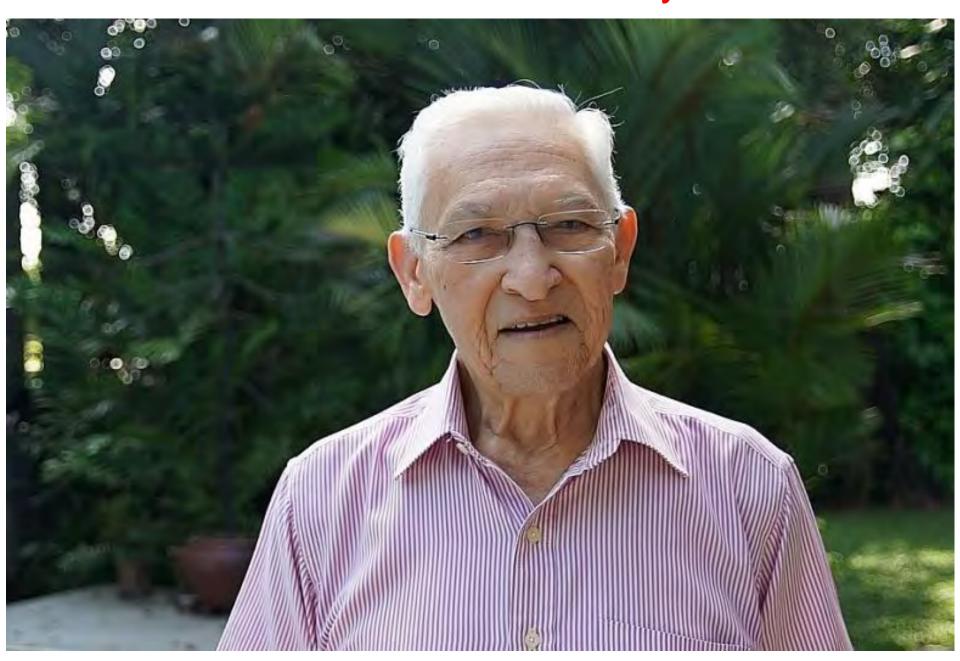
"How many States today boast that they are "biological weapon states" or "chemical weapon States"?

Who is arguing now that bubonic plague or polio are legitimate to use as weapons under any circumstance, whether in an attack or in retaliation? Who speaks of a bio-weapon umbrella?"



Angela Kane, when UN High Representative for Disarmament Affairs, NZ, 2014

### Datuk Dr Ron McCoy





Founded by IPPNW and MAPW in Melbourne

Campaign coalition: 541 partner organisations in 103 countries

Goal: A treaty for prohibit and provide for the elimination of nuclear weapons

Based on the unacceptable, catastrophic consequences of any use of nuclear weapons

www.icanw.org

## Bringing the era of nuclear weapons to an end

ICRC President Jakob Kellenberger 20 April 2010 to Geneva diplomatic corps



- "Nuclear weapons are unique in their destructive power, in the unspeakable human suffering they cause, in the impossibility of controlling their effects in space and time, in the risks of escalation they create, and in the threat they pose to the environment, to future generations, and indeed to the survival of humanity.
- "... preventing the use of nuclear weapons requires ...
  negotiations aimed at prohibiting and completely eliminating
  such weapons through a legally binding international treaty."

### May 2010 NPT Review Conference

- A commitment to "achieve the peace and security of a world without nuclear weapons."
- "expresses ...deep concern about the catastrophic humanitarian consequences of any use of nuclear weapons, and reaffirms the need for all States at all times to comply with applicable international law, including international humanitarian law."

### **Humanitarian Impact of Nuclear Weapons**







- Three intergovernmental conferences on HINW, attracting most of the world's governments, concluded with no significant challenge:
  - any use of nuclear weapons would be a catastrophe
  - no effective humanitarian response is possible
  - risk of nuclear weapons use has been underestimated, is growing, and exists as long as the weapons do
  - there is a legal gap: the most destructive of all weapons are not explicitly prohibited

### Austrian → Humanitarian Pledge to fill the legal gap



# How can states without NW change the game?

 Nuclear-armed states currently arming and modernising, not serious about disarmament

- States can't eliminate weapons they don't own, but they can de-legitimise, stigmatise and ban nuclear weapons
  - if they use the right forum
    - Not NPT meetings
    - Not UN Conference on Disarmament

# United Nations Conference to Negotiate a Legally Binding Instrument to Prohibit Nuclear Weapons, Leading Towards Their Total Elimination

16 Feb, 27-31 March, 15 June – 7 July 2017



Conference President Ambassador Elayne Whyte Gómez, Costa Rica

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Topics & Issues



UN conference to negotiate a legally binding instrument to prohibit nuclear weapons, leading towards their total elimination

A legally binding instrument to prohibit nuclear weapons would establish general prohibitions and obligations as well as a political commitment to achieve and maintain a nuclear-weapon-free world.

## Sue Coleman-Haseldine, Kokotha nuclear test survivor, South Australia



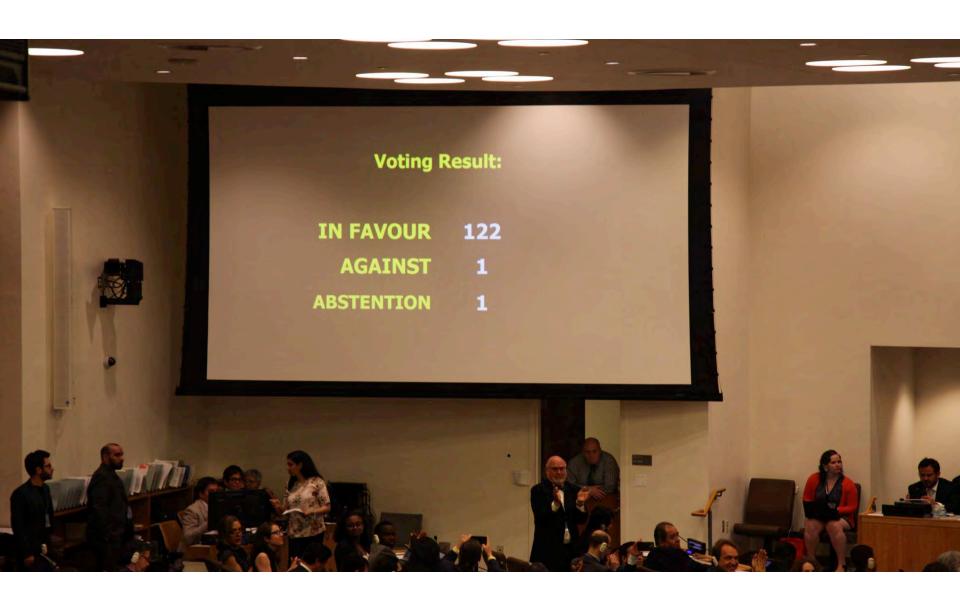


Karina Lester, second generation nuclear test survivor from Anangu Pitjantjara Yankunytja-tjara Aboriginal land in South Australia

Karina Lester, Anangu Pitjantjatjara Yankunytjatjara 2<sup>nd</sup> generation nuclear test survivor South Australia



## 1047:02 am, 7 July 2017









"Without the leadership so ably displayed by ICAN, we would not have achieved our objective today."

Thomas Hajnoczi, Austrian Ambassador, 7.7.17



9 Aug 2019:

70 signatures 25 ratifications





We are saying to our children, YES, it is possible to inherit a world free from nuclear weapons.

WHYTE GOMEZ
President, U.N. Nuclear Weapons Ban Conference

### Treaty on the Prohibition of Nuclear Weapons

- Reflects health /humanitarian evidence
  - "Catastrophic consequences cannot be adequately addressed, pose grave implications for human survival, the environment, socioeconomic development, ... food security and the health of current and future generations"
  - First disarmament treaty to cite disproportionate impact on women and girls and Indigenous peoples
- Categorical and comprehensive prohibition

- Provides pathways for all states to join:
  - Possess NW
  - Prior possession NW
  - NW stationed
  - Assist in preparations to use NW
- Maintains/strengthens safeguards
- Obligations:
  - Victim assistance and environmental remediation
  - International cooperation
  - Promote universalisation
- Indefinite duration
- No reservations
- Entry into force: 50 ratifications

**AMERICAS** 

## A Treaty Is Reached to Ban Nuclear Arms. Now Comes the Hard Part.

By RICK GLADSTONE JULY 7, 2017

## Leadership



New Zealand Prime Minster Jacinda Ardern

#NuclearBan

# WISH YOU WERE HERE.





# "There are no grey areas when it comes to survival"

... I don't want your hope. ... I want you to panic. I want you to feel the fear I feel every day. And then I want you to act.

I want you to act as you would in a crisis. I want you to act as if our house is on fire.
Because it is."



Greta Thunberg World Economic Forum, Davos 25 Jan 2019

### How the Treaty matters 1

### De-legitimises nuclear weapons

- Completes the prohibitions on weapons of mass destruction
- Normative force: moral, political, legal
- Grows over time
- Removes 'prestige' associated with possession and proliferation
- Drives divestment

### Changes party and non-party behavior

- eg landmines ban, chemical weapons
- Prohibition on assistance
- National legislation including criminal sanctions
- Obligation to promote universalization

### How the Treaty matters 2

- Provides a pathway for all states
  - To fulfil their obligation to negotiate and achieve disarmament
- Strengthens international law
  - Humanitarian (IHL), also human rights ...
- A moment of truth: are you sincere about disarmament?

### The Treaty matters

### US to NATO 17 Oct 2016

Defense impacts of potential UN nuclear weapons ban treaty

"The US calls on all allies and partners to vote against negotiations on a nuclear weapons ban treaty, not to merely abstain. ... if negotiations do commence, we ask allies and partners to refrain from joining them."

#### US to NATO 17 Oct 2016

- "aims primarily to stigmatize nuclear weapons and nuclear deterrence ...
- "The effects of a nw ban treaty [NWBT] could be wide-ranging and degrade enduring security relationships.
- "...aims to delegitimize the concept of nuclear deterrence
- "... could impact non-parties as well as parties, and could even have an impact prior to its entry into force
- "Such treaty elements could and are designed by ban advocates to-destroy the basis for US extended nuclear deterrence.
- "A stance that delegitimizes nuclear deterrence would be inconsistent with these core concepts [nw as a core component of NATO's deterrence and defense posture]
- "The concept of nuclear burden-sharing as embodied by forward-based US nw in Europe, and the dual capable aircraft mission ... entrusted to certain Allies - could become untenable

. . .



### Moral leadership

" ... a crucial basis for their elimination."

Peter Maurer ICRC President



"the possession of nuclear weapons is immoral"

Pope Francis 12 Jan 2019



### WMA STATEMENT ON NUCLEAR WEAPC Revised Reykjavik, Iceland Oct 2018

- "... joins with others ..., including the Red Cross and Red Crescent movement, International Physicians for the Prevention of Nuclear War, the International Campaign to Abolish Nuclear Weapons, and a large majority of UN member states, in calling, as a mission of physicians, on all states to promptly sign, ratify or accede to, and faithfully implement the Treaty on the Prohibition of Nuclear Weapons; and
- Requests that all National Medical Associations join the WMA in supporting this Declaration, ... educate the general public and to urge their respective governments to work urgently to prohibit and eliminate nuclear weapons, ..."

#### Government action at all levels

- All levels of government have a responsibility to act to protect their citizens
- Cities urging their federal government to join the TPNW: ICAN Cities Appeal
  - Melbourne, Sydney, Canberra, Bayside, Blue Mountains, Lismore,
     Wollongong, Darebin, Fremantle, Inner West NSW, Moreland, Randwick,
     Yarra, Yarra Ranges, Newcastle, Hobart, Benalla, Augusta Margaret
     River, Cockburn, ...
  - Madrid, Barcelona, Geneva, Mainz, Milan, Manchester, Trondheim,
     Toronto, Baltimore, Los Angeles, 1700+ Japanese cities incl Hiroshima
     and Nagasaki, Washington DC, Paris, Oslo, Vancouver, ...



# The City of Hiroshima PEACE DECLARATION

August 6, 2019





"I call on the government of the only country to experience a nuclear weapon in war to accede to the *hibakusha's* request that the TPNW be signed and ratified."

Mayor Kazumi Matsui

#### Government action at all levels

#### States

- Assembly and Senate of California, 5 Sep 2018:
  - "The Legislature urges our federal leaders and our nation to embrace the Treaty on the Prohibition of Nuclear Weapons and make nuclear disarmament the centerpiece of our national security policy; ..."
- Similar resolutions by state legislatures in New Jersey and Oregon

#### National parliaments

 US House of Reps McGovern-Blumenauer resolution 302: Embracing the goals and provisions of the Treaty on the Prohibition of Nuclear Weapons, 8 April 2019

# OSCE Parliamentary Assembly Luxembourg Declaration July 2019



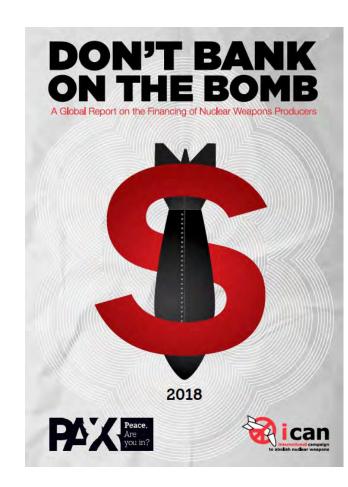
Organisation for Security and Cooperation in Europe

"28. Urges participating states to sign the Treaty on the prohibition of Nuclear Weapons of 2017, the first legally binding international agreement to comprehensively prohibit nuclear weapons, with the goal of their total elimination"

#### Money is moving

### Divestment – banks, sovereign wealth funds, pension funds etc

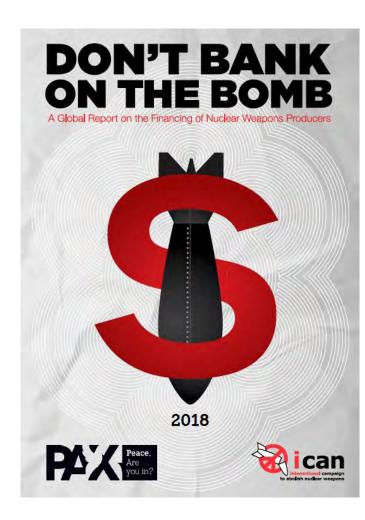
- Cooperative Bank (UK), 2015;
   Amalgamated Bank (US) Sep 2017
- Norwegian Pension Fund largest wealth fund (US\$1.1 trillion) pulled out of BAE Systems because nw "violate fundamental humanitarian principles" Jan 2018
- Dutch ABP largest pension fund in Europe will divest all holdings in nw companies, product by definition harmful to humans, Jan 2018
- Deutsche Bank, May 2018
- Largest Belgian KBC bank, June 2018
- AP4 Swedish pension fund, Jan 2019
- Resona Holdings Japan, finance Jan 2019
- Cities of Cambridge (MA), Takoma Park,
   Ojai, (Calif); Leuven (Belg)
- Ghent University



#### Money needs to move

#### Australia

- Hall of Shame:
  - A\$6529.3 m to nw makers Jan 2017 – Jan 2019 by:
    - ANZ \$1904 m
    - Macquarie \$2197 m
    - Westpac \$272.2 m
    - CBA \$517m
- Hall of Fame:
  - Australian Ethical
  - Future Super

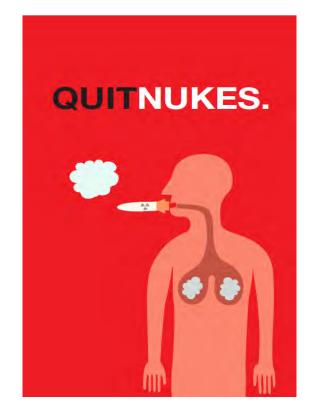


#### Walking the talk – first do no harm



#### **University of Melbourne**

"Partnering with nuclear weapons companies is unethical and unacceptable."



#### Unacceptable weapons

Statement for students, staff and alumni of the University:

- I will not accept research or other funds from nor collaborate with such companies;
- I want my university to avoid or end funding from, including for research, and collaboration with such companies.

#### Nuclear "weasels"



Nuclear-dependent states which claim to support disarmament but encourage and assist a nuclear-armed state in possible use of nuclear weapons

- NATO states eg Canada, Norway
- Australia, Japan, South Korea

Currently more part of the problem than the solution

## Australia: conflicted by claimed reliance on nuclear weapons and assisting their possible use

Australia has been the most active nuclear-dependent opponent of Treaty

- Opposed, sought to undermine at every stage
- FOI: boast re "heavy lifting" for US in disrupting OEWG
- First multilateral disarmament negotiations Australia boycotted
- Rapid July 2017 statement by Foreign Minister Bishop that Australia would not join treaty
- No differentiation re current US nuclear re-armament, threats
- Australia has joined all other weapons prohibition treaties
  - Was a leader on some eg Chemical Weapons Convention

#### Australia – you're standing in it

"Our most urgent global challenges won't be solved by countries acting alone. We stand for an international order based on rules and cooperation."

#MultilateralismMatters

Marise Payne Foreign Minister





11 June 2019

### The TPNW is compatible with a military alliance with a nuclear-armed state ...

- ... provided prohibited activities are excluded
- Nothing in ANZUS Treaty (nor NATO) stipulates extended nuclear deterrence
- NATO already has divergence in nuclear policies:
  - Denmark, Norway, Spain do not allow deployment of nw in peacetime
  - Iceland, Lithuania do not allow deployment of nw anytime
- 11 of 17 US "Major Non-NATO Allies" voted for treaty adoption:
  - Egypt, Jordan, New Zealand, Argentina, Bahrain, Philippines,
     Thailand, Kuwait, Morocco, Afghanistan, Tunisia
  - 3 of these have signed to date (Thailand, Philippines, NZ)
  - Thailand and NZ have ratified
  - No issues for non-nuclear military cooperation evident

"For the greatest benefit to mankind"

#### 2017 NOBEL PEACE PRIZE

International Campaign to Abolish Nuclear Weapons (ICAN)





 "... for its work to draw attention to the catastrophic humanitarian consequences of any use of nuclear weapons and for its ground-breaking efforts to achieve a treaty-based prohibition of such weapons."



# The first Nobel Peace Prize born in Australia







### Perspective

### The 2017 Nobel Peace Prize and the Doomsday Clock — The End of Nuclear Weapons or the End of Us?

Lachlan Forrow, M.D., Tilman Ruff, M.B., B.S., and Setsuko Thurlow, C.M., M.S.W.

the International Campaign to Abolish Nuclear Weapons (ICAN) may mark a turning point in efforts to ensure that humanity survives

stan, India, Israel, and North Korea — maintain nearly 15,000 nuclear weapons. Almost 20 years after warnings were published in the Journal and elsewhere about