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FUTURE CHALLENGES IN BW DISARMAMENT

WHAT IS BIOLOGICAL WARFARE?

Biological warfare is the intentional application against humans, animals or plants for hostile purposes of

- + disease-causing micro-organisms (e.g., bacteria);
- + other entities that can replicate themselves (e.g., viruses, infectious nucleic acids and prions)
- + toxins, poisonous substances produced by living organisms (and their synthetically manufactured counterparts), including
 - × micro-organisms (e.g., botulinum toxin),
 - × plants (e.g., ricin derived from castor beans), and
 - × animals (e.g., snake venom)

TODAY'S ASPECTS OF THE BW THREAT

- ✘ **Deliberate use of disease in war**
 - + Against humans
 - + Against animals and plants
 - + For economic and societal disruption
- ✘ **Terrorism and criminal activities**
- ✘ **Misuse of scientific and technological developments**

PERSPECTIVES ON THE BW THREAT

- ✘ **Use of biological and toxin weapons has so far been extremely rare**
 - + Since 1975, fewer than 100 persons have been killed through deliberate disease
 - ✘ Most cases involved toxins
 - ✘ Most cases were criminal in nature
 - + Major terrorist BTW programmes have been total failures (Rajneesh Cult; Aum Shinrikyo)
 - + However, anthrax letters demonstrate the potential for low-casualty – high-impact events
 - + Most bioterror events do not involve actual agents (hoaxes)
- ✘ **Nature poses by far the greatest challenge**
 - + Infectious diseases are responsible for
 - ✘ > 13 million deaths annually (\approx number of fatalities in the Twin Towers attacks on 9/11 every two hours)
 - ✘ $\frac{1}{4}$ of all deaths worldwide
 - ✘ $\frac{1}{2}$ of all deaths in developing countries
 - + 1918: Spanish Flu caused more fatalities worldwide than World War 1
 - + Emerging diseases: SARS; West Nile Virus; Avian flu (H5N1 and H7N9)
 - + AIDS in Africa: threat to social fabric of societies
 - + Foot and Mouth Disease outbreak in the UK; Swine Fever in Taiwan, etc. (economic impact)
- ✘ **We have arrived in a post-proliferation stage**
 - + Biotechnology (equipment, processes, products, knowledge) has become universal
 - + Developing countries (Cuba, India, Indonesia, Iran, Malaysia, Pakistan, etc.) have become original sources of innovation and, in some cases, technology exports

MODERN BIOLOGICAL WEAPONS AND WARFARE: CONFLUENCE OF SEVERAL TRENDS

- × **The scientific understanding of disease**
 - + Three critical characteristics of disease uncovered in 19th century:
 - × Infectious disease is caused by an agent (pathogen)
 - × The agent can be transmitted from one living organism to another (infectiveness)
 - × One agent is responsible for one disease only
 - + Manipulation of the pathogen
 - × Isolation
 - × Cultivation (while maintaining its infectiveness)
 - × Production in large quantities
 - × Effective dissemination
- × **The new industrial revolution**
 - + Biotechnology & informatics are the driving force
 - + Major impact on all aspects of life in developed and developing countries
 - + Biotechnology has accelerated development of societies (emerging economies)
 - + Convergence with other scientific disciplines (e.g., chemistry, informatics, etc.)
- × **Military application of new scientific and technological developments has become commonplace (= exploitation of 'dual-use' potential)**
 - + Pressures to exploit new biology and biotechnology for military goals will grow
 - + Many arguments in favour framed in humanitarian discourse (e.g., so-called non-lethal weaponry → convergence with chemistry for incapacitating agents)

POTENTIAL FOR FUTURE WEAPON DEVELOPMENT

- × **Biology and biotechnology allow for the manipulation of disease on the sub-cellular level (genes, biochemical processes, etc.)**
 - + May make the effects of biological agents more controllable
 - + May produce agents with higher infectivity or ability to overcome medical defences

- × **Interference with the natural immune system rather than dissemination of pathogen may become new mode of attack**

- × **Improvements in analytical and production processes:**
 - + Higher quality & higher quantities in smaller units
 - + Technologies become common place (classroom equipment; bio-hacker laboratories)

- × **Possible application of synthetic biology and nanotechnology in agent design or dissemination technology, as well as in defence, protection and prophylaxis**

- × **May contribute to novel ways of agent dissemination**
 - + Aerosol techniques
 - + Targeting of specific genes

CORE TREATIES BANNING BW

- ✘ **1972 Biological and Toxin Weapons Convention (BTWC)**
 - + Bans development, production and stockpiling of BW and toxins
 - + Ban on use explicitly referred to at 4th Review Conference (1996)

- ✘ **1925 Geneva Protocol**
 - + Bans the use of CBW in war

- ✘ **1993 Chemical Weapons Convention (CWC)**
 - + Bans development, production, stockpiling and use of toxins

PREVENTING BIOLOGICAL WEAPONS

- ✘ **Logical point of entry: weapons and their application**
 - + However, treaties only govern inter-state behaviour
 - ✘ Biological warfare (states) / terrorism / crime
 - need for domestic (criminal, penal) legislation
 - ✘ *Prevention of terrorism:*
 - also responsibility of the individual

- ✘ **Possible additional points of entry**
 - + Prevention of disease (irrespective of origin of outbreak)
 - + Preserving biology and biotechnology for peaceful purposes (societal advancement, economic development, health security, food security, etc.)
 - + Environmental security (impact of accidental or purposeful introduction of organisms in new biotopes or of modified organisms)

A MULTI-LAYERED & MULTI-SECTORIAL GOVERNANCE MODEL?

× **Weapon control**

- + Multilateral agreements (Geneva protocol, BTWC, CWC)
- + Proliferation prevention arrangements (Australia Group, PSI, Global Partnership, etc.)
- + UN agencies: UNSC, UNODA, 1540 Committee, UNEP, UNDA, etc.
- + National laws and regulations (criminal, penal, trade, safety, etc.)

× **Disease prevention**

- + WHO, FAO, OIE + their regional organisations/initiatives

× **Crime and terrorism**

- + UNSC Resolutions (1540, terrorism resolutions, etc.)
- + Interpol, Europol, etc.

× **International transfers**

- + WTO, WCO, etc.

× **Economic actors**

- + Companies (national, multinational, transnational)
- + Research institutions
- + Individuals

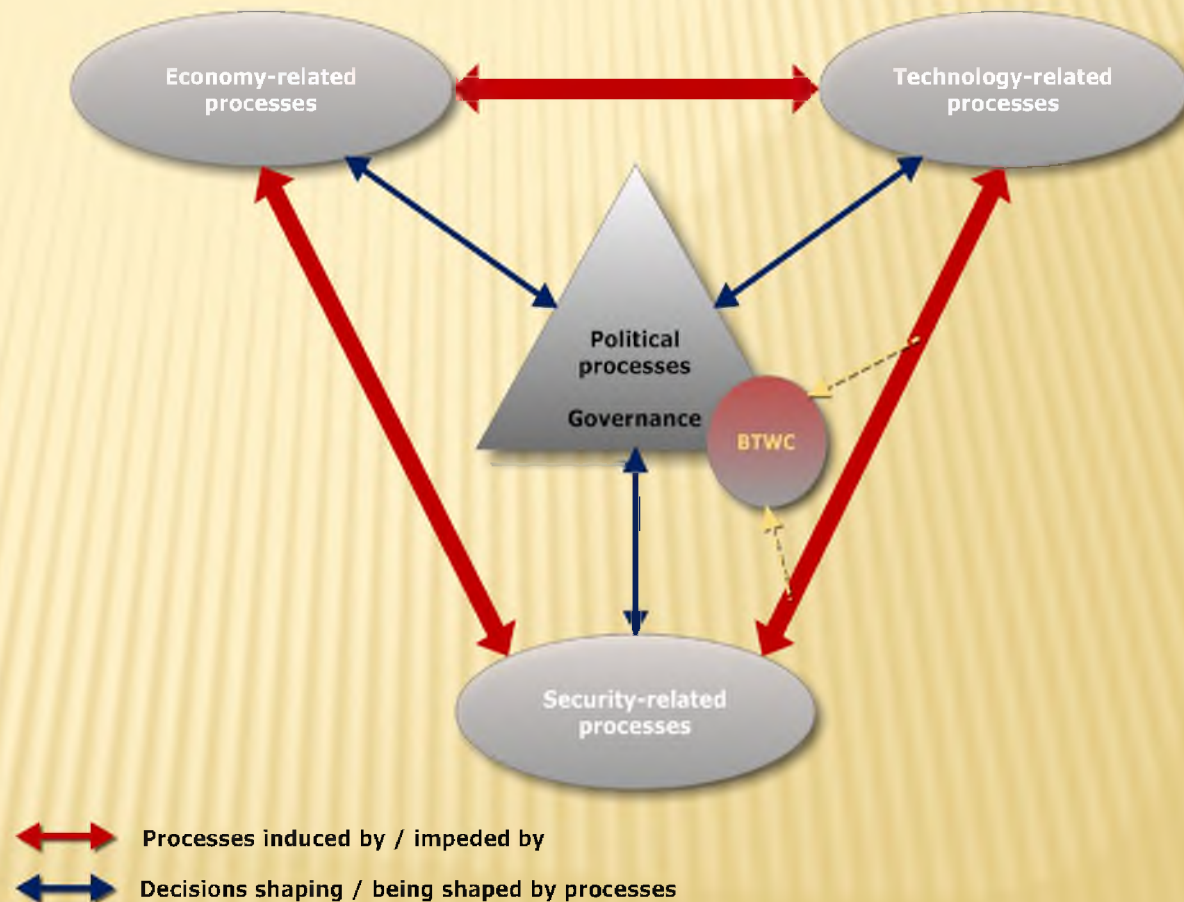
× **Instruments of collective & individual governance**

- + Codes of conduct; Professional codes; Ethics
- + Awareness-raising & education
- + Whistle-blower protection schemes

WHAT FUTURE ROLE FOR THE BTWC?

- No unified model for governance of weapon control anymore
- New stakeholders and security actors
- Increased role of non-state national & transnational actors
- Shifting relative balances of powers (economy, politics, military) and multiple power centres (polycentrism)
- Geographical decentralisation of business and industry activities
- South-south trade patterns and impact on technology diffusion

- *Declining role of states in shaping developments, but many states reject formal governance responsibilities for non-state actors under BTWC*



The logo for 'THE TRENCH' features a large, light gray silhouette of a trench in the background. In the foreground, the word 'THE' is written in a bold, brown, sans-serif font. Below it, the word 'TRENCH' is written in a larger, bold, dark green, sans-serif font. The letter 'O' in 'TRENCH' is replaced by a solid brown circle. To the right of the text is a stylized, black and white illustration of a motorcycle, shown from a side profile, with its front wheel and handlebars visible.

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Recalling where science, industry and military art converged
Challenging entrenched positions

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