

# Verification of Chemical Weapons

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# Overview

- **Part I:** *The Chemical Weapons Convention (CWC)*
- **Part II:** *Future challenges for chemical weapon (CW) disarmament*
- **Part III:** *The challenges posed by Syria*
- **Part IV:** *Conclusions*

Part I

# THE CHEMICAL WEAPONS CONVENTION

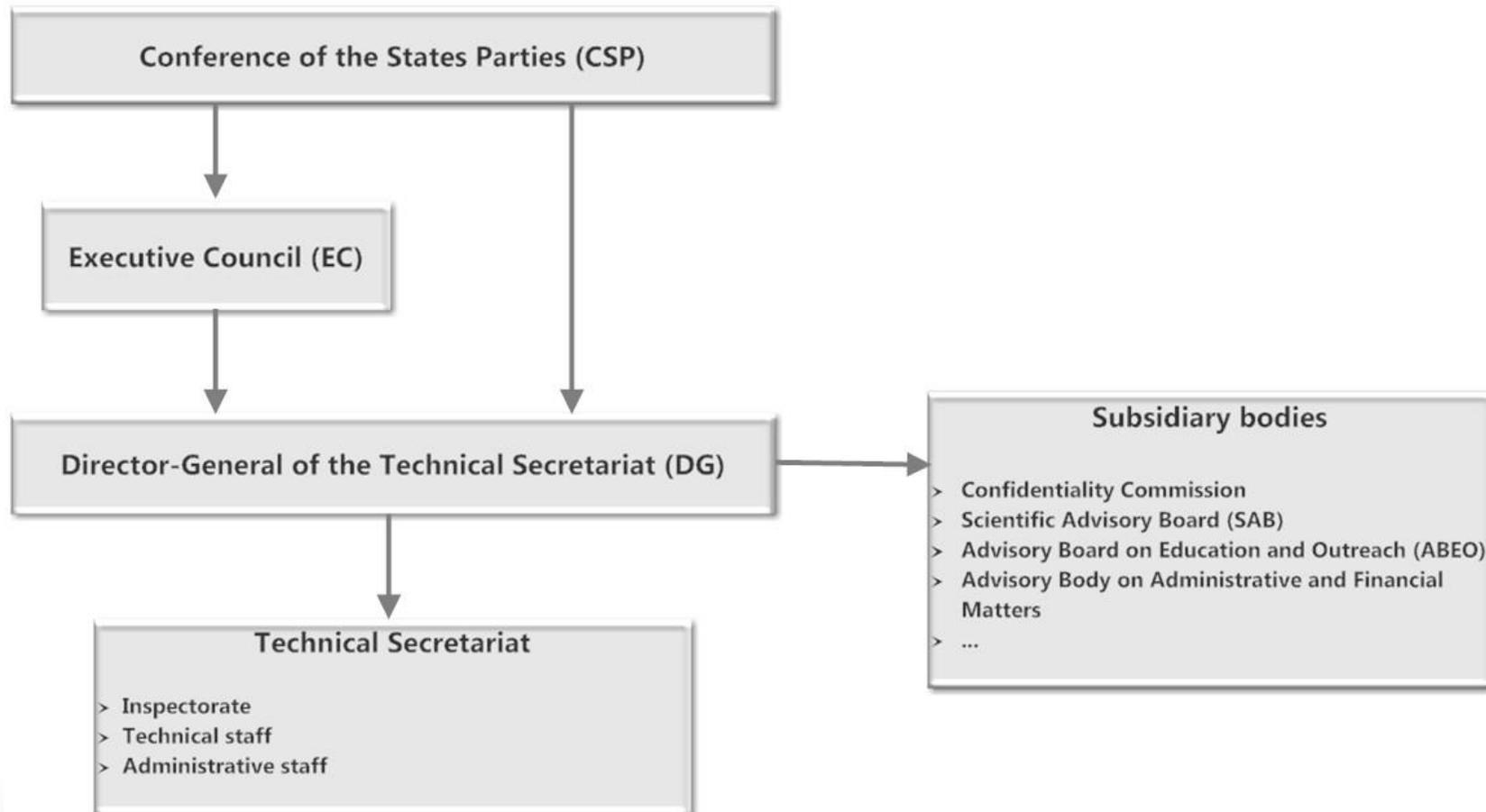
# Disarmament

- Basic principles
  - Reduction of levels of specified weapon categories to *zero*
  - *Removal* of the weapons category from military doctrine
- Differences with arms control (incl. arms reductions)
  - *Management of levels of weapons* within specified quantitative or qualitative boundaries
  - Weapon category *retains (residual) value* in military doctrine

# The Chemical Weapons Convention (CWC)

- **A quasi-universal disarmament treaty**
  - 192 States Parties (as of January 2018);
  - 4 non-States Parties (DPRK, Egypt, Israel, South Sudan)
    - Largest weapon control treaty (followed by NPT and BTWC)
    - December 2017: South Sudan announced accession
    - January 2018: Announcement accession Palestine; then withdrawn
- **Characteristics**
  - Finite goal: No chemical weapons (CW) for anybody
  - Integrated regime
    - 1 treaty for disarmament, non-proliferation, cooperation & technology transfers, assistance, verification, complaints & compliance, ...
  - Equal, non-discriminatory rights; equal obligations for all
  - International organisation to oversee treaty implementation:
    - Organisation for the Prohibition of Chemical Weapons (OPCW)

# OPCW Structure



# Core components of the CWC

- Prohibitions on
  - Possession, acquisition, and use
  - Proliferation (= technology transfers for illicit purposes)
  - Based on 'General Purpose Criterion' (GPC) to deal with dual-use technology
- Verification tools
  - (National technical means)
  - Confidence-building measures
  - International organisation / National authorities
  - Reporting
  - On-site inspections and monitoring
- Conflict resolution mechanisms
- Emergency assistance in case of use or threat of use of CW
- Investigation of alleged use and emergency assistance
  - Today applied with respect to chlorine, mustard and sarin use allegations in Syria
- 'Non-security' clauses (cooperation for peaceful purposes)

# What is a 'chemical weapon'?

- Article II

1. 'Chemical Weapons' means the following, together or separately:

- (a) Toxic chemicals and their precursors, except where intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes;

- (b) Munitions and devices, specifically designed to cause death or other harm through the toxic properties of those toxic chemicals specified in subparagraph (a), which would be released as a result of the employment of such munitions and devices;

- (c) Any equipment specifically designed for use directly in connection with the employment of munitions and devices specified in subparagraph (b).

2. 'Toxic Chemical' means:

Any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals. This includes all such chemicals, regardless of their origin or of their method of production, and regardless of whether they are produced in facilities, in munitions or elsewhere.

3. 'Precursor' means:

Any chemical reactant which takes part at any stage in the production by whatever method of a toxic chemical. This includes any key component of a binary or multicomponent chemical system.

# General Purpose Criterion (GPC)

- Pillar of prohibition in the CWC
  - Article II: Toxic chemicals and their precursors, *except where intended for purposes not prohibited* under this Convention, as long as *the types and quantities are consistent with such purposes*;
  - Also in other parts of the CWC (e.g., Article VI, 1)
- GPC addresses the problem of dual-use technologies
  - Not the technology as such is banned, but the purpose to which that technology will be applied
    - Addresses many toxic chemicals and toxins used industrially or commercially (Art. VI,1)
  - Rules are applicable to any past, present and future toxic chemicals or toxins, irrespective of their mode of production
- Contribution of GPC to prevention
  - If included in domestic legislation, then law enforcement agencies do not have to wait until a crime has been committed to act
  - If there is no legitimate purpose for the possession of certain technologies (agents, equipment, etc.), then a violation against the national implementation legislation has been committed

# GPC and the 3 Schedules

- Schedules are lists with chemicals (toxic chemicals and their precursors) in *Annex on Chemicals*
- Each Schedule reflects a balance between threat posed to objectives and purposes of the CWC and commercial importance
  - *Schedule 1*: CW + certain precursors: toxic chemicals with no or little purpose other than being a CW
  - *Schedule 2*: Past CW and precursor compounds that can be used in CW production, but with certain limited legitimate uses
  - *Schedule 3*: Past CW and precursors that have large-scale commercial application
- For practical purposes, the national reporting and inspection routines are based (in part) on the Schedules
  - However, GPC remains key, e.g.
    - A challenge inspection may be called if strong suspicion exists that an unscheduled chemical is used in violation of the CWC
    - Use of unscheduled toxic chemical *chlorine* as a weapon in Syria ⊢ **prohibited!**
- Updating the Schedules
  - Simplified amendment procedure
  - Extremely rarely used ⊢ Schedules already reflect past CW; challenge for future of verification regime

# Basic operation of verification

- CWC has an elaborate verification machinery
  - OPCW as oversight and implementation organisation
    - The OPCW = collective of states parties
    - Comprises the Technical Secretariat for implementation of state party decisions and policy preparation
- A division of labour between a state party and the OPCW
  - Verification regime is a declaration-based system
    - The national collection of relevant data and their submission to the OPCW is an obligation
  - Specific state party responsibilities (obligations):
    - State Party – via National Authority – submits declarations
  - Technical Secretariat
    - Analyses national declarations and addresses anomalies
    - Conducts inspections (CW destruction, industry, government facilities)
    - Investigates compliance concerns if so requested
    - Investigates allegations of use

# CWC: organisation of compliance

- Functions on the basis of the GPC
  - Covers all toxic chemicals (past, present *and* future)
  - CWC contains 3 Schedules in annex
    - Schedules do not replace GPC
    - Tools to organise declarations and help with organisation of industry verification
- Mechanisms to:
  - Generate transparency → declarations
    - States parties must declare:
      - All past and present CW-related activities within treaty-specified parameters
      - Relevant chemical production facilities and that produce or consume certain scheduled chemicals or discrete organic chemicals; production volumes, and transfers of certain scheduled chemicals
    - Any unreported or erroneously reported activity is violation of CWC (but not necessarily a deliberate one)
  - Address anomalies
    - Consultations
    - Clarification requests
    - Challenge inspections
    - Investigation of alleged use of CW

# Consultations

- **Director-General**
  - Attempts to resolve anomalies with State Party
  - Outcomes
    - Positive: correction of reports; verification of corrective action; no further steps
    - Negative: reporting to Executive Council
- **Between States Parties:**
  - Bilateral diplomatic engagement
  - Engaging State Party decides on further action
  - OPCW organs not involved
- **Advantages**
  - No megaphone diplomacy
  - Engaged State Party can take corrective action without loss of face

# Clarification request

- **Formal procedure**
  - Initial request goes directly to another State Party (bilateral)
  - Engaged State Party
    - must reply within **10 days**
    - is expected to offer supplementary information than what is available via, e.g., declarations or routine inspections
- **Escalation of matter through Executive Council**
  - If unsatisfied, requesting State Party may turn to EC
  - EC forwards request within **24 hours**; engaged State Party again receives **10 days** to reply
  - If dissatisfaction persists, requesting State Party may request EC to obtain further information
    - Possibility (no obligation) to set up an expert group
      - Delivers a factual report
      - Cannot launch its own inspection process
- **Further escalation**
  - If dissatisfaction persists, requesting State Party may call for a special EC session
  - EC in this situation obtains special decision-making authority and may recommend any measure deemed appropriate to resolve the matter
  - If still unresolved, requesting State Party may call for special session of the Conference of the States Parties **60 days after submission of clarification request to EC**
- Requesting State Party retains the right to call for a challenge inspection at any time during the clarification process
- Has never been used since EIF

# Challenge inspection

- Short-notice inspection at any site (even undeclared)
- No right of refusal by challenged State Party
  - Refusal would be major breach of CWC obligations
- Challenge inspection process starts automatically as soon as EC and Director-General receive request
  - It can only be blocked if the EC votes within 12 hours after receipt of request with a 2/3 majority to block the inspection
  - The process, up to the submission of the factual report, then continuous without further involvement of OPCW decision-making bodies
- Challenged State Party may use managed access procedure
- May be called at any time, independent of other processes or on-going procedures to restore compliance
- CWC recommends this as tool of last resort
  - Has never been invoked

# Confidentiality

- Very strict oversight of confidentiality at all stages of all verification procedures
- Many actions of the Director-General confidential
  - allows certain anomalies to be addressed without consequences for the State Party
- Shields the inspection process from political interference during its execution
- Confidentiality in the challenge inspection
  - Right of the challenged state party
    - No release of information unrelated to challenge inspection (e.g., via managed access procedure)
    - Allows giving of additional (business propriety) information to satisfy the inspectors
  - Need for the OPCW in order to avoid that challenged State Party submits too many areas to managed access

# Special features of CWC procedures

- **Reporting non-compliance to UNGA and UNSC**
  - Can (*not: must*) be done by either EC or CSP
  - Conscious & autonomous decision rather than automatic requirement
    - P5 will be on board
    - Most likely outcome: endorsement of decisions by OPCW bodies, resulting in their enhanced authority as regards State Party with compliance concerns
- **Measures to be taken by EC and CSP**
  - Unspecified; the CWC only offers some recommendations without imposing limitations
  - May include sanctions (to be determined)
  - Throughout the process, the engaged or challenged State Party retains rights that preserve the integrity of the CWC process
  - A state cannot be denied membership of the OPCW

Part II

# FUTURE CHALLENGES FOR CW DISARMAMENT

# The CWC as a product of its time

- Negotiated in the final stages of the Cold War
- Completion of negotiations just after end of Cold War (September 1992)
  - Geopolitical dominance of the West in global security following dissolution of Warsaw Pact (March 1991) and USSR (December 1991)
  - Western paradigm shift from disarmament to non-proliferation
    - Australia Group: from a stop-gap solution pending the CWC to a permanent fixture
- Preparation for EIF immediately after end of the Cold War (1993–97)
  - Renewed assertiveness by Non-Aligned Movement (NAM)
    - Emphasis on equal importance of development and international cooperation, including technology transfers
    - Posed a direct challenge to the West's quasi-exclusive focus on security (CW destruction; CW programme dismantlement; and non-proliferation)
- Take off:
  - Hungary triggered 180-day countdown to EIF by depositing 65<sup>th</sup> instrument of ratification on 31 October 1996
  - Some key players missed their ratification deadline by EIF date so as to be an original state party (Russia, Iran, India, Pakistan, ...)
  - First Conference of the States Parties (May 1996): Key decisions for the future implementation of the CWC taken by original states parties

# Drawing the future

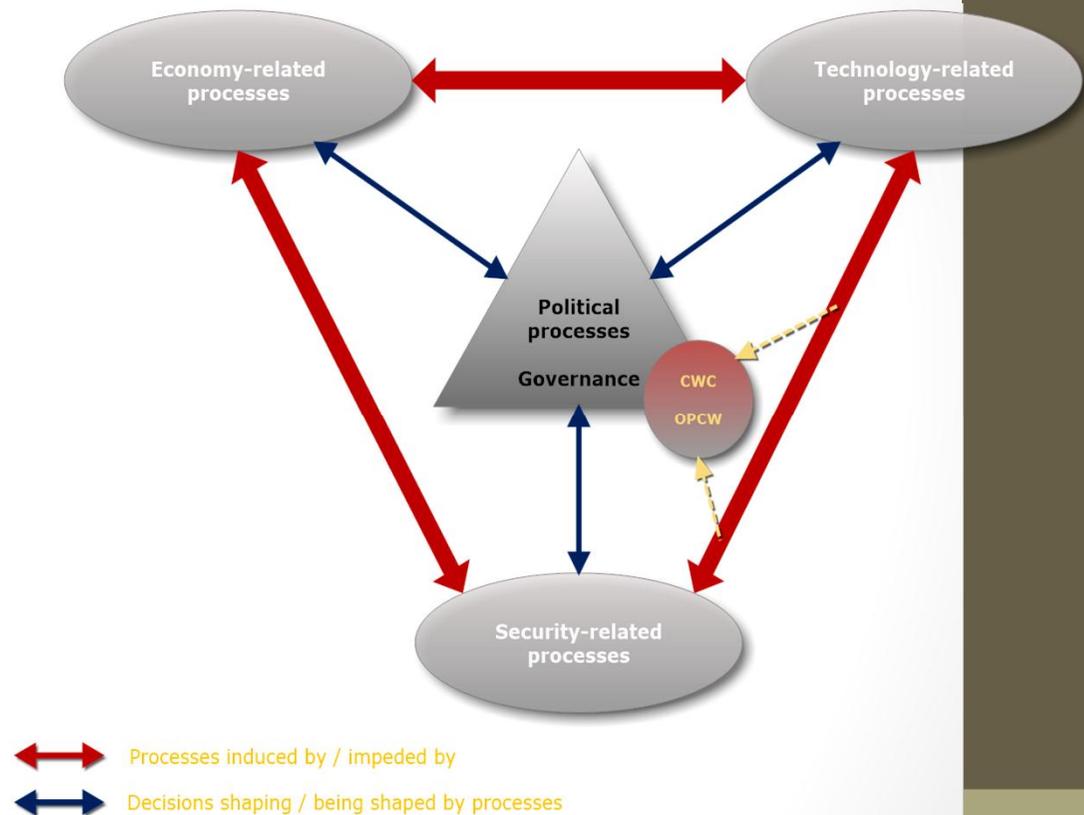
- CWC of unlimited duration ≠ perpetual
  - *Challenge*: How can the CWC retain its relevancy for States Parties after destruction of declared CW?
  - How can yesterday's culture be adapted to tomorrow's challenges?
    - Need for new balances between 'security' and 'peaceful cooperation'
    - Confidentiality vs need to reach out & interact with stakeholder communities
    - Decision-making processes (consensus vs majority voting)
    - Budgetary imperatives by states vs need for OPCW to maintain key capacities
- Disarmament
  - Backward-looking dimension
    - Destruction of existing stockpiles and weapon-related equipment
    - Destruction or conversion of production installations and other infrastructure
  - Forward-looking dimension
    - Prevention of future armament or re-armament
    - Governance of relevant dual-use technologies

# New confluences in science and technology

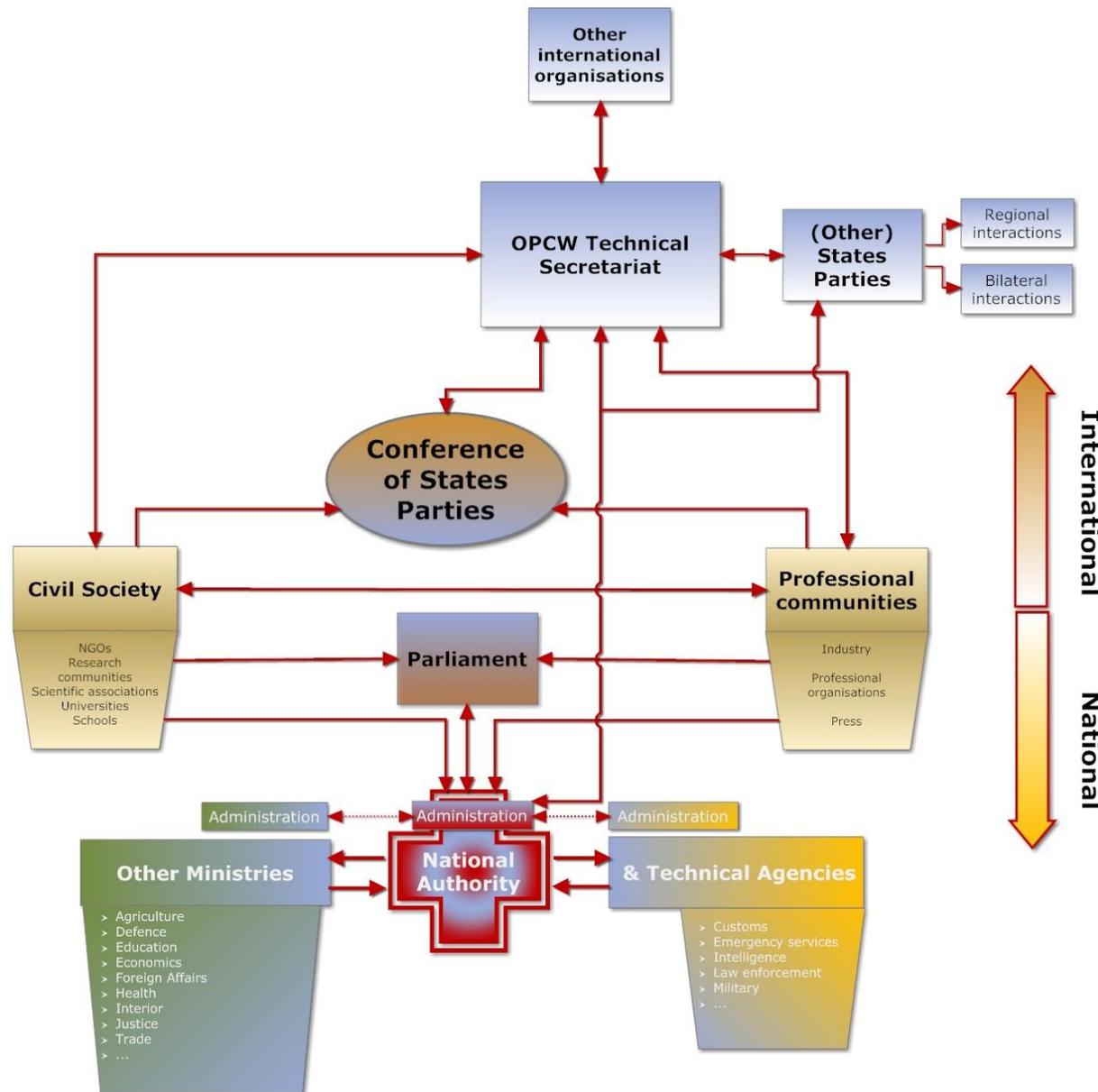
- **Convergence of several scientific and technological domains:**
  - **Biology and chemistry**
    - Development of new generation of incapacitating agents
    - Manipulation of biochemical processes on sub-cellular levels
  - **Nanotechnology (= convergence between chemistry and physics)**
    - Construction of artefacts on the level of individual molecules or atoms
    - May also be useful for new CBW defence technologies, protection or detection
  - **Informatics**
    - Computer-assisted creation of new compounds and study of their properties
    - Increasingly fast design of new molecules / gene sequences: 250,000 new genes sequenced/day; 15,000 new chemicals registered (CAS)/day
    - Simulation of processes
  - **Engineering and process designs**
- **Evolution of production processes:**
  - Modular production processes → may pose challenges for verification thresholds
  - Computer-steered production processes: consistent quality, reduced need for cleaning or interruptions for feeding (e.g., incubation or fermentation processes)

# Future governance challenges

- No unified model for governance of weapon control anymore
- States do not drive the processes anymore; they can steer in a limited way
- New stakeholders and security actors
- Increased role of non-state national & transnational actors
- Declining role of states in shaping developments
- Shifting relative balances of powers (economy, politics, military) and multiple power centres
- Geographical decentralisation of business and industry activities
- South-south trade patterns and impact on technology diffusion
- Etc.



# Stakeholder communities



Part III

# THE CHALLENGES POSED BY SYRIA

# CW attacks in Syria

- CW allegations mounting during 1st half of 2013
  - 21 March: UNSG accepts Assad's request for an investigation of alleged use
  - August: UN team (OPCW + WHO) finally arrives in Damascus after much haggling
  - Team uses OPCW operational procedures for CW investigation and OPCW-certified reference laboratories
- CW attacks against Ghouta (Damascus), 21 August 2013
  - Change mandate UN investigative team
  - Preliminary report, 16 September (Ghouta only)
  - Final report, 12 December (also includes originally mandated investigations of allegations and some post-Ghouta allegations)
  - Outcomes:
    - Reports do not apportion blame
    - Ghouta: strong suggestion responsibility Syrian government
    - Earlier attacks: confirmation of sarin use in some of them; other evidence very limited
    - Still some open questions
- Chlorine and sarin attacks (spring – summer 2014; 2015 – 2018)
  - Confirmed by OPCW investigations
  - As good as certain that Syrian government forces are responsible
  - Some unconfirmed claims of ISIL use of chlorine and mustard agent (also in Iraq)
    - One as good as confirmed by OPCW investigation

# Opportunistic use of toxic chemicals

- **Syrian use of barrel bombs with chlorine**
  - OPCW investigated & confirmed allegations
  - February 2015: OPCW EC decision condemning chemical warfare in Syria (1<sup>st</sup> in a CWC state party)
  - March 2015: unanimous UNSC condemnation
  - UNSC Resolution 2235 (2015): Established OPCW – UN Joint Investigative Mission (JIM)
    - Determine criminal responsibility (so far 3 x Syrian government; 1 x ISIL)
    - Role for International Criminal Court?
    - How to proceed?
    - November 2017: continuation vetoed; activities have ceased
- **ISIL allegations of CW use**
  - AQI bombing campaign with chlorine (October 2006 – June 2007)
  - Syria: skin irritant report from Kobane area (August 2014)
  - Several chlorine reports from Iraq (September – October 2014)
  - Today: reports of chlorine and mustard agent (confirmed by OPCW)
  - Trend towards technology development for delivery systems?
- **Challenges**
  - How to investigate? Who requests investigation?
    - CWC: territory not under government control → UNSG's investigative mechanism?
  - Kobane scenario: non-state actor against non-state actor on territory of CWC state party, but not under control of that state party
  - OPCW: strategies for chemical safety/security in conflict zones?
    - Preventive infrastructure protection strategies?

# Syria as a challenge to the CWC

- **OPCW verification of Syria's declarations**
  - Major gaps in the Syrian declarations: lack of documentary support
  - Unwillingness to resolve outstanding issues
    - Volumes of agent in storage
    - Material accounting of precursor/agent production, consumption or loss
    - Discovery of ricin factory; nerve agent traces at sites not declared by Syrian authorities; mustard agent destruction
  - Technical Secretariat cannot close dossiers
- **OPCW investigations into alleged use**
  - Establishment of a Fact-Finding Mission (FFM) for Syria
  - Limits investigations to whether or not an incident has taken place: recovery of forensic evidence; corroboration of allegations via various techniques; scientific analysis of recovered samples in OPCW designated laboratories → submission of factual report to states parties
  - Determination of criminal responsibility:
    - Investigation by OPCW – UN Joint Investigative Mechanism (JIM)
    - Reports to the UN Security Council
- **Geopolitical priorities by states parties**
  - Denial by some parties that CW incidents attributed to the Syrian government took place
  - Challenges to the integrity of OPCW methodologies, even though they were unanimously approved by states parties
  - Support for the Syrian regime versus calls for regime change
  - Outside support for the various belligerent parties: no consensus of direction to be taken or, more urgently, on how to terminate the war

Part IV

# CONCLUSIONS

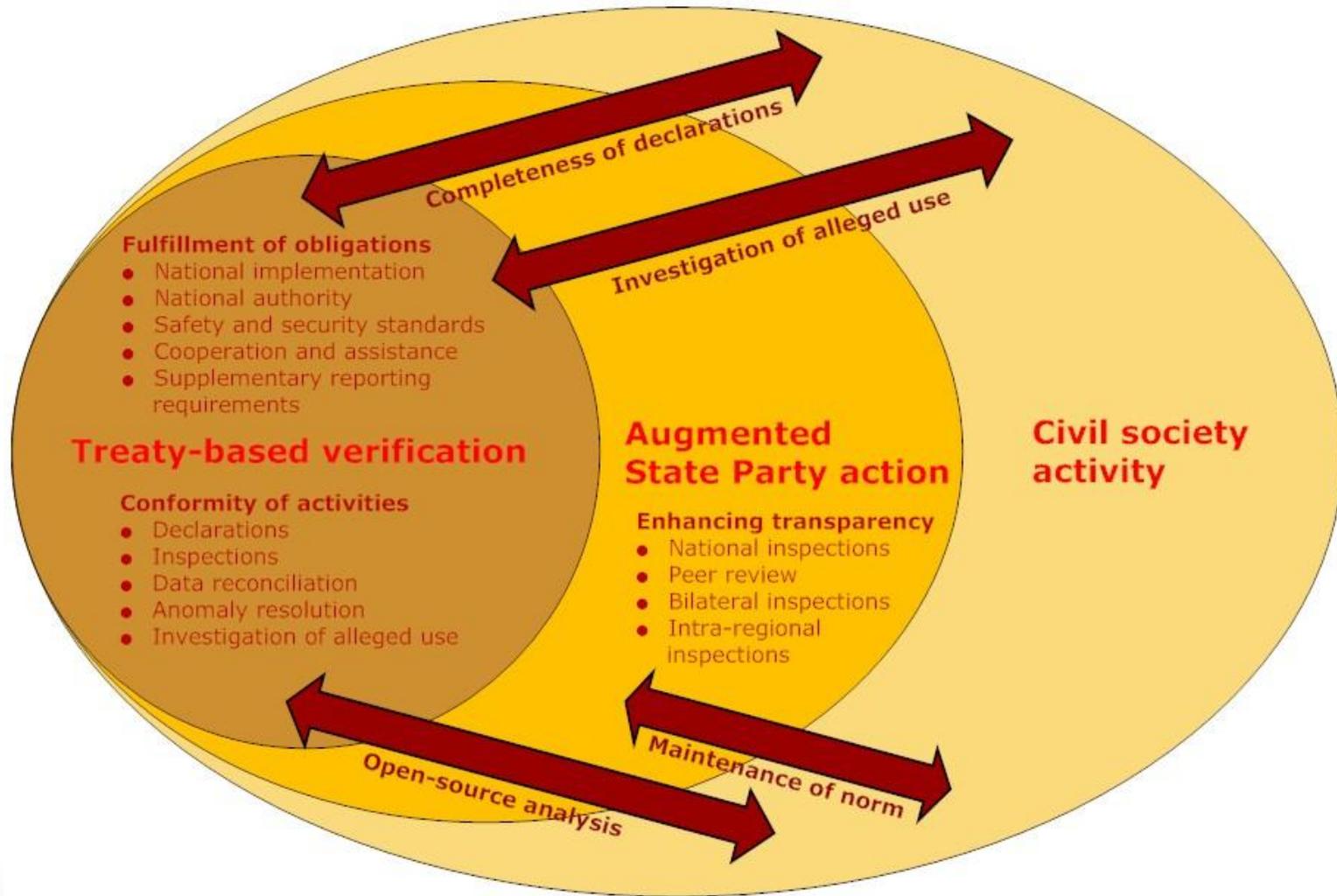
# After CW destruction – 1

- Centrality of industry activities: production, consumption & trade
  - *Article XI*: technology transfers, scientific exchanges, & other development cooperation
  - *Article VI*: transfers of toxic chemicals and their verification
  - *Article VIII*: CSP tasked with '*international cooperation for peaceful purposes in the field of chemical activities*' → enables deployment of future activities by OPCW
  - *Article X*: assistance in case of use or threat of use of CW → opportunities for chemical security and safety activities (which involve industry)

# After CW destruction – 2

- Prevention of (re-)armament: a challenge
  - Verification:
    - Post-destruction: reduction of inspectors envisaged but capacity for industry verification needs to be enhanced
    - Increased emphasis on transfer monitoring (Art. VI):
      - Is the current monitoring system adequate to capture the volumes of transfers of toxic chemicals?
      - Quid the General Purpose Criterion (vs. scheduled chemicals subject of reporting)?
      - Who verifies State Party reports?
  - Options:
    - Modification of reporting requirements and upgrading of monitoring system
    - Recruitment of more inspectors with proficiency in chemical industry?
    - Rebalancing functional division between OPCW and States Party responsibilities?
      - Enhanced verification responsibilities for States Parties
      - Greater lateral interaction among National Authorities relating to transfer monitoring
      - Reporting to OPCW + auditing process of national reports

# Future verification layers?





# THE TRENCH

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

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