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International Centre for Theoretical Physics*



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Joint ICTP-IAEA School of Nuclear Energy Management

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Export Control

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OVERVIEW OF THE NUCLEAR NON-PROLIFERATION REGIME

IONUT SUSEANU
OFFICE OF LEGAL AFFAIRS

IAEA-ICTP
School of Nuclear Energy Management
Trieste, 15 August 2011



IAEA
International Atomic Energy Agency

International Control



1945

Hiroshima and Nagasaki

Use of first atomic bombs showed the urgency to bring nuclear energy under effective international control and to ensure that it would be used for peaceful purposes only



Early Initiatives



Jan 1946

United Nations Atomic Energy Commission

Mandate to develop proposals for the elimination of nuclear weapons and for the control of atomic energy



June 1946

The Baruch Plan

Nuclear disarmament with international control over nuclear activities

Atoms for Peace



Dec 1953

Atoms for Peace

To create an international organization responsible for promoting safe and peaceful uses of nuclear energy and verifying that nuclear technology is not misused

THE IAEA

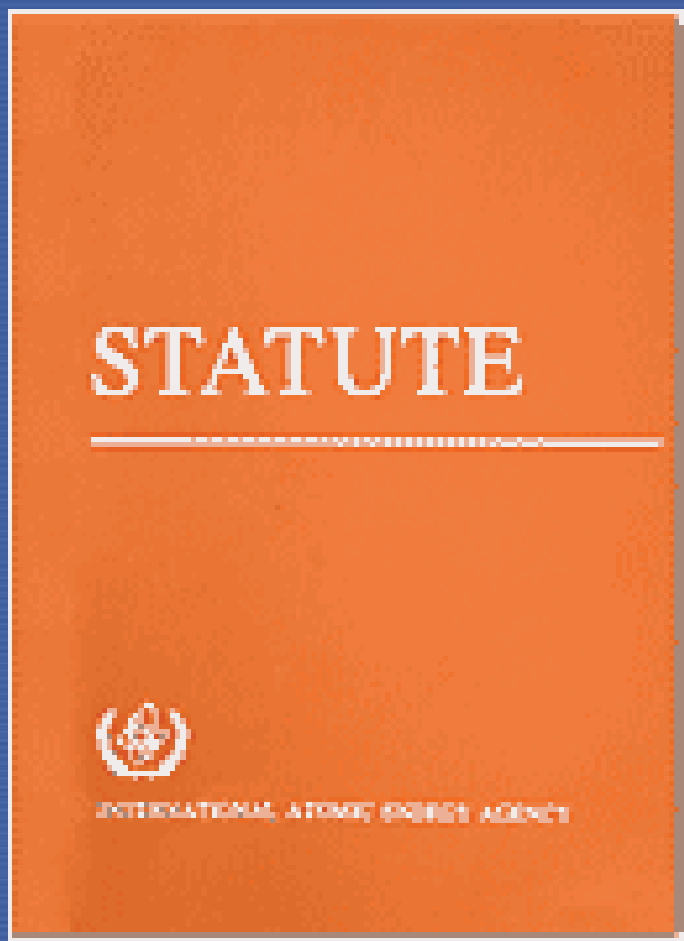


1957
IAEA

- Intergovernmental organization
- Independent from United Nations
- Direct access to the Security Council
- Headquarters in Vienna
- Established by the Statute
- 151 Member States



IAEA Statute



IAEA authorized to establish and administer safeguards:

- **Article III.A.5**
 - Agency assistance
 - Any bilateral or multilateral arrangements at the request of the parties
 - Any nuclear activities of a State at its request
- **Article XII**
 - Fundamental features of IAEA safeguards

What are IAEA Safeguards?



Key technical means for verifying compliance by States with legally binding undertaking not to use nuclear material or facilities to develop nuclear weapons or other nuclear explosive devices

IAEA Safeguards

- **Membership in IAEA does not require acceptance of safeguards**
- **IAEA safeguards possible in non-Member States**
- **Implementation of safeguards requires consent of the State (not self-executing)**

Treaties Requiring Safeguards

- Bilateral nuclear cooperation agreements
- Multilateral treaties:
 - **1970: NPT** – near universal
 - Regional treaties establishing NWFZs:
 - 1967: Tlatelolco
 - 1986: Rarotonga
 - 1997: Bangkok
 - 1996: Pelindaba
 - 2008: Central Asia
 - **All NWFZ Treaties entered into force**

The NPT



1 July 1968
Opened for signature



5 March 1970

Entered into force

Cornerstone of the
international nuclear
non-proliferation regime



Types of Safeguards Agreements

- **Item Specific (INFCIRC/66/Rev.2)**
 - Safeguards system prior to the NPT
- **Comprehensive Safeguards Agreements (CSAs)**
INFCIRC/153 (Corr.)
 - Comprehensive safeguards in connection with the NPT and NWFZ Treaties
- **Voluntary Offer Agreements (VOAs)**
 - China, France, Russia, UK and US (NPT NWSs)

Item-Specific Safeguards Agreements

1961: Covered **research reactors** only (INFCIRC/26)

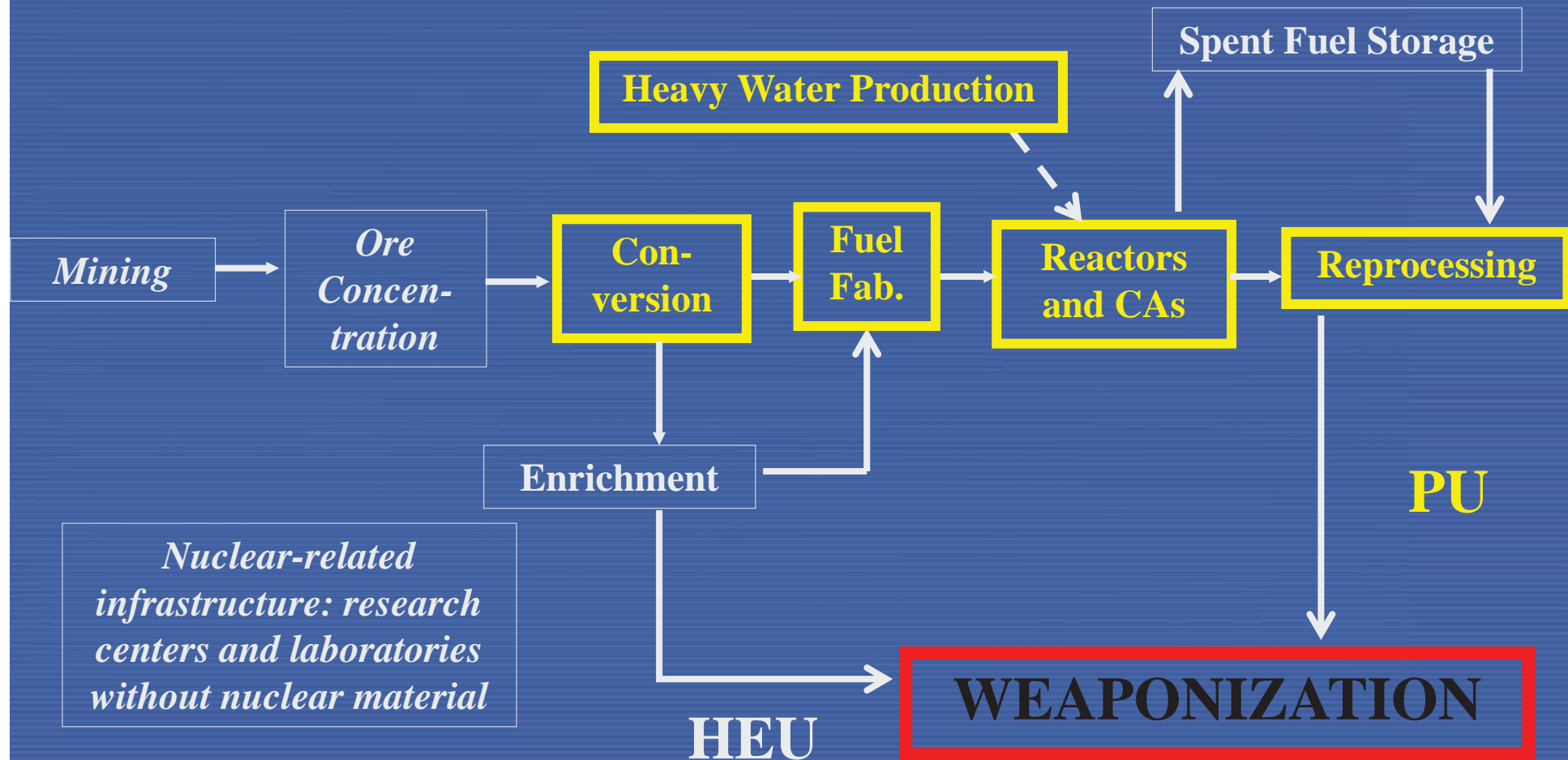
1964: Expanded to cover **all reactors**

1965: Revised (INFCIRC/66)

1966: Revised and expanded to cover **reprocessing plants**

1968: Expanded to include procedures for **conversion and fuel fabrication plants** (INFCIRC/66/Rev.2)

Safeguards Coverage under 66 Agreements



CSAs Required by NPT

Non-Nuclear-Weapon States (NNWSs)

Art. II - Not to acquire nuclear weapons or other nuclear explosive devices

Art. III.1 - Accept safeguards on all nuclear material in the State, as set forth in an agreement with the IAEA in accordance with the Statute and its safeguards system

Art. III.4 - Conclude agreements within 18 months

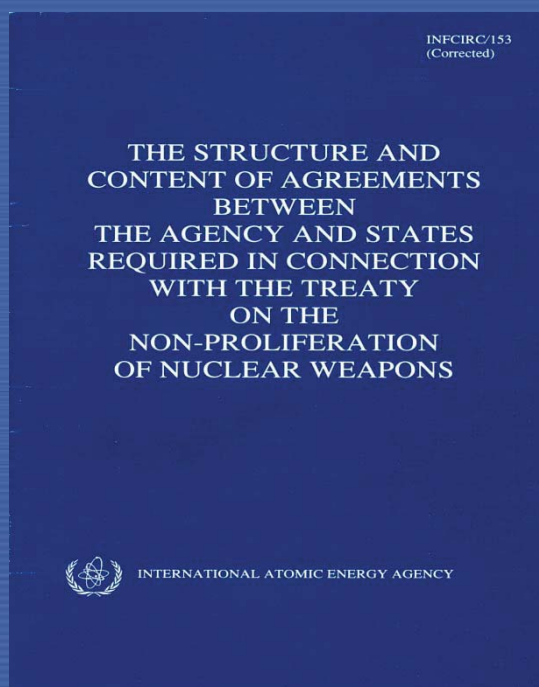
NPT Export Control Requirements

All States Parties

Art.III.2 - Not to provide source or special fissionable material, or equipment or material “especially designed or prepared” (EDP) for the processing, use or production of special fissionable material to any NNWS, unless subject to IAEA safeguards

Comprehensive Safeguards Agreements

The Structure and Content of Agreements between the Agency and States required in connection with the Treaty on the Non- Proliferation of Nuclear Weapons INFCIRC/153 (Corr.)



CSA: INFCIRC/153

- Developed by an open ended committee of IAEA Board of Governors (1970-1971)
- Approved by the Board in April 1971
- The Board requested the Director General to use it as a basis for negotiating safeguards agreements between the IAEA and NNWSs party to the NPT
- Content: Part I, Part II and Definitions

Safeguard Agreements based on INFCIRC/153

CSAs with NNWSs pursuant to the NPT

CSAs with NNWSs pursuant to NWFZ Treaties

1967: Tlatelolco

1986: Rarotonga

1997: Bangkok

1996: Pelindaba

2008: Central Asia

Sui generis CSAs with NNWSs

VOAs with the 5 NPT NWSs



Why a Comprehensive Safeguards Agreement ?

The State

- Voluntarily became party to the NPT
- Is a non-nuclear-weapon State (NNWS)
- Has committed to conclude a CSA with the IAEA
- May have a similar commitment under a Nuclear Weapon Free Zone Treaty

Comprehensive Safeguards Agreement

- International treaty concluded between a State or States and the IAEA
- Based on INFCIRC/153 (Corr.)
- Standardized model (GOV/INF/276, Annex A)
- Board approval is required
- Signed by the State and the Director General
- Entry into force: upon signature or written notification by the State

CSA: State's Undertaking

... to accept safeguards, in accordance with the terms of the Agreement, on all source or special fissionable material in all peaceful nuclear activities within the territory of the State, under its jurisdiction or carried out under its control anywhere ...

INFCIRC/153 (Corr.), para. 1

CSA: IAEA Right and Obligation

...to ensure that safeguards will be applied, in accordance with the terms of the Agreement, on all source or special fissionable material in all peaceful nuclear activities within the territory of the State, under its jurisdiction or carried out under its control anywhere...

INFCIRC/153 (Corr.), para. 2

CSA: IAEA Right and Obligation

To verify correctness and completeness of a
State's declarations

Confirmed by Board in March 1995

CSA: Basic Obligations of the State

- Provide information to the IAEA concerning nuclear material, facilities and activities
- Provide access to the IAEA for purposes of inspections and design information verification
- Cooperate with the IAEA in the implementation of the safeguards agreement
- Establish a State system of accounting for and control of nuclear material (SSAC)

CSA: Elements

Information:

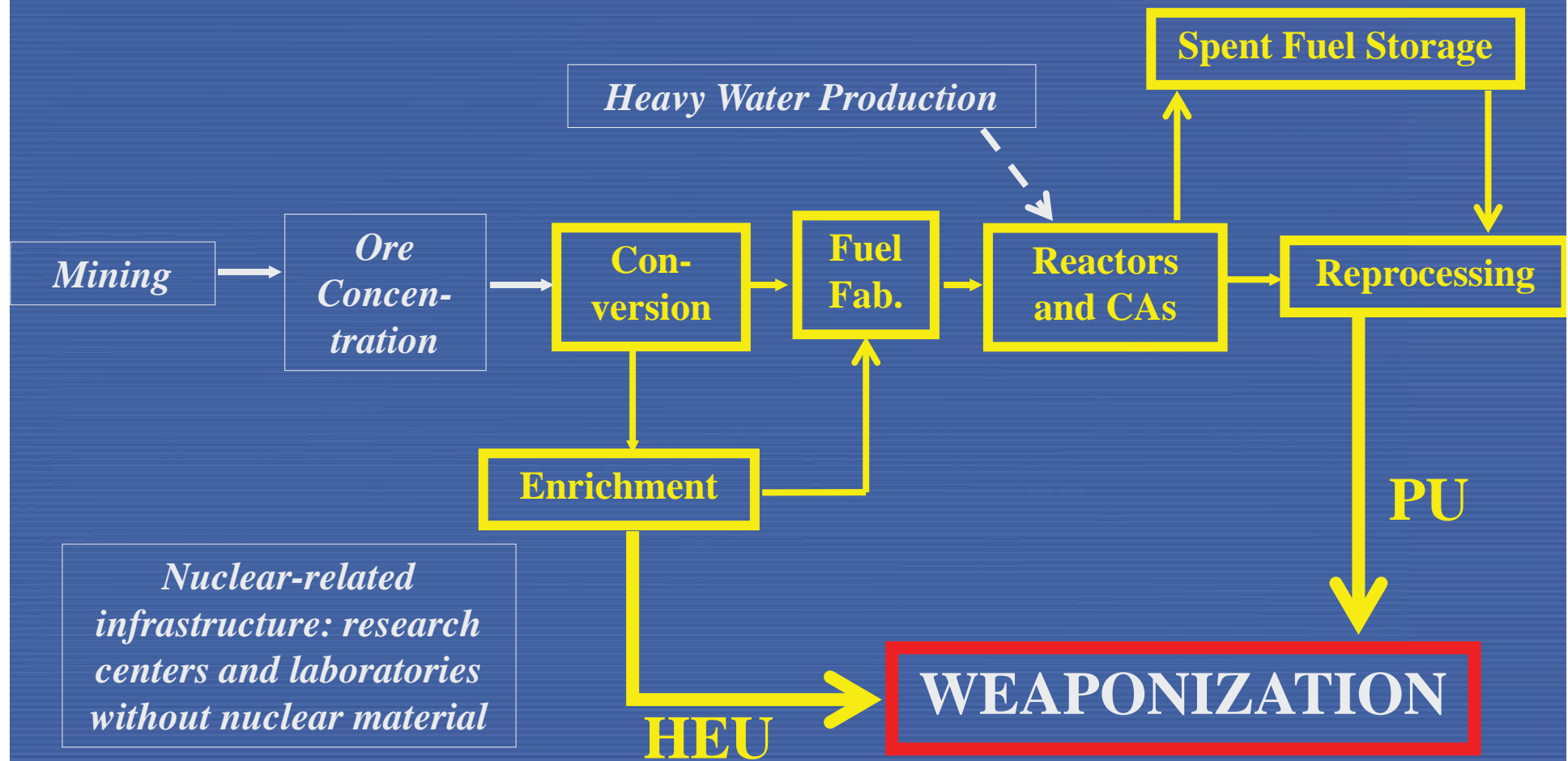
- Initial report on nuclear material
- Initial list of all nuclear facilities, and design information
- Record keeping of nuclear activities
- Reporting of inventory changes (flow), including imports and exports

CSA: Elements

Access:

- **DIV:** facility design information verification
- **Inspections:**
 - Ad hoc – used for verifying initial report/exports of nuclear material
 - Routine – once Subsidiary Arrangements agreed; limited to strategic points
 - Special – when information available to IAEA “not adequate for IAEA to fulfil its responsibilities under the Agreement”

Safeguards Coverage under CSAs



Small Quantities Protocol (SQP)

State **eligibility** for SQP (GOV/INF/276, Annex B):

- Little or no nuclear material and
- No nuclear material in a nuclear facility

Holds in abeyance most of State's reporting and access requirements

Does not hold in abeyance:

- Obligation not to divert nuclear material to proscribed uses
- Requirement to establish SSAC
- Report annually imports and exports of nuclear material

Modified SQP

Board decision September 2005:

- SQP is a weakness
- Remains part of SG system but modified
- States with SQPs asked to modify the text
- No longer eligible if State has existing or planned facility

Requires:

- Initial report on nuclear material
- Early notification of decision to authorize construction or to construct a facility
- IAEA access for ad hoc and routine inspections to verify the State's declarations



Strengthening IAEA Safeguards

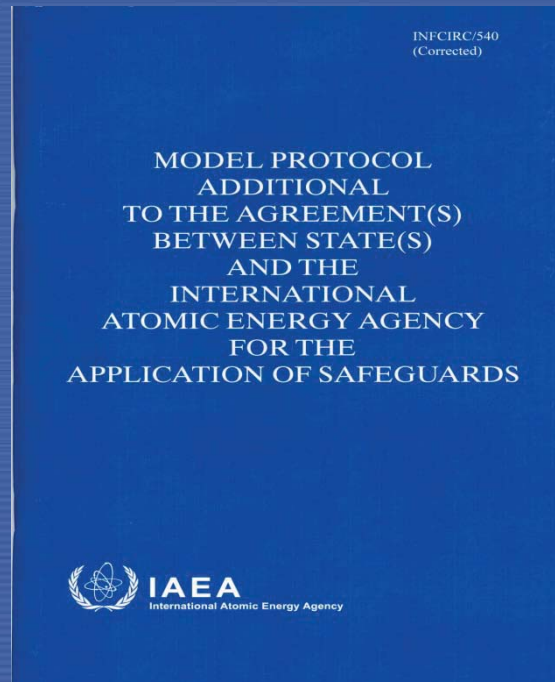
- Implementation issues encountered in Iraq and DPRK
- New experience gained in South Africa
- Confirmation of Agency access to **undeclared locations**
- Confirmation of State's obligation to provide **early design information** on nuclear facilities, and Agency's **continuing right to verify** it

Strengthening IAEA Safeguards

- **Programme 93+2**
 - **Part I** measures – other measures possible within existing legal authority (e.g. environmental sampling)
 - **Part II** measures – those requiring additional legal authority
 - Decision to develop **new legal instrument**

Model Additional Protocol

Model Protocol Additional to the Agreement(s) between State(s) and the International Atomic Energy Agency for the Application of Safeguards INFCIRC/540 (Corr.)



Model Additional Protocol

- Approved by the Board in May 1997
- Model for CSA States: must accept all measures
- Other States encouraged to conclude APs: need not accept all measures
- **104** States with CSAs brought into force APs and all NWSs have an AP in force

What is an Additional Protocol?

- A protocol to any safeguards agreement – not free standing
- Standardized model [\(INFCIRC/540 \(Corr.\)\)](#)
- Board approval required for each AP
- Signed by the State and the Director General
- Entry into force:
 - Upon signature
 - Upon receipt of notification by the Agency
 - Can be implemented provisionally pending entry into force

Purpose

... to strengthen the effectiveness and improve the efficiency of the safeguards system as a contribution to global nuclear non-proliferation objectives ...

INFCIRC/540, Foreword

AP: New Tools

- More complete information about a State's nuclear fuel cycle
- Broader (but not unlimited) access to locations within a State
- New administrative measures

AP: Elements

Information

All aspects of a State's nuclear fuel cycle activities – from mines to nuclear waste:

- State-controlled nuclear fuel-cycle related R&D not involving nuclear material - *Art. 2.a.(i)*
- Operational activities at facilities and LOFs - *Art. 2.a.(ii)*
- Buildings on “sites” - *Art. 2.a.(iii)*
- Activities functionally related to the nuclear fuel cycle (Annex I activities) - *Art. 2.a.(iv)*
- U mines; U and Th concentration plants - *Art. 2.a.(v)*

AP: Elements

Information

- Inventories, imports and exports of nuclear material not currently required (pre-34(c) material) - *Art. 2.a.(vi)*
- Exempted material - *Art. 2.a.(vii)*
- Location and further processing of terminated intermediate and high-level waste - *Art. 2.a.(viii)*
- Exports of specified equipment and non-nuclear materials (Annex II); imports on request - *Art. 2.a.(ix)*
- Future plans - *Art. 2.a.(x)*

Complementary Access: Where and Why

- Any place on a site **Art. 5.a.(i)**
- Other places where nm declared to be **Art. 5.a.(ii)**

Decommissioned facilities/LOFs
Art.5.a.(iii)

- Other locations declared by State (R&D, functionally related) **Art. 5.b.**
- Other locations for ES **Art. 5.c.**

To assure the absence of undeclared nuclear material and activities**
(Art. 4.a.(i))

To confirm decommissioned status
(Art. 4.a.(iii))

To resolve questions or inconsistencies
(Art. 4.a.(ii))



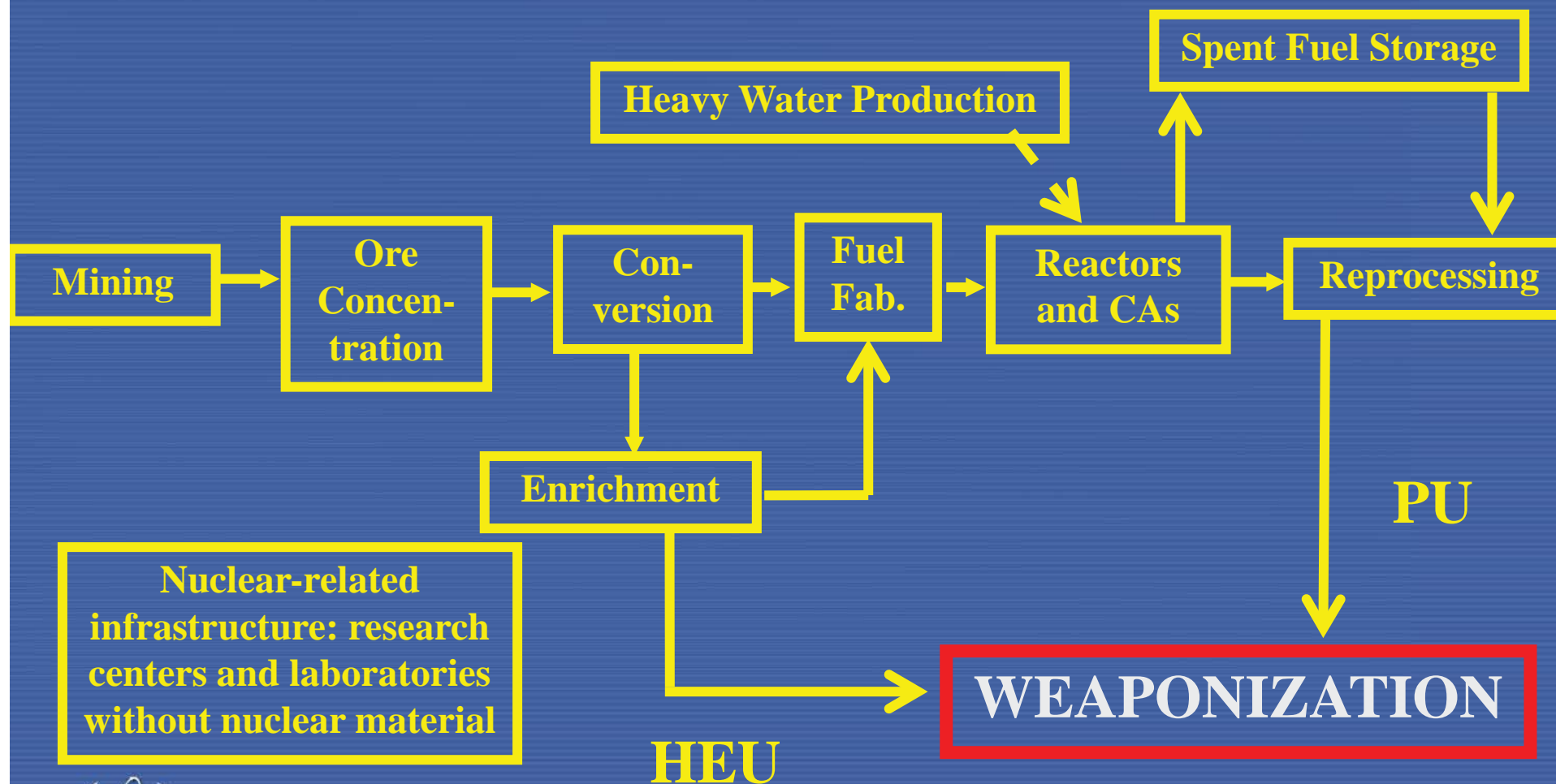
** includes resolution of questions and inconsistencies

AP: Elements

Administrative measures

- Inspector designation
- Visas
- Access to and use of state of the art communications systems

Safeguards Coverage: CSAs with APs



CSA and AP Implementation

- Contribute to greater nuclear transparency and confidence building in the context of regional and international security
- Makes the State and its neighbours more secure
- Permits the State to have increased access to nuclear technology
- Permits the IAEA to provide increased assurance of the absence of undeclared nuclear material and activities in the State

What is Needed to Implement Safeguards?

- Ensuring that legislation and regulations are in place
- Ensuring that legal framework is consistent with State's international obligations
- Ensuring that the SSAC has adequate:
 - Authority
 - Independence
 - Human resources
 - Financial resources

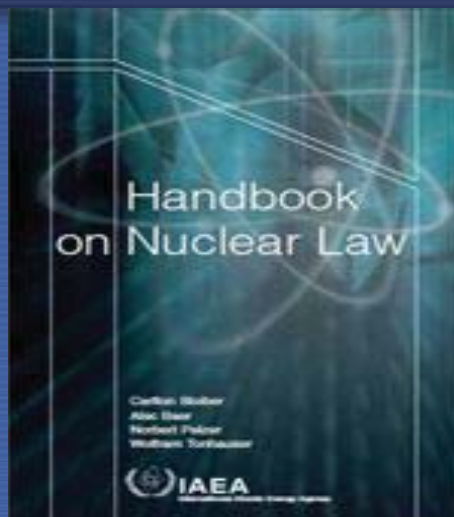
National Legislation



ELEMENTS

- SSAC
- Licensing
- Inspection
- Enforcement
- Criminalization
- Import and export controls

IAEA Legislative Assistance



IAEA legislative assistance programme available to all Member States

Office of Legal Affairs has provided legislative assistance to more than 100 Member States upon their request

The programme covers all areas: nuclear safety, civil liability, nuclear security, **safeguards and export controls**

