ONDRAF/NIRAS

The Waste Acceptance System for Radioactive Waste

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BVS-ABR, 23rd September 2022

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1. ONDRAF/NIRAS – A short introduction

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Radioactive waste management

Dismantling and remediation

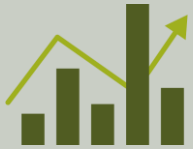
Inventory

Enriched fissile materials

Scientific research

Preparation of policy

Socio-economic investments

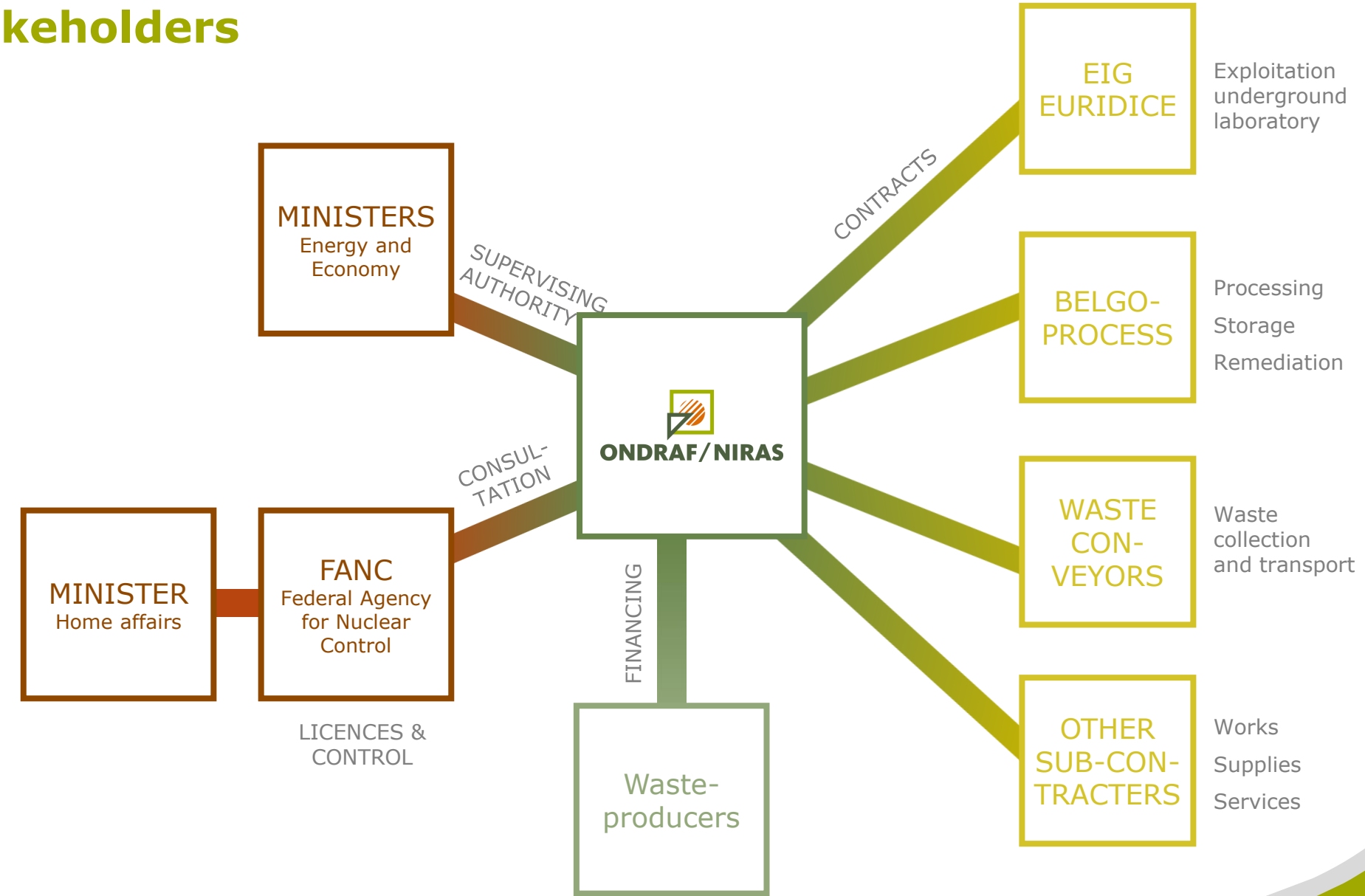


Participation and involvement

Long-term financing

1. ONDRAF/NIRAS – A short introduction

Our stakeholders



2. Radioactive Waste Production in Belgium

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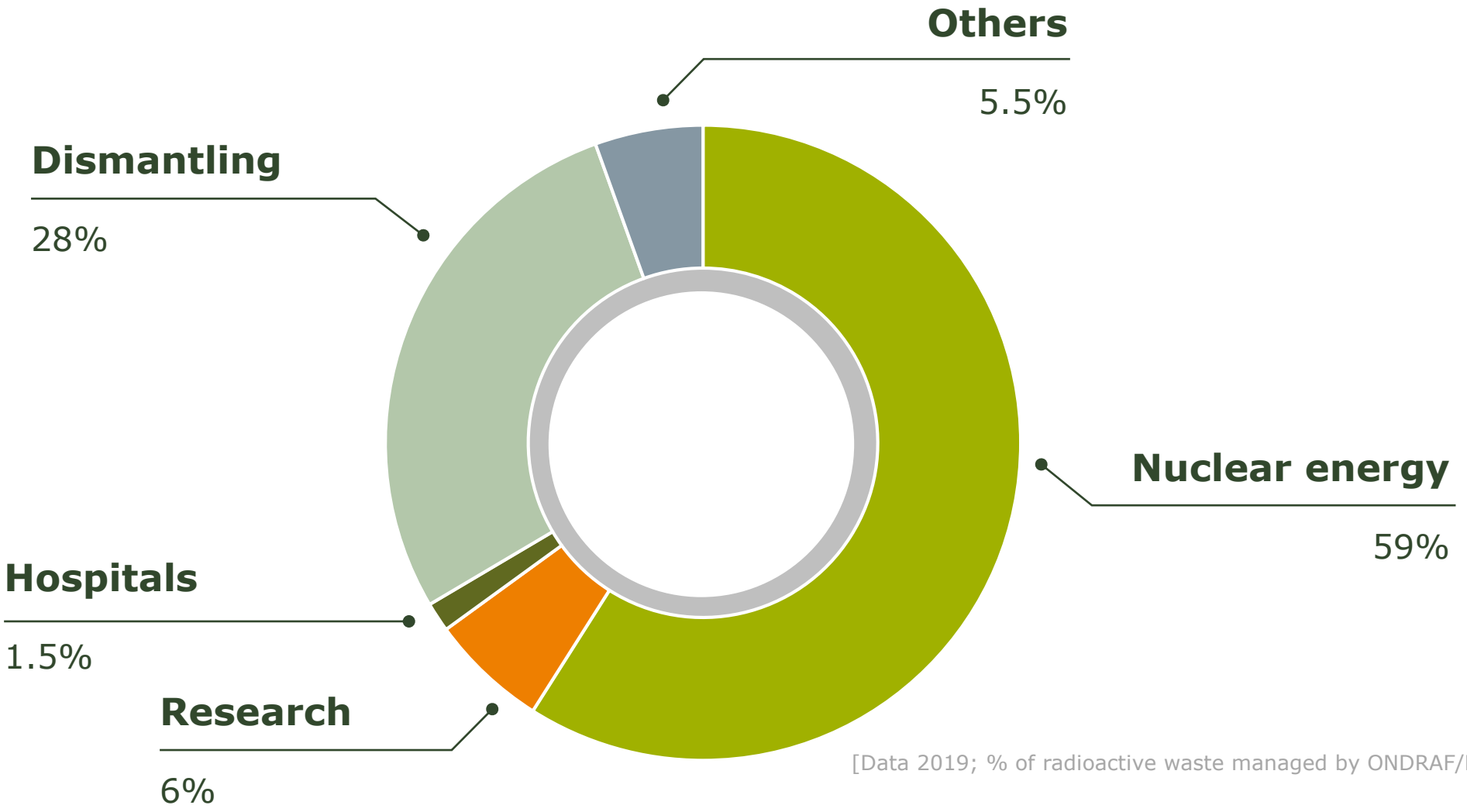
Nuclear activities in Belgium – Waste production by origin

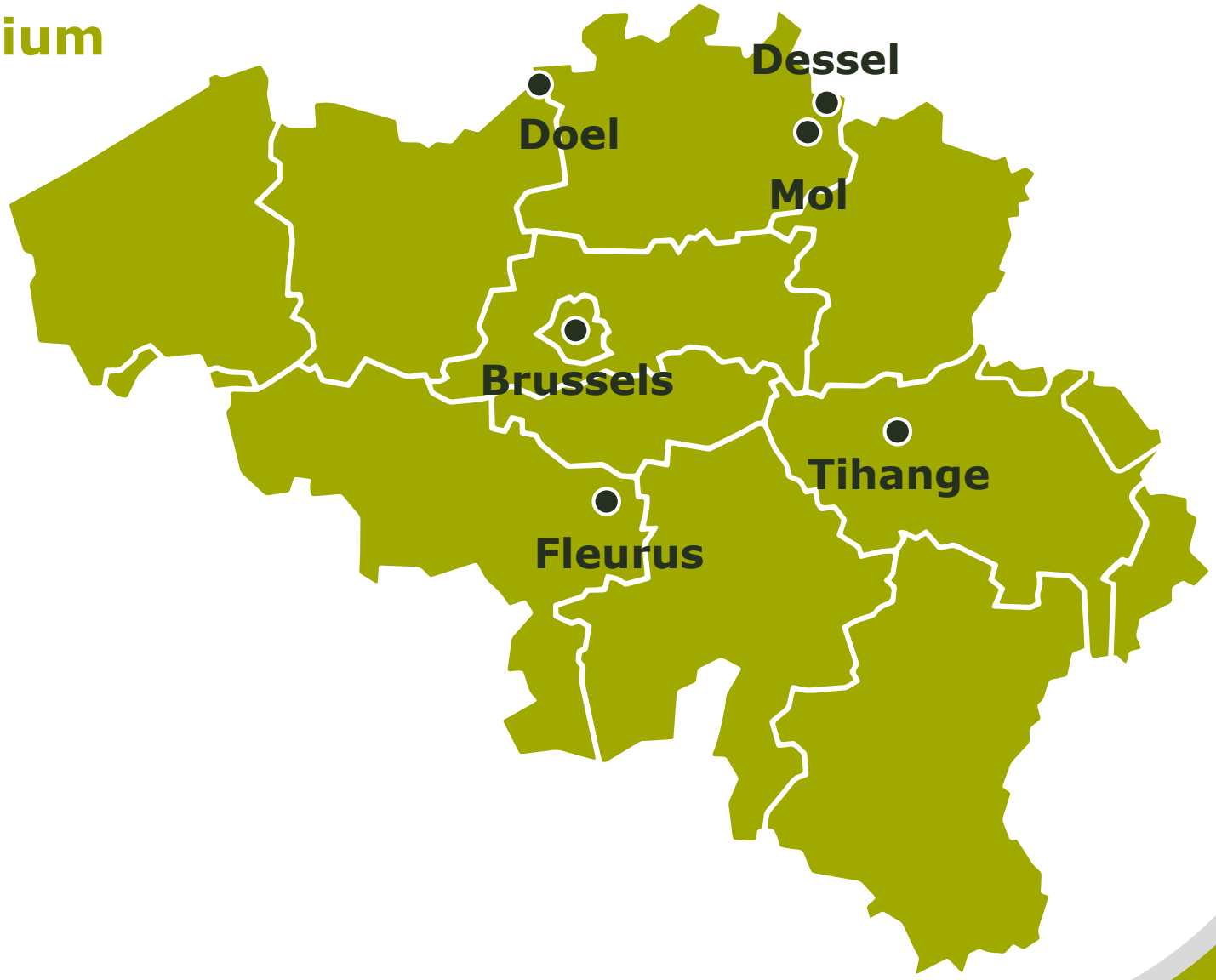


[Data 2019; % of radioactive waste managed by ONDRAF/NIRAS]

2. Radioactive waste production in Belgium

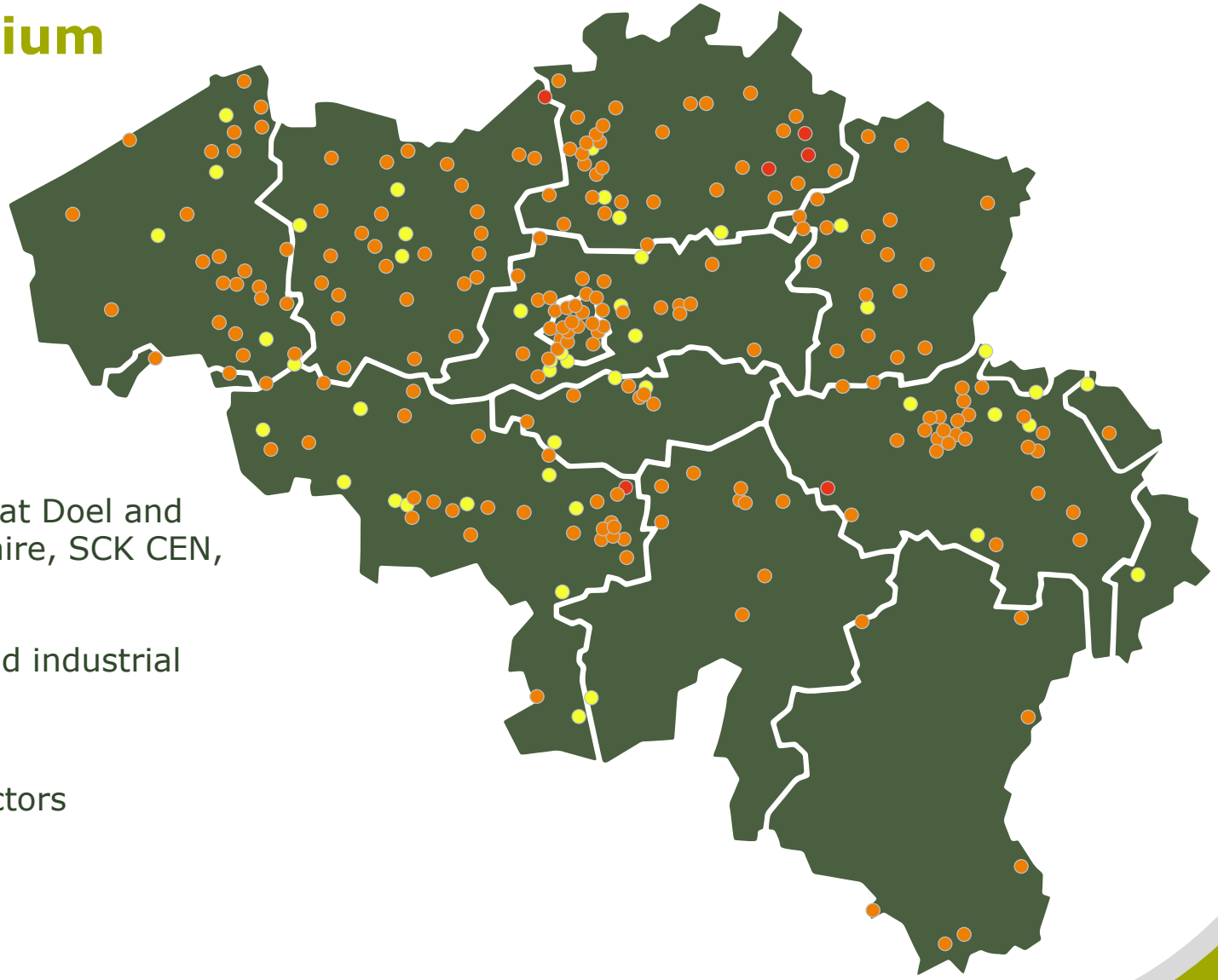
Nuclear activities in Belgium

- **Dessel, Mol and Geel**
  - SCKCEN
  - Belgoprocess
  - ONDRAF/NIRAS-site, Dessel
  - Belgonucleaire (decommissioned)
  - FBFC-I (decommissioned)
  - Joint Research Center (Geel)
- **Doel**
  - Doel Nuclear Powerplant
- **Fleurus**
  - IRE
  - ONDRAF/NIRAS-site, Fleurus
- **Tihange**
  - Tihange Nuclear Powerplant
- **Brussels**
  - ONDRAF/NIRAS
  - AFCN/FANC



2. Radioactive waste production in Belgium

Nuclear activities in Belgium



- **Class I:** Electrabel (nuclear power plants at Doel and Tihange), FBFC International, Belgonucleaire, SCK CEN, Joint Research Center, and Belgoprocess
- **Class II:** mainly research and medical and industrial applications
- **Class III:** mainly non-nuclear industry actors and laboratories

3. Waste Acceptance System

3. The Waste Acceptance System

Setting the scene

- **ONDRAF/NIRAS**
  - Waste Manager
  - Future operator of a class I disposal facility
  - Current operator of a class II facility
- **FANC – Federal Agency for Nuclear Control**
  - Operational safety
  - Nuclear Licenses
  - Interfaces with ONDRAF/NIRAS
- **Belgoprocess**
  - Industrial daughter of ONDRAF/NIRAS
- **Waste Producers**

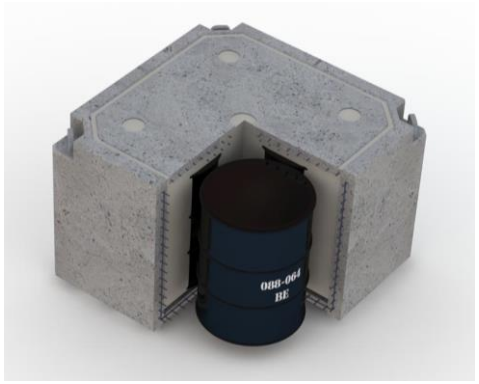
3. The Waste Acceptance System

Outline

Non-conditioned waste

Conditioned waste

Conditioned waste in a concrete container (IPM)

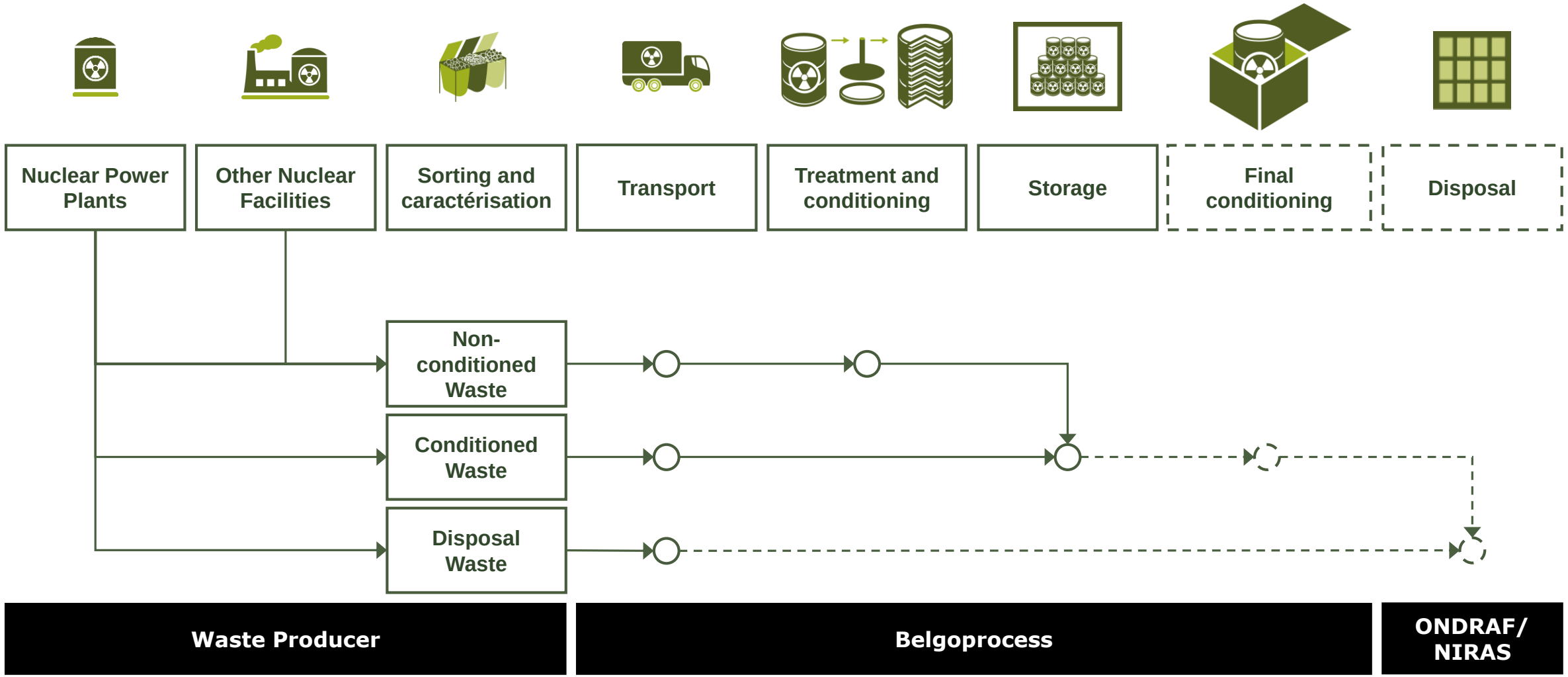


Conditioned wate in a grouted concrete container = monolith (IPM)

Surface disposal facility

3. The Waste Acceptance System

Outline

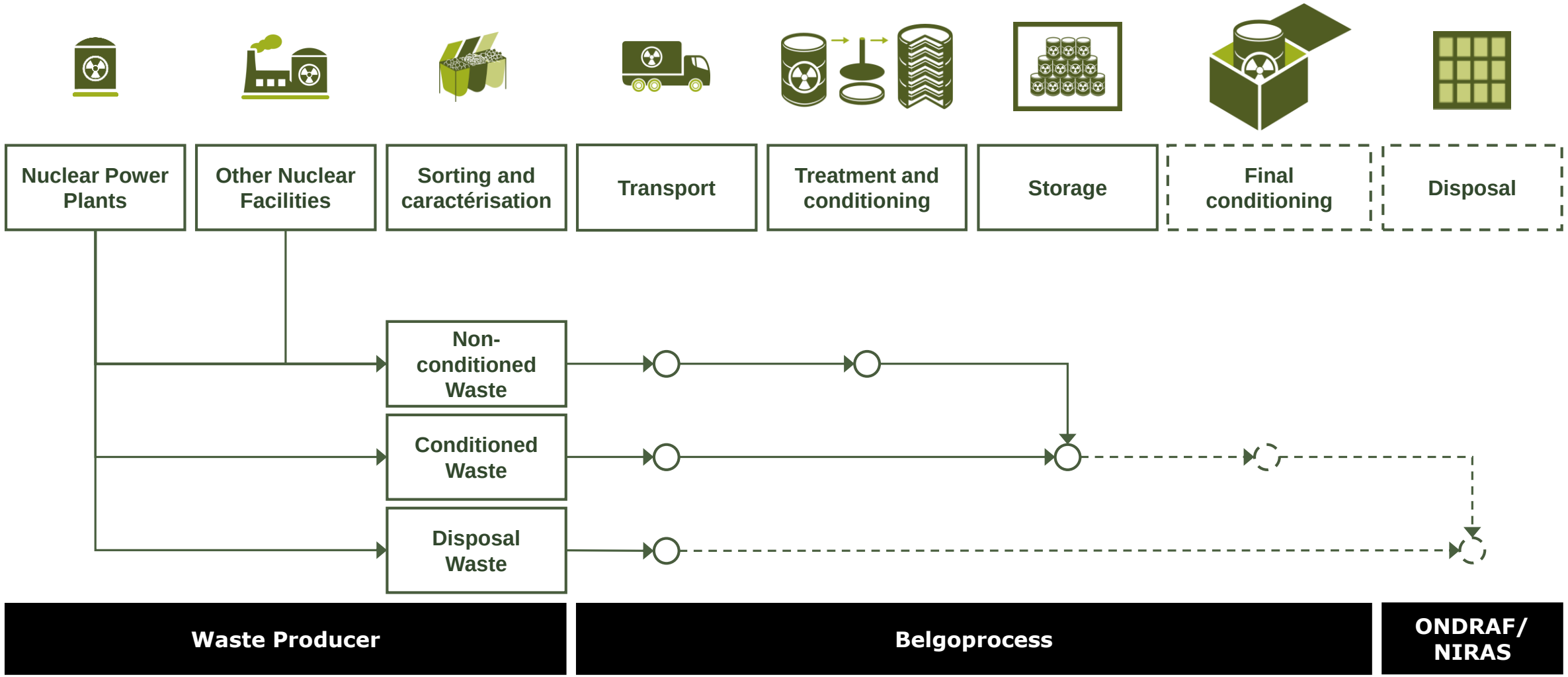


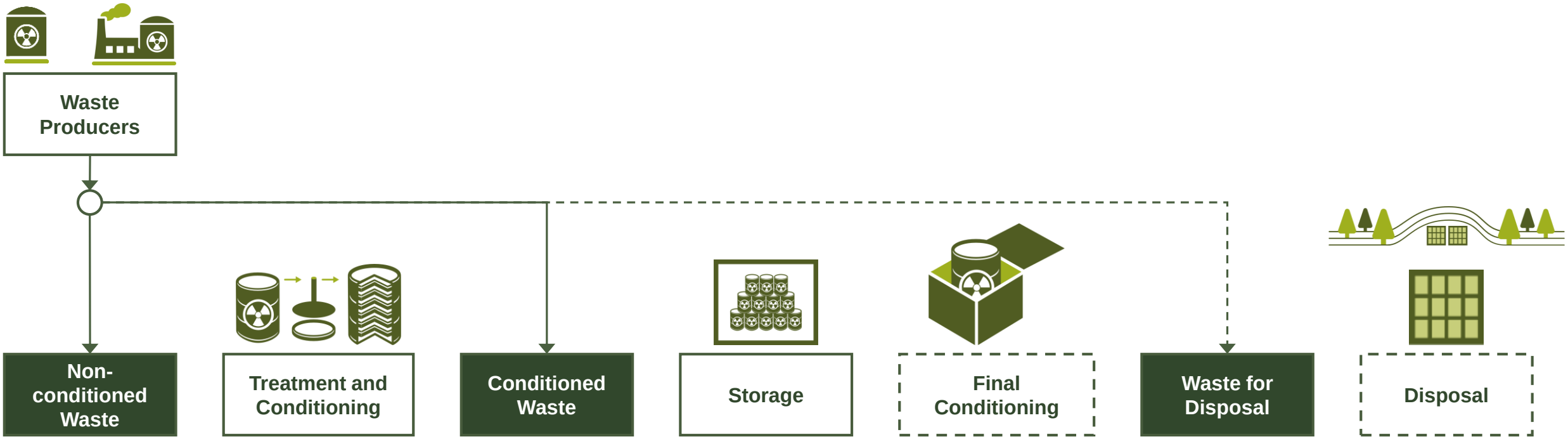
3. The Waste Acceptance System
Outline

- **Three part system**
  - Acceptance criteria
  - Qualifications
  - Acceptance procedure

3. The Waste Acceptance System

Outline



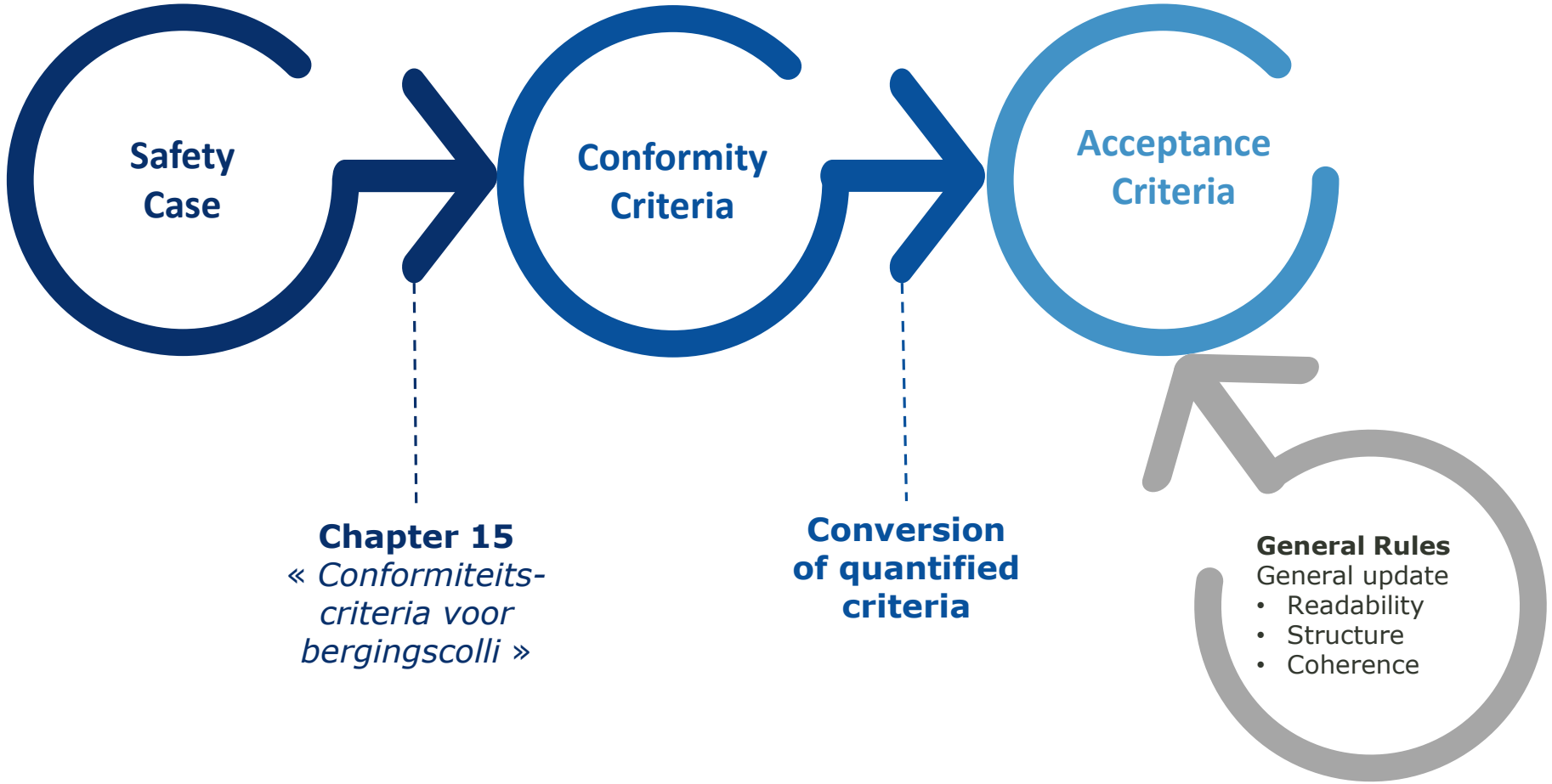

Waste Producers
Non-conditioned Waste
Treatment and Conditioning
Conditioned Waste
Storage
Final Conditioning
Waste for Disposal
Disposal

3. The Waste Acceptance System
Waste Acceptance Criteria

- Acceptance: declaration by ONDRAF/NIRAS of the *apparent* compliance of the examined radioactive waste unit with the *requirements* which provide, in so far as known, sufficient confidence about the safety and feasibility of the ensuing management of the waste in function of its *reference* final destination
- Acceptance criteria: measure by which to verify whether the radioactive waste complies with the requirements for acceptance
- Sources of input for criteria: transport, treatment and conditioning (T&C), operational safety, quality assurance, long term management considerations, existing licenses, planned disposal criteria's,…
- General Rules (for the Establishment of Acceptance Criteria): rules for formulating acceptance criteria
  - Existing General Rules approved by Competent Authority (Minister of Interior) on 10th February 1999;
  - Under revision → Publication as a royal decree

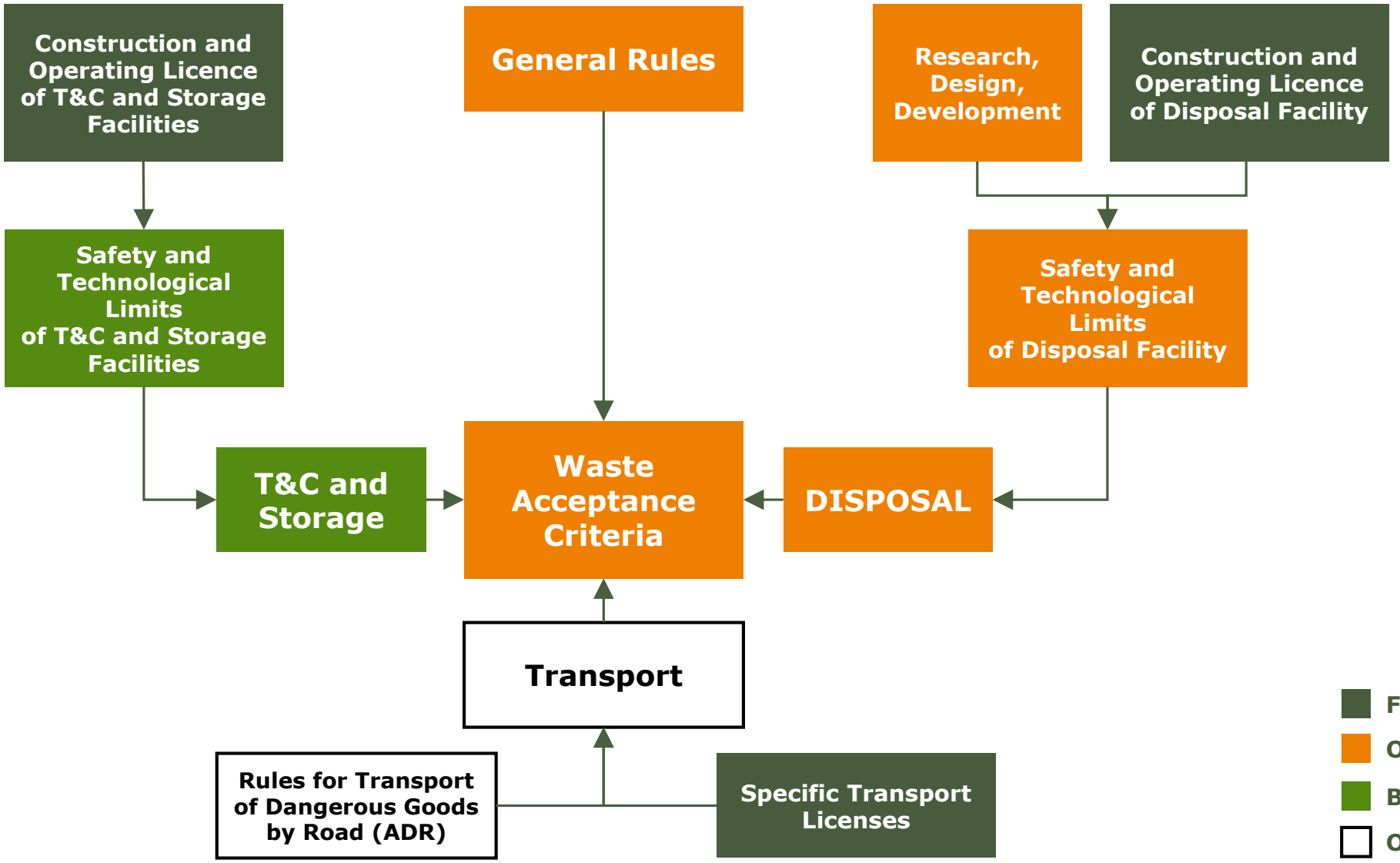
3. The Waste Acceptance System

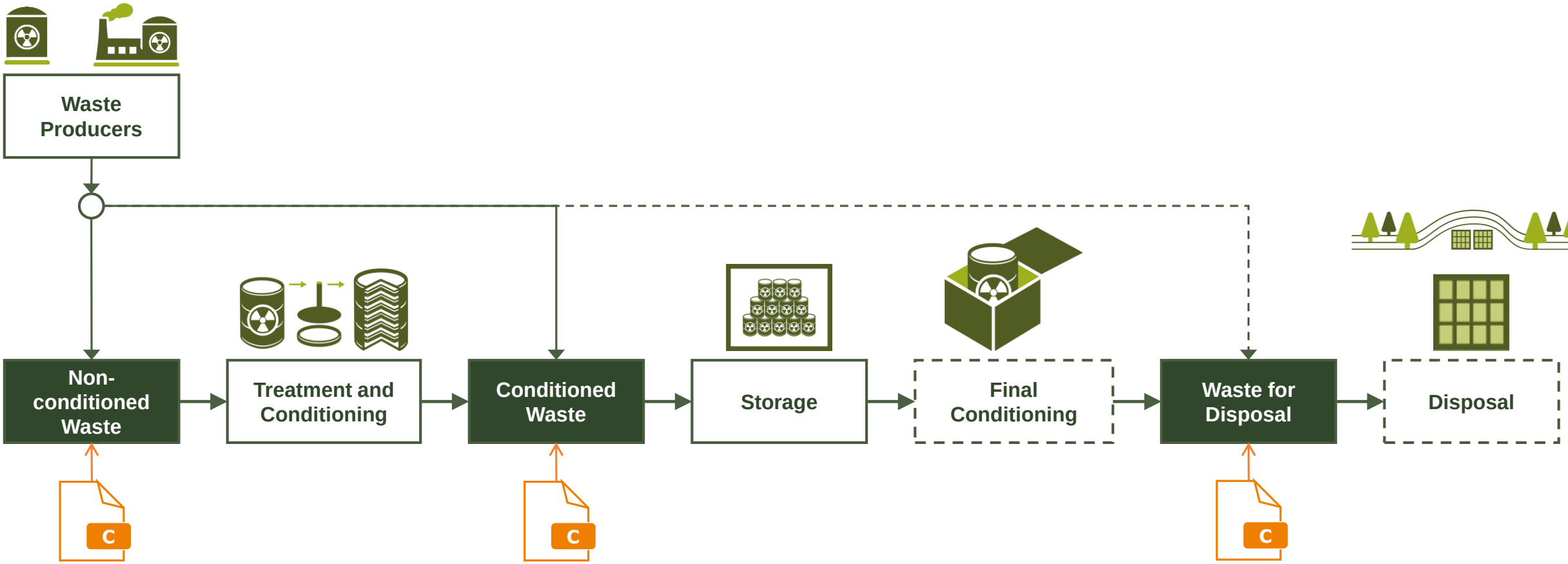
Waste Acceptance Criteria



3. The Waste Acceptance System

Waste Acceptance Criteria

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Non-conditioned Waste
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Disposal
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3. The Waste Acceptance System
Qualifications

- Formal recognition by ONDRAF/NIRAS of the capability of a process, an installation or a methodology to produce or characterize radioactive waste which meets the corresponding waste acceptance criteria

- Legal Framework = Royal Decree of 18th November 2002

3. The Waste Acceptance System
Qualifications - Objectives

- Judge the capability of a process (installation) to produce (characterize) radioactive waste meeting the waste acceptance criteria (WAC)
- Assure the adequacy of the methods put in place in order to meet these WAC
- Prepare the road leading to the acceptance of the radioactive waste by ONDRAF/NIRAS

3. The Waste Acceptance System

Qualifications – Six types

Methods - assuring conformity of non-radiological aspects
Limited to non-conditioned waste

Radiological - assuring conformity of radiological aspects
Applicable to conditioned and non-conditioned waste

Radiological measuring apparatus used for end-characterization
Applicable to conditioned and non-conditioned waste

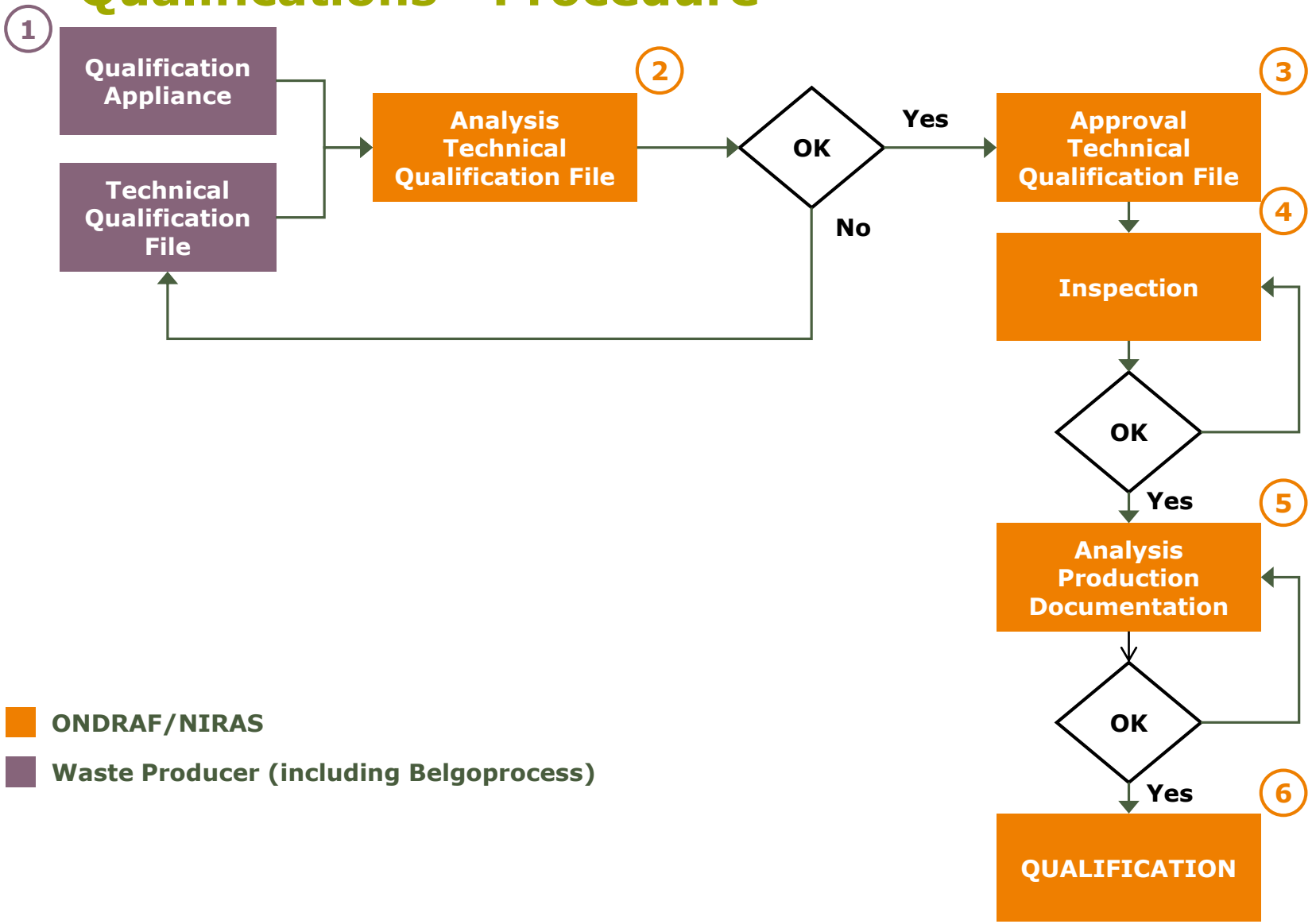
Treatment and conditioning process
Limited to conditioned waste

Primary package for conditioned waste
Limited to conditioned waste

Storage buildings for conditioned waste operated by Belgoprocess
Limited to conditioned waste

3. The Waste Acceptance System

Qualifications - Procedure

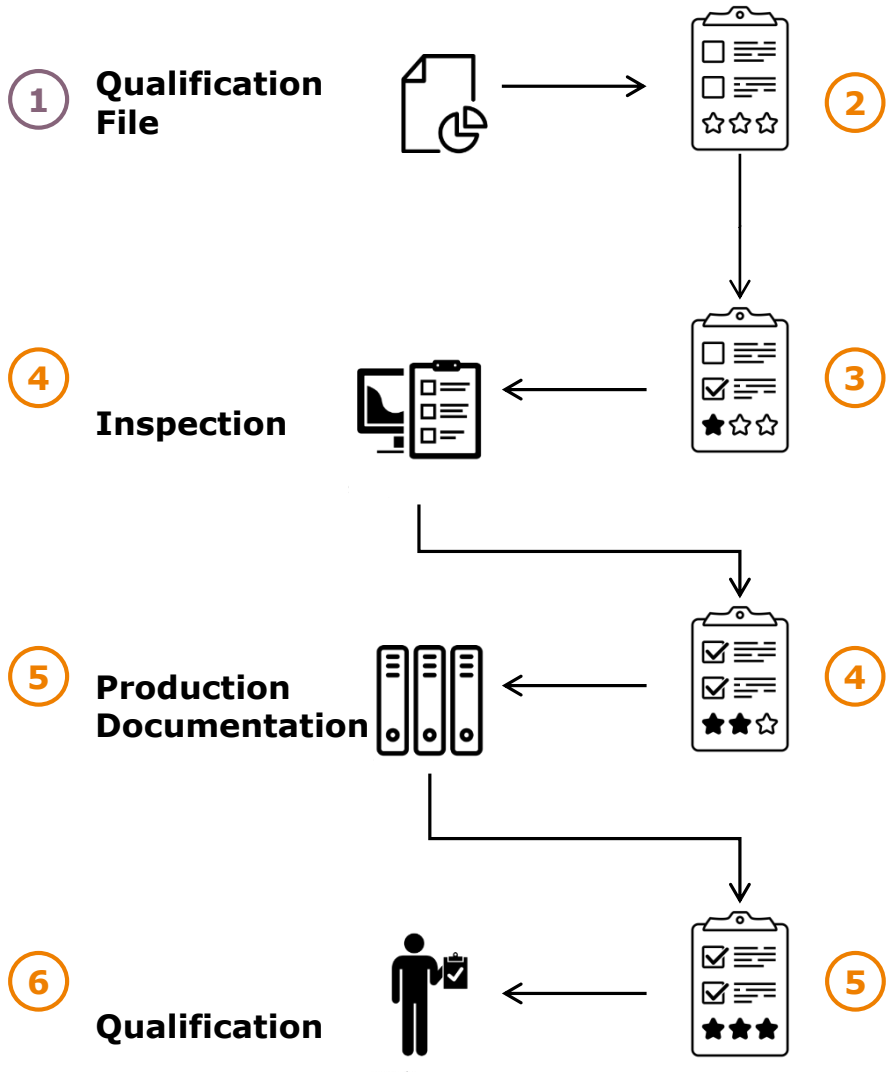


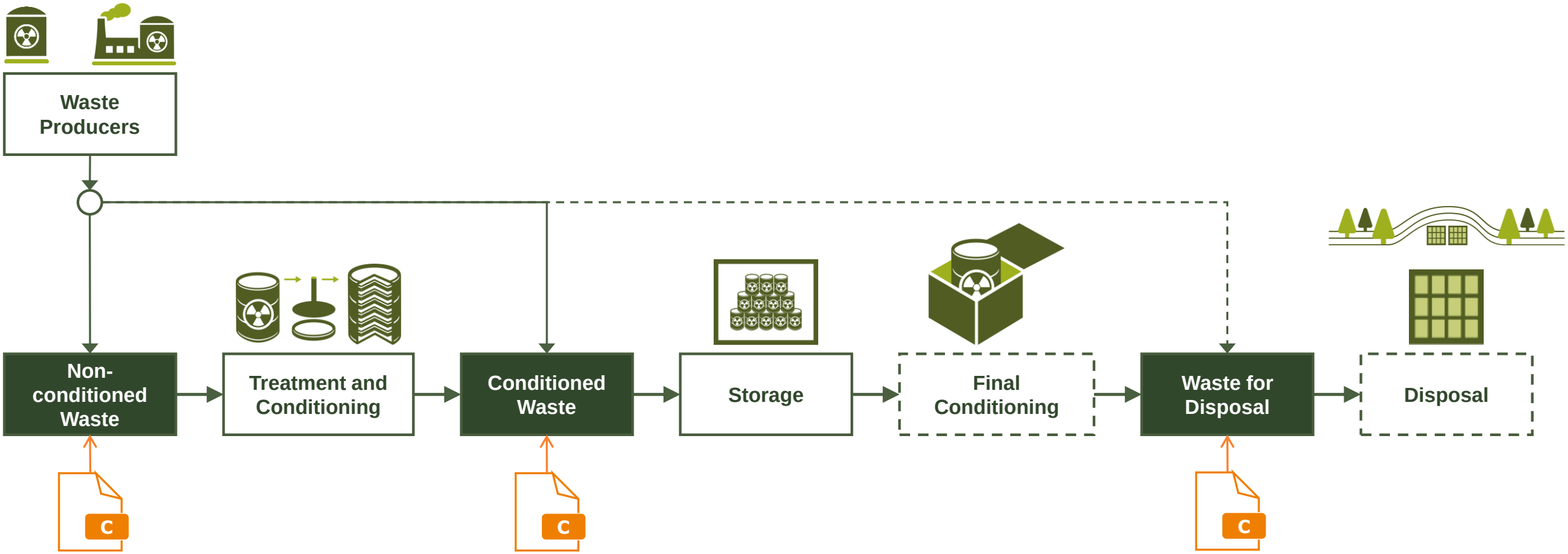
ONDRAF/NIRAS

Waste Producer (including Belgoprocess)

3. The Waste Acceptance System

Qualifications - Procedure

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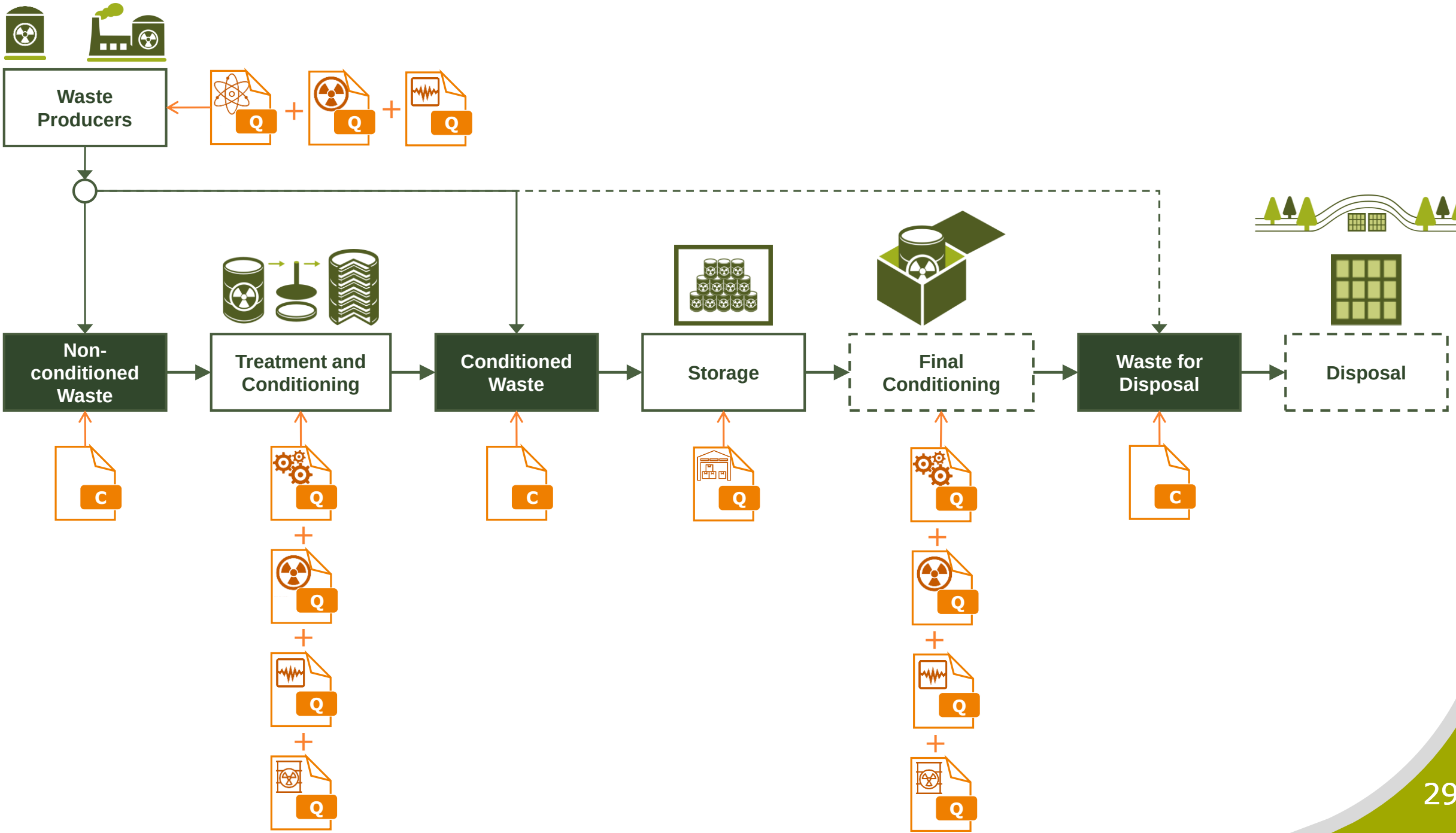
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3. The Waste Acceptance System
Acceptance procedure - Objectives

- To examine the compliance of the radioactive waste produced by a qualified process or installation with the applicable waste acceptance criteria (WAC)

➔ Does the radioactive waste meet all applicable waste acceptance criteria?

- Prepare the road leading to the acceptance of the radioactive waste by ONDRAF/NIRAS

- After compliance is verified, to formally record the acceptance of the radioactive waste

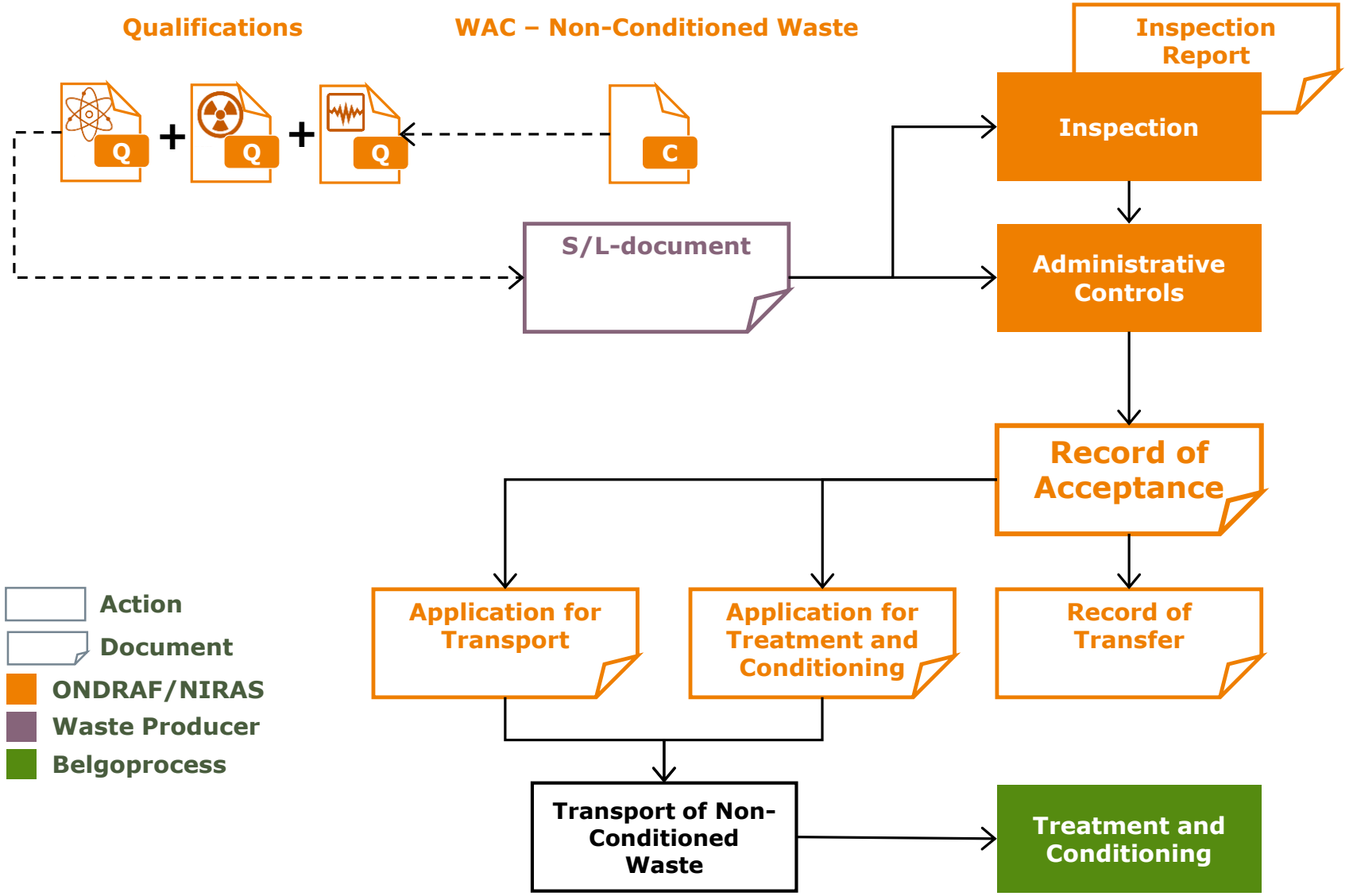
3. The Waste Acceptance System
Acceptance procedure - Objectives

- After radioactive waste is transferred from a waste producer to ONDRAF/NIRAS (first acceptance), to formally record the transfer
  - ➔ Allows ONDRAF/NIRAS to fulfill her legal assignment as final manager of all radioactive waste on Belgian territory
  - ➔ Allows payment of fee by the waste producer (contribution to the Long Term Fund) to cover the expected costs associated with the long term management of the transferred waste

- Acceptance procedure is based on 2 axes:
  - Administrative controls (in our offices)
  - Inspections on the sites of waste producers during and after production of non-conditioned and conditioned waste

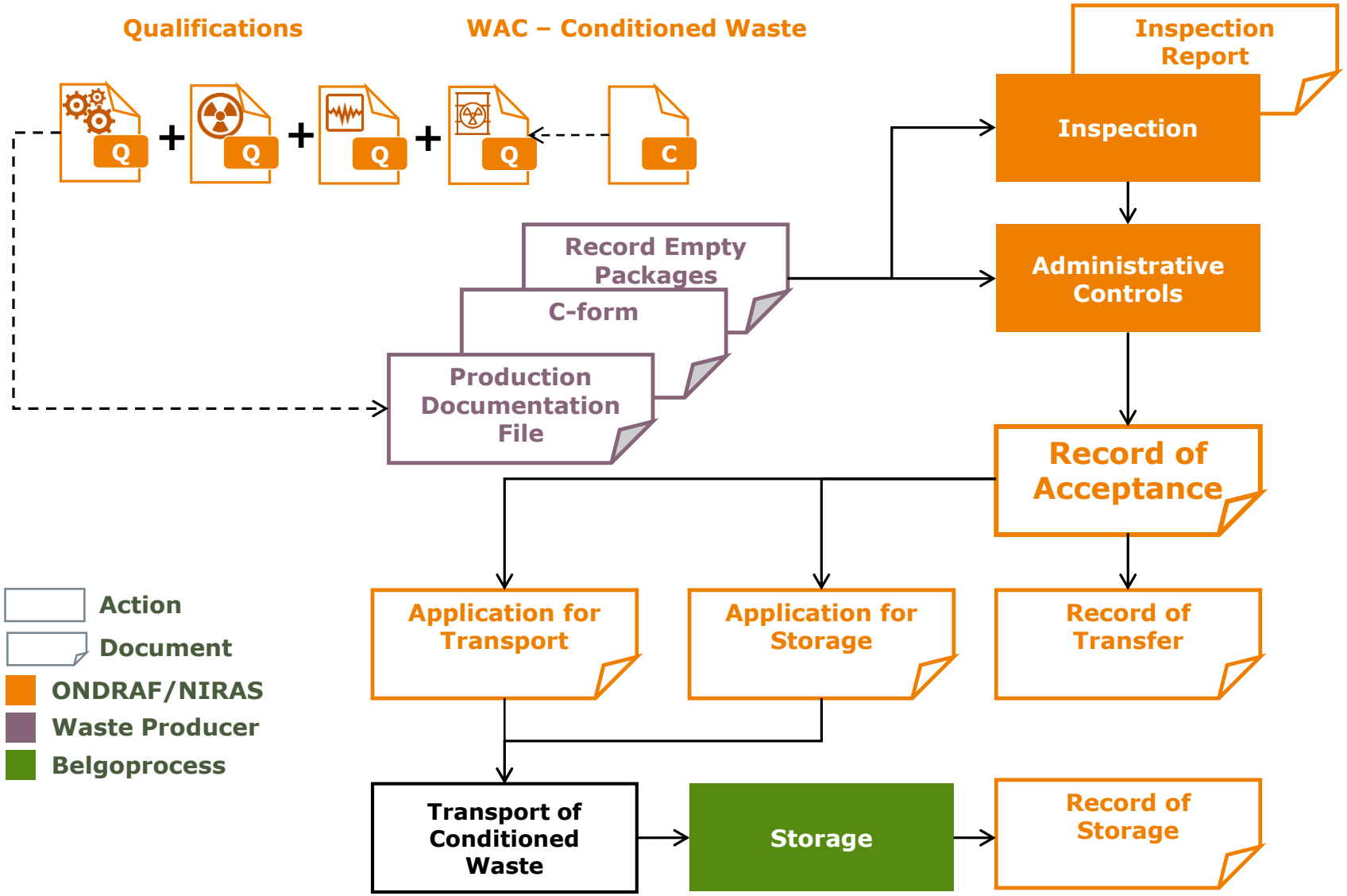
3. The Waste Acceptance System

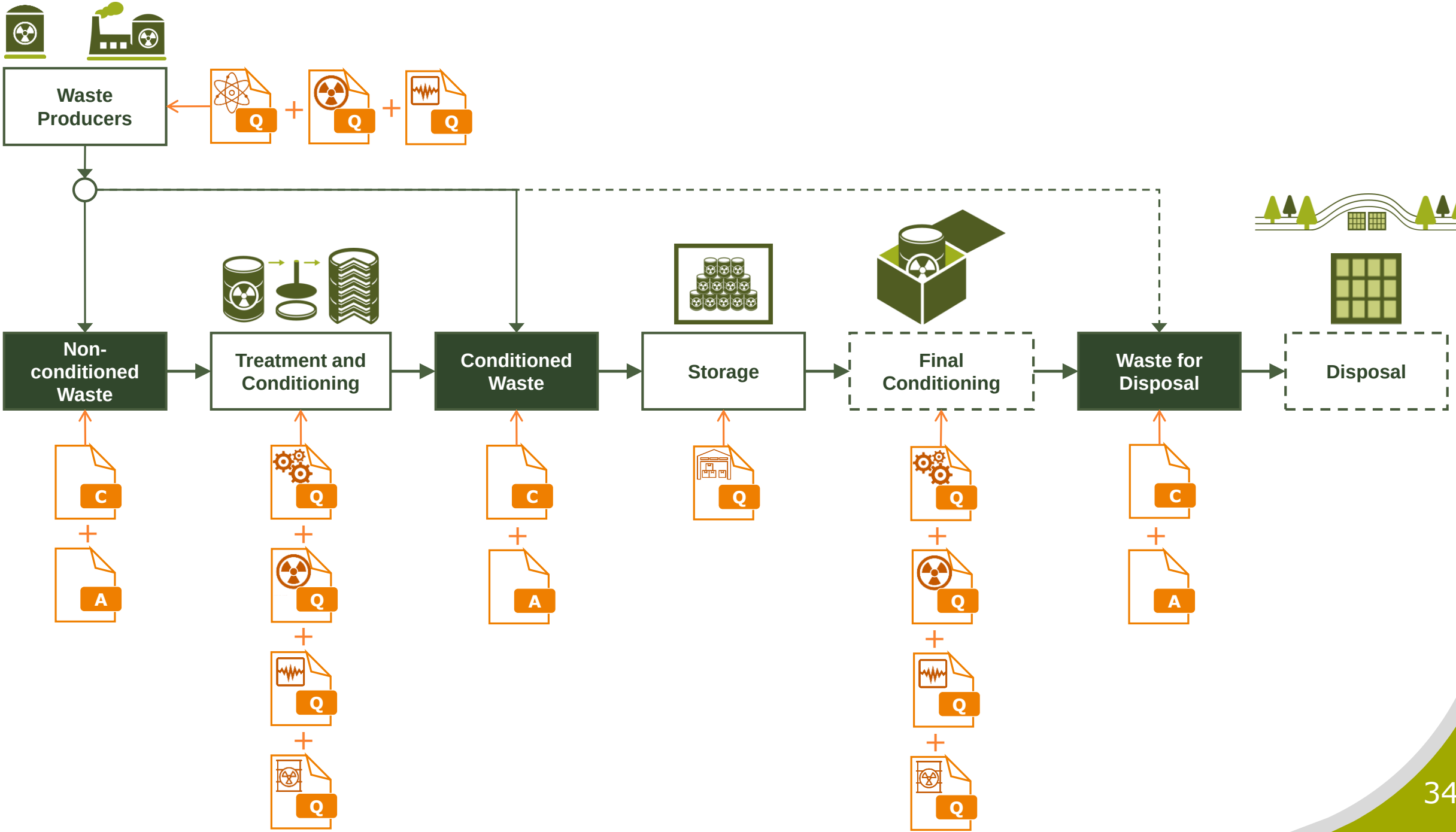
Acceptance procedure for non-conditioned waste



3. The Waste Acceptance System

Acceptance procedure for conditioned waste

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3. The Waste Acceptance System

Current challenges

- Inspection of supply chain of materials used by conditioning processes.
- Update of waste acceptance criteria, considering the updated general rules and the safety case of the surface disposal facility.
- Update of the royal decree of 18th November 2002.

Thank you!

Questions?