Recent Activity of ISO/TC 265/WG 1 on Carbon Dioxide Capture

Takayuki Higashii
Research Institute of Innovative Technology for the Earth
CSLF Technical Group Meeting, October 4th, 2016

ISO – A Global System

Updated on 5 March 2012

* ISO annual report 2015

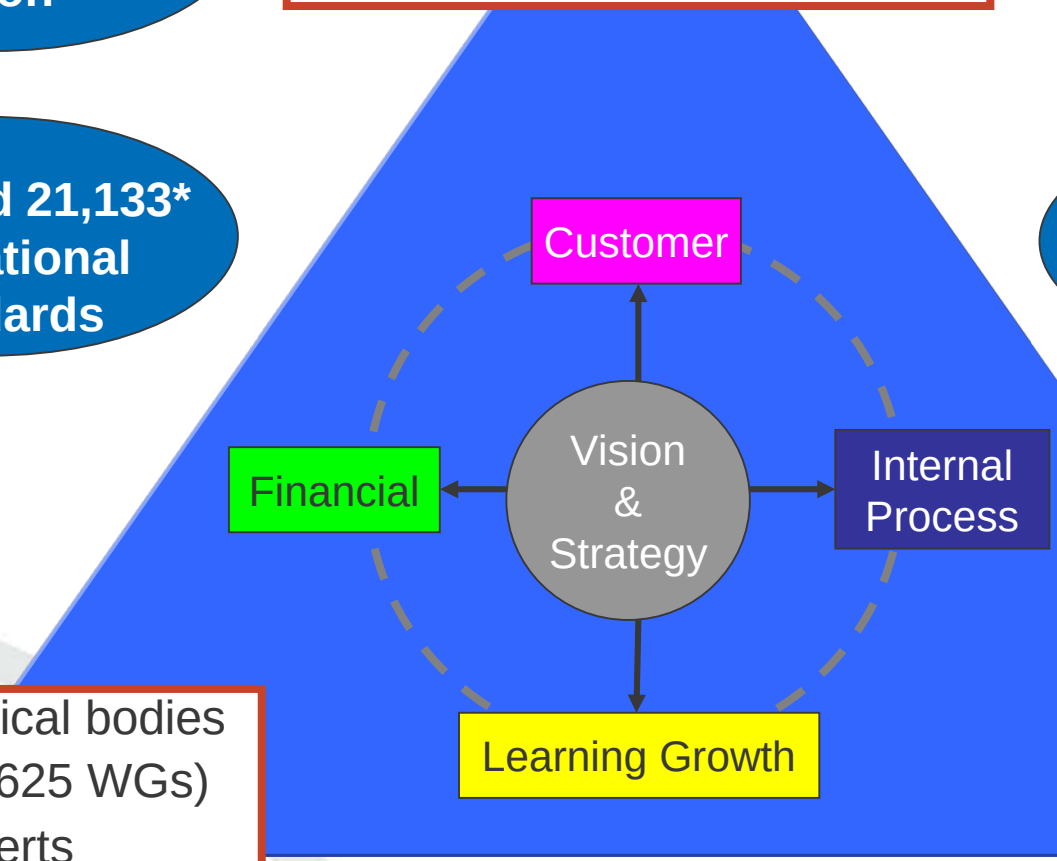
Over 600 organisations in liaison

162* national standards bodies

98% of world GNI
97% of world population

Published 21,133* International Standards

1,505* standards published in 2015



3,535* technical bodies
(238 TCs, 2,625 WGs)
100,000 experts

Central Secretariat in Geneva
137* FTE staff

ISO TC265 General updated May 2016_CSA (002), modified

ISO does not write standards

Technical Committees write standards

Member countries approve standards

Nations adopt ISO standards

ISO does not influence the technical content

ISO TC265

- Chaired by Canada (Sandra Locke)
- Secretariat – Standards Council of Canada (SCC), twinned with Standardization Administration of China (SAC)

Scope

Standardization of design, construction, operation, and environmental planning and management, risk management, quantification, monitoring and verification, and related activities in the field of carbon dioxide capture, transportation, and geological storage (CCS).

ISO TC265 General updated May 2016_CSA (002)

ISO TC265

Objectives

– Provide support to GHG emissions reduction technology consistent with industry best practices

– Ensure that CCS projects are safe for future generations

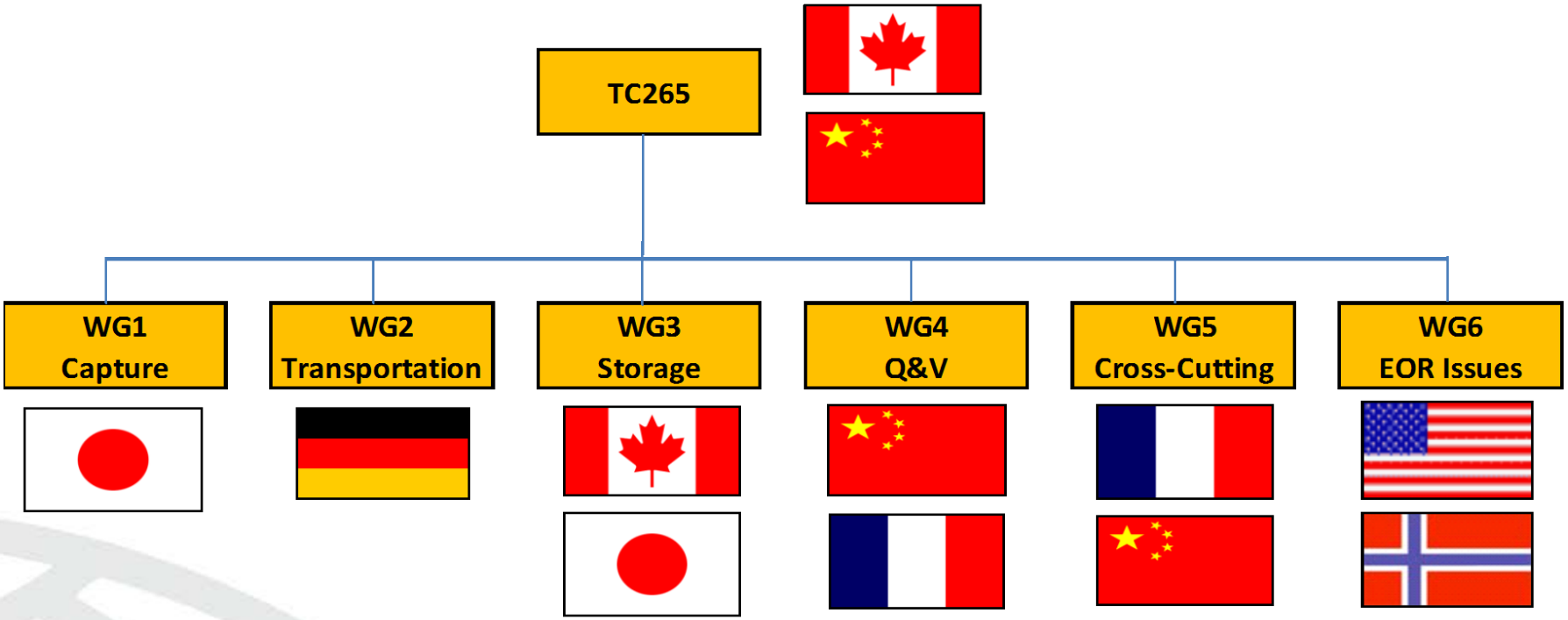
– Reach consensus on a uniform set of rules and guidelines to assist the development of the technology

– Not necessarily prescriptive, particularly in rapidly evolving technology domains (such as Capture) to avoid hampering innovation

ISO TC265 Membership

Countries			Liaisons	
P- Participating		O- Observing		
Australia	Netherlands	Argentina	CO2GeoNet	ISO TC67
Canada	Norway	Czech Republic	CSLF	ISO TC207
China	Qatar	Egypt	EIGA	ISO TC207/SC1
France	Saudi Arabia	Finland	GCCSI	ISO TC207/SC7
Germany	South Africa	Islamic Republic of Iran	IEA	ISO TC27/SC5
India	Spain	New Zealand	IEAGHG	CEN TC234
Italy	Sweden	Serbia	WRI	
Japan	Switzerland	Sri Lanka		
Republic of Korea	United Kingdom			
Malaysia	United States			

ISO TC265 Structure



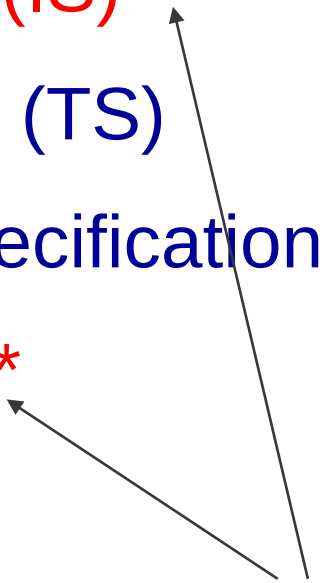
ISO TC265 General updated May 2016_CSA (002)

The current status of 6 WGs in TC265

WGs	Current ISO document	status
WG1	*TR 27912:2016* Carbon dioxide capture systems, technologies and processes *CD 27919-1* Part 1: Performance evaluation methods for post-combustion CO2 capture integrated with a power plant	Published (2016.5) CD voting (2016.11)
WG2	*FDIS 27913* Pipeline transportation systems	Approved (2016.9) Now, ISO 27913
WG3	*DIS 27914* Geological Storage	DIS voting (2016.10)
WG4	*DTR 27915* Quantification and verification *NP 27920* Quantification and Verification	Publication stage as TR 27915 NP voting (2016.11)
WG5	*DIS 27917-1* Vocabulary -- Part 1: Cross-cutting terms *DTR 27918* Lifecycle risk management for integrated CCS projects	DIS voting (2016.10) TR voting (2016.11)
WG6	*CD 27916* (* the second CD)* Carbon Dioxide Storage using Enhanced Oil Recovery	Under development (2016.7-)

Type of ISO Documents

- International Standard (IS) *
- Technical Specification (TS)
- Publically Available Specification (PAS)
- Technical Report (TR) *



* ISO documents at the current WGs

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Recent activity of WG1 (capture)

TR 27912:2016

Carbon dioxide capture systems, technologies and processes

✓**Published**

CD 27919-1

Part 1: Performance evaluation methods for post-combustion CO2 capture integrated with a power plant

✓**on CD voting**

Current members of WG1 (capture)

- 56 experts from 14 P-member countries

1. Australia (3)
2. Canada (6)
3. China (5)
4. France (2)
5. Germany (1)
6. Japan (8)
7. Netherlands (2)
8. Norway (2)
9. Republic of Korea (4)
10. Saudi Arabia (3)
11. Spain (6)
12. Sweden (1)
13. United Kingdom (4)
14. USA (9)

- 4 experts from 2 liaisons

1. IEAGHG (2)
2. GCCSI (2)

- 5 document monitors

1. France
2. Germany
3. Japan
4. Netherlands
5. Norway

- Convenor/Secretary

Direction of standard development in WG1

ISO standards for CCS will help to provide a common basis for commercial and business transactions and encourage safe, effective use of CCS. The focus is on CO2 being emitted from large stationary point sources. Existing standards will be utilized where possible.

Standards for carbon dioxide capture will cover a broad range of sectors and CO2 capture technologies.

Sectors:

- Power industry
- Cement industry
- Iron and steel industry
- Gas production and chemical industry

Technologies:

- Post-combustion CO2 capture
- Oxyfuel combustion
- Pre-combustion

Standards for them will be developed and established in order based on the technological and practical maturity and rationality.

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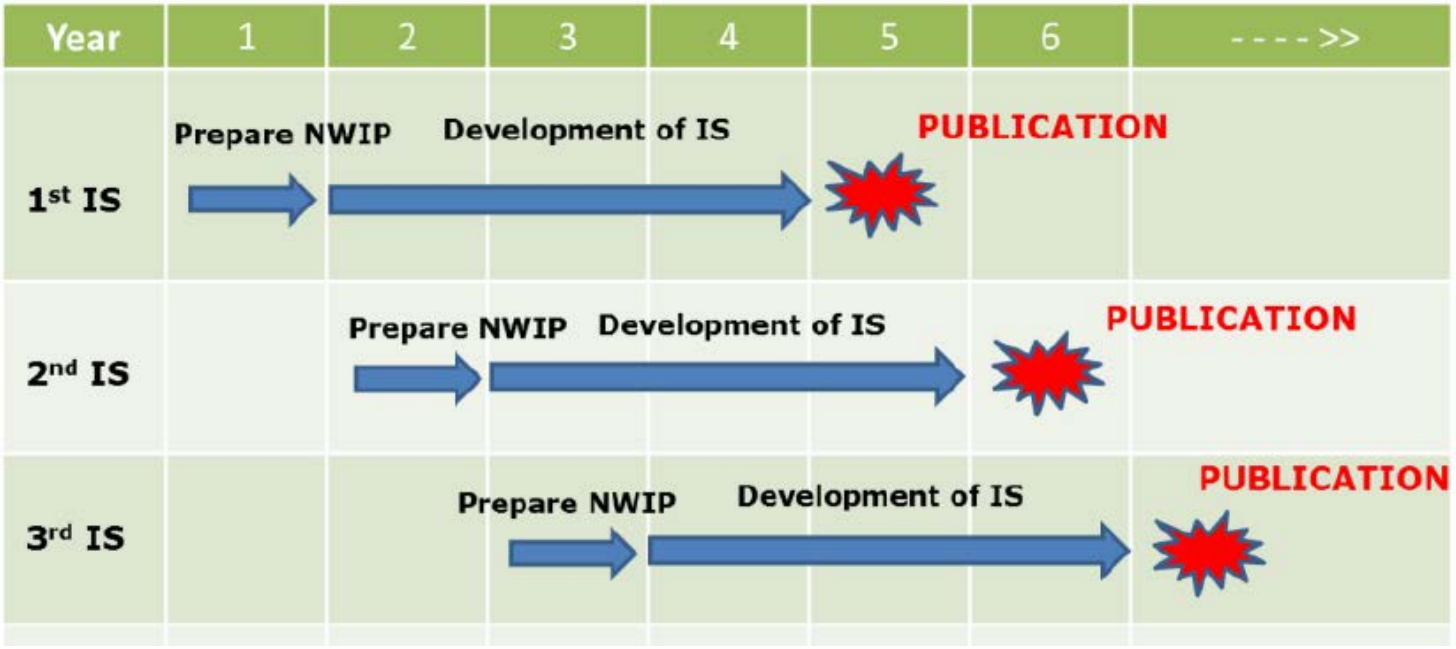

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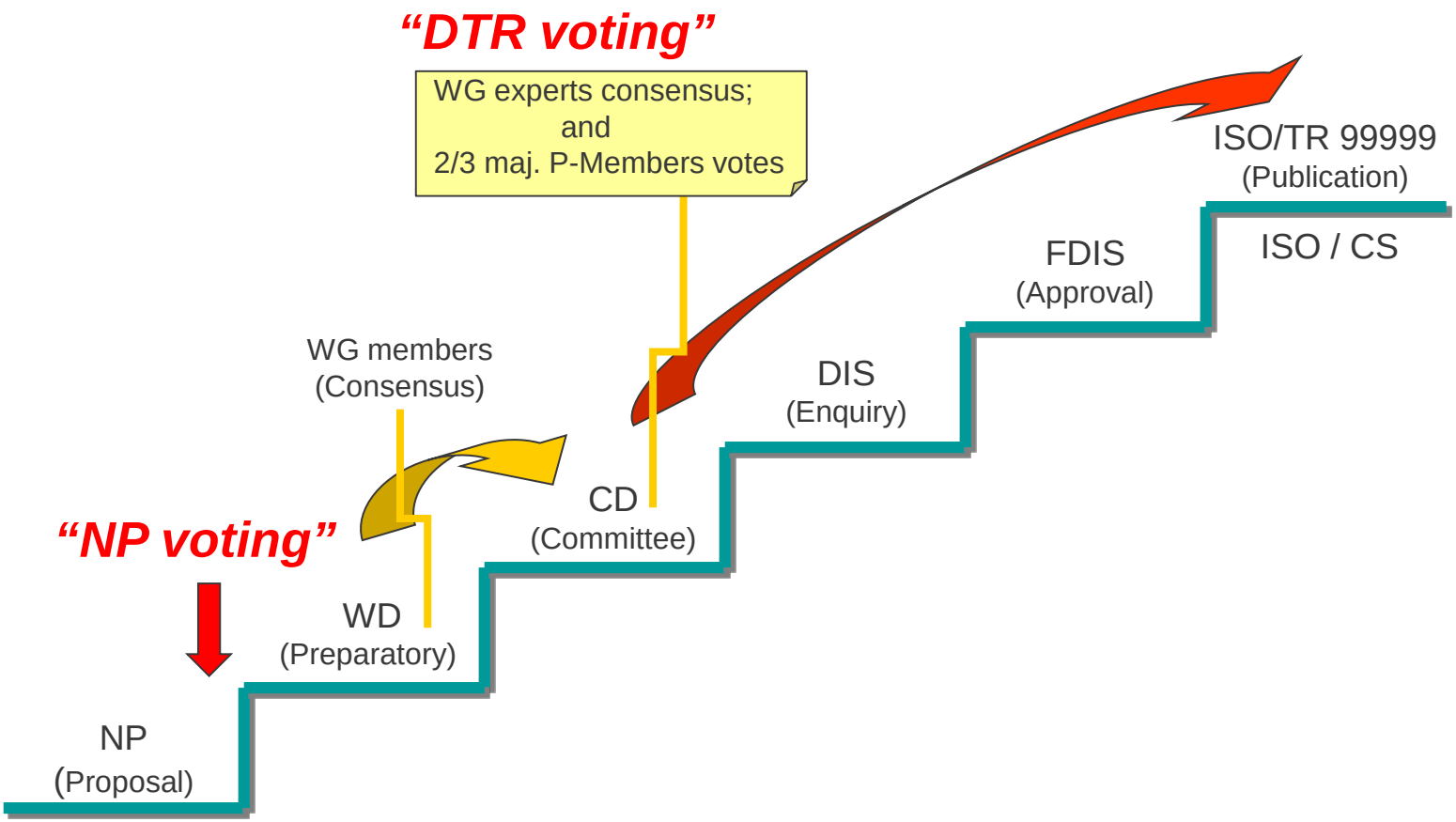
First project – Technical Report (TR)

This report describes the principles and information necessary to clarify the CO2 capture system and provide stakeholders with the guidance and knowledge necessary for the development of a series of standards for CO2 capture.

This also covers CO2 capture systems applicable to CO2 emission sources and their respective boundaries, as well as capture technologies, equipment and processes specific to CO2 capture from the viewpoints of the international standardization for the implementation of CCS.

In addition, it can be used for the development of International Standards under TC265.

Technical Report (TR) development



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Outline of TR 27912: 2016

1. Classification by industry as CO2 emission point

(1) Power Industry
- Post-combustion capture
- Pre-combustion capture
- Oxyfuel combustion

(2) Cement production processes
(3) Iron and steel industry
(4) Industrial gas production processes

2. Classification by subject for standardization

1) System boundary
2) Technologies, equipment and processes
3) CO2 streams, flue gas streams and emissions, process and waste products
4) Evaluation procedure for capture performance
5) Safety issues, 6) Reliability issues, 7) Management system

3. Discussion on possible future direction

Second project – the first IS from WG1

Based on “Possible Future Direction for International standardization” discussed in TR 27912, WG1 reached the following consensus;

1. The combustion-type thermal power generation is considered promising for the early adoption of CO2 capture. The said power generation is also the most common power source, and it is found worldwide as a source of CO2 emissions.
2. WG1 had extensive discussions on the performance evaluation methods of CO2 capture processes as one of the important items to be standardized. Accordingly, the performance evaluation of energy consumption in the CO2 capture process has a particularly high priority to be worked out before the other items.

Outline of ISO 27919-1 (ISO 27919 part 1)

(This is Scope in the drafting document.)

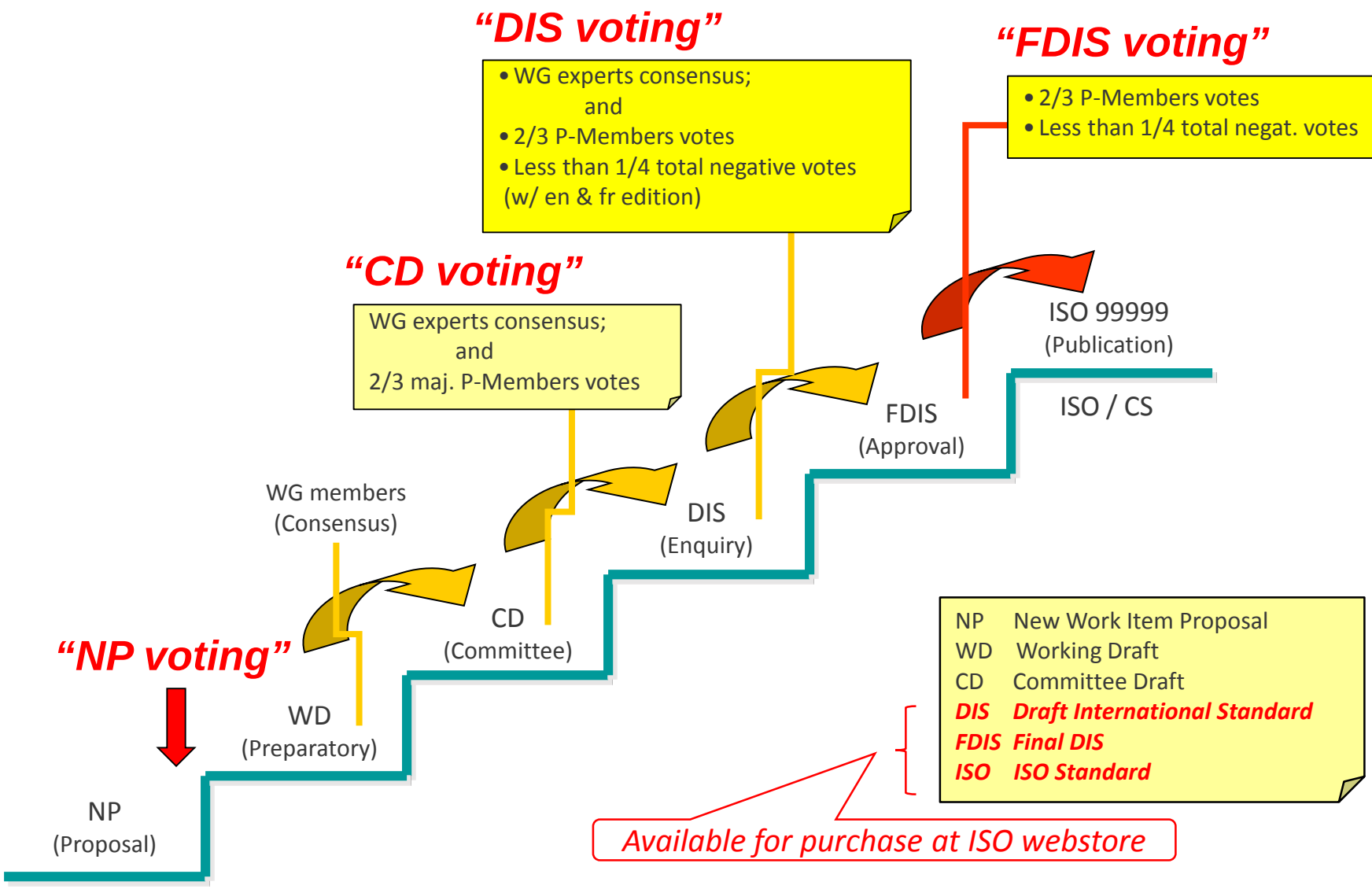
This document establishes guidelines for measuring, evaluating and reporting the performance of a post-combustion CO2 capture plant integrated with a power plant, and which separates CO2 from the power plant flue gas in preparation for subsequent transportation and geological storage. In particular, it provides a common methodology to calculate specific Key Performance Indicators (KPIs) for the CO2 capture plant, requiring the definition of the boundaries of a typical system and the necessary measurements for the determination of these KPIs.

Outline of ISO 27919-1 (ISO 27919 part 1)

This document covers thermal power plants burning carbonaceous fuels which are producing CO2 from boilers or gas turbines, and are integrated with CO2 capture.

Post-combustion capture technologies covered by this document are those based on chemical absorption using reactive liquids. Other post-combustion capture concepts based on different principles (e.g. adsorption, membranes, cryogenic) are not covered in this document.

International standard (IS) development



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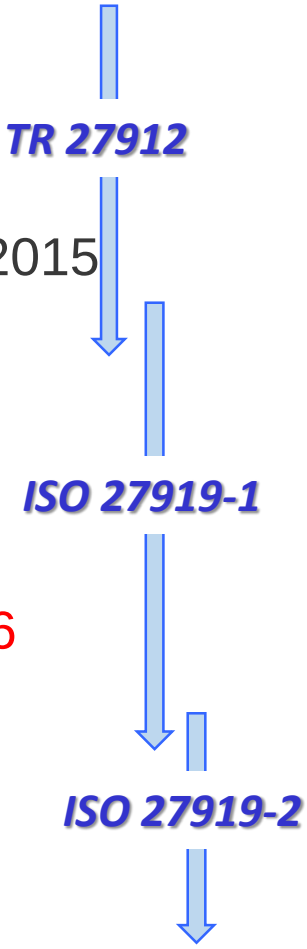
ISO TC265 and WG1 meetings

- TC265 initiated in 2011 and led by Canada
- 1st plenary meeting, Paris, June 2012
- 2nd plenary meeting, Madrid, February 2013
- 3rd plenary & 1st WG1 meeting, Beijing, September 2013
- 4th plenary & 2nd WG1 meeting, Berlin, April 2014
- 3rd WG1 meeting, Tokyo, October 2014
- 5th plenary & 4th WG1 meeting, Birmingham, AL, USA, January 2015
- 5th WG1 meeting, Paris, June 2015
- 6th plenary & 6th WG1 meeting, Oslo, Norway, September 2015
- 7th WG1 meeting, Erlangen, March 2016
- 7th plenary & 8th WG1 meeting, Laramie WY, USA, May 2016
- 8th plenary & 9th WG1 meeting, Sapporo, Japan, December 2016

Note: During the above period, WG1 teleconference were held 3 times.



ISO

RITE
Research Institute of Innovative Technology for the Earth

ISO TC265

Carbon Dioxide Capture, Transportation, and Geological Storage

ISO/TC265 the 8th Plenary Meeting and WG Meetings

DELEGATE INFORMATION PACKAGE

November 28 – December 2, 2016
Sapporo, Hokkaido, JAPAN

Host by

JISC

Organized by

RITE
Research Institute of Innovative Technology for the Earth

Appendix

Membership of ISO TC265

Countries		Liaisons
P- Participating	**O- Observing**	
• Member bodies that want to **play an active role** • Have **obligation to vote** • Also **identify experts to contribute** • Provide **national delegations**	• Those who **wish to follow** • Can still **make contributions** • But **do not want to commit** • Open to ISO Member bodies and Correspondent members	• International organizations • Internal liaisons (committee-to-committee) • Participation or information • Helps to **ensure wider acceptance, do not have a vote, bring expertise**