

Technical Group Meeting

28 October 2014

Warsaw, Poland

Agenda Items 9 and 10



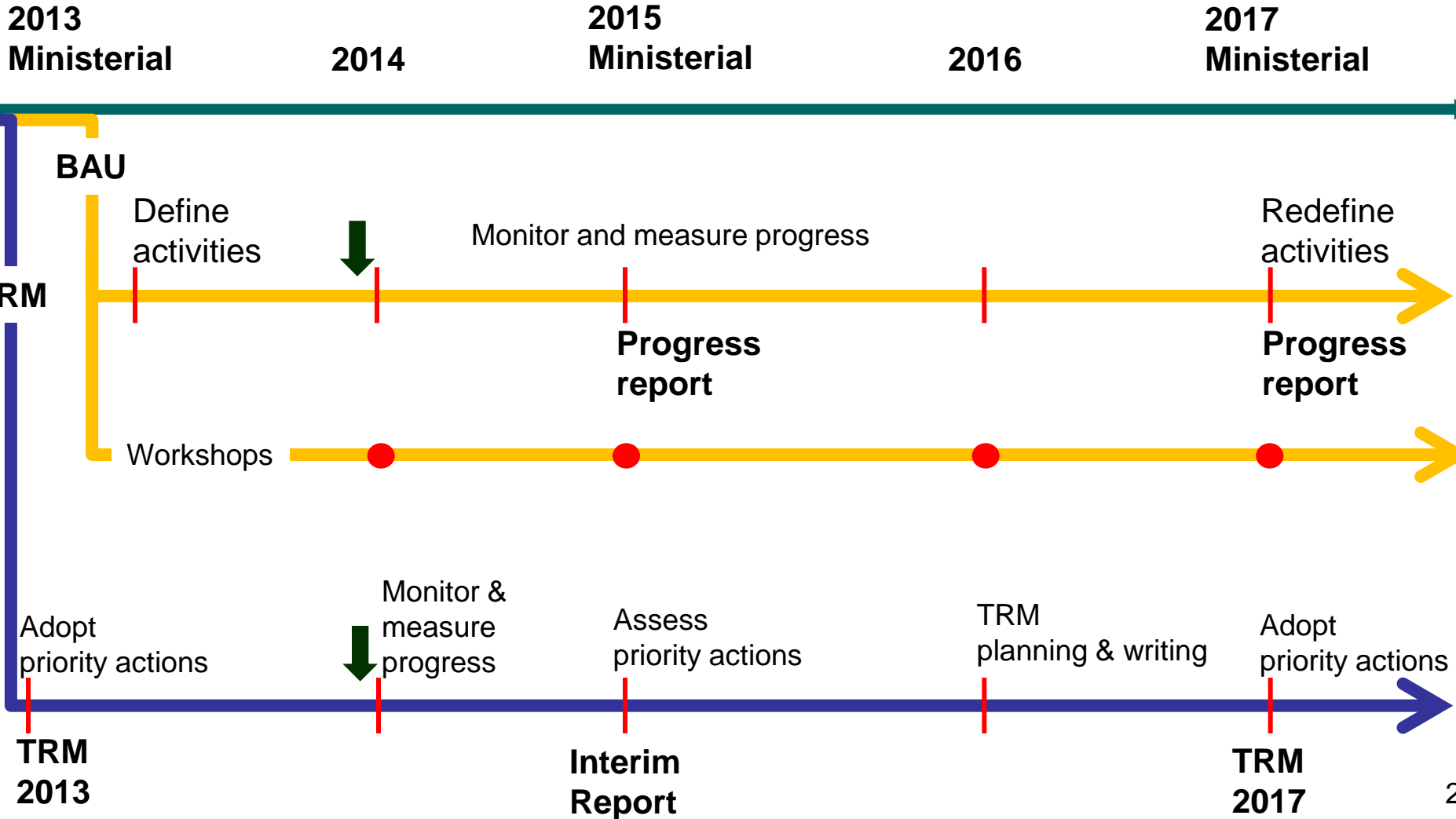
Report from Projects Interaction and Review Team

Clinton Foster

PIRT Chair



PIRT Action Time Line





Recommendation and outcomes

New project review (BAU of PIRT)

- The Technical Group recommend to the Policy Group that the *Norcem CO₂ Capture Project* is recognised by the CSLF [Agenda item 16].

Progress of CSLF Projects

- More rigorous progress reporting needed
 - *Gorgon Carbon Dioxide Injection Project*, CSLF recognised project Warsaw, 2010.
 - workshops; sharing learning experiences

Gorgon Project Overview 2014



- AUD \$52 billion investment
- Sub sea development of the Gorgon and Jansz-Io gas fields
- 3 x 5.2 MTPA LNG trains
- A domestic gas plant with capacity of 300 terajoules per day
- Carbon dioxide injection project

Joint Venture Participants

- Chevron (47.3%)
- ExxonMobil (25%)
- Shell (25%)
- Osaka Gas (1.25%)
- Tokyo Gas (1%)
- Chubu Electric Power (0.417%)

Jansz-Io Field

Gorgon Field

Barrow Island

Karratha

Dampier to Bunbury
Natural Gas Pipeline

Operated by Chevron Australia
in joint venture with
ExxonMobil
Osaka Gas | Tokyo Gas | Chubu Electric Power



Gas Treatment Plant Site



Operated by Chevron Australia
in joint venture with



Osaka Gas | Tokyo Gas | Chubu Electric Power

Gorgon Project Plant Site

Plant Site – July 2014



CO₂ Compressor Module



Operated by Chevron Australia
in joint venture with
ExxonMobil
Osaka Gas | Tokyo Gas | Chubu Electric Power



Recommendation and outcomes

Technology Road Map – *TRM monitoring progress*

- The 2013 TRM remains a valid document.
- Progress Report be prepared for the next 2015 TG Meeting – in accord with the PIRT Action Time Line.
- Required actions for Progress Report to be made clearer (roles of Secretariat, Lead countries)
 - ❖ *Recommend questionnaire be re-opened for five weeks to mid December [for discussion]*

TRM Progress Report – CSLF Document T-2014-7



- 2013 CSLF Technology Roadmap (TRM) was launched at 5th CSLF Ministerial Meeting in November 2013.
- An objective of 2013 TRM was to answer three key questions:
 - What is the current status of CCS technology and deployment, particularly in CSLF member countries?
 - Where should CCS be by 2020 and beyond?
 - What is needed to get from point a) to point b), while also addressing the different circumstances of developed and developing countries?



Confirmation of lead countries 27/10/14

Area #1: CO2 Capture Technologies in Power Generation (Norway)

Area #2: CO2 Capture in Industrial Sector (South Africa & UK)

Area #3: CO2 Transport (Australia)

Area #4: Large-Scale CO2 Storage (Japan and France)

Area #5a: Monitoring (United States & France)

Area #5b: Mitigation / Remediation (European Commission)

Area #6: Understanding the Storage Reservoirs (United Kingdom)

Area #7: Infrastructure (United Kingdom)

Area #8a: CO2 Utilization, non-EOR (France)

Area #8b: CO2 Utilization, EOR (Saudi Arabia)

TRM Progress Report



- Technical Group delegates sent template to representatives of organizations within their countries which are working on CCS.
- As of October, total of 13 completed templates have been returned.
 - Norway (4)
 - USA (3)
 - Canada, China, EC, Japan, Saudi Arabia, Australia (1 each)

TRM Progress Report



TRM Progress Report – Global Trends

Technology Needs Area	1 st Generation Technologies – Progress toward 2020	2 nd – 3 rd Gen. Technologies – Progress toward 2020	What kinds of barriers exist?		
			Economic	Policy	Technology
a) CO ₂ Capture in Power Generation	Moderate	Very Slowly to Moderate	Yes	Yes	Yes
b) CO ₂ Capture in Industrial Sector	Very Slowly to Moderate	Very Slowly	Yes	Yes	Yes
c) CO ₂ Transport	Very Slowly to Moderate	Very Slowly to Moderate	Yes	Yes	
d) Large-Scale CO ₂ Storage	Very Slowly to Moderate	Very Slowly to Moderate	Yes	Yes	
e) Monitoring Stored CO ₂	Moderate	Very Slowly to Moderate	Yes	Yes	Yes
f) Mitigation / Remediation Procedures	Moderate	Very Slowly to Moderate	Yes	Yes	Yes
g) Understanding Storage Reservoirs	Very Slowly to Moderate	Very Slowly to Moderate	Yes	Yes	Yes
h) Infrastructure and the Integrated CCS Chain (capture to storage)	Very Slowly	Very Slowly	Yes	Yes	
i) CO ₂ Utilization, non-EOR	Very Slowly	Very Slowly	Yes	Yes	Yes
j) CO ₂ Utilization, EOR	Moderate	Very Slowly	Yes	Yes	Yes

TRM Progress Report



PRELIMINARY RESULTS:

- Not enough information yet to definitively describe global status of CCS. Some trends are evident.
- For 1st generation technologies, **none** of the 10 technology needs areas were perceived as “fast moving”.

TRM Progress Report



PRELIMINARY RESULTS:

- Progress in most areas perceived as mixed opinion of “very slow” and “moderate”.
- Geographic bias in responses received: North American responders were, in general, more pessimistic.
- Results for 2nd & 3rd generation technologies were similar, but many more “no opinion” responses were received.

TRM Progress Report



PRELIMINARY RESULTS:

- No clear-cut singling-out of specific barriers (or drivers). All types of barriers (economic, policy, technology) perceived to exist for most technology needs areas.
- Individual country results gave wide range of responses. Issues surrounding CCS are viewed in different ways in different countries.

TRM Progress Report



CONCLUSIONS AND RECOMMENDATIONS:

- Results confirm that worldwide, CCS is not a “one size fits all” collection of technologies.
- There is a great need for individualized country-specific technology roadmaps.
- **This is only an interim progress report.** An updated version is recommended for the next CSLF meeting.

TRM Progress – Outcomes from PIRT Meeting 27/10/14



- TRM still valid
- Questionnaire to be resent to Technical Delegates seeking additional input (Secretariat – **recommend close out 5 weeks**)
- Roles, responsibilities, and definitions clarified: lead delegate countries are responsible for interpretation of results
- Progress report against specific areas prepared for June 2015 meeting

PIRT always open for new members