Fourth Mission Innovation (MI-4) Ministerial
Pre-read material
May 6, 2019

Fourth Mission Innovation (MI-4) Ministerial

About

Mission Innovation (MI) members have committed to supporting breakthroughs and cost reductions in order to deliver a global energy system that is clean, affordable, and reliable.

MI-4 will bring together Ministers, business leaders, youth and innovators to explore creative ways to significantly boost the pace and scale of meaningful change. By building on the success of MI-3 and blending the traditional plenary setting with moderated discussions, panels, breakouts, and keynote presentations that open up important dialogue beyond just Ministers, MI-4 will be an inclusive, dynamic and engaging planform for MI to demonstrate its impact, challenge members and the private sector, and raise collective ambition.

MI-4 Key Outcomes

Doubling commitment: MI members will have reported on efforts to meet the doubling commitment, with a focus on demonstrating the impact of investments and on setting a clear path from MI-4 to MI-5 (the road from Vancouver to Chile).

New projects: Through the Innovation Challenges, countries will have advanced development of breakthrough technology solutions to address the most pressing clean energy needs.

Bold initiatives: Bold, collaborative initiatives will have been committed to by members, with clear alignment to the MI Action Plan, and linkages to milestone events over the coming year (G20, UN Climate Summit, COP25, etc.).

This will be achieved through:

- ***Diverse perspectives***: Dialogue will have opened up beyond the public sector, including women, youth, investors and innovators.
- ***Extending MI's reach:*** *MI will have welcomed Morocco as a new member, and introduced the first cohort of MI Champions.*
- ***Partnerships:*** *New and strengthened partnerships will have emerged with the private sector.*

Fourth Mission Innovation Ministerial Meeting (MI-4)

MONDAY, MAY 27					
Timing	**Title**	**Location**	**Event Type**	**MI attendees**	**Page no.**
11:30-16:00	MI Champions Teambuilding Event	VCC, Room 201	MI-4 side event	MI Champions, invited speakers	6
11:00-15:00	PFAN-Mission Innovation Clean Energy Investment Forum	VCC, Room 211	MI-4 side event	All	7
9:00-12:00	Avoided Emissions Framework Workshop: A presentation of MI Solutions	VCC, Room 222	MI complementary programming	All	8
9:00-13:00	Joint Programming Event and Pilot Multilateral MI Call 19 Workshop	VCC, Room 208-209	MI complementary programming	All	9
10:00-11:30	World Economic Forum: Global Sustainable Energy Innovation Fund	VCC, Room 205	MI complementary programming	All	10
15:00-16:00	Pre-briefing for all MI country representatives	VCC, Room 206-207	MI-4 Senior Official Event	2 MI points of contact	11
16:15-16:45	Minister's Innovation Theatre Presentation	VCC, Ballroom A & B	MI Champions & PFAN Awards Ceremony	HoDs	12
16:45-17:30	Minister's Innovation Showcase Tour	VCC, Ballroom A & B	Joint CEM10/MI-4 Event	HoDs	13
18:00-18:45	Joint CEM10/MI-4 Opening Ceremony	VCC, Ballroom Foyer	Joint CEM10/MI-4 Event	All	14
18:45-20:30	Joint CEM10/MI-4 Opening Reception	VCC, Ballroom Foyer	Joint CEM10/MI-4 Event	All	15

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8:00-9:30	Public Private Breakfast	VCC, Room 211	MI-4	HoDs	16
9:30-9:45	Health & Networking Break		MI-4	All	N/A
9:45-10:00	Family Photo	TBC	MI-4	HoDs	N/A
10:00-11:30	Plenary Session 1: Demonstrating Impact	VCC, Ballroom C & D	MI-4	HoDs plus 2 (8 in theatre seating)	17
11:30-11:45	Health & Networking Break		MI-4	All	N/A
11:45-12:45	Ignite Talk: Accelerating Clean Energy Innovation	VCC, Room 118-120	MI-4	All	18
12:45-13:45	All Delegates Lunch	VCC, Room 109-110	MI-4	All	19
12:45-13:45	HoD Lunch Room	VCC, Room 221		HoDs	19
13:45-15:15	Public-Private Roundtables	VCC, Room 211	MI-4	HoDs	20
15:15-15:30	Health & Networking Break				N/A
15:30-17:00	Plenary Session 2: Raising Ambition	VCC, Ballroom C & D	MI-4	HoDs plus 2 (8 in theatre seating)	21
17:00-18:00	World Bank Energy Storage Announcement / World Bank and Global Covenant of Mayors Partnership Agreements	VCC, room TBC	MI-4 Event	All	22
18:00-19:00	Joint CEM10/MI-4 Minister's Reception	VCC, room 224 Foyer	Joint CEM10/MI-4 Event	HoDs	23
19:00-21:00	Joint CEM10/MI-4 Minister's Dinner	VCC, room 223-224	Joint CEM10/MI-4 Event	HoDs	24

WEDNESDAY, MAY 29					
7:15-8:45	Women in Clean Energy Breakfast	VCC, Room 109-110	Joint CEM10/MI-4 Event	Invited HODs	25
15:10-16:20	CEM/MI Roundtable Debate	VCC, Room 118-120	Joint CEM10/MI-4 Event	Invited HODs	26
18:00-18:30	Joint CEM10/MI-4 Closing Press Conference	VCC, Room 212-213	Joint CEM10/MI-4 Event	Canadian and Chilean Minister	27
OTHER MATERIALS					
Public-Private Roundtables: Smart Manufacturing for a Sustainable Energy Future		VCC, Room 211	MI-4	HoDs	29
Public-Private Roundtables: The Digital Economy of an Electric Future		VCC, Room 211	MI-4	HoDs	32
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Public-Private Roundtables: Scaling and Financing Sustainable Cooling Solutions		VCC, Room 211	MI-4	HoDs	37
Public-Private Roundtables: Towards a Clean Mobility Future		VCC, Room 211	MI-4	HoDs	40
CEM10/MI-4 Logistics Note (updated)					Separate attachment
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MI Champions Programme					46

MONDAY, MAY 27

MI-4 Side Event

MI Champions Teambuilding Event

Time: 11:30-16:00
Location: Vancouver Convention Centre, Room 201
Registration: MI Champions and invited speakers and guests will be able to access this event using their event passes. No separate registration is required.

Summary: This closed-door event for MI Champions will welcome the first cohort of 19 Champions and introduce them to the work of Mission Innovation. This will be an occasion for Champions to meet one another, review the importance of their roles, the purpose of the Champions programme, and how this work fits with the broader picture of Mission Innovation. Within this framework, there will be breakout discussions on their engagement, maximizing communications efforts, and strengthening links between Champions and Mission Innovation.

Contact: For questions regarding the programme please contact Laura Cuesta-Fernandez (Laura.cuesta-fernandez@ec.europa.eu) or Travis Dagg (travis.dagg@canada.ca).

Supporting documents: Champions Programme, page 46.

MONDAY, MAY 27

MI-4 Side Event

PFAN-Mission Innovation Clean Energy Investment Forum

Time: 11:00-15:00
Location: Vancouver Convention Centre, Room 211
Registration: All MI-4 delegates will be able to access this event using their event passes, with an option to register specifically for the event through the delegate registration portal.

Summary: The Private Financing Advisory Network (PFAN) investment forum will have entrepreneurs from Africa, Asia, and Central America who will pitch their technologies and business solutions to investors. A jury of experts will evaluate the business plans and select the most promising projects. Through this event, MI members will have an opportunity to learn about clean energy innovation from MI member countries, as applied in India, Nigeria, Ivory Coast, Belize, and more broadly, South East Asia.

PFAN is a multilateral public private partnership hosted by the United Nations Industrial Development Organization (UNIDO) in cooperation with the Renewable Energy and Energy Efficiency Partnership (REEEP). PFAN was initiated in 2006 to create a pipeline of investment-ready clean energy projects in low- and medium-income countries and continues to support project developers to refine their business models, complete/improve their business plans, create investor pitches and match them with investors.

Contact: For questions regarding the programme, please contact Stephanie Klak (stephanie.klak2@canada.ca).

MONDAY, MAY 27

MI Complementary Programming

Avoided Emissions Framework Workshop: a presentation of MI Solutions

Time: 9:00-12:00
Location: Vancouver Convention Centre, Room 222
Registration: All MI-4 delegates will be able to access this event using their event passes, with an option to register specifically for the event through the delegate registration portal.

Summary: Since MI-3, the Avoided Emissions Framework (AEF) has gathered solutions with the potential to reduce emissions with more than 2 gigatonnes per year by 2030 and collaborated with framework innovators that can make the accelerated uptake of clean energy solutions mainstream.

With the IPCC 1.5C special report published, the AEF has begun work with the leading scientists behind the report to develop tools that can assess and encourage 1.5C compatible solutions.

This event will be an opportunity to hear from IPCC researchers about their initial findings and to discuss with leading practitioners, from policymakers, incubators to investors, about accelerated uptake of 1.5C compatible solutions.

Contact: For questions regarding the programme, please contact Dennis Pamlin (dennis.pamlin@ri.se) or Rebecca Hubble (rebecca.hubble@canada.ca).

MONDAY, MAY 27

MI Complementary Programming

Joint Programming Event and Pilot Multilateral MICall19 Workshop

Time: 9:00-13:00
Location: Vancouver Convention Centre, Room 208-209
Registration: All MI-4 delegates will be able to access this event using their event passes. Please register your interest to attend with Bernhard Gahleitner (Bernhard.Gahleitner@ait.ac.at).

Summary: This event will bring together public funding partners from around the world to discuss opportunities for multilateral collaboration. It will highlight opportunities to close gaps in the innovation chain by connecting different networks and initiatives on a joint programming platform and will illustrate a public-public-private partnership format, enabling the initiation and joint funding of applied, collaborative R&D projects.

Discussions amongst MI members will serve to prepare the pathway for the MICall19 (to be launched in September 2019) by developing the call topics and documents, and preparing joint evaluation and decision-making procedures. Furthermore, it will provide first matchmaking possibilities among researchers and companies in cooperation with the MI Innovation Challenges. All interested delegates are welcome to attend.

Contact: For questions regarding the programme or general registration, please contact Bernhard Gahleitner (Bernhard.Gahleitner@ait.ac.at) or Rebecca Hubble (rebecca.hubble@canada.ca).

MONDAY, MAY 27

MI Complementary Programming

World Economic Forum: Global Sustainable Energy Innovation Fund

Time: 10:00-11:30
Location: Vancouver Convention Centre, Room 205
Registration: All MI-4 delegates will be able to access this event using their event passes. Please register your interest to attend with Espen Mehlum (espen.mehlum@weforum.org).

Summary: This session will focus on the World Economic Forum's and KPMG's proposal to establish a first Global Sustainable Energy Innovation Fund (SEIF) using blended finance in partnership with Mission Innovation and other interested public and private parties.

Building on initial consultations, participants will discuss key dimensions of the fund and opportunities for individual MI countries to engage if they wish in establishing the SEIF to become a global instrument to complement national funding programs.

Contact: For questions regarding the programme or general registration, please contact Espen Mehlum (espen.mehlum@weforum.org) or Rebecca Hubble (rebecca.hubble@canada.ca).

MONDAY, MAY 27

MI Senior Official Meeting

Pre-briefing for MI country representatives

Time: 15:00-16:00
Location: Vancouver Convention Centre, Room 206-207
Invitees: Nominated MI Points of Contact (maximum of two per country)
Registration: Officials are not required to register.

Summary: The MI Steering Committee Chair will host a meeting for MI country representatives. This will provide an opportunity for MI senior officials to meet in person, review the final programme, share expectations for MI-4, and answer any questions in advance of the official start of the Ministerial.

Contact: For more information, please contact Lindsay Brown (Lindsay.brown3@canada.ca)

MONDAY, MAY 27

MI-4 Side Event

MI Champions and PFAN Investor Forum Awards Ceremony

Time: 16:15-16:45
Location: Vancouver Convention Centre, Ballroom A & B, Innovation Theatre Stage
Invitees: MI Heads of Delegation, Champions, Investors, and partners

Summary: Mission Innovation will host a media event in the Innovation Theatre, just before the official Minister's Tour of the Innovation Showcase. Following the completion of the PFAN Investor Forum deliberations, the event will begin with a presentation from PFAN to the winning pitch. Directly following, the European Commission will host a formal awards ceremony for the first co-hort of the MI Champions, recognizing global leadership in innovation.

Media will be invited to participate in the event, and Champions may choose to answer questions following the ceremony (at which time, Ministers will move on to the Innovation Showcase tour).

Contact: For questions, please contact Rebecca Hubble (rebecca.hubble@canada.ca) or Travis Dagg (travis.dagg@canada.ca).

MONDAY, MAY 27

CEM10/MI-4 Joint Event

CEM10/MI-4 Minister's Innovation Showcase Tour

Time: 16:45-17:30
Location: Vancouver Convention Centre, Ballroom A & B
Invitees: Heads of Delegation from Mission Innovation and Clean Energy Ministerial member countries

Summary: This exclusive event will officially launch the CEM10/MI-4 programme. Minister and Heads of Delegation will participate in a guided tour of the Innovation Showcase, with an opportunity to engage with exhibitors representing international firms who are innovating in the clean energy sector.

The Showcase floor is organized around four key themes, with exhibitors from Canada and around the world:

1. Clean fuels;
2. Clean power and electricity;
3. Reducing emissions; and
4. Energy efficiency.

The tour will conclude by moving to the Opening Ceremony, where guests will have gathered.

Contact: For questions, please contact Rebecca Hubble (rebecca.hubble@canada.ca) or Travis Dagg (travis.dagg@canada.ca).

MONDAY, MAY 27

CEM10/MI-4 Joint Event

CEM10/MI-4 Opening Ceremony

Time: 18:00-18:45
Location: Vancouver Convention Centre, Ballroom C & D Foyer, Level 1
Invitees: All MI-4 delegates are invited to participate in this event.

Summary: Canada will welcome CEM and MI Ministers and delegates, invited VIP guests and Youth participants to Vancouver for CEM10 and MI-4. Recognizing the significance of the land on which the event is being hosted, an Indigenous elder will perform a traditional welcome to formally start the event.

In addition to setting the scene for the days to come, guests will enjoy some cultural musical entertainment and inspirational videos.

With a focus on opportunities to engage with members and partners, the event will be short in length, seamlessly transitioning to the reception.

Contact: For questions, please contact Lindsay Brown (lindsay.brown3@canada.ca).

MONDAY, MAY 27

CEM10/MI-4 Joint Event

CEM10/MI-4 Opening Reception

Time: 18:45-20:30
Location: Vancouver Convention Centre, Ballroom C & D Foyer, Level 1
Registration: All MI-4 delegates are invited to participate in this event.

Summary: Following the opening ceremony, all guests will be invited to participate in a welcome reception with musical entertainment, hors d'oeuvres and beverages. An informal setting will allow for engagement opportunities between Ministers and Heads of Delegation, delegates, VIPs, youth, innovators and industry leaders. Over 700 guests are expected at this event.

Contact: For questions, please contact Lindsay Brown (lindsay.brown3@canada.ca).

TUESDAY, MAY 28

Fourth Mission Innovation Ministerial Meeting: Public-Private Breakfast

MI-4 Public-Private Breakfast:

Time: 8:00-9:30
Location: Vancouver Convention Centre, Room 211
Invitees: Ministers and Heads of Delegation (no plus one), invited business leaders

Summary: Hosted by Canada, and in partnership with the Breakthrough Energy Coalition (BEC), the Public-Private Breakfast will bring together Ministers and select business leaders for an informal conversation about public-private co-investment models and the supporting policy environments that can help drive innovation. The session will ask participants to consider:

- What lessons can we draw from existing public-private co-investment initiatives?
- From the perspective of investors, what kind of policies can governments implement to attract private sector buy-in for co-investment initiatives?

In setting the tone for the Ministerial, the Breakfast is intended to spark ideas and inform participants' discussions throughout the day. A discussion paper will be shared with MI points of contact in advance of the Ministerial.

Following some words of welcome from the Chair, the session will begin with brief remarks from three panellists to help stimulate ideas and preface the ensuing discussion. Panellists will be invited to speak for up to five minutes each, after which the moderator will open up the discussion to all breakfast participants for an hour of open discussion. Chatham house rules will be followed.

Moderator: Joan MacNaughton (The Climate Group)
Panellists (TBC): Jérôme Schmitt (Total/OGCI), Michelle Patron (Microsoft), and Marcius Extavour (XPRIZE Foundation)

This closed session will also include the following confirmed business leaders: Ditlev Engel (DNV GL-Energy / Special Envoy), Dominic Waughray (WEF), Mike Cosse (SAP), Olivier Warnan (BNP Paribas), Puon Penn (Wells Fargo), Shayle Kann (Energy Impact Partners), and Sue-Ern Tan (OGCI Investments). Other names to be added as invitations are confirmed.

Contact: For questions, please contact Stephanie Klak (stephanie.klak2@canada.ca).

MI-4 Plenary Session 1: Demonstrating Impact

Time: 10:00-11:30
Location: Vancouver Convention Centre, Ballroom C & D
Invitees: Ministers and Heads of Delegation plus 2 (8 additional in theatre seating), invited observers and partners

Summary: During the first of two plenary sessions, members will focus on MI's impact to date by looking back over the year and showing how far MI has come. This is a chance to take stock of progress against what MI set out to do, follow-up on past announcements and highlight collaboration between MI members and partners through Ministerial updates, mini keynotes by guest speakers, videos, photos, and other engaging presentation tools. The closed door setting and concluding discussion will allow for meaningful exchanges on areas that have seen great impact and opportunities for more focussed effort, setting the stage for the afternoon plenary.

A run of show for the plenary session will be shared with MI points of contact in advance of the Ministerial.

Contact: For questions, please contact Julie Anderson (julie.anderson2@canada.ca).

TUESDAY, MAY 28

Fourth Mission Innovation Ministerial Meeting: Ignite Talk

MI-4 Ignite Talk: Accelerating Clean Energy Solutions

Time: 11:45-12:45
Location: Vancouver Convention Centre, Room 118-120
Invitees: Invited MI-4 delegates can attend this event and all are invited to participate and engage in this session through the online livestream and social media.

Summary: Hosted by Canada and developed in partnership with the IEA, this new session within the MI-4 programme offers a unique approach to sharing a diverse range of perspectives. The session will explore a diverse range of perspectives on the solutions to challenges in accelerating clean energy innovation. The session will be shared with the world via livestream and social media, along those outside of the venue to engage with the session from a virtual platform.

The "Ignite Talk" will challenge participants to think differently for faster and more ambitious development of clean energy solutions. Four speakers will give a short presentation (i.e. five to seven minutes, with or without slides) to illustrate ideas from their perspectives, addressing the theme of *Approaches to Accelerating Clean Energy Innovation*.

The four speakers will represent outlooks from policymaker, business leader, innovator, and youth perspectives. Speakers will raise discussion on how they would challenge conventional ideas and approaches to help accelerate the development and adoption of clean energy solutions. The remainder of the session will be allocated for discussion among audience participants, directed by the moderator for 1-2 minute statements or comments in response to the presentations. Heads of Delegations, delegates and other invited guests (youth, business leaders) will be welcome to make informal interventions.

This is a closed session; only invited Heads of Delegation, MI Champions, Youth, Business Leaders and invited VIPs will attend. While those outside of the venue cannot directly participate in the session, they are invited to engage with the discussion over social media

Moderator: TBC
Speakers: Minister Susana Jiménez (Policymaker), Dr. Myoungju Lee (Innovator), Luciana Miu (Youth).

Contact: For questions, please contact Clement Nocos (clement.nocos@canada.ca).

TUESDAY, MAY 28

Fourth Mission Innovation Ministerial Meeting: Lunch

Lunch Break and Bilateral Meetings

Time: 12:45-13:45
Location: Vancouver Convention Centre, Room 109-110 for all delegates and room 221 for HoDs.
Invitees: All MI-4 delegates are invited to participate in this event.

Summary: The lunch break will be an opportunity for Ministers and Heads of Delegation and delegates to arrange bilateral meetings, press interviews and/or to meet internally. Lunch will be served to delegations in room 109-110. No formal seating plan will be prepared.

A private room for HoDs is available in room 221.

Contact: For questions, please contact Lindsay Brown (lindsay.brown3@canada.ca).

TUESDAY, MAY 28

Fourth Mission Innovation Ministerial Meeting: Public-Private Roundtables

MI Public-Private Roundtables
Advanced Innovations for a Clean Energy Future:

Time: 1:45-3:15 PM
Location: Vancouver Convention Centre, Room 211
Invitees: Ministers and Heads of Delegation only will participate in the roundtables.

Summary: Hosted by Canada, in partnership with the World Economic Forum (WEF), this session will bring together Ministers and Heads of Delegation, business leaders, Mayors, innovators, and investors to discuss how the public and private sectors can better harness disruptive technologies and business models to accelerate clean energy innovation and facilitate leapfrogging in developing and emerging economies.

Opening remarks and scene setters will be followed by five concurrent hour-long sessions, guided by concept notes developed by the (co) chairs:

(1) Smart Manufacturing for a Sustainable Energy Future, co-chaired by Canada and the US
(2) The Digital Economy of an Electric Future, co-chaired by Italy and China
(3) Transformation of the Industrial Sector, co-chaired by the UK, Japan & Australia
(4) Scaling and Financing Sustainable Cooling Solutions, co-chaired by the UAE and the EC
(5) Towards a Clean Mobility Future, chaired by Denmark

Moderator: Dominic Waughray, Managing Director of WEF's Center for Global Public Goods.

Each breakout session will have up to 12 participants with armchair-style seating, including a discussion leader/facilitator. At the end of the breakout session, the Moderator will ask each group to share one core insight and one collaboration opportunity from the discussion. Highlights may be included in the MI-4 Chair's Summary.

Concept notes for the roundtables can be found beginning on pages 29.

Contact: For questions, please contact Cathy Chen (cathy.chen@canada.ca).

TUESDAY, MAY 28

Fourth Mission Innovation Ministerial Meeting: Plenary

MI Plenary Session 2: Raising Ambition

Time: 15:30-17:00
Location: Vancouver Convention Centre, Ballroom C & D
Invitees: Ministers and Heads of Delegation plus 2 (8 additional in theatre seating), invited observers and partners

Summary: After a day of thought-provoking discussions and presentations, delegates will reconvene for a second plenary session focussed on bringing together the day's ideas and learnings to inform discussion on raising ambition.

Delegates will bring forward new, bold ideas that can truly lead to the acceleration of widespread clean energy innovation.

A run of show for the plenary session will be shared with MI points of contact in advance of the Ministerial.

Contact: For questions, please contact Julie Anderson (julie.anderson2@canada.ca).

TUESDAY, MAY 28

CEM10/MI-4 Joint Event

World Bank Energy Storage Announcement & MI Partner Signings

Time: 17:00-18:00
Location: Press Centre, VCC
Invitees: Ministers and Heads of Delegation are invited to participate.

Summary: In the context of the launch of a new collaboration between Mission Innovation and the World Bank Group, the World Bank will hold an announcement of a new international partnership to help expand the use of energy storage and bring new technologies to developing countries' power systems. The global Energy Storage Partnership comprises the World Bank Group, Mission Innovation, and the Clean Energy Ministerial, as well as more than a dozen other international organizations, government agencies, research institutions, and industry associations working collaboratively to help develop energy storage solutions tailored to the needs of developing countries.

This announcement will be directly followed by the signing of two new Mission Innovation Partnership agreements, between the World Bank and Mission Innovation, and the Global Covenant of Mayors and Mission Innovation.

This event will be open to the media.

Contact: For questions, please contact Lindsay Brown (lindsay.brown3@canada.ca).

TUESDAY, MAY 28

CEM10/MI-4 Joint Event

Ministers' Reception

Time: 18:00-19:00
Location: Vancouver Convention Centre, Foyer in front of room 224, level 2
Invitees: Ministers and Heads of Delegation (no plus one), invited VIP guests.

Summary: The Ministers' reception is a unique opportunity for high-level private sector participants and clean energy leaders to interact with Ministers, Heads of Delegations, and leaders from other sectors in an informal setting. Light refreshments will be served.

Contact: For questions, please contact Lindsay Brown (lindsay.brown3@canada.ca).

TUESDAY, MAY 28

CEM10/MI-4 Joint Event

Ministers' Dinner

Time: 19:00-21:00
Location: Vancouver Convention Centre, Room 223-224, level 2
Invitees: Ministers and Heads of Delegation (no plus one)

Summary: This formal, sit down dinner will provide an opportunity for Ministers and Heads of Delegation to reflect on the discussions from the day, and set the stage for those participating in the Clean Energy Ministerial the following day. It also provides a venue for informal pull asides between Ministers and Heads of Delegation.

Contact: For questions, please contact Lindsay Brown (lindsay.brown3@canada.ca).

WEDNESDAY, MAY 29

CEM10/MI-4 Joint Event

Women in Clean Energy Breakfast

Time: 7:15-8:45
Location: Vancouver Convention Centre, Room TBC
Registration: Invitees will receive a registration link.

Summary: The transformation of the global energy system will only succeed if we harness all available talent, which means removing barriers to women's participation, empowering women, and creating a more inclusive energy sector overall. This dynamic session on advancing gender equality in the clean energy sector will feature the inaugural international C3E Awards ceremony, the release of the Equal by 30 campaign's Success Stories report, and the launch of the second C3E Data report.

This event is by invitation only for 150-200 participants. Heads of delegation and support staff from countries affiliated with the C3E initiative and/or the Equal by 30 campaign are invited to attend.

Contact: For questions, please contact the C3E and Equal by 30 Team (nrcan.C3E.rncan@canada.ca) or Stephanie Klak (stephanie.klak2@canada.ca).

WEDNESDAY, MAY 29

CEM10/MI-4 Joint Event

Roundtable Debate: Gender Diversity Across the Clean Energy Value Chain

Time: 15:10-16:20
Location: Vancouver Convention Centre, Room TBC
Registration: Invitees will receive a registration link.

Summary: This event will be structured as a debate, sparking a high-level discussion about how gender diversity can unlock new ways of advancing clean energy solutions across the energy value chain. Two teams, each consisting of a Minister from a CEM/MI country, a corporate executive, and a youth leader, will debate the roles of private sector initiatives and public policies in advancing gender diversity. An audience of CEM and MI delegates will vote for the team with the most convincing argument.

This session is by invitation only.

Contact: For questions, please contact the C3E and Equal by 30 Team (nrcan.C3E.rncan@canada.ca) or Stephanie Klak (stephanie.klak2@canada.ca).

WEDNESDAY, MAY 29

CEM10/MI-4 Joint Event

Closing Press Conference

Time: 6:30pm
Location: Vancouver Convention Centre, Room 212-213
Invitees: Ministers and Heads of Delegation

Summary: The Canadian and Chilean Ministers will meet with the press, providing a recap of discussions across CEM10 and MI-4, highlighting key outcomes and announcements. Other Ministers and Heads of Delegation are invited to attend.

Contact: For questions, please contact Lindsay Brown (Lindsay.brown3@canada.ca).

Supporting documents

Public-Private Roundtable: Smart Manufacturing for a Sustainable Energy Future

Co-Chairs: Canada and United States

Brief Overview:

This session will address the potential for harnessing the latest advancements in intelligent manufacturing processes including artificial intelligence (AI), robotics, internet of things, big data and high-performance computing, with a view to maximize the viability and environmental sustainability of clean energy manufacturing.

Narrative:

Industry is transitioning from manufacturing processes based on computerization and automation to advanced digitally interlinked systems of production. Advanced robotics and artificial intelligence are making our production processes more efficient, flexible and reliable; while big data and high-performance computing are enabling manufactures to better manage logistical challenges, and develop more complex production processes and supplier networks.

This next generation of manufacturing, created through the deployment of advanced digital technologies, can play a pivotal role in the creation and enhancement of clean energy products and process technologies including:

- improving solar cell efficiency,
- converting carbon dioxide to value added products,
- generating hydrogen economically
- improving energy efficiency, and
- increasing the overall demand for products manufactured from earth abundant, sustainable raw materials.

With broad support for clean energy technology solutions, there is an opportunity for private and public sectors to collaboratively and strategically deploy these advanced technologies to meet the challenge of rising global energy demand. By working together, industry and governments can reduce the environmental impact of manufacturing; and enable more efficient and low cost storage and production of energy such as wind turbines, solar cells, zero-emissions vehicles, and electric and thermal storage batteries.

Session Structure:

The discussion will focus on the transformation of manufacturing toward a more energy efficient production of clean energy materials, products and systems. It will look at key challenges to the adoption of these digitally enhanced, robotic technologies including:

- labour market disruption,
- technology aversion,
- skills and expertise development, and
- investments in capital that might strand existing assets.

The discussion will key in specifically on startups and SMEs as their production flexibility and less-established supply chains provide them with unique opportunities to take advantage of advanced manufacturing technologies.

This discussion seeks to identify broad, and stakeholder-specific opportunities for implementation of Industry 4.0 technologies in sustainable manufacturing for energy. The focus will be on examples and experiences from the stakeholders at the table. Considerations include:

- Assessing the hard and soft costs of implementing the latest advancements intelligent manufacturing processes
- Identifying the most promising approaches to adoption and the scale-up of next-generation manufacturing technologies, with consideration of the unique experiences of new entrants and SMEs
- Taking stock of existing resources across various sectors to support underlying technologies
- Reviewing the impact of new materials in an energy-sensitive manufacturing ecosystem
- Identifying the new value-chains needed for widespread platform technology deployment
- Discussing the role of the public and private sectors and how they can accelerate innovation through collaboration.

Desired Outcomes:

- To challenge MI members and the private sector to share best practices and explore collaborative opportunities to foster the adoption of smart manufacturing, specifically in regards to energy intensive products and processes. Participants should take into account the following aspects:
    - Insights on how artificial intelligence, robotics, internet of things, big data and high-performance computing will create smart manufacturing
    - Understand of the potential impact smart manufacturing could have in improving energy efficiency
    - Ways public- and private-sector can work together to foster smart manufacturing
- Determine MI's potential to address the cross-sectoral opportunities and challenges discussed in this session. The MI clean energy materials Innovation Challenge utilizes a smart manufacturing platform to accelerate the discovery of new clean energy materials, and has broad applications for the smart manufacturing of clean energy - from new inputs to optimized implementation of these platforms in manufacturing.

Guiding Questions:

1. What are the barriers and practical opportunities for public-private collaboration to harness the latest advancements in intelligent manufacturing processes in the upstream clean energy value chain?

2. How will the value chains change with the adoption of a digitalized manufacturing system? Where are the gaps?

3. What are the impacts and concerns associated with increased digitization of manufacturing? Where are we vulnerable?

Public-Private Roundtable: The Digital Economy of an Electric Future

Co-Chairs: Italy and China

Brief Overview:

This session will address how new business models and grid edge technologies have the potential to help industrialized countries cope with pressing challenges, such as rising electricity needs and grid integration and emerging economies optimise the path towards a secure and sustainable access to clean energy for all users.

Narrative:

A wide variety of technologies, solutions and services are being integrated at the edge of the electricity network:

i) Distributed renewable generation, such as rooftop mounted PV panels, enables the progressive evolution of the passive electricity consumers towards active prosumers potentially able to participate in the market;

ii) Energy storage decouples from the grid the variability of renewable sources;

iii) Advanced and flexible electricity uses, from smart appliances or advanced electric vehicle recharging, allow to shape the load curves to accommodate the variable generation patterns;

iv) Flexibility services, enabled by vehicle-to-grid, generation and/or consumption aggregators boost the renewables integration capacity and open for new market opportunities, growth and welfare;

v) Coupling between the electricity system and other energy vectors (e.g. natural gas, water, heating & cooling, hydrogen), intimately linked and tuned to a renewables-based electricity generation, has the potential to dramatically expand the flexibility of the entire energy sector, thus contributing to a progressive decarbonisation of all sectors of the economy.

The common denominator for all these developments is digitalization: the digital layer integrated within smart grids supports the necessary network automation to increase the hosting capacity of renewables, control this new type of generation and fosters interaction with the prosumers (i.e. a hybrid between consumers and producers). A new playground is created for the development of all sorts of market platforms enabling peer-to-peer transactions, creating value for the grid and the customers by shrinking energy bills, reducing peak demand and shifting consumption to lower-price, off-peak hours.

Session Structure:

The discussion will focus on the phenomenal potential unleashed by grid edge technologies and the digital layer to boost yet unexplored business models where the prosumer (single or aggregated) can have a

fundamental role in the decarbonisation of the power system, thanks to the dramatic increase in renewables integration made possible by smart grids. The formidable potential from grid edge is however still untapped: most of the necessary technologies are available but obstacles still stand in the way: regulation, interoperability, cybersecurity, resilience, or just initial adoption. Failure to untie these knots will prevent the deployment of the full potential of grid edge solutions.

This discussion aims to identify what works and what impedes these developments based on concrete examples and experiences from a variety of stakeholders around the table. Subjects such as technology adoption, subsidiarity, decentralization, grid defection and the new roles and business models of network operators will be discussed. In light of varying profiles, geographies, regulatory and boundary conditions, participants will be invited to discuss if and how grid edge technologies are deploying their potential over the entire value chain of electricity.

As an example, the session could proceed as follows:

- Italy and China could lead a discussion on how new business models and grid edge technologies have the potential to help industrialized countries cope with pressing challenges, such as rising electricity needs and grid integration;
- A discussion could then be established on how microgrid technologies can help developing countries leapfrog centralized power systems altogether, increasing energy access and connectivity in developing and emerging economies;
- The progress of technologies and solutions could be assessed, highlighting success stories and reasons for failure, identifying the most important drivers to foster the unleashing of grid edge solutions potential;
- The value of international collaboration, technology and experience transfer could be brought to light and Italy could present the Smart Grid Innovation Accelerator and invite participants to pitch in.
- Clear mention to the World Bank's $1BN battery storage accelerator could also be profiled.

Desired Outcomes:

- To challenge MI members and the private sector to share best ideas and cooperate towards exploiting at best the opportunities made available by electrification, decentralization and digitalization of the grid, especially taking into account the following aspects:
    - Redesign of the regulatory paradigm
    - Deployment and more efficient utilization of the enabling infrastructures to allow new business models
    - Redefine customer experience
    - Embrace new business models for all stakeholders (from prosumers to network operators, flexibility providers, telecommunication operators, mobility service providers etc.)

- Define how by its global approach MI could tackle the system transformation challenges and help fulfil the above mentioned objectives. IC1 SGIA initiative could play an important role in this direction promoting effective cooperation between public and private sectors.

Guiding Questions:

1. Are there technical, policy, and/or financing barriers to transforming power systems and maximizing grid edge potential?

2. What are some examples of new business models or transformations that could accelerate the progressive uptake of grid edge solutions?

3. What are the impacts and concerns linked with extensive digitalisation of the energy system?
    a. Are we more secure or exposed to new threats from cyberattacks?
    b. How do we need address privacy risks to grid users?

Public-Private Roundtables: Transformation of the Industrial Sector

Co-Chairs: United Kingdom, Japan, Australia

Brief Overview:

Discussion will focus broadly on the challenges facing the industrial and manufacturing sectors as critical sectors in delivering to global abatement goals. Participants will identify the key shared problems that need attention then follow with discussion on how government and the private sector can work together; this could include research and development opportunities, collaboration opportunities, and strategies to remove barriers to accelerate transition.

Narrative:

Even as new manufacturing techniques and cleaner materials are being developed, some aspects of the industrial sector continue to have difficulty reducing emissions. These sectors include cement, steel and chemicals. It is important to act in these sectors now given the challenge they present through their long investment timeframes and the need to make changes to both energy sources and processes in often highly integrated systems.

There are a range of expert reports which show how these sectors could be transformed including Mission Possible which was produced by the Energy Transitions Commission. This report notes that public sector R&D is critical to foster radical technological breakthrough in these hard to abate sectors. Further, that R&D goals should have specific quantitative objectives 10 to 15 years ahead in priority areas.

Both new energy sources and new processes are needed for these hard to abate sectors. Hydrogen and carbon capture use and storage offer options but there is a challenge ahead to identify approaches that will deliver these given the scale and rate of change required.

Significant investment in RD&D will be needed, underpinned by coordinated efforts from government, business and stakeholders. Successful public-private partnerships would add value and avoid extra cost, thereby enabling the sector to innovate faster and more effectively.

Session Structure:

Introduction	5 mins	Co-Chair/s
Scene Setter	5 mins	Discussion Leader
Discussion	45 mins	Participating countries and industry
Conclusion	5 mins	Discussion Leader/Co-Chair/s

Desired Outcomes:

To identify opportunities where public-private collaboration can make a significant difference and support Mission Innovation in accelerating technology breakthroughs.

The discussion should aim to identify concrete actions towards partnerships that could be implemented in the next two years.

Guiding Questions:

- What are the key RD&D challenges and priorities in these sectors?
- How can private-sector participation in early-stage energy innovation be increased?
- Collaboration:
    - What public-private collaboration on RD&D could lead to radically faster breakthroughs in these sectors?
    - How can industries work together (rather than in isolation) to find solutions, what opportunities are there for collaboration and is there a role for co-design between sectors?

Public-Private Roundtables: Scaling and Financing Sustainable Cooling Solutions

Co-Chairs: European Commission and United Arab Emirates

Brief Overview:

The purpose of this roundtable is to explore the non-technical barriers and enablers in scaling and financing sustainable cooling solutions. These will be explored using as case studies global cooling prize and research on different heat sink mediums for cooling systems.

Narrative:

Demographic trends, economic growth, urbanization and increasing average global temperatures due to climate change are widely expected to lead to a greater demand for cooling. With the future demand and impact, the potential for high efficiency, low carbon and sustainable cooling and heating solutions is massive.

Cooling energy use in buildings has already doubled since 2000, from 3,6 EJ to 7 EJ, making it the fastest growing end-use in buildings.[1] Rising demand for cooling is already having a major impact on power systems because most cooling needs are met by electricity-powered systems. In particular, increased air-conditioning loads raise overall electricity demand and increases peak electricity loads.

Furthermore, it has been projected that the use of refrigeration, air-conditioning and heat pump equipment will grow rapidly and significantly, particularly in emerging economies. The number of individual cooling units or systems in use in the residential sector worldwide are expected to grow from about 3,4 billion in 2016 to more than 8 billion in 2050.[2]

This growth will put a major strain on electricity distribution grids and could lead to a substantial increase in greenhouse gas emissions, unless meaningful improvements of the energy efficiency of the cooling equipment is accomplished. It will also lead to increased greenhouse gas emissions through leakage of high GWP (Global Warming Potential) refrigerants.
Currently the mainstream technology of choice is energy intensive, operating below the possible efficiencies that could be achieved. There are a number of heating and cooling solutions with potential to significantly reduce energy use and carbon emissions, for instance demand side management (including demand response), solar cooling and district cooling. However, existing technology is mature, well established and supported by a generally risk adverse industry, driven by the market focus on lowest first cost. For these reasons entering the market and gaining share is challenging for new sustainable heating and cooling solutions.

The MI *Affordable Heating and Cooling Innovation* Challenge (IC7) addresses these shortfalls through its technological priority areas[3] to develop sustainable technology which can disrupt the market and displace energy intensive and less sustainable cooling solutions. For example, in the technological priority area

[1] The Future of Cooling, Opportunities for energy-efficient air conditioning, IEA, 2018.
[2] Ibidem
[3] The areas are: Non-atmospheric Heat Sinks/Sources, Physiological studies for thermal comfort, Thermal Energy Storage, Heat Pumps and Predictive Maintenance and Control Optimization

Non-atmospheric Heat Sinks/Sources, we promote heat pumps not using the ambient air as heat sink or source. This has the potential to significantly improve cooling system efficiency, whilst at the same time reducing potable water use – a scarce resource especially in hot climates. The most promising technologies are indirect evaporative cooling of chiller condenser, ground/sea/aquifer/wastewater sources/sinks interconnected via thermal network and long-wavelength radiation to deep space. With the *Physiological studies for thermal comfort* priority area, we have identified the need to innovate through the Global Cooling Prize[4] as an innovative way to source the best residential cooling solutions.

In both cases, technological research and development is essential to their commercialisation while further work on a number of non-technological issues is equally critical and required:

- End-use and end-user acceptance
- Bridging the gap between R&D and industry
- Opening up markets
- Skills and training

Since MI-3, countries have been working together on the commitment taken to improve the data sharing on building's performance to reduce the energy lost by poorly performing heating and cooling systems. A joint work plan, with indicative commitments of efforts from the participants, has been developed with the objective of delivering data management protocols and open-data platform specifications that reduce the cost and enhance the quality of data. The next step is the formalisation of the work-plan as an Annex under the International Energy Agency 'Energy in Buildings and Communities' TCP collaboration mechanism. The work will reduce barriers to digital innovation and unlock a new generation of product research in predictive maintenance and control optimization.

Session Structure:

The discussion will focus on the enablers and challenges in scaling and financing sustainable cooling solutions. Financing is a relevant barrier to uptake, especially at the residential level and participants will be invited to present and discuss the most effective financing models (i.e. cooling as a service?).

Table leads could guide participants towards a discussion on the demand side to identify viable markets for innovative solutions. For example, enabling users to make more informed investment decisions and overcome carbon lock-in by increasing transparency on energy bills and aggregating savings without passing on high transaction costs to the end user. This discussion aims to identify what works and what impedes these developments based on concrete examples and experiences from a variety of stakeholders around the table.

During the roundtable discussion, the Chair would explore reactions from participants to the topic as outlined above and would stimulate further discussion with questions/issues such as:

- Why haven't we tried this before?
- Market failures
- Approaches to overcome them

[4] Global Cooling Prize, see https://globalcoolingprize.org/

- What to learn from other industries/ business sectors

Desired Outcomes:

- Agreement that this line of work is relevant and will be supported by all stakeholders around the table;

- Challenge MI members and the private sector to share best ideas and cooperate towards sustainable financing of cooling solutions, including:
  - Capture case studies ideas for later follow up
  - Identification of organisations to engage with, that are already developing these ideas

- Commitment to tangible actions, to move the initiative forward;

- Agreement on the importance of financial and technical support for pilot projects:
  - CEOs prepared to put company resources behind the initiative;
  - Follow-up meeting involving working level experts;
  - Commitment from IC7 to support the development of this research area

Guiding Questions:

1. What technical, policy, and/or financing barriers are hindering the scaling up of sustainable cooling solutions and the interest of investors?

2. Are existing instruments and platforms for cooperation sufficient to deliver on the sustainable cooling solutions in a timely manner?

3. What are examples of new business models or transformations that could accelerate the progressive uptake of sustainable cooling solutions?

Public-Private Roundtables: Towards a Clean Mobility Future

Chair: Denmark

Brief Overview:

This session will focus on better understanding the opportunities and impediments in large scale commercialisation of emissions-free transportation, both maritime and land-based heavy transport. There is a pressing need to accelerate the development of advanced fuels and associated technologies in order to promote sustainable development, combat climate change and mitigate transportation GHG emissions. Biofuels as well as other emissions-free transportation technologies will be needed to decarbonize heavy transport modes like marine vessels and aeroplanes, and over the next couple of years new technologies must come to market.

Narrative:

Maritime transportation

International maritime activity represents 90% of all shipping energy use, and ship efficiency has not changed significantly in recent years. International tourism is also on the rise, and as such the amount of passengers on cruise ships and ferries is increasing. This means that the maritime sector accounts for high emissions as most of the worlds traded goods are transported by sea. To counter this, the International Maritime Organization (IMO) has set the goal of at least halving emissions from international shipping by 2050, and some private companies like Mærsk has set their ambitions even higher. This will increase the demand for low and zero emissions solutions – both for the transportation of goods and for the transportation of passengers.

Aviation

The jet aviation industry has advanced quite far in the standardisation of biofuels as drop-in fuels to match the performance of kerosene. Biofuels have not achieved large commercial production yet, however they have proved their feasibility for a range of aeroplanes from a number of manufacturers. Compressed Biogas generated from waste agricultural residues and MSW is also catching up as an alternate to CNG in long distance heavy transport.

Long Distance Heavy Transport

Emissions have grown faster for heavy-duty vehicles (HDVs) than for any other transport mode – 2.4% annually since 2000. On a positive note, more countries are implementing new fuel economy and CO2 emissions standards for HDVs. Fuel economy standards and green freight programmes are the two most promising policy instruments in the near- and mid-term to improve the efficiency of road freight services. But in the longer term, it will be vital to gradually shift away from today's near complete dependence on petroleum-based fuels, and develop alternative emissions-free solutions, such as clean hydrogen and electrification.

Technologies

A number of technologies are being explored. Within maritime transport using less energy through enhanced ship design and slower sailing is one way forward. Using cleaner fuels is another obvious way, and a variety of alternative fuel options like biofuels, compressed natural gas (CNG), renewable natural gas (RNG), and hydrogen, as well as electrification are being explored and used in a range of different settings.

Biofuels will be needed to decarbonise heavy transport modes (aeroplanes, marine vessels and long-haul trucks) that rely on liquid fuels. Over the next 40 years, new biofuel technologies must come to the market, using less land and showing better overall efficiencies, to contribute to meeting the roadmap targets. Up to 27% biofuels will be needed by 2050 corresponding to 65 EJ primary biomass – equivalent to 100 million ha.

For most HDVs, the suitability of electrification will depend upon continuing energy density improvements and cost reductions in lithium-based batteries. But for certain operations, such as city buses, a market for electric drive is emerging because of its suitability for buses' fixed routes and schedules, their frequent stops and municipalities' ambitions to reduce local air pollution.

However, radical new thinking and innovation is required if we are to move the sector significantly forward when it comes to long-haul fright, and create emissions-free transport.

Desired Outcomes:

- To challenge MI members and the private sector to think beyond the present status and propose plans to meet industry needs.
- Explore new business models and public-private partnerships for stakeholders.
- Explore the need for enabling infrastructure.
- Explore how the MI community may assist the development.

Guiding Questions:

1. What are key RD&D challenges within for example alternative fuels, ship design and electrification?

2. How do we create demand for innovation and global standards to move the sector significantly forward?

3. How do we create a green value chain in handling and logistics surrounding ports and airports?

CEM10/MI-4 Preliminary Non-delegate Participant List

Organization	Name	Position
ACWA Power International	Paddy Padmanathan	CEO
AddÉnergie / FLO	Travis Allan	Vice President, Public Affairs and General Council
Alberta Electric System Operator	Greg Ritzer	Vice President Operations
ARC Financial Corporation	Peter Tertzakian	Executive Director
Asahi Kasei Europe GmbH	Masami Takenaka	Senior Managing Executive, Clean Energy Project, Managing Executive
Bharat Light and Power	Tejpreet Singh Chopra	CEO
BNP Paribas	Olivier Warnan	Investment Director, Energy Transition Capital
Brookfield Renewable	Josée Guibord	CEO, Canada
Canadian Labour Congress	Hassan Yussuff	President
Carbon Engineering	Steve Oldham	CEO
Coalfield Development Corporation	Jacob Hannah	Conservation Coordinator
Commission for Environmental Cooperation	David Donaldson	Program Manager for Green Growth
DNV GL / Government of Denmark	Ditlev Engel	CEO / Denmark special envoy for Climate and Energy
Dunsky Energy Consulting	Phillipe Dunsky	President
Energy Impact Partners (EIP)	Peter Fox-Penner	Chief Strategy Officer
Energy Impact Partners (EIP)	Shayle Kann	Managing Director
Electricity Human Resources Canada	Michelle Branigan	CEO
Enel	Livio Gallo	Head of Global Infrastructure and Networks
Enel X	Valery Miftakhov	Head of Global Technology Development
Eni	Alberto Del Bianco	Senior Vice President, Downstream Research & Development
Environment and Climate Change Canada	Patricia Fuller	Ambassador for Climate Change
Innergex Renewable Energy Inc.	Colleen Giroux-Schmidt	Vice President of Corporate Relations
International Institute for Sustainable Development	Jane McDonald	Interim President and CEO
International Trade Union Confederation	Samantha Smith	Director - Just Transition Centre
IPEEC (CEM observer)	Benoît Lebot	Executive Director
IRENA (CEM observer)	Francesco La Camera	Director General
MaRS Discovery District	Aisha Bukhari	Senior Manager – Energy Systems Practice
MaRS Discovery District / Triphase Accelerator Corporation	Ilse Treurnicht	(former) CEO / Chair of Board of Directors

Microsoft	Michelle Patron	Director of Sustainability
Mitsubishi Hitachi Power Systems	Ken Kawai	President and CEO
NRG COSIA Carbon Xprize, Xprize Foundation	Marcius Extavour	Executive Director, Energy & Resources
Oil and Gas Climate Initiative (OGCI) Investments	Sue-Ern Tan	Lead, CCUS Workstream
Opus One	Joshua Wong	President and CEO
Ørsted	Ulrik Stridbæk	Vice-President of Regulatory Affairs
Regulatory Assistance Project	Richard Sedano	CEO
Rocky Mountain Institute	Iain Campbell	Senior Fellow
Royal Bank of Canada, Board of Directors	Andy Chisholm	Corporate Director
Ryerson University	Imogen Coe	Dean - Faculty of Science
SAP	Mike Cosse	Vice President, Digital Government
SAP	Svend Wittern	Vice President, Industry Business Innovation
Schneider Electric	Susan Uthayakumar	Canada CEO
Siemens	Vinod Philip	CEO of Service Power Generation
Solar Impulse Foundation	Bertrand Piccard	Co-Founder and Chair
State Power Investment Corporation	Jihong Fan	Chief R&D Officer
Steeper Energy Canada Ltd.	Perry Toms	CEO
Sustainable Energy for all (SEforALL)	Rachel Kyte	CEO
Terna	Luigi Michi	Head of Strategy, Development and System Operation
The Atmospheric Fund (TAF)	Julie Langer	CEO
The Climate Group	Joan MacNaughton	Chair
The Energy and Resources Institute	Ajay Mathur	Director General
Total / Oil and Gas Climate Initiative (OGCI)	Jérôme Schmitt	Senior Vice President, Innovation and Energy Efficiency / Executive Committee Chair
UNIDO (CEM observer)	Philippe Scholtès	Managing Director - Directorate of Programme Development and Technical Cooperation
University of Toronto	Alán Aspuru-Guzik	Professor of Chemistry and Computer Science
UPS Global	Michael McDonald	Senior Director of Sustainability and Government Affairs - Corporate Automotive
Wells Fargo	Puon Penn	Executive Vice President and Head of Technology and Venture Banking
World Bank (CEM observer)	Michael Stanley	Global Lead for Extractives
World Bank (CEM observer)	Rohit Khanna	Energy Practice Manager
World Economic Forum (WEF)	Dominic Waughray	Managing Director, Head of the Centre for Global Public Goods

Not Included: Country delegates, side-event participants, MI Champions and youth program participants.

Confirmed Innovation Showcase Exhibitors

Organizations	
Arterran	Italian Trade Commission
AGORA Energy Technologies	Mission Innovation India
Alfa Laval	Moltex Energy
ARC Nuclear	National Energy Board
ATCO	Nuclear Energy Institute
Atlas Power Generation	Nuscale
Bluesource	OECD Nuclear Energy Agency
Canadian Nuclear Association	Opus One Solutions
Canadian Nuclear Laboratories	Parkland Fuels
Canadian Solar	Recover Energy
Carbon Engineering	Red River College
CCUS Knowledge Centre	Research Institute of Innovative Technology for the Earth (RITE)
CMC Research Institutes	RISE Sweden
Council of Environmental Cooperation	Steeper Energy
CWB Group	Sustainable Marine Energy
CWL Energy	Terrestrial energy
Emissions Reduction Alberta	Thin Film AOP
Firstlight Fusion	UBC Clean Energy Research Centre
Foresight Cleantech Accelerator	UK Atomic Energy Authority
GHGSAT	Waste to Energy Generating
Inventys	

Not Included: companies and organizations who have yet to sign contracts for space(s) in showcase.

Confirmed Side Event Organizers

(including CEM, MI, and Canada as Host side events)

Organizations	
Austrian Institute of Technology	International Smart Grid Action Network
Biofuture Platform	IRENA
Canadian Nuclear Association	LNG Canada
Clean Energy Canada	Ministry of Economic Affairs and Employment
ChargePoint	National Renewable Energy Laboratories
Danish Ministry of Energy, Utilities and Climate	Power Workers Union
Energetics	Private Financing Advisory Network (PFAN)
Energy Council of Canada	Research Institute of Innovative Technology for the Earth (RITE)
Environment and Climate Change Canada	Student Energy
Global Covenant of Mayors	The Power Workers' Union
Korea Smart Grid Institute	UNIDO
Indigenous Clean Energy (ICE)	Water Power Canada
International Energy Agency (IEA)	World Bank
Innergex Renewable Energy Inc.	World Economic Forum (WEF)

Mission Innovation Champions MI-4 Program

Each Champion will receive a personalized program with a description of each event. The document will also include preparatory materials and guidelines for the events listed below.

Monday, May 27

Time	Event Name	Location	Participants
10:00-11:00	Leading our Low Carbon Future Panel Discussion	Details to follow	Open to all, registration required
11:30-16:00	Champions Teambuilding	Room 201	All
16:30-16:45	Champions Award Ceremony	Ballroom A & B	All
18:00-18:45	Joint CEM10/MI-4 Opening Ceremony	Ballroom Foyer	All
18:45-20:30	Joint CEM10/MI-4 Opening Reception	Ballroom Foyer	All

Tuesday, May 28

Time	Event Name	Location	Participants
10:00-11:30	Plenary Session 1: Demonstrating Impact	Ballroom C & D	All
11:45-12:45	Ignite Talk: Accelerating Clean Energy Innovation	Room 118-120	All South Korea
12:45-13:45	Delegates Networking Lunch	Room 109-110	All
13:45-15:15	Public-Private Roundtables	Room 211	Austria, China, European Union, Italy, Mexico, Sweden
14:00-14:30	Pitch Presentations Session 1	Ballroom A & B	Canada, Finland, United Arab Emirates
15:00-15:30	Pitch Presentations Session 2	Ballroom A & B	France, India, Saudi Arabia
15:30-17:00	Plenary Session 2: Raising Ambition	Ballroom C & D	All
Various times	Mission Innovation Live Correspondent	Ballroom A & B	Australia, Denmark, Germany, Japan, Netherlands, Norway
Various times	Brain Dates	Details to follow	More information to follow

Wednesday, May 29

Time	Event Name	Location	Participants
7:15-8:45	Women in Clean Energy Breakfast	Room 109-110	China, South Korea