

IRENA Innovation Day: Canada

Overview:

IRENA's Innovation Days take place in different regions around the world and aim to connect innovators and policy makers. This series of events aims to showcase emerging innovations and to inspire and inform the broader and faster uptake of innovative solutions that can help deliver a renewable-powered future and decarbonise hard-to-abate sectors. IRENA Innovation Days build on IRENA's biennial [Innovation Week events](#) but focus on the particular needs and experiences of groups of countries. To date, Innovation Days have been held in [Uruguay](#), [Thailand](#) and [Turkey](#).

IRENA Innovation Day: Canada was a jointly-organised event by IRENA and **Natural Resources Canada** (NRCan).

This event connected a diverse mix of experts, policymakers, and innovators from Canada with the international IRENA community for a two-way exchange about challenges and innovative solutions to decarbonise power and end-use sectors. It offered **Canadian representatives and companies** the opportunity to showcase successes, highlight challenges, learn from each other's experience and explore how innovative solutions can help meet the national renewable targets under Paris Agreement. For **countries and companies from further afield**, this event provided the opportunity to virtually meet key local actors, showcase work and learn from the Canadian experience.

This **Innovation Day in Canada** focused on innovative solutions to decarbonise the power sector, with a specific focus on **mini-grids of the future** and **innovative hydropower solutions for a clean, reliable and flexible grid**, and on pathways to decarbonise end-use sectors of industry and transport, with a specific focus on **advancements in decarbonising on-road transportation** and **innovative solutions to decarbonise the iron and steel sector**. Discussions delved deeper into the topics of technology and processes, enabling frameworks, business models, and market readiness for wide-scale deployment and increased use of renewables and enabling technologies.

DAY 1

Opening Session

Wednesday, 23 March 2022 • 09:00-09:15 EDT / 14:00-14:15 CET

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| 09:00 – 09:15 | <p>Welcome</p> <p>Francesco La Camera, Director General, IRENA</p> <p>John Aldag, Member of Parliament and Chair of Standing Committee on Natural Resources, Canada</p> |
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Session 1: Mini-Grids Of The Future

Wednesday, 23 March 2022 • 09:15-10:30 EDT / 14:15-15:30 CET

Renewable energy mini-grids are a form of integrated energy infrastructure with distributed energy generation resources and loads. They provide the autonomous capability to satisfy electricity demand through local generation, mainly from distributed renewable energy sources. Commonly, mini-grids operate independently from the main grid; this capability makes renewable mini-grids a viable option for providing electricity to populations in remote locations where transmission lines are not economically viable because of the distance to the nearest main grid or where the power supply is unreliable and unstable, with constant power outages. Renewable mini-grids are now also being tailored to different applications and are starting to be found in grid-connected areas to increase the reliability of supply for consumers, reduce electricity bills or decrease grid dependency.

The session explored innovative power solutions in off-grid, remote areas, including interconnecting mini-grids together or with the main grid to increase resilience and reliability, and allow the integration of higher shares of renewable electricity and in turn decrease costs. Central to the discussions were the changing roles of energy actors, digitalisation, emerging challenges and opportunities, and the potential to enable indigenous reconciliation and economic development.

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| 09:15 – 09:30 | <p>Introduction and Scene-setting</p> <p>Global perspective: Aakarshan Vaid, Associate Programme Officer, Power System Flexibility, IRENA</p> <p>Canadian perspective: Kathleen Lombardi, Science and Technology Advisor, NRCan</p> |
| 09:30 – 10:30 | <p>Moderator: Emanuele Taibi, Analyst, Power Sector Transformation Strategies, IRENA</p> <ul style="list-style-type: none"> • Shane Andre, Director, Energy Branch, Yukon Government • Peter Kirby, President & CEO, Taku River Tlingit Corporations • Louise Mathu, Lead Consultant, Gennis Consulting • Tammy Riel, Director, Three Nations Energy |

Session 2: Innovative Hydropower Solutions For A Clean, Reliable And Flexible Grid

Wednesday, 23 March 2022 • 11:00-12:15 EDT / 16:00-17:15 CET

Water is a cost-effective electricity source; it offers high efficiency, operational flexibility and low operating and generation costs. As one of the oldest and largest sources of renewable energy, hydropower is a mature and extremely flexible electricity generation technology while being continually renewable, owing to the recurring nature of the hydrologic cycle. Hydro reservoirs provide built-in energy storage that enables a quick response to electricity demand fluctuations across the grid, optimisation of electricity production and compensation for loss of power from other sources. Special attention is now paid to pumped hydropower plants as they are at present the most competitive options for large-scale energy storage to be used in combination with variable renewables (e.g. solar and wind power). Hydropower also provides other key services, such as flood control, irrigation and potable water reservoirs.

The session explored innovative solutions in hydropower and pumped hydro storage to maximize its contribution to the grid, integrate, and balance higher shares of variable renewables by offering a unique range of system services including provision of inertia, operation reserves, load following and time-shifting to long-duration storage. The discussion also explored the role of digitalisation.

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| 11:00 – 11:15 | <p>Introduction and Scene-setting</p> <p>Global perspective: Carlos Ruiz, Associate Programme Officer, Renewable Technologies, IRENA</p> <p>Canadian perspective: Thomas Levy, Senior Science and Technology Advisor, NRCan</p> |
| 11:15 – 12:15 | <p>Moderator: Roland Roesch, Deputy Director of Innovation and Technology Centre, IRENA</p> <ul style="list-style-type: none"> • Viviane Aubin, Engineer, Hydro-Quebec • André Dagenais, Network Planning Engineer, Hydro-Quebec • Chelsea Donelon, Senior Policy Advisor, TransAlta • Rebecca Ellis, Energy Policy Manager, International Hydropower Association • David Havard, Head Of Product Marketing, General Electric Renewable Energy |

Closing Session

Wednesday, 23 March 2022 • 12:15-12:30 EDT / 17:15-17:30 CET

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| 12:15 – 12:30 | <p>Wrap up of Day 1</p> <p>Dolf Gielen, Director of Innovation and Technology Centre, IRENA</p> <p>Abigail Lixfeld, REED Senior Director, Natural Resources Canada</p> |
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DAY 2

Opening Session

Thursday, 24 March 2022 • 09:00-09:15 EDT / 14:00-14:15 CET

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| 09:00 – 09:15 | <p>Welcome and wrap up of Day 1</p> <p>Martina Lyons, Associate Programme Officer, Innovation and end-use sectors, IRENA</p> |
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Session 3: Advancements In Decarbonising On-Road Transport

Thursday, 24 March 2022 • 09:15-10:30 EDT / 14:15-15:30 CET

Road transport plays a vital role in the world’s economy by facilitating the movement of people and merchandise. Yet, it comes at a cost, as it is a major source of emissions given its current heavy reliance on fossil fuels. On-road transportation represents a sector with the lowest level of renewable energy use but with the largest potential. There are some preferable renewable options for some but not all transport modes. Whilst electrification with renewables is a viable option for rail and light-duty road transport, the optimal pathway has yet to become clear for medium- and heavy-duty on-road transportation, such as heavy-duty trucks, as several decarbonization options are emerging but none is standing out as a leading solution.

The session explored some of the challenges and opportunities in technologies, enabling frameworks and business models for medium- and heavy-duty road transport sectors in transitioning to low-carbon transport modes and related infrastructure.

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| 09:15 – 09:30 | <p>Introduction and Scene-setting</p> <p>Global perspective: Arina Anisie, Analyst, Renewable Energy Innovation for Developing Countries, IRENA</p> <p>Canadian perspective: René Pierre Allard, Senior Technical Advisor, NRCan</p> |
| 09:30 – 10:30 | <p>Moderator: Francisco Boshell, Analyst, Renewable Energy Technologies Standards and Quality Infrastructure, IRENA</p> <ul style="list-style-type: none"> • Hussein Basma, Associate Researcher, International Council on Clean Transportation • Mathieu Larivière, Senior Manager, NRCan • Amanda Mesluk, Senior Manager – Industry Development, Alberta Motor Transport Association • Josipa Petronic, President & CEO, Canadian Urban Transit Research & Innovation Consortium |

Session 4: Innovative Solutions To Decarbonize Iron And Steel Sector

Thursday, 24 March 2022 • 11:00-12:15 EDT / 16:00-17:15 CET

The industrial production of key materials is an essential enabler of modern economies. As countries develop, the demand for such materials continues to grow. However, that production currently comes with high carbon emissions as the majority of energy used in industry is currently sourced from fossil fuels. One of the key hard-to-abate industrial sectors is that of iron and steel. Reducing emissions and eventually reaching zero will require radical shifts in how iron and steel are produced, consumed and disposed of. To date, however, the need to drive long-term emission reductions in the sector has not received the necessary policy attention. The technology shifts needed to decarbonise the iron and steel industry and the different possible pathways could have geopolitical and economic implications as this transition requires large-scale infrastructure changes and investments.

The session explored pathways to accelerate the development and dissemination of renewables and enabling solutions, including technologies and processes, enabling frameworks and business models to decarbonise the hard-to-abate industrial sector of iron and steel.

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| 11:00 – 11:15 | <p>Introduction and Scene-setting</p> <p>Global perspective: Martina Lyons, Associate Programme Officer, Innovation and end-use sectors, IRENA</p> <p>Canadian perspective: John Smiciklas, Interim Director, Canadian Steel Producers Association</p> |
| 11:15 – 12:15 | <p>Moderator: Ted Todoschuk, Board Chairman, Canadian Carbonization Research Association</p> <ul style="list-style-type: none"> • Jean-Pierre Birat, CEO, IF Steelman • Chad Cathcart, Director of Research, Stelco • Kashif Rehman, Director of Product Development & Technology, Algoma Steel • Ka Wing Ng, Research Scientist, Canmet-NRCan • Tony Valeri, Vice President of Corporate Affairs, ArcelorMittal |

Closing Session

Thursday, 24 March 2022 • 12:15-12:30 EDT / 17:15-17:30 CET

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| 12:15 – 12:30 | <p>Recap and Way Forward</p> <p>Dolf Gielen, Director of Innovation and Technology Centre, IRENA</p> <p>Abigail Lixfeld, REED Senior Director, Natural Resources Canada</p> |
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