

Research and Development 20

for Clean Energy Technologies



The 7th RD20 Conference 2025

The leading edge of AI technology for energy, from Tsukuba to the World

Date: Tuesday, September 30–Friday, October 3, 2025

Venue: HOTEL NIKKO TSUKUBA (<https://www.nikko-tsukuba.com/eng/>)

Organizer: National Institute of Advanced Industrial Science and Technology (AIST), Japan

Co-organizers:

Ministry of Economy, Trade and Industry (METI), Japan

Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan

Ministry of the Environment (MOE), Japan

New Energy and Industrial Technology Development Organization (NEDO), Japan

Launched in 2019, the RD20 is an initiative for international research and development aiming to strengthen international collaboration and promote innovation by leading research institutes in G20 countries and regions that develop the world's most advanced technologies for achieving carbon neutrality. RD20 provides opportunities for participants to exchange R&D activities, experiences, and best practices related to clean energy technologies across countries and regions, as well as to explore the potential for international joint research. It also serves to deepen and develop new partnerships among relevant industry, academia, and government stakeholders.

The 7th RD20 Conference will be held on September 30–October 3, 2025 in Tsukuba, Japan and online. Leaders and experts of the institutes from G20 members will gather to accelerate collaboration and release the outcome all over the world.

Session	Date	Time (JST)	Attendance
Technical Session (TS)	Tue., Sep. 30	9:00 – 17:10	Open to the public
	Wed, Oct. 1	9:00 – 17:40	
Site Visit Tour	Thu. morning, Oct. 2	9:00 – 12:00	Invited members only
Workshop (WS)	Thu. afternoon, Oct. 2	13:00 – 17:30	Invited members only
Leaders Session	Fri. morning, Oct. 3	9:00 – 12:05	Open to the public
	Fri. afternoon, Oct. 3	14:00 – 16:45	Invited members only

Day 1: Technical Session (Tue., Sep. 30, 2025)

Time	Session (Open to the public)
8:15-9:00	Registration
9:00-10:50	TS plenary: High level talk on energy and environment <i>Moderator: Dr. Michio Kondo (AIST, Japan)</i>
9:00-9:20	Dr. Koichi Matsuoka (AIST, Japan) <i>in-person</i> <i>AIST's Latest International Collaboration</i>
9:20-9:50	Dr. Jean-Francois Houle (NRC, Canada) <i>in-person</i> <i>Resources, Resilience and Sustainability: NRC Innovation Supporting Canada's Energy Future</i>
9:50-10:20	Dr. Thabo Hlalele (CSIR, South Africa) <i>in-person</i> <i>RD20 contribution to South Africa's G20 Presidency</i>
10:20-10:50	Dr. Stephane Sarrade (CEA, France) <i>in-person</i> <i>Return of Experiment on International Research Collaboration</i>
10:50-11:15	Coffee Break
11:15-17:10	TS #1: Synthetic fuels including a wide range of resources, conversion processes and products <i>Moderator: Dr. Thabo Hlalele (CSIR, South Africa) and Dr. David Harris (CSIRO, Australia)</i>
11:15-11:40	Dr. Randy Cortright (NREL, US) <i>online</i> <i>Synthetic fuels- opportunities and challenges spanning biomass, e-fuels and solar fuels</i>
11:40-12:05	Mr. Adam Tuck (NRC, Canada) <i>in-person</i> <i>Advanced Hydrogen Production and Transport Technologies</i>
12:05-12:30	Dr. Yu Katayama (Osaka University, Japan) <i>in-person</i> <i>Electrochemical Ammonia Synthesis Under Ambient Conditions – NEDO Research and Development Program for Promoting Innovative Clean Energy Technologies Through International Collaboration</i>
12:30-13:50	Lunch
13:50-14:15	Dr. Mike Colechin (Cultivate Innovation Ltd/UKERC, UK) <i>in-person</i> <i>The potential role for biomass as a long-duration store of energy</i>
14:15-14:40	Dr. David Harris (CSIRO, Australia) <i>in-person</i> <i>Gasification and syngas potential for biomass and waste feedstocks</i>
14:40-15:05	Dr. Tata Sutardi (BRIN, Indonesia) <i>in-person</i> <i>Biofuel Development from Biomass Stock</i>
15:05-15:30	Dr. Claudia Bassano (ENEA, Italy) <i>online</i> <i>Sustainable Aviation Fuels in Italy: opportunities and research challenges faced by ENEA</i>

15:30-15:55	Prof. Sary Awad (CNRS, France) <i>online</i> <i>Sustainable fuels production for shipping and aviation sectors from microalgae via Hydrothermal pathway: insights from COCPIT project</i>
15:55-16:20	Coffee Break
16:20-17:10	Discussion and wrap-up (Invited members only)

Day 2: Technical Session (Wed., Oct. 1, 2025)

Time	Session (Open to the public)
8:15-9:00	Registration
9:00-12:40	TS #2: Energy storage with a focus on grid-scale storage for renewables Moderator: Dr. Pierre SERRE-COMBE (CEA, France) and Dr. Ratih Damayanti (BRIN, Indonesia)
9:00-9:25	Dr. Emmanuel Baudrin (CNRS, France) <i>in-person</i> <i>Overview of Redox flow technologies, challenges, and opportunities</i>
9:25-9:50	Dr. Katie Harrison (NREL, US) <i>in-person</i> <i>Safe, Long-Life Batteries for Behind-the-Meter Grid Storage</i>
9:50-10:15	Dr. Euis Djubaedah (BRIN, Indonesia) <i>in-person</i> <i>Challenges and Opportunities in Advancing Energy Storage Technologies in Indonesia</i>
10:15-10:40	Dr. Callum MacIver (UKERC/University of Strathclyde, UK) <i>in-person</i> <i>Security of supply challenges for a weather dependent GB electricity system and the role for storage at scale</i>
10:40-11:00	Coffee Break
11:00-11:25	Dr. Julie Mouglin (CEA, France) <i>in-person</i> <i>Role of Hydrogen for large Scale Energy Storage</i>
11:25-11:50	Dr. Friedrich Mendler (Fh-ISE/AIST, Germany) <i>in-person</i> <i>Scaling Hydrogen Production and Storage: Lessons from Supply Chain Optimisation Across all Spatial Scales</i>
11:50-12:40	Discussion and wrap-up (Invited members only)
12:40-14:00	Lunch
14:00-17:40	TS #3: AI and digitalization to accelerate research for energy technology innovation, development and deployment Moderator: Dr. Tomonori Honda (AIST, Japan) and Dr. Sangjin Choi (KIER, Korea)

14:00-14:25	Dr. Ray Grout (NREL, US) <i>in-person</i> <i>AI applications for energy and energy R&D</i>
14:25-14:50	Dr. Jehyun Lee (KIER, Korea) <i>in-person</i> <i>Identifying Strategic Research Partners through Data-Driven Analysis of the Renewable Energy Technologies</i>
14:50-15:15	Dr. Hideki Shimada (AIST, Japan) <i>in-person</i> <i>Data-Driven DSR Control Technology for Energy Sharing – NEDO Research and Development Program for Promoting Innovative Energy and Environmental Technologies Through International Collaboration</i>
15:15-15:40	Dr. Aidan Rhodes (Imperial College London/UKERC, UK) <i>in-person</i> <i>Enhancing Electricity System Resilience with AI, Digital Twins and Digitalisation Technologies</i>
15:40-16:00	Coffee Break
16:00-16:25	Prof. Mohamed Tahar MABROUK (Imt Atlantique/CNRS, France) <i>in-person</i> <i>Hybrid Modeling for Smarter Energy Systems: Physics Meets AI</i>
16:25-16:50	Dr. Scott Smith (NRC, Canada) <i>in-person</i> <i>Autonomous Laboratory: Self-driving labs to accelerate battery cathode material discovery</i>
16:50-17:40	Discussion and wrap-up (Invited members only)

Day 3: Site Visit Tour (Thu. morning, Oct. 2, 2025)

NIMS course (Invited members only)	
9:00	Departure for NIMS (Place of departure: HOTEL NIKKO TSUKUBA)
9:25	Arrival at NIMS Sakura Site
	<ul style="list-style-type: none"> - Laboratory of Magnetic Refrigeration System Group - Extreme Environment Material Data Unit
10:25-10:45	Transfer from NIMS Sakura Site to Namiki Site
	<ul style="list-style-type: none"> - NIMS Battery Research Platform - Laboratory of Advanced Phosphor Group
11:20	Departure for HOTEL NIKKO TSUKUBA
11:35	Arrival at HOTEL NIKKO TSUKUBA

AIST course (Invited members only)	
9:00 9:25	Departure for AIST (Place of departure: HOTEL NIKKO TSUKUBA) Arrival at AIST Tsukuba Central:
10:45-11:10	<ul style="list-style-type: none"> - Global Research and Development Center for Business by Quantum-AI technology (G-QuAT)
	Transfer from AIST Tsukuba Central to Tsukuba West
	<ul style="list-style-type: none"> - Integrated production process of liquid synthetic fuels - Gigantic Analysis platform using Modelling and AI GAMA
12:00	Departure for HOTEL NIKKO TSUKUBA Arrival at HOTEL NIKKO TSUKUBA

Day 3: Workshop (Thu. afternoon, Oct. 2, 2025)

Time	Session (Invited members only)
13:00-15:00	<p>WS #1: AI and digitalization for energy Moderator: Dr. Taha Selim Ustun (AIST, Japan), Dr. Jehyun Lee (KIER, Korea), and Dr. Saptak Dutta (NRC, Canada)</p> <p>13:00-13:15 Dr. Saptak Dutta (NRC, Canada) <i>in-person</i> <i>Digitalization of Buildings and Equipment to Support Electrification and O&M</i></p> <p>13:15-13:30 Dr. Gabriella Ferruzzi (ENEA, Italy) <i>online</i> <i>Techno-economic analysis and advanced models for optimizing energy systems</i></p> <p>13:30-13:45 Dr. Doğan GEZER (TÜBİTAK, Turkey) <i>online</i> <i>AI and digitalization studies in Turkish Power System</i></p> <p>13:45-14:00 Dr. Taha Selim Ustun (AIST, Japan) <i>in-person</i> <i>AI-Driven Solutions for Power System Stability in a Sustainable Energy Future</i></p> <p>14:00-15:00 Discussion</p>
15:00-15:30	Coffee Break

15:30-17:30	WS #2: International collaboration Moderator: Mr. Ron Benioff (NREL, US), and Dr. Pierre SERRE-COMBE (CEA, France)
	15:30-15:35: Guiding Remarks by Moderator
	15:35-16:30: Collaboration Examples and Lessons –AIST, CNRS, CSIRO, Fraunhofer, KIER, NREL, TERI, Others
	16:30-16:40: Findings and Recommendations from RD20 Survey & Reflections on Lessons 16:40-17:30: Discuss and Refine Recommendations and Agree on Concrete Collaboration Actions

Day 4: Leaders Session (Fri., Oct. 3, 2025)

Time Morning session (Open to the public) Venue: Hotel Nikko Tsukuba, Room: SUBARU	
8:15-9:00	Registration
9:00-9:10	Group Photo
9:15-9:35	Opening ceremony (MC: AIST Secretariat)
9:15-9:20	Welcome address: Mr. Kazuhiko Ishimura (AIST, Japan)
9:20-9:35	Opening remarks: METI, MEXT, MOE, NEDO
9:35-10:55	Plenary lecture, RD20 status and activities (Chaired by Dr. Vibha Dhawan)
9:35-9:55	Plenary lecture: Dr. Akira Yoshino (AIST, Japan)
9:55-10:05	Report of TS in the 7th RD20: Dr. Koichi Matsuoka (AIST, Japan)
10:05-10:20	Report of Taskforce activity: Taskforce leaders -PV: Dr. Masahiro Yoshita (AIST, Japan) <i>in-person</i> -H ₂ LCA: Dr. Nawshad Haque (CSIRO, Australia) <i>online</i> -H ₂ TEA: Dr. Mark Ruth (NREL, US) <i>online</i>
10:20-10:30	Report of RD20 Summer School 2025: NREL
10:30-10:40	Contribution to G20: ETWG: Dr. Thabo Hlalele (CSIR, South Africa)
10:40-10:55	Discussion

10:55-11:10	Coffee Break
11:10-12:00	Keynote presentations: Frameworks and Role of Leadership to Promote International Collaboration (Chaired by Mr. Kazuhiko Ishimura and Dr. Michio Kondo)
11:10-11:20	Various collaboration scheme: Dr. Shigeki Koyanaka (NEDO, Japan)
11:20-11:40	Keynote Presentation: Prof. Dr. Bernd Rech (HZB, Germany) <i>Green Energy Research at Helmholtz-Zentrum Berlin – Innovations Through International Partnerships</i>
11:40-11:50	Q&A for presentations, Open discussion among Leaders
11:50-12:00	Approval and Announcement of the 8th RD20 Conference: Dr. Thabo Hlalele (CSIR, South Africa)
12:00-12:05	Closing remarks: Dr. Haruhiko Obara (AIST, Japan)
12:05	Adjournment of morning session
12:05-13:30	Lunch * Media relations (12:05-12:35)
Time	Afternoon session (Invited members only) Room: SUBARU
13:30-13:35	Introductory remarks from chairs: Mr. Kazuhiko Ishimura and Dr. Martin Keller
13:35-13:45	Reviewing Leaders Recommendation 2024: Dr. Martin Keller (NREL, US, <i>in-person</i>) and Dr. William Tumas (NREL, US, <i>online</i>)
13:45-16:40	Moderated discussion (Chaired by Dr. Martin Keller)
13:45-14:10	<i>Theme 1: Collaboration with other organizations (facilitator: Dr. Martin Keller)</i>
13:45-13:50	Presentation: Potential collaboration with IEA/H2 TCP: Dr. Julie Mouglin (CEA, France) <i>online</i>
13:50-13:55	Presentation: Potential collaboration with MI: Dr. Helen Fairclough (MI) <i>online</i>
13:55-14:10	Discussion: continuity and new development of collaboration with G20, MI and IEA/H2 TCP
14:10-14:40	<i>Theme 2: Capacity building and researcher exchange within RD20 (facilitator: Dr. Abdelilah Slaoui)</i>
14:10-14:20	Approvals and Announcements of RD20 Summer School 2026 and 2027 Summer School 2026 @Morocco: Dr. Abdelilah Slaoui (CNRS, France) Summer School 2027 @ Scotland: Dr. Jamie Speirs (UKERC, UK)

14:20-14:25	RD20 Portal Site: RD20 Secretariat Dr. Yuji Ando (AIST, Japan)
14:25-14:40	Discussion: Expanding summer school to human resource development and creating new community, promoting researcher exchange
14:40-15:00	Coffee Break
15:00-16:25	<i>Theme 3: Activation of RD20 initiatives (facilitator: Dr. Pierre SERRE-COMBE)</i>
15:00-15:20	Report of WS in the 7th RD20: Dr Taha Selim Ustun (AIST, Japan), and Mr. Ron Benioff (NREL, US)
15:20-15:50	Discussion: New TF proposal, Activate TF, Future areas for collaboration (biofuels etc.): TF leaders (including new TF leader) -Biofuel: Dr.Sanjukta Subudhi (TERI, India) <i>in-person</i> (-Any comments: Dr. Masahiro Yoshita (AIST), Dr. Nawshad Haque (CSIRO), and Dr. Mark Ruth (NREL))
15:50-16:10	Discussion: Promoting international collaboration among RD20
16:10-16:15	<i>(facilitator: Prof. Dr. Christopher Hebling)</i>
16:15-16:25	RD20 membership: RD20 Secretariat Dr. Noriko Yoshizawa (AIST, Japan)
16:25-16:40	Discussion: RD20 membership and engagement, future conference
16:25-16:40	Reviewing the discussion to summarize recommendations: Dr. Martin Keller (NREL, US)
16:40-16:45	Closing remarks: Mr. Kazuhiko Ishimura (AIST, Japan)
16:45	Adjournment of afternoon session
18:00- 20:00	Networking Dinner

Expected participating countries and regions

