



# Terms of Reference Summer School 2024



Diversity of Knowledge on  
Decarbonization  
in Just Energy Transition  
Mechanism

**July 7 - 13, 2024**

National Research and  
Innovation Agency (BRIN)  
Ibis Style Serpong BSD City & BRIN  
Science Technopark  
Serpong, Tangerang Selatan  
Banten, INDONESIA



SCAN ME!

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**Youtube** RD20 SummerSchool Indonesia



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## 1 Overview

# FOREWORD

This year, 2024, National Research and Innovation Agency (BRIN) Indonesia as a member of RD20 is honored to organize the RD20 Summer School titled “Diversity of Knowledge on Decarbonization in Just Energy Transition Mechanism”, which holds immense significance in the contemporary global landscape. In an era where sustainability and energy transition are critical imperatives, this initiative serves as a pivotal platform. By addressing multifaceted themes such as Sustainable Energy Transition, Life Cycle Assessments, Circular Economy, and Waste Management, it illuminates pathways toward a more ecologically balanced future. Delving into emerging paradigms like Carbon Feedstock, Energy Storage, and Advanced Solar Developments, this program embodies a forward-looking approach, fostering a deeper understanding of cutting-edge technologies and strategies.

Moreover, by examining topics like Smart Grids, Artificial Intelligence for Energy Transition, and Biomass Resources, the program acknowledges the centrality of innovation in driving sustainable change. It doesn't just stop at technological developments; it extends to societal and economic facets through discussions on Green Building, Innovative Finance, and Carbon Capture and Storage. Exploring aspects of Hydrogen Production and Utilization, as well as Negative Emissions, demonstrates a holistic perspective towards diverse energy vectors and their role in mitigating climate challenges. This program's significance lies in its comprehensive scope, bridging the gap between theoretical knowledge and practical applications. It empowers participants to not only comprehend the complexities of decarbonization but also equips them with the tools necessary to actively contribute to a more equitable and sustainable energy landscape.

# 1 Overview

## BACKGROUND

RD20 Member Institutes			
Key R&D institutes from G20 members leading cutting-edge technology development		Instituto Nacional de Tecnología Industrial (INTI), Argentina	Commonwealth Scientific and Industrial Research Organization (CSIRO), Australia
National Research Council Canada (NRC), Canada	Dalian Institute of Chemical Physics (DICP), Chinese Academy of Science	European Union Joint Research Centre (JRC)	Commissariat à l'énergie atomique et aux énergies alternatives (CEA), France
Fraunhofer Gesellschaft (FH-G), Germany	Fraunhofer Institute for Solar Energy Systems (FH-ISE), Germany	The Energy and Resources Institute (TERI), India	National Research and Innovation Agency (BRIN), Indonesia
Center for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV), Mexico	Korea Institute of Energy Research (KIER), Republic of Korea	King Abdullah City for Atomic and Renewable Energy (KACARE), Saudi Arabia	Council for Scientific and Industrial Research (CSIR), South Africa
UK Energy Research Centre (UKERC), United Kingdom of Great Britain and Northern Ireland	National Renewable Energy Laboratory (NREL), United States of America	National Institute for Materials Science (NIMS), Japan	RIKEN, Japan
			National Institute of Advanced Industrial Science and Technology (AIST), Japan

**RD20** AIST is the Organizer of RD20, Leading the Conference as the Secretariat

### RD 20

Launched in 2019, the RD20 is a “initiative” (framework) for international research and development aiming to strengthen international collaboration 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.

### PARTICIPANTS CRITERIA, FEES AND COSTS

- Young researchers are defined as:
  - a. person getting doctor degree (Dr./Ph.D.) within the past 3 years
  - b. Second year or later PhD students
  - c. Master degree holder who graduated within 5 years and have a work experience in energy or decarbonization field.

Participation fee for young researcher is USD 500.
- Senior scientists are individuals who have completed their PhD more than 3 years ago. Participation fee for senior scientist is USD 1000.
- A contribution of USD 500 is requested from speakers.
- Local (Indonesian) participant and corporation researchers/representative fee: Please reach out to the committee via e-mail.
- The participation fee includes accommodation and meals throughout the entire week of the summer school, from July 7th to 13th. However, travel expenses to Indonesia and shuttle from and to the airport are not covered. The shuttle service from and to the airport will be managed by the committee with an additional fee of USD 60 per person for a round trip.
- Participants are responsible for arranging and covering their own flight tickets to Indonesia.
- Payment is to be made through the website, and the payment method will be communicated via email.
- All participants are expected to join the whole event.

## 1 Overview



# OBJECTIVES



## Deepening knowledge & skill

Provide an opportunity for young researchers from G20 countries to deepen their knowledge and skills in the field of decarbonization.



## Showing Indonesian nature & culture

Introduce Indonesia as a country rich in natural resources with many islands with different behaviour of energy and research outcomes related with.



## Stimulating collaboration

Encourage knowledge exchange and collaboration between G20 and Indonesian experts.





Research and Development 20  
for Clean Energy Technologies

The 5th RD20  
Conference  
2023

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# EVENT DESCRIPTION



Activities | Discussion Topic &  
Excursion | Tours | Rundown | Facilitator  
& Lectures | Speakers | Host | Previous  
RD20 Summer School | Registrations

# ACTIVITIES

## Lectures and Seminars

Experts from G20 member countries will deliver lectures and seminars on relevant decarbonization topics.



## Technical Excursions

Participants will be taken to locations related to new and renewable energy development in Indonesia, such as research centers, as well as pilot plants, or related facilities

## Panel Discussions

Panel discussions will be conducted to facilitate the exchange of ideas and experiences among participants and expert speakers.



## Posters & collaborative projects

- Each participant is required to share about their work or research using a printed poster. Committee will print your poster and format of poster will be inform via e-mail. We expect to receive your poster file by June 24th, 2024.
- Participants will be divided into small groups to develop collaborative projects related to the discussion topic. The project outcomes will be presented at the end of the event.

2 Event Description

# DISCUSSION TOPIC AND EXCURSION PLAN

## DISCUSSION TOPIC: THE NEW COUNTRY CAPITAL DEVELOPMENT

**THE EIGHT MAIN PRINCIPLES OF THE NEW NATIONAL CAPITAL CITY (IKN) PROJECT**

- The World's Sustainable City
- A Symbol of National Identity
- Economic Driver for Indonesia's Future

**iKN IN NUMBERS**

IKN National Strategic Area (K3N) <b>256.142 ha</b>	Indonesia's GDP Target for 2045 <b>USD 180 Billion</b>	Estimated Workforce Number by 2045 <b>4.811.000</b>
IKN Development Zone <b>199.962 ha</b> <small>*part of the K3N</small>	The IKN Area <b>56.180 ha</b> <small>*part of the K3N</small>	Main Governmental Zone <b>6.596 ha</b> <small>*part of the IKN Area</small>

What should we build in the New Capital of Indonesia?

- Carbon Capture and Storage?
- Resource and waste management
- Energy efficiency
- Circular economy
- Environmental awareness
- other related issues

## Technical excursion tour (tentative)

The largest solar power plant in Southeast Asia : Cirata, Purwakarta, West Java



## Hydrogen Refueling Station in Jakarta





## 2 Event Description

# OTHER TOURS

## BJ Habibie Science & Tech Park

- Efficiency Energy
- Smart Grid
- Energy conversion
- Electric Vehicle
- Hydrogen Energy
- Nanomaterials and Battery
- Nuclear Facility
- Bioenergy
- Photovoltaic lab
- EV Charging Station
- Waste to Energy Lab



## Biodiversity Visit at Bogor Botanical Garden

A place of botanical interest but also a cultural and historical site. It offers a peaceful environment for leisurely walks and exploration, making it a popular destination for both locals and tourists.



## Lunch at Bogor Botanical Garden and Gala Dinner at a restaurant with rich Indonesian culture ambience\*

An opportunity to gather participants at distinguished restaurants, providing unforgettable culinary delights, cultural immersion, and social engagement.

*\*tentative*



## 2 Event Description

# RUNDOWN

July 7 - 13, 2024

Start from 8.30 AM to 9 PM (GMT+7)

BRIN  
Indonesia

Time	Sunday July 7	Monday, July 8	Tuesday, July 9	Wednesday, July 10	Thursday, July 11	Friday, July 12	Saturday, July 13			
							Option 1*	Option 2*		
08.30 - 08.40	Registration	(1) Welcome Greeting by Summer School host (BRIN)	Moving from hotel to BJ Habibie Science Park	Moving from hotel to BJ Habibie Science Park	(18) Negative Emission, Biomass Resources and Utilizations (BRIN)	Short Walking in Botanical Garden	Hydrogen Refuelling Station- Jakarta City	Group City Tour to Cirata Lake Floating PV and Hydrogen Refuelling station- Jakarta City (Tentative - depends on local sponsorships, will be announce later)		
08.40 - 08.50		(2) Welcome Speech by BRIN Representative								
08.50 - 09.00		(3) RD20 Introduction (AIST)								
09.00 - 09.30		(4) Introduction to Sustainable Energy Transition (Ministry of Energy and Mineral Resources)	Lab Visit to BJ Habibie Science Park - Serpong A	Lab Visit to BJ Habibie Science Park - Serpong B					(19) Hydrogen Production, Transport, Utilization (CEA)	(22) CEO Talk: From Fossil to Green Energy (Pertamina)
09.30 - 10.00		(5) Insight of Indonesia's New Capital, Nusantara (Ministry of National Development Planning)								
10.00 - 10.30		(6) Life Cycle Assessments, Waste Management and Circular Economy (NREL)	(9) Carbon Feedstock, Carbon Sink, Carbon Market and Price (ERIA)	(14) Bio Based Materials and Green Building (National Institutes of Technology, India)	(20) Innovative Finance for Energy Transition (University of Sheffield)	Young Researchers' Recommendation				
10.30 - 11.00		(9) Carbon Feedstock, Carbon Sink, Carbon Market and Price (ERIA)								
11.00 - 11.30										
11.30 - 12.00					Poster Pitch ( 3 minutes for 1 person)	Free				
12.00 - 13.30		Break & Lunch								
13.30 - 14.00		(7) Energy System Optimisation (Imperial College London)	(10) Energy Storage and Battery (NREL)	(15) Risk and safety assessment of H <sub>2</sub> , NH <sub>3</sub> (AIST)	(21) Low-cost Active Materials for Green Energy Conversion and Storage: i) value-added from abundant waste and ii) Low-Pt	Botanical Garden free activity				
14.00 - 14.30										
14.30 - 15.00		(8) Carbon Capture Storage & Utilization (NREL)	(11) Recent Solar Development (Floating PV, Agrophotovoltaic) (CSIRO)	(16) Smart Grid and Advanced Power Generation (AIST)	Discussion & Team Work (Making Recommendation of RD20)	Back to Sahid Serpong Hotel				
15.00 - 15.30										
15.30 - 16.00		Coffee Break & Poster Session	Coffee Break & Poster Session	Coffee Break & Poster Session	Free					
16.00 - 17.00	Poster Pitch (about 1.5-2.0 minutes for 1 person)	(12) BRIN Research Collaboration Schemes	(17) Inspiring Talk: Lesson Learn of Energy in Remote Area	Discussion & Team Work (Making Recommendation for RD 20)						
17.00 - 18.00		(13) NEDO'S International Collaboration Activities	Free							
18.00 - 19.30	Dinner (time depending on participants arrival)	GALA Dinner (tentative)	Dinner	Dinner	Dinner	Dinner and Closing Course				
19.30 - 21.00		Discussion & Team Work								

\*tentative

## 2 Event Description

# FACILITATORS & LECTURES

### FASILITATORS

- A facilitation team consisting of energy and decarbonization experts from G20 member countries will accompany the participants throughout the event.
- Facilitators will guide discussions, provide feedback, and direct group activities.

### TOPIC & LECTURES

- Introduction to Sustainable Energy Transition
- Insight of New Capital
- Life Cycle Assessments and Circular Economy
- Waste Management
- Carbon Feedstock, Carbon Sink, Carbon Market and Price
- Energy Storage and Battery
- Recent Solar Development (Floating PV, Agro-Photovoltaic)
- Smart Grid and Advanced Power Generation
- AI for Energy Transition
- Negative Emission, Biomass Resources and Utilizations
- Bio Based Materials and Green Building
- Carbon Capture Storage & Utilization
- Hydrogen Production, Transport, Utilization
- Innovative Finance for Energy Transition

Each topic is expected to be discussed by a maximum of 20 participants. To collect data on interest in the discussion topic, please fill out the form in the registration section on the website.

## 2 Event Description

# MEET THE SPEAKERS (1)

The speakers are variety of professionals, such as prominent leaders from the ministries or national agencies from the host country



**Eniya L Dewi**

Directorate General of New and Renewable Energy, Ministry of Energy and Mineral Resources, Indonesia



**Tri Mumpuni**

Steering Committee of National Research and Innovation Agency (BRIN), Indonesia



**Vivi Yulaswati\***

Directorate General in the Ministry of National Development Planning, Indonesia



**Nicke Widyawati\***

President Director of PT. Pertamina Persero, Indonesia



**Dadan Kusdiana\***

Secretary General of Ministry of Energy and Mineral Resources Indonesia



**Amarulla Octavian**

Vice Chairman of National Research and Innovation Agency (BRIN), Indonesia



**Haznan Abimanyu**

Head of Organization Research for Energy and Manufacture, BRIN Indonesia



**Mego Pinandito**

Deputy Chairman for Development Policy, National Research and Innovation Agency, (BRIN) Indonesia

*\*in the confirmation process*

## 2 Event Description

# MEET THE SPEAKERS (2)

The speakers are also professionals and prominent leaders from the government institutions, international or national agencies also universities from various countries.



**Hiroshi Kikusato**

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



**Venkatachalam Anbumozhi**

Director of Research Strategy and Innovation, ERIA



**Noel Duffy**

Commonwealth Scientific and Industrial Research Organisation (CSIRO)



**Sonachalam Arumugam**

National Institutes of Technology (NITs), India



**Bill Tumas**

National Renewable Energy Laboratory (NREL), USA



**Colin Nolden**

University of Sheffield, UK



**Francisco Javier**

Cinvestav: "Excelencia en Investigación y Posgrado - Mexico"



**Danny Pudjianto**

Imperial College London, UK

## 2 Event Description

# MEET THE SPEAKERS (3)

The speakers are also professionals and prominent leaders from the government institutions, international or national agencies also universities from various countries.



**Noriko Yoshizawa**

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



**Anthony Burrell**

National Renewable Energy Laboratory, NREL, USA



**Kyotaka Tsunemi**

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



**Pierre Serre-Combe**

Atomic Energy and Alternative Energies Commission | CEA France

*Other speakers from members of RD20 such as NREL, ERIA, AIST Japan, NEDO Japan, French Alternative Energies and Atomic Energy Commission (CEA), The French National Centre for Scientific Research (CNRS), and other members of RD20 are also expected to participate.*

## 2 Event Description

# MEET THE HOST

The National Research and Innovation Agency, Indonesia (BRIN) is honored to host the summer school in Indonesia, with the invaluable support of member institutes in RD20.

## Steering Committee



**Haznan Abimanyu**

Head of Research Organization  
for Energy and Manufacture,  
BRIN



**Mego Pinandito**

Deputy Chairman for  
Development Policy, BRIN



**Eniya Listiyani Dewi**

Directorate General of New and  
Renewable Energy, Ministry of Energy  
and Mineral Resources, Indonesia



**Hens Saputra**

Head of Research  
Center for Process and  
Manufacturing Industry  
Technology BRIN



**Nugroho A S**

Head of Research  
Center for Sustainable  
Production System  
and LCA - BRIN



**Mahfud Al Huda**

Head of Research  
Center for Structural  
Strength Technology  
BRIN



**Aam Muharam**

Head of Research  
Center for  
Transportation  
Technology BRIN



**Widjo Kongko**

Head of Research  
Center for  
Hydrodynamics  
Technology BRIN



**Teguh Mutaqqie**

Head of Research  
Center for Testing  
Technology and  
Standards BRIN

## Chairman



**Cuk Supriyadi Ali Nandar**

Head of Research Centre for Energy  
Conversion and Conservation, BRIN

## Vice Chairman



**Euis Djubaedah**

Senior Researcher of Research Centre for  
Energy Conversion and Conservation BRIN

## Secretariat

Arif Darmawan  
Sri Rahayu  
Windra Priatna H  
Dini Dwi Ludfiani

## Partnerships

Nilam Sari O  
Sherly O Saraswati

## Finances

Hamid Budiman  
Prima Zuldian

## Design

Ade Sana R

## Logistic and Operations

Oka Arjasa  
Novi Syaftika  
Afri Dwijatmiko  
Gissa N Sevie  
Nirma A K  
Ludfi P Bowo

Dewi R Mandasari  
Aldion Renata  
Abdul Hadi  
Utari Ayuningtyas  
Yoyon Wahyono  
Fensa Eka Widjaja

# PREVIOUS RD20 SUMMER SCHOOL (2023) Prapoutel, France



## RD20 Summer School Report, Prapoutel, France, July 2-7, 2023

During lectures, participants had the opportunity to learn more about low-carbon energy technologies and systems from world experts of leading research and development institutes

### Message from the lecturers



Striving for a carbon neutral society requires help from many stakeholders, including the government, businesses, researchers, and society. From the RD20 meetings, I gained a good overview of the research institutes, collaborative efforts, and research funding of other countries that could be gathered to achieve a carbon neutral economy. I would like to point to our understanding that technological solutions must always meet local requirements, which are different in every place. For the collaboration to succeed, we need to overcome the gap that exists between developed and developing countries and openly share our difficulties, which should enable developing countries to avoid them and speed up their efforts to implement renewable energies.

**Eniya Listiani Dewi**  
Research Professor at National Research and Innovation Agency (BRIN) – Indonesia; fuel cell and hydrogen technology, national research and innovation

Looking at the enthusiasm of the young researchers and their high levels of education leads me to the conviction that this event could influence other researchers to spread the word about the RD20 initiative. In this sense, the summer school is a first visible result of our discussions at the RD20 leaders' meetings.



**Anthony Burrell**  
Energy Storage Lead at the National Renewable Energy Laboratory (NREL) – USA; electrochemical storage technologies

It is time to make the energy transition happen as fast as we can, and the RD20 summer school is critical for our success. The transition won't be achieved with a single piece of technology, without thinking about how the whole world of interconnected devices are connecting in the overall energy landscape. The summer school let us get together and talk about how we are going to achieve this, as well as enabling early career researchers to understand what those challenges are and begin to think in a broader sense about where their research fits into the total ecosystem and where the whole system is going, which is important for our common understanding. While we all have our national interests and focus, the total RD20 initiative is critical to getting together as a global community of scientists and starting to think about how we integrate our directions in multiple systems across the globe, in developed countries as well as developing countries. Cooperating and learning from each other is the only way we can accelerate this to the point where we can meet the challenges and demands ahead.





To complete your registration, please follow these steps:

- a. Send an email to the committee at [rd20summerschool2024@brin.go.id](mailto:rd20summerschool2024@brin.go.id). Include your name, affiliations, nationalities, your academic degree, your graduation year or study year and other necessary information. Feel free to reach out with any inquiries as needed.
- b. The committee will review your profile and if you are eligible, we will send you an invitation letter that you may need for visa applications or other paperwork.
- c. Additionally, the committee will provide you with links of payment and the registration form. This form requires you to provide details regarding your participation, such as your flight schedule, shuttle pickup requirement, your chosen topic, and so forth. We kindly request all participants to complete the payment and fill the form by June 7, 2024. If you need to make any changes after submitting the form, you can still reach out to us via email.

Please visit our website periodically to stay informed about details and updates.

We are excitedly looking forward to your participation, where together, we will cultivate cherished memories, foster meaningful connections, and pave the way for fruitful collaborations!



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## Feel free to reach out with any inquiries

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- Youtube** RD20 SummerSchool Indonesia

