IAIA23, Session, Room 6, afternoon, Day-4
Universities Should Lead Climate Action

2:00-3:30pm, May 11 (R)
Kuching, Malaysia

# How Universities Lead Climate Action
## -RE100 University League in Japan-


UN Symposium on SD, Sep. 2015, and started from Jan. 2016

# SDG12
# Responsible Consumption and Production

- **Responsible Consumption : RE100-consumption**

**The Climate Group「RE100」**

**Companies with great procurement of power**

Significant power footprint (i.e. > 0.1 TWh / 100 GWh / 100,000 MWh)

- **Responsible Production : RE100-production**

**Decentralized generation : Each entity can do it**

**Each University as an entity**

**Responsible University: 100% Renewable Electricity**

***Universities can show models***

# Fukushima Nuclear Power Accident、2011.3.11

## What is Sustainable Energy?

(AP Photo/AIR PHOTO SERVICE) MANDATORY CREDIT

# GHG Emission of Japan, 2020 Report, MOE

| Decreasing | Reduction | Saving energy |
|---|---|---|
| 1.408 bil. ton, 2013 | 1.149 bil. ton, 2020 | Generating |
| 1.364 bil. ton, 2014 | 16.8% less than | Renewables |
| 1.325 bil. ton, 2015 | that of 2013 | |

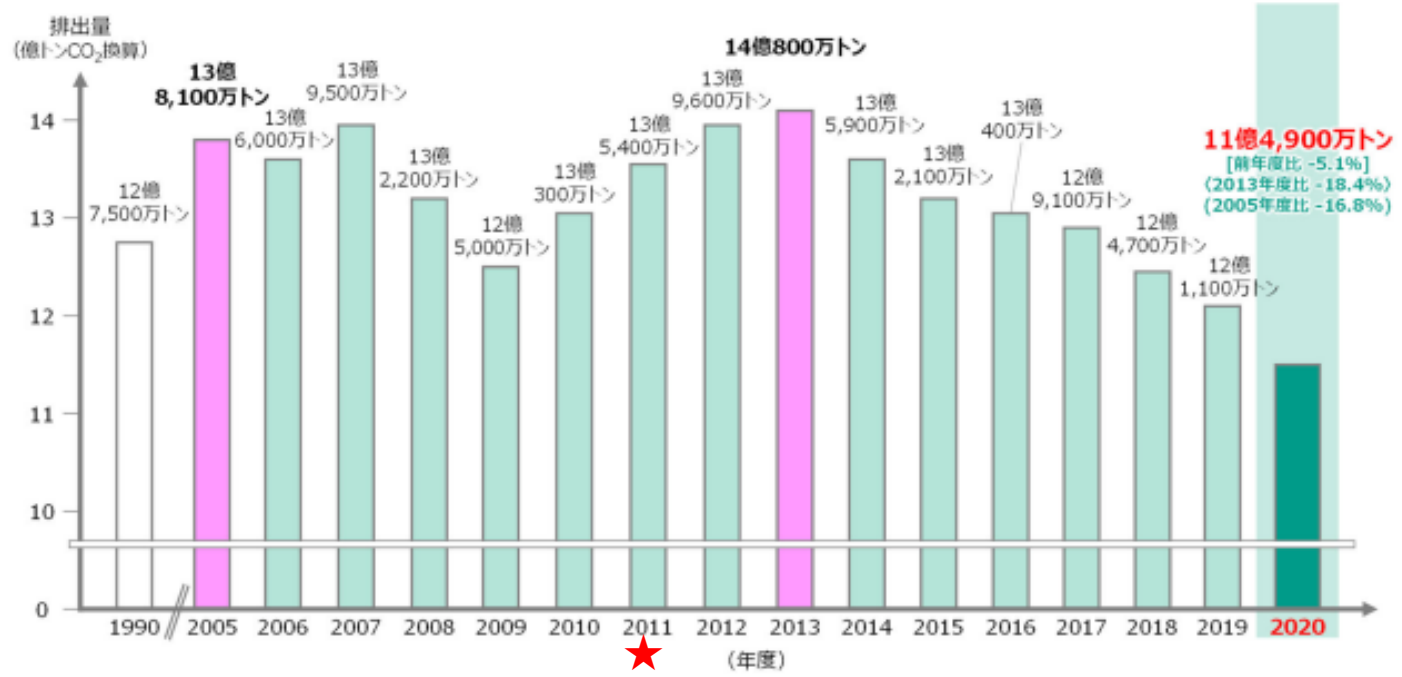



図 1　我が国の温室効果ガス総排出量（2020 年度速報値）

# Change of Energy Policy

## Saving Energy & Generating Renewables

- **Shortcomings of Centralized Generation**

  **Big damage from disasters, Long recovering time**

- **Decentralized Local Generation is Resilient**

  **Small damage from disasters, Short recovering time**

## Paradigm Shift

**Generate Ren. Elec. on its own property/nearby sites**

**Total volume of RE ≧ Total volume of consumption**

**Enough generation of RE ⇒ Circulate the power through the power of commerce!**

**Universities must lead it by showing examples**

## 100% Renewable Energy University

# The First Penguin in Japan
# Chiba University of Commerce（CUC）

**Mega Solar Noda Power Plant**

Profitable Project of CUC by application to FIT in 2012 (sold to TEPCO)

Installed in 2013, Operation since 2014

◆ The capacity of 2.45 MW was found to be the biggest of all the universities in Japan
(est. RE coverage rate is 62.7%)

◆ Voluntary activities seeking zero carbon by faculty, staff and students since 2012

◆ Press Release (Sep. 2014)
The will to make CUC a 100% renewable energy university
Announcement as a Dean **Not CUC official** announcement

Original roof-top solar panels are on Building 1, Ichikawa campus, Installed in 2010 by the proposal of a student group. 12KW capacity

# The way to RE100% University 1/2
## -From voluntary activities to official projects of CUC-

**2013** CUC Open Lecture Series (The first year), as a voluntary activity
Topic: Considering sustainable environment and energy policy

**2014** Press Release (September) Announcement as a Dean, Voluntary
The will to make CUC a 100% renewable energy university

**2015** survey on the possibility of becoming a net-zero energy campus by saving energy and producing renewable energy
(Subsidy from METI, Collaboration with external consultants)

**2016** Cooling down by sprinkling water (Saving energy week in Jul.)
Raising awareness of students, faculty and staff
CUC Energy Co. Ltd. (voluntarily by university people)

**2017** President's Projects Started, as Official Projects
Decision: Replacement of all lights to LED lights
Decision: Additional installment of solar panels at the Noda Plant
Declaration of CUC Environmental Goals (Nov. 13)
at the press conference held at the Japan Press Center, Tokyo

# Declaration as a University, November 13, 2017

## 「Towards the first RE100 University」
## Many Media Gathered at the Press Conference
〈2017/11/13, Japan Press Center〉

**メディア掲載　111件**
2018/1/10までで

本学が11月13日に行った、日本初「自然エネルギー100%大学」の達成をめざす発表が、新聞、ウェブサイトなど多数のメディアで紹介されました。
原科幸彦学長らの思いをはじめ、目標達成の目途となる2020年度までに取り組む内容など、国内の大学ではまだ例を見ない本学のチャレンジに、大きな期待が集まっています。


学内の省エネ活動について発表する鮎川ゆりか教授と学生


地域分散型エネルギー社会の展望を話すCUCエネルギー(株)山口勝洋社長


環境目標を発表する原科幸彦学長


会見場の様子

会見後の囲み取材


省エネシステムについて取材を受ける職員

## Chiba University of Commerce Environmental Goals

**FY2018 Goal**

**The 1st RE100 University (in Electricity)**

**FY2020 Goal**

**The 1st RE100 University (in Electricity + Gas)**

*Registered on RE100 Platform of CAN-Japan 2017.11.13*

## Chiba University of Commerce

### Hardware
**Energy Efficiency and Generation**

- ■Mega Solar PV Addition
- ■LED Lighting
- ■Rooftop PV, Solar Thermal

Data

Control

### Software
**Visualization, Control**

- ■Energy Management System
- ■Electric Consumption, Generation Records
- ■Optimization Control

Mutual Effect between Man and Machine

Hardware Plan to Empower Human

Data Analysis, Action Trial

Action Feedback, Improvement Hints

### "Heart"-ware
**Action Leading Mind**

- ■Energy Waste Research (by students)
- ■"Operation Sprinkle"
- ■Green Shade
- ■Apps for participation

Internships, Leading Programs Collaboration

Energy Systems, Joint Effort toward Net RE100 Campus

Local Bank

Govern-ment

Indivi-duals

Project Loan

Subsidy

Project Fund

## CUC Energy Co.

**Established May 2016**

Create businesses during the Net RE100 Campus initiative of CUC. Then apply that experience in providing distributed energy solutions in the region and communities.

Energy Efficiency and Renewable Generation,
ESCo service and lease,
Joint production of customized projects

**Communities, Municipalities, Small/Medium Businesses (Energy Users)**

# Hardware and Software at CUC

## Energy Saving

Actions resulting in energy consumption reduction by nearly 23% in 2 years

Replaced with LED lights in all buidings

Vend.
7 removed
19 replaced

Set AC
1 degree
plus minus.

## Generating more RE

***Mega Solar Plant, Noda***

Added 1,610 panels (427kW)

2.45 MW (Inst. 2014)
Sup. 3.1 GWh (FY2017)

2.88 MW (Inst. 2018)
Sup. 3.6 GWh (FY2018)

***Rooftop Solar Panels:***
10 Buildings in
**Ichikawa campus**

Installed from October 2018 to February 2019

The ten buildings: The Main Building, Build. No.1 to No.6, the Gymnasium, the Research Tower and the University HUB

Commissioned in 2019
Capacity 0.45 MW (1,337 panels)
Production 0.466 GWh (FY2019)

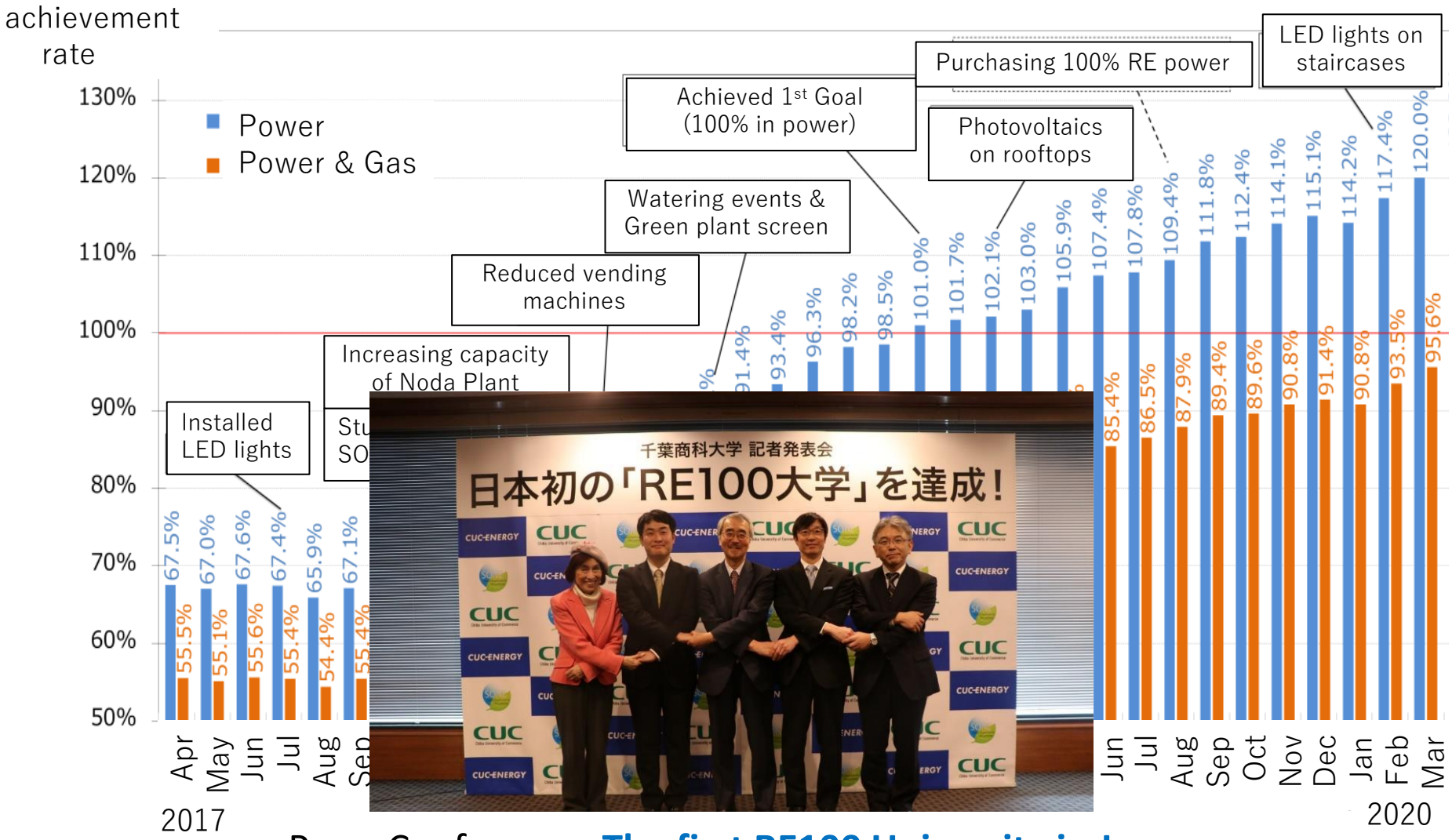
# Creating Heart-ware:
# mindset that makes people take action

Student patrol:
switching off lights in unused classrooms

*Uchimizu* (cooling down by sprinkling water) :
Event to promote energy-saving mindset

Symposium:
Sharing knowledge and networking

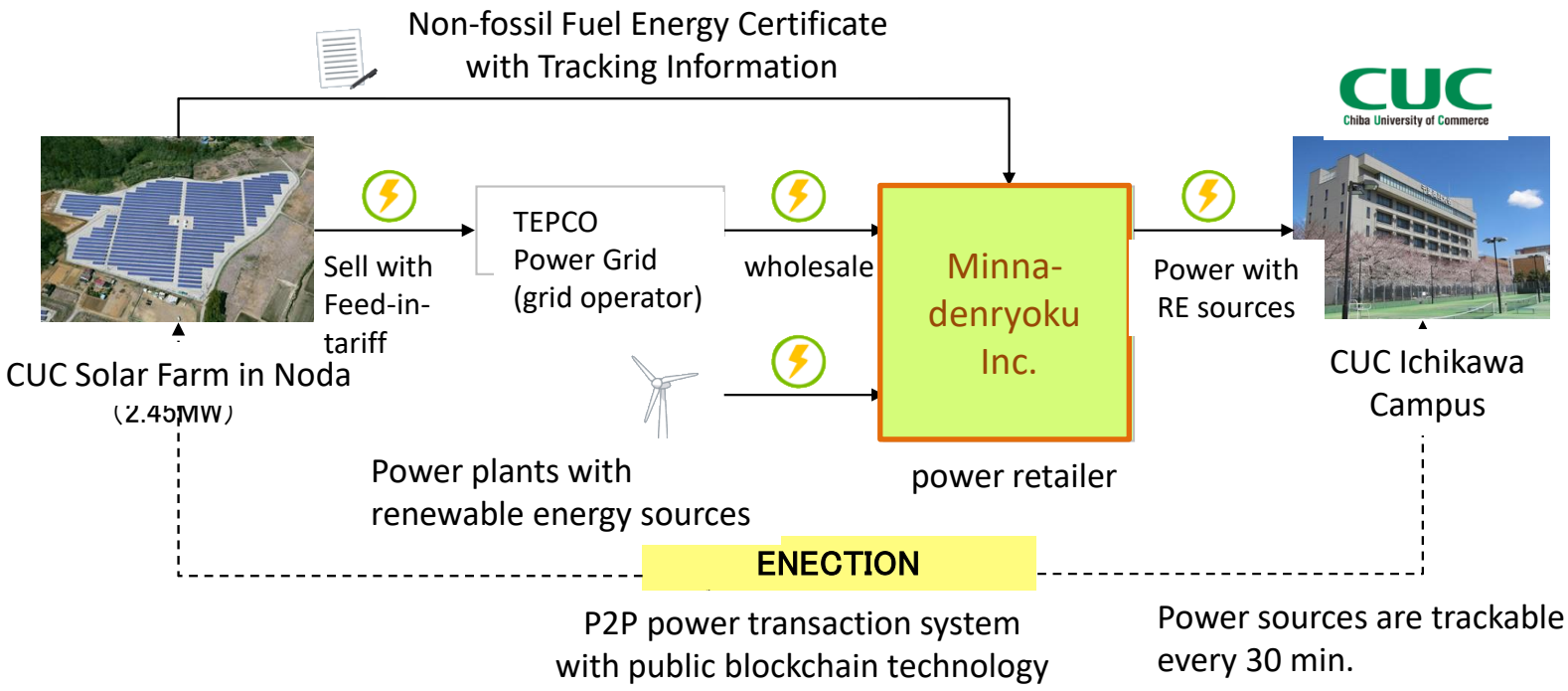
# RE Achievement: RE100_production (100 %, Jan, 2019)




Press Conference: **The first RE100 University in Japan**

Japan Press Center, Hibiya, Tokyo, Feb. 27, 2019

# Responsible Consumption
# RE100_consumption since Nov. 2019




Power consumed on the campus is 100% renewable thanks to multi-stakeholder collaboration

# The way to RE100% University 2/2

2017 Declaration of CUC Environmental Goals (Nov. 13) Tokyo
Cool Choice Leaders Award, MOE, Dec.

2018 Additional solar panels at Noda power plant, Feb.
Replacement of vending machines: Removed 7 from 38 etc. Mar.
Responding to the proposal from a student group
IAIA SDGs Special Symposium, Kuching, Malaysia, Oct.
CUC Wine Project (solar sharing ) was started, Dec.

2019 Achievement of RE100 University (in electricity), RE100_prod. Jan.
Installed roof-top solar panels on 10 buildings on campus, Mar.
RE100 of procurement, Minna Denryoku Co., RE100_cons. Aug.-Nov.
MOE: 22nd Global Warming Prevention Activities Award, Dec.

2020 ACEEU Asia-Pacific Triple E Award
"Green University of the Year 2019", Kochi, India, Jan.
Signatory of UNFCCC's "Race to Zero" campaign, Feb.

2021 Establishing "Renewable Energy University League of Japan", Jun.

2022 Winner "2030 Climate Action" of the Green Gown Awards,
organized by EAUC and endorsed by UNEP, Jul.

# Chiba University of Commerce, Japan

**Winner**

## CUC, the first 100% renewable energy university in Japan

Chiba University of Commerce, CUC, is the first and so far, as of March 2022, the only 100% Renewable Energy University in Japan. This was achieved as a whole University effort, involving management, faculty, staff, and students, based on the three initiatives of hardware, software, and “heartware”.

For hardware, we produced energy by turning a former baseball ground into a mega solar farm and by installing solar panels on every available rooftop. We also saved energy by switching to LED lighting throughout the campus. For software, we introduced an EMS (Energy Management System), and made the energy consumption on campus visual for everyone to see. For “heartware” which means raising awareness leading to concrete action, the Student Organization for Natural Energy (SONE) was formed to raise awareness by conducting various activities and using social media to spread this information to the public. Everyone at CUC played a part in making 100% Renewable Energy possible.

Annual carbon savings achieved with the initiative:
CO2t savings over the life cycle of the project: 2,544 tonnes (Actual over 5 years, from April 2016 to March 2021)
Actual CO2t emissions
FY2016: 2,863 tonnes (Actual)
FY2017: 2,541 tonnes (Actual)

CUC
Chiba University of Commerce

## What the Judges Thought

The mix of energy generation and energy conservation measures combined with the inclusion of students and the wider engagement around the project, makes it all very compelling. The judges welcomed the use of own land and the additionality gained through the project.

## What it Means to Win

*"Winning this Award is both an honour and an encouragement for us. As the first challenger, we wanted to show by our example that universities can be sustainable institutions using renewable energy. We are thrilled that our university-wide effort has been recognized and hope that many others will follow us."*

Dr. Sachihiko Harashina, President

## Top 3 Learnings

1. Achieving 100% renewable energy is an all-university effort: management, faculty, staff, and students.
2. Achieving 100% renewable energy is a great active learning experience.
3. If we could achieve100% renewable energy, you can do it, too.


Annual carbon savings achieved with the initiative:
CO2t savings over the life cycle of the project: 2,544 tor
2016 to March 2021)
Actual CO2t emissions
FY2016: 2,863 tonnes (Actual)
FY2017: 2,541 tonnes (Actual)
FY2018: 2,289 tonnes (Actual)
FY2019: 906 tonnes (Actual)
FY2020: 319 tonnes (Actual)
In Japan, the fiscal year (FY) is from April to March the f

# What are the lessons learned from the experience of CUC?

- **The culture of environmental consideration** had been formed since the establishment of the Faculty of Policy Informatics in 2000.
  The students organized a committee to acquire ISO14001 in 2001.
  CUC acquired ISO14001, **led by students**, in 2003.

- Just after the FIT system started in 2012, CUC decided to apply to it.
  Though there was some risk, the **management knew the significance** of it as they had worked with students under ISO14001.

- The project towards the RE100 university had been started from **volunteer base activities**. It had been gradually expanded among the university people and then the policy of the university was changed.

- **The process: Declare, Plan, Implement, and Report *( 2014~2019)***
  ***Race to Zero:* Pledge, Plan, Proceed, and Publish (*2020 )***

*"**Expanding RE100 universities** from our experience!"*

# Renewable Energy University League of Japan
## - Make Society Sustainable -

- Universities are responsible.

  Addressing the issue as a university is significant in three ways:

First, the **university can influence other entities**, such as businesses, local governments, public organizations, and NGOs. Society would begin to change when each social entity starts working towards 100% renewable energy to create sustainable decarbonized society. Universities can lead this change.

Second, as higher education institutions, we have a mission to **educate students who can transform society** into one powered by 100% renewable energy. In order to do so, we must lead by example, that is to realize 100% renewable energy in the university. This is really living education.

Third, universities can work **as the center of promoting renewable energy** in the area, by providing information, giving technological support and advising of renewable energy to entities which need such help.

# Renewable Energy University League of Japan

## Inauguration of the University League, June 7, 2021

## Press Conference, Hibiya, Tokyo

**Leading Presidents of the "Renewable Energy University League of Japan"**

Sachihiko Harashina* (Chiba University of Commerce), *The representative of the party
Shoichiro Iwakiri (International Christian University), Koji Kishida (Wayo Women's University),
Toshiaki Kohso (University of the Sacred Heart),
Kayoko Hayashi (Tokyo University of Foreign Studies)
Masumi Kindaichi (The University of Nagano) , Yoshiaki Terumichi (Sophia University)
Mitsuo Ochi (Hiroshima University), Yujiro Tanaka (Tokyo Medical and Dental University)

# Renewable Energy University League of Japan

自然エネルギー大学リーグ
RENEWABLE ENERGY UNIVERSITY LEAGUE

## The League is growing

## Sharing knowledges and experiences

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### Starting Members of the League

Chiba University of Commerce
International Christian University
Wayo Women's University
University of the Sacred Heart
Tokyo University of Foreign Studies
The University of Nagano
Sophia University
Hiroshima University
Tokyo Medical and Dental University

*June 7, 2021*

### New Members since June 2021

Tokyo Metropolitan University
Tokyo City University
Ashikaga University
Ritsumeikan University
Showa Women's University
Keio University
Nagoya University
Chiba University
Meiji University
J. F. Oberlin University
…

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