

# How Universities Could Lead Climate Action -RE100 University League-

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## Abstract:

Universities should contribute to create zero carbon society and it has three meanings. First, they can influence other entities by showing models of 100% renewable energy. Second, as a mission of then, universities need educate students who could lead to transform society into one powered by 100% renewables. Third, through these activities a university would work as a center to support other entities. Chiba University of Commerce became the first RE100 university in Japan. It achieved this in 2019. Based on the success, we established the Renewable Energy University League in 2021. The conditions to be the member are to declare, plan, implement and report which is almost same as that of the UN Race to Zero campaign. How we could lead climate action?

**Key words:** university's leadership, renewable energy, climate action, zero carbon society

## 1. Introduction

Creating a sustainable energy society is a common goal of all society for tackling the climate change problem. If every actor in a society shifts to use renewable energy, we can achieve the goal much earlier<sup>1)</sup>. Entities such as big companies or public corporates could lead the transformation of society. Universities, as higher education institution, also could lead this.

The Renewable Energy University League (REUL) of Japan was established in June 2021 to lead activities towards zero carbon society<sup>2)</sup>. The conditions to be the member are to declare, plan, implement and report which is almost same as that of the UN Race to Zero campaign. Each member of REUL tackles to be a 100% renewables university.

What are the meanings of this trial. And how a university could become 100% renewable energy university? The league has been spearheaded by Chiba University of Commerce (CUC), the first RE100 University (in electricity) in 2019.

This paper discusses this topic, especially from the experience of CUC. It won the 2030 Climate Action Award of the Green Gown Awards organized by EAUC, UNEP and others in 2022.

## 2. Renewable Energy University<sup>3)</sup>

### 2.1 Responsible Consumption and Production

SDGs cover a wide range of issues facing our society. Creating a renewable energy society is deeply related to SDG7 Affordable and Clean Energy, SDG13 Climate Action and also to SDG12 Responsible Consumption and Production. We have the responsibility to produce electricity from decent energy sources, which would have no negative impact on the environment and society.

Considering the sustainability of energy, it is clear that neither nuclear power nor coal-fired or

LNG thermal power is suitable as these have a huge adverse impact on the environment and society. From the point of SDGs, they are unsuitable, and the major financial institutions in the world are withdrawing their investment from these.

From the point of SDGs, renewable energy is promising. Major companies in the world, therefore, have voluntarily started to procure 100% renewable electricity. This is the RE100 initiative of the Climate Group, started in 2014. RE100 companies are those whose annual demand is more than 100GWh. Then, about 390 companies are members as of April 2023. RE100 companies procure 100% renewable electricity for their own use mostly by purchase. A 100% renewable energy society would not emerge only this approach as such companies are limited. We must increase renewable electricity by much wider producers.

Contrary to the definition of RE100, which is noted as RE100-consumption, I define RE100-production which is to generate power by renewable energy by its own effort. The volume of the generation has to be equivalent to its consumption. The produced electricity could be for our own use and/or sold to others. By this definition we can call an "RE100 university" that is an RE100-production university. This is a response to SDG12 Responsible Consumption and Production of energy. I believe that it is of great value to produce electricity by renewables and supply it to society.

The possibility to generate renewable electricity would increase if we do it not only within our own property but also in nearby sites. As the target of power generation is our own consumption, the goal becomes clear and feasible. It gives us incentive to promote energy efficiency as the goal would be much closer. If every stakeholder acts same as this, the total power consumption of the society became

equal to the total production, the next stage is how to circulate the power in the society.

Renewable electricity is variable but supply would be not unstable. We have plenty of energy sources from nature such as solar, wind, small-scale hydro, biomass, geothermal, web tide, and sea waves. We could make use of those in the best mix suitable to each area. Through good circulation of powers, we can stabilize the power supply. The combination of the power of technology and the power of commerce would lead to success.

## 2.2 The meanings of University Actions

Addressing zero carbon society as a university issue has three significant meanings.

First, universities can influence other entities. A society would begin to change when each social entity starts working for 100% renewable energy towards decarbonized society. By showing concrete examples of such as RE100 production campuses, universities can lead this change.

Second, as a mission of higher education institutions, universities can educate students who lead to transform society into one powered by 100% renewable energy. The alumni would work for this in much variety both private and public sectors. To become a renewable energy university is really living education.

Third, through these activities a university would work as a center of supporting other entities in each region. Universities also would work for

promoting 100 renewables by giving information of positive and negative impacts in the process.

## 3. Becoming the First Penguin<sup>4)</sup>

### 3.1 Starting from Voluntary Activities

It had started when I came to CUC in April 2012, retiring from Tokyo Institute of Technology (Tokyo Tech). But only a few colleagues at CUC shared my view to make sustainable energy society and many were reluctant to go ahead, so I took a strategy of creating “heart-ware” in their mind. It is awareness which leads to concrete action.

To change the mindset of the colleagues, I held a series of open seminars on the topics of energy policy with people both inside and outside of our university. The CUC Seminar Series was held at the satellite campus located in Marunouchi, the heart of Tokyo, from November 2013. The theme of the first year was “Considering Sustainable Environmental and Energy Policy,” by six prominent lectures.

In the same year, 2013, CUC installed a mega solar power plant at the site in Noda City, located about 25 km north of Ichikawa campus, and it started the operation in April 2014. Universities in the social science field usually do not have big Noda generation facilities, and CUC management was exceptional in installing a mega solar system at as a profitable project by applying the Feed-in Tariff (FIT) system in 2012, when the FIT system had just started. At that time, CUC had no idea of becoming a 100% Renewable Energy University.

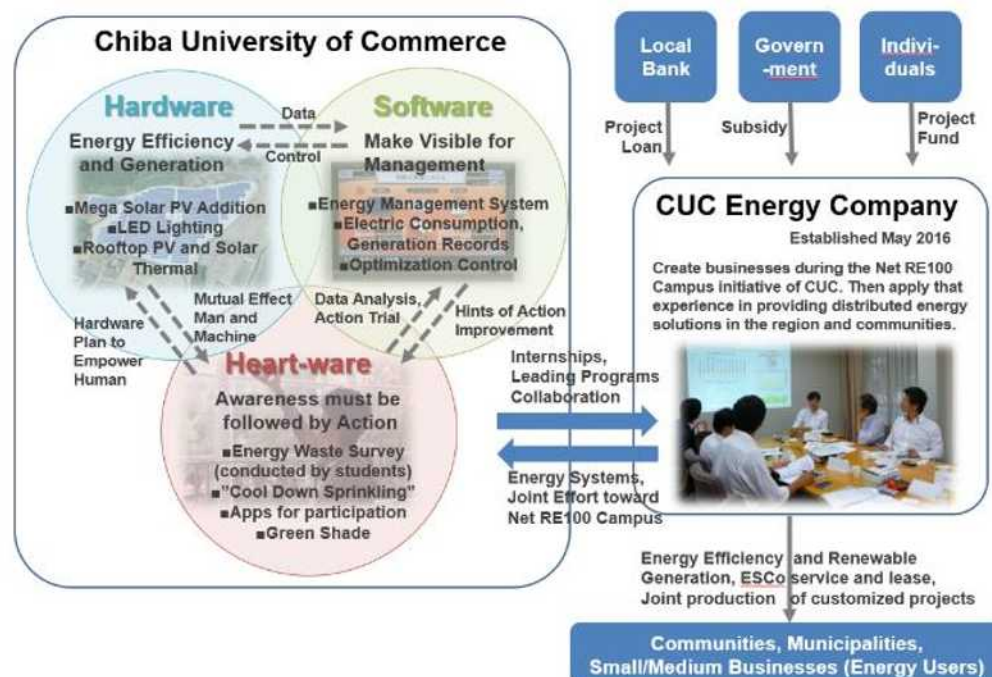


Fig.1 Climate Action of Chiba University of Commerce and CUC Energy Company

The way to RE100% University 1/3  
-From voluntary activities to official projects of CUC-

- 2013 CUC Open Lecture Series started voluntarily,  
The topic of the first year was "Considering  
sustainable environment and energy policy"
- 2014 Press Release, Announcing as a Dean, Voluntary  
Will to be a 100% renewable energy univ. (Sep.)
- 2015 survey on the possibility of be a net-zero energy  
campus by saving energy and producing renewable  
energy (subsidy from METI)  
Collaboration with external consultants
- 2016 An Event started: Cooling down by sprinkling water  
(Saving energy week in Jul.)  
To raise awareness of students, faculty and staff

In the spring of 2014, we held a series of joint seminars at CUC. In the process, a member of an NGO by various university students told us that the mega solar system of CUC was the biggest among universities in Japan. The estimated volume of generation was equivalent to 62.7% of the total usage on Ichikawa campus in 2013, which made us wonder if we could make it 100%. Then, a team studied the possible improvement of energy efficiency, and found out it was quite low.

It should be very difficult to generate enough electricity by renewables in universities of science and engineering such as Tokyo Tech. But it might be different in those of social sciences such as CUC.

Then, I decided to make a press release to show our intention of the voluntary climate action. On September 4, 2014. We announced our will of becoming a 100% renewable energy university, as the first penguin. I also explained the significance of this action<sup>5)</sup>. Though it was not an official announcement from CUC, but the voluntary activities by the university people is meaningful.

In the autumn, a students' team lead by a professor checked the capacity of rooftop solar power generation in our campus and the estimated coverage rate would be at most 89%. To realize this, we had to build a consensus on the decision of CUC to invest in installing the necessary facilities.

In the spring of 2014 also, we met the president of a consulting company working to promote local energy. He advised us to conduct a survey on the possibility of making a net-zero energy campus by the combination of saving energy and producing renewable energy. This company and others jointly got a subsidy for the survey from the Ministry of Economy, Trade and Industry in 2015.

Since then, we did the project with the efforts of faculty, staff and students, and

also collaboration with the outside experts.

The chronicle of the voluntary activities are as follows. It was during the period of 2013-2016.

### 3.2 Turning to the University Activity

Through such voluntary activities, awareness of the university people had been gradually changed. Then when I became the president, I made it an official activity as one of the President's Project of CUC<sup>5)</sup>.

The approach for the goal is comprised of the hardware, software, and heart-ware (figure 1). Heart-ware is awareness which leads to concrete action. For instance, in the project, it is necessary to enhance the awareness of students, faculty, and staff, then the awareness must lead to concrete action.

Heart-ware is important for decision makers. Even if there is high awareness on the desirability of creating a 100% renewable society, it has to lead to actual decisions for investing in the required facilities. To build consensus on such investment, the project has to be understood not only by the management but also by the faculty and staff. As written above, we held CUC Open Seminar Series annually since 2013 for this purpose.

And we added other events, such as an energy-saving week in July including "Cooling Down by Sprinkling Water" since 2016. Hoping to raise the awareness of the management by these events, I actively provided information on the topic and discussed it at the steering meetings to deepen the understanding of the management.

Major contribution to achieve 100% was installing facilities for energy efficiency and generating electricity.

The energy-saving activities conducted by the students also made contribution. For instance, a student group voluntarily made a proposal to the companies providing the vending machines on campus to reduce the electricity consumed, and it was realized.

The chronicle is as follows

The way to RE100% University 2/3  
-From voluntary actions to official projects of CUC

- 2017 President's Projects Started, as Official Projects
  - Decision: Replacement of all lights to LED lights
  - Decision: More installment of solar panels, Noda CUC Energy Co. Ltd. was established
  - Declaration of CUC Environmental Goals (Nov)
  - Cool Choice Leaders Award, MOE, (Dec)
- 2018 Additional solar panels at Noda plant, (Feb)
  - Replacement of vending machines: Responding to the proposal from a student group
  - IAIA SDGs Symposium, Kuching, Malaysia, (Oct)
  - CUC Wine Project (solar sharing ) started, (Dec)



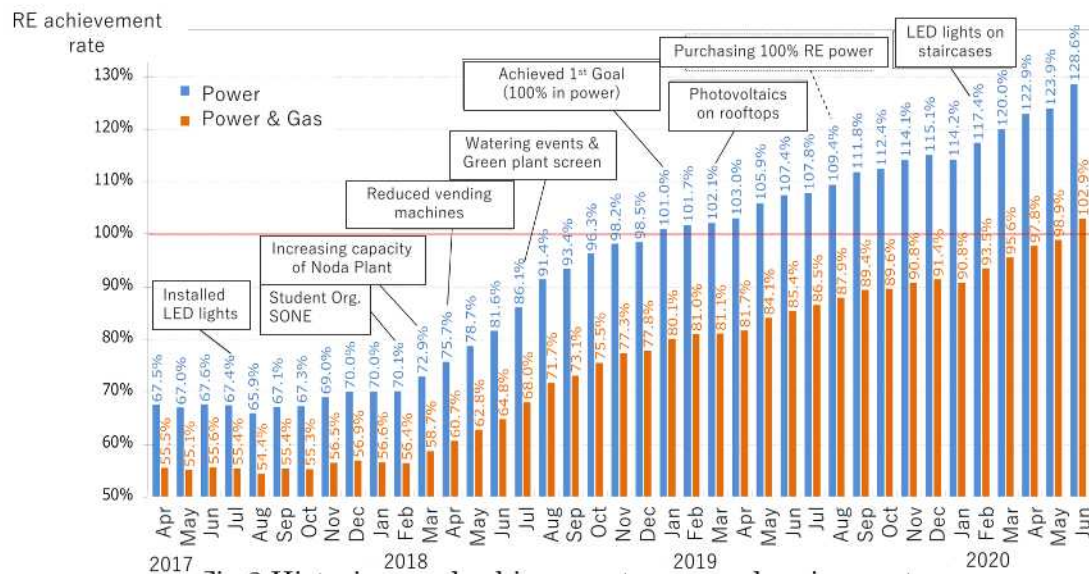


Fig.2 Historical goal achievement rates and main events

Student Organization for Natural Energy (SONE), started in March 2018. They seek to reduce the electricity usage of the university by energy-saving on the campus. One of other student groups started cultivation of grapes for wine in the spring of 2019, a collaboration of students, faculty and staff, with a help of CUC Support Company.

The way to the goal and main events from Apr. 2017 to Jan. 2019 are shown in Figure 2.

### 3.3 After RE100 University

CUC achieved the Goal 1 in January 2019. The power consumption from February 2018 to January 2019 was 3650 MWh, and the power generation by renewables was 3690 MWh. CUC is working for the second goal of 100% in electricity and gas.

CUC began to buy renewable electricity from a renewable electricity provider to fulfill shortfall mainly for night time use since August 2019.

We generate renewable power by the solar panels at the Noda Mega Solar Power Plant and on the rooftops of ten buildings on Ichikawa campus. Most of generated power is sold to the TEPCO Power Grid and the remainder is consumed on site.

#### The way to RE100% University 3/3

- 2019 Achievement of RE100 University (in electricity), RE100\_production (Jan)
- Roof-top solar panels on 10 builds on campus (Mar)
- RE100 of procurement, purchasing the shortfall RE100\_consumption (Aug)
- MOE: Global Warming Prevention Activity 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 Establishment
- "Renewable Energy University League of Japan" (Jun)
- 2022 Green Gown Award, EAUC and endorsed by UNEP
- The first winner, 2030 ClimateActione (Jul)

CUC became the first university of 100% renewable energy in procurement, which fits the definition of RE100 by the Climate Group. CUC achieved SDG12, Responsible Consumption and Production of energy, which is RE100-consumption and RE100-production. The chronicle of after the achievement is shown as above.

### 4. Renewable Energy University League

We have been working to share our experience with other entities to make zero carbon society as the first penguin. CUC joined "Renewable Energy 100 Declaration, RE Action" from its establishment in 2019. This is for companies and organizations smaller than the target companies of the RE100 in Japan. CUC also released an "Urgent Message Concerning Intensifying Climate Change" as a Climate Emergency Declaration.

On February 18, 2020, we became the first university in Japan to sign the "Global Universities and Colleges for the Climate" agreement, created by the UNEP and others. This is a part of the UN Race to Zero campaign.

We had been preparing for establishing the "Renewable Energy University League (REUL) of Japan" from 2019. We established REUL on June 7, 2021 to expand climate action among universities in Japan. I have been serving as the Representative of the league and the headquarter is at CUC.

We held a press conference on the inauguration of REUL at the Japan Press Center, Hibiya, Tokyo. The photo shows the founding nine presidents gathered in person or by online. I was standing in the frontline with holding both arms.

The conditions to be the member are, declare, plan, implement and report periodically which is almost same as that of the UN Race to Zero campaign. But REUL has much lower barrier than UN campaign for Japanese universities<sup>2)</sup>.





Leading Presidents of REUL at the Inauguration  
Japan Press Center, Hibiya, Tokyo, Sep. 4, 2021

1. The university decides and announces its decision to produce or procure renewable electricity by a self-determined time frame before 2030 or 2040 at the latest, based on a target for the amount of electricity used by the university (or on campus).
2. The university will make a concrete plan to meet its target and implement it.

The founding members are the following presidents from nine universities.

Chiba University of Commerce (S. Harashina\*), International Christian University (S. Iwakiri), Wasei Women's University (K. Kishida), University of the Sacred Heart (T. Kohso), Tokyo University of Foreign Studies (K. Hayashi), The University of Nagano M. Kindaichi), Sophia University (Y. Terumichi), Hiroshima University (M. Ochi), Tokyo Medical and Dental University (Y. Tanaka). \*The representative

And, new members after foundation as of Apr. 2023 are following ten universities;

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

We hope that other universities, companies and various other organizations will follow suit, and take the first step of setting a concrete goal of generating renewable electricity and start working towards that goal. We are prepared to support their activities in various ways based on our experiences.

## 5. Lessons from experience of CUC

CUC already had a culture of considering the environment, which had been built gradually over the two decades. The forming of this culture had been started by the establishment of the Faculty of Policy Informatics in 2000. The faculty taught environmental topics, and a students' group worked to acquire ISO14001 certification. CUC became the first university to acquire ISO14001 certification by students' activity in 2003<sup>6)</sup>. And by another students' activity, CUC installed rooftop solar panels on the building 1 on Ichikawa campus in 2010. It was a very good experience for CUC.

The culture influenced the decision of the CUC management to introduce the mega solar system by applying FIT even the investment had a risk in 2012, which was a quite new system. They decided to make use of the former baseball ground in Noda City. By my brief assessment, the use of the ground would have no negative impacts on the area.

It was lucky for CUC having such background. But as the experience of CUC indicates, the culture should be formed in other universities also through taking climate actions by collaboration of teachers, staffs and students.

## 6. Concluding Remarks

Decisions on installing hardware and software can be made under the leadership of the president, but in order to build a consensus for the decisions, heart-ware must be built in the university people. This should lead us sustainable activities.

My colleague and I started the 100% Renewable Energy University project in the spirit of "the first penguin". We intended to show it is possible to produce renewable energy by one's own efforts, equivalent to the energy usage.

Transition to a renewable energy society will create new jobs and change the industrial structure. The public sector and the private sector working together, making full use of the power of commerce to circulate the decent energy towards decentralized renewable energy society, which is sustainable.

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