

## Digest of Grand Renewable Energy 2018 International Conference

- Conference Name: Grand Renewable Energy 2018 International Conference  
(Grand RE2018 International Conference)  
Associating The 13<sup>th</sup> Renewable Energy International Exhibition
- Date and Venue: June 17 to 22, 2018 in Pacifico Yokohama, Yokohama City, Japan

### Summary

The conference was successfully terminated, which was held for June 17 to 22, and the technical tour on June 23, The Exhibition for June 20 to 22 held all in Pacifico Yokohama, Yokohama city. The remained work hereafter is to prepare DVD fabrication in which full papers collected in the conference onsite are compiled, and the uploading work to J-Stage to be commenced after the DVD completion.

The preparation of the conference was started after the kickoff meeting held on January 23, 2017, where all key persons were gathered, METI Director, Mr. Takuya Yamazaki had a speech for encouragement. 250 members from domestic and 150members from oversea countries were gathered for preparatory work.

In the conference, 1,121persons from 47countries participated with 713 paper presentation, 5 keynote

Speeches by the representative from Japan, IEA, China, USA, and Germany. The 15 renown speakers were invited from all over the world. In addition, one work session titled RE100, six special sessions organized by Japanese socio-governments, IEA, Germany Agency, and The University of Tokyo. More than 1,000 persons attended to these sessions. In Exhibition, about 22,000 visitors except for the conference participants came to the various countries.

### Conference Aim

The solid slogan is “Advanced Technology Paths to Global Sustainability”, which means the technology development and deployment are indispensable to achieve the global sustainability. Therefore, we have the open venue to serve the presentation and discuss on the advanced research and development. We pay attention also to the student to participate as many as possible. To show up, in every final day of the conference, we declare Conference Communique and confirme it among all the participants.

### Conference Structure and Areas

This conference was initiated from 2006, and we decided the international conference is held every four years in Japan, and exhibition every year. The conference was held in 2010, 2014, and this time 2018. Exhibition is counted as the 13<sup>th</sup>.

The international conference is structured from the 10 corporates, like JCRE, ISES, NEDO, AIST, JST, EAJ, NEF, JSES, JWEA, OEA-J, covering the 12 renewable areas, ①Policy, ②Photovoltaics, ③Solar Thermal Application, ④Innovative Bioclimatic Architecture, ⑤Wind Energy, ⑥Biomass Utilization and Conversion, ⑦ Hydrogen and Fuel Cell, ⑧ Ocean Energy, ⑨ Geothermal Energy and Ground-source Heat Pump, ⑩Energy Network, ⑪Energy Conservation and Heat Pump, ⑫Small Hydro and Non-Conventional Energy.

### Organization of Grand RE2018 International Conference

The members of managing structure are as follows;

General Chairperson Kazuhiko Ogimoto (Professor, The University of Tokyo)

Deputy General Chairperson Yoshiro Owadano (Emeritus Researcher, AIST)

Honorary Chairperson Kosuke Kurokawa (Emeritus Professor, Tokyo University of A & T)

Co-Chairperson Masayuki Kamimoto (Special Supporter for President, Hirosaki Univ.)  
Co-Chairperson Takeshi Kinoshita (President, Nagasaki Institute of Applied Science)  
Vice Chairperson Hiroshi Segawa (Professor, The University of Tokyo)  
Vice Chairperson Yoshiteru Sato (Executive Director, NEDO)  
Vice Chairperson Ryuichi Ito (Executive Director, NEF)

Underneath of managing structure, driving organization is structured. The most key position and nominees were as follows;

Co-Chairperson of Program Committee Michio Kondo (Executive Researcher, AIST)  
Co-Chairperson of Program Committee Takeshi Ishihara (Professor, The University of Tokyo)  
Co-Chairperson of Program Committee Masaru Nakaiwa (President, FREA of AIST)

The program leaders of respective areas are shown below,

Area 1(Policy & Integrated Concept) Kazuhiko Ogimoto (Professor, The University of Tokyo)  
Area 2(Photovoltaics) Koji Matsubara (President, PV Research Center of AIST)  
Area 3(Solar Thermal Application) Atsushi Akisawa (Professor, Tokyo University of A & T)  
Area 4(Innovative Bioclimatic Architecture) Tsuyoshi Seike (Associate Prof., The University of Tokyo)  
Area 5(Wind Energy) Tetsuya Kogaki (Managing Director for Wind, FREA of AIST)  
Area 6(Biomass Utilization and Application) Kinya Sakanishi (Vice President of FREA, AIST)  
Area 7(Hydrogen and Fuel Cell) Etsuo Akiba (Professor, Kyushu University)  
Area 8(Ocean Energy) Yasuyuki Ikegami (Professor, Saga University)  
Area 9(Geothermal Energy and Ground-Source HP) Kasumi Yasukawa  
(Vice President, RE Research Center of FREA, AIST)  
Area10(Energy Network) Hiroshi Asano (Professor, Tokyo Institute of Technology, CRIEPI)  
Area11(Energy Conservation and Heat Pump) Haruki Sato (Emeritus Professor, Keio University)  
Area12(Small Hydro and Non-Conventional Energy) Yuji Nakanishi (Professor, Kanagawa Univ.)

Leaders as of key committees;

General Affairs Yutaka Genchi (Division Executive Manager, AIST)  
Public Affairs Mayumi Matsumoto (Associate Prof, The University of Tokyo)  
Paper Edition Masato Tazawa (President, Chugoku Research Center, AIST)  
Exhibition Committee Yoshiro Owadano (Emeritus Researcher, AIST)

Steering secretariat to drive above the organization was;

Secretary General Makoto Ikeda (Director General of JCRE)  
Manager of Secretariat Makoto Iida (Associate Prof. The Univ. of Tokyo)

The business world nominating the Executive Advisors were Hitachi, Toshiba, JXTG, Tokyo Gas, Electric Federation, JEMA, JPEA, JWEA, PVTEC.

Advisory committee was chaired by Prof. Izumi Ushiyama (Ashikaga Univ.), co-chaired by Senior scholar Masafumi Yamaguchi (Toyota IT) and Dave Renne (ISES).

## Overview of WHOLE PROGRAM

	6.17(S)	6.18(M)		6.19(T)		6.20(W)		6.21(T)		6.22(F)		6.23(S)	
	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
<b>●Altogether</b>	Prep.	Registration											
<ul style="list-style-type: none"> <li>Opening, Keynote Speeches, etc★</li> <li>Keynote by 5 persons</li> <li>Panel Discussion</li> <li>RE Emsanbles Award</li> <li>Closing Ceremony</li> <li>Paper Presentaion Awards, Communique Announcement</li> </ul>			★	Greeting by Organizer: Kazuhiko Ogimoto; Greeting by Guest: Jun Takashuna (METI) ①Hiroaki Ishuduka (NEDO),② Li Junffeng(China),③ Paolo Frankl(IEA), ④Martin Keller(NREL), ⑤Hans-Martin Henning(Fraunhofer) Promotor: K. Ogimoto & M. Matsumoto, Panelist: T. Yamazaki(METI), Four Keynote Speakers Awardee : Kosuke Kurokawa, Dave Renne Awardee: 29 persons									
<b>●Paper Presentation</b>		(★: Invited Speaker)											
1. Policy and Integrated Concept				★	Paolo Frankl(IEA)		Presentation: 50 papers						
2. Photovoltaics							★	Sara Kurtz(USA)	★	Sang II Seok(Korea)	Presentation: 119 papers		
3. Solar Thermal Energy					★	WANG Ruzhu(China)		Presentation: 42papers					
4. Innovative Bioclimatic Architecture									★	Cinzia Abbate(Itary)		Presentation: 46 papers	
5. Wind Energy					★	Hannela Holttinen(Finkand)		★	Chin-Cheng Huang(Taiwan)		Presentation: 142 papers		
6. Biomass Utilization and Coverision									★	Andrea Kruse(Germany)		Presentation: 45 papers	
7. Hydrogen and Fuel Cells								★	Koji Nakazawa(Japan)		Presentation: 46 papers		
8. Ocean Energy					★	Henry Jeffrey(UK)		Presentation: 40 papers					
9. Geothermal Energy and Gound-souce HP								★	Juliet Newton(Iceland)	★	Tae Jong Lee(Korea)		Presentation: 67 papers
10. Energy Network									★	Aranya Chakrabortty(USA)		Presentation: 58 papers	
11. Energy Conservation and Heat Pump					★	Marek Miara(Germany)		Presentation: 35 papers					
12. Small Hydro and Non-Conventional Energy									★	Young Do Choi(Korea)		Presentation: 23 papers	
<b>●Workshop</b>						"RE100" Workshop							
<b>●Special Session</b>								NEDO			JST		
								AIST					
						日独Mobility		IEA					The Univ. of Tokyo/NEDO/IEA
<b>●Technical Tour</b>													
<b>●Banquet</b>													
<b>●International Exhibition</b>													
		Prallel Event at same venue: PVJapan2018 and The 13th RE International Exhibition											
	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	6.17(S)	6.18(M)		6.19(T)		6.20(W)		6.21(T)		6.22(F)		6.23(S)	

Participants: Country and Region

● Total number of Participants

Event	Organizer	The number of Participants	Note
· International Conference : Paper Presentation, Opening, Keynote and Invited speeches, Closing, W/S, and so on	Grand RE2018 Organizing Committee	1,121*	Paid
· Special Session	6 Sessions (by NEDO, AIST, JST, IEA, The Univ of Tokyo/NEDO/IEA, German Agency)	1,002	Free
· International Exhibition	PVJapan, JCRE	21,881**	Free

\*: including Invited

\*\*: Exhibition only, not including Conference

● Participants, analyzing country by country

County/ Region	Grand RE2018		Grand RE2014		RE2010		RE2006
	The number of person	country	The number of person	country	The number of person	country	The number of person
Japan	913	(1)	962	(1)	920	(1)	804
Asia	112	(13)	231	(10)	264	(19)	116
Europe	46	(14)	90	(16)	77	(20)	70
North America	12	(2)	15	(2)	34	(2)	28
Oceania	5	(2)	19	(4)	24	(5)	8
Africa	10	(5)	21	(7)	15	(8)	15
Mid East	16	(6)	9	(3)	12	(4)	4
Mid/South America	3	(1)	4	(2)	7	(6)	6
Rusia	4	(3)	6	(3)	6	(1)	12
Total	1,121	(47)	1,357	(48)	1,359	(66)	1,063
Oversea other than Japan	208		395		439		259
Percent, Oversea	19		29		32		24

● Breakdown for Asia to Country

Country	GRE2018	GRE2014	RE2010
Korea	28	58	69
Thai	22	28	38
Republic of China	20	53	42
Taiwan	15	60	55
Indonesia	8	6	16
India	5	3	9
Philippine	4	2	3
Singapore	3	7	10
Others	7	14	22
Total	112	231	264

In Grand RE2018, the number of participants and oversea participants decreased compared with GRE2014 and GRE2010. Firstly, one of this reason is the drop from the participants from Republic of China, Taiwan, and Korea. Japan must do the endeavor to promote renewable energy technology to be able to appeal. Second reason was the conference timing to move one month ahead so far, that is, mid.

June because of available venue of international conference due to the preparation of Tokyo Olympic 2020, resulting five sessions out of twelve to be overwrapped with big international conferences held in other countries just in the same week or before and after the week. Third reason was there was nothing of joint international conference together with GRE2018, while the 2<sup>nd</sup> Asia AWTEC was held in GRE2014, where more than 100 ocean energy specialists attended mainly coming from Europe.

However, we must do the next challenge, and want to treat above the reasons just only with excuse.

● Participants, analyzing by Profession

Profession	Japan	Oversea	Total	Participant %
University	280	57	337	30
Research and Institute	121	58	179	16
Enterprise and Business	297	45	342	31
Individual	3	0	3	0
Student	212	48	260	23
Total	913	208	1,121	100

The feature of the conference roughly shows 70% of research and development, and 30% of business.

Considering the organization structure, this ratio is seemed to be reasonable.

● The number of Presentation Papers by Area

<Program Book base>	GRE2018			GRE2014	vs Former
	Oral presentation	Poster Presentation	<b>Presentation Total</b>	Presentation Total	%
1 policy and Integrated Concept	40	10	<b>50</b>	34	+47
2 Photovoltaics	50	69	<b>119</b>	158	-25
3Solar Thermal Application	22	20	<b>42</b>	74	-43
4 Innovative Bioclimatic Architecture	28	18	<b>46</b>	54	-15
5 Wind Energy	90	52	<b>142</b>	191	-26
6 Biomass Utilization and Conversion	21	24	<b>45</b>	74	-39
7 Hydrogen and Fuel Cell	35	11	<b>46</b>	45	+2
8 Ocean Energy	29	11	<b>40</b>	157	-75
9 Geothermal Energy and Ground-source Heat Pump	54	13	<b>67</b>	58	+16
10 Energy Network	38	20	<b>58</b>	47	+23
11Energy conservation and Heat Pump	25	10	<b>35</b>	47	-26
12Small Hydro and Non-Conventional Energy	14	9	<b>23</b>	35	-34
<b>合計</b>	446	267	<b>713</b>	974	-27

・ Maximum drop was Ocean Energy area due to the two reasons such as no joint conference like

GRE2014 and the big ocean conference held in Spain for the same week.

・ Photovoltaics and Biomass encountered worldwide big conference just before the week, but their endeavors have contributed to minimize the drop of participants. Hydrogen and Fuel Cell was coupled just same week as big international conference, however, due to the effort of leaders and other members participants can be kept.

・ Reflecting on the renewable energy epoch trend, policy and integrated concept, energy network were increased then the former. Leadership by program leaders is also greatly contributed too. Geothermal Energy and Ground-source Heat Pump was also same.

• It was confirmed that this Grand Renewable Energy Conference is firmly supported by two big pillars of Wind Energy and Photovoltaics.

**Final Communiqué from  
Grand Renewable Energy 2018  
“How to Accelerate Renewable Energy Integration”**

PACIFICO YOKOHAMA, YOKOHAMA, JAPAN, 17 - 22 JUNE 2018

Under the theme How to Accelerate Renewable Energy Integration, the 4th edition of the Grand Renewable Energy International Conference was held this week in Yokohama, Japan. The Conference was attended by over 1100 participants, representing 45 countries. Besides Keynote Addresses and Panel Discussions, experts from international organizations and institutions, industry and governments delivered presentations and posters in a broad cross-section of renewable energy issues related to technical, scientific, economic, social and environmental aspects of renewable energy integration in society.

Based on the various presentations and discussions at the Conference, the following fundamental understandings and proposals have been reached to provide directions on how to accelerate renewable energy integration around the world:

- Since the beginning of this conference series in 2006, held every four years in Japan, contributions of renewable energy continue to increase, and the public further recognizes its importance.
- We have observed a continuous growth in renewable energy deployment worldwide, with renewable energy-based power generation now being the dominant new power source installed in the world. In 2017, 70% of total new power generation installed was based on renewable energy sources.
- While continuing to be the object subject of innovative research and development, wind and solar photovoltaic (PV) systems solar PV have achieved technological maturity and are now cost-competitive with traditional power sources. In, and, in some areas in the world, wind and solar PV have become the lowest power sources.
- While penetration of variable renewable energy integration has already exceeded 30% of electricity generation in certain jurisdictions, power systems need to evolve towards more renewable energy-friendly systems to increase flexibility in grid management.
- Importance of energy storage has become more widely recognized. Not only pumped hydro storage but also large-scale battery systems are being installed to control the output from variable power sources. Hydrogen and hydrocarbons produced from renewable energy are expected to become significant energy carriers in the future.
- The world continues to meet more of its energy demands through electrification. In this regard, on the short term, the transportation and heating & cooling are sectors where renewable energy can be deployed more widely.
- Continued cost reductions, system friendly policies and well-designed economic rules are crucially important and effective for further deployment of renewable energy for future energy security and sustainability.

The scientific community, industry and governments recognize that we have achieved significant accomplishments in the renewable energy sector. However, based on the above, a lot more needs to be done.

We, the specialists involved in the field of renewable energy technologies and their policies, are committed to continue to contribute in the development of a viable, efficient, safe and secure energy sector throughout the world. The next Grand Renewable Energy 2022 International Conference, to be held in Japan, will provide an opportunity to assess the work and to share the accomplishments that will be done in the next four years.

- Adopted by all the participants of GRE2018 on June 22, 2018 in Yokohama, Japan-

● **Keynote Speakers, having the presentation in Opening ceremony, July 18, 2018**



**Hiroaki ISHIZUKA, Mr.**  
Chairman of New Energy and Industrial  
Technology Development Organization  
(NEDO)



**Martin Keller, Ph.D.**  
Director, National Renewable Energy  
Laboratory for DOE, US Government



**Li JUNFENG, Mr.**  
Director General of National Center of  
Climate Change Strategy Research



**Hans-Martin Henning, Ph.D.**  
Director of the Fraunhofer Institute for  
Solar Energy System (IES), Germany



**Paolo Frankl, Ph.D.**  
Head of Renewable Energy Division,  
International Energy Agency (IEA)

● **Invited Speakers, having the speech in respective area, nominated in advance**



**Paolo Frankl, Ph.D.**  
Head of Renewable Energy Division,  
International Energy Agency (IEA)



**Koji NAKAZAWA, Mr.**  
Chief Engineer, Energy Management  
Project, Honda R&D Center



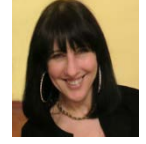
**Sarah Kurtz, Ph.D.**  
Faculty position at the University of  
California, and Work for NREL



**Henry Jeffrey, Mr.**  
Senior Lecturer of University of Edinburgh,  
UK rep. of IEA Ocean Energy Systems  
initiative



**Sang II Seok, Prof., Ph.D.**  
Distinguished Professor of Ulsan National  
Institute of Science and Technology  
(UNIST), Korea



**Juliet Newson, Ph.D.**  
Director of the Iceland School of Energy,  
Reykjavik University, Iceland



**WANG Ruzhu, Prof. Ph.D.**  
Chair professor of Shanghai Jiao Tong  
University, China



**Tae Jong Lee, Dr.**  
Geophysicist, at Korea Institute of  
Geoscience and Mineral Resources (KIGAM)



**Cinzia Abbate, Prof.**  
Studio Associato AeV Architetti, Italy  
and Lecturer of Rome University



**Aranya Chakraborty, A. Prof., Ph.D.**  
Associate Prof. of North Carolina State  
University, Guest Prof. of Tokyo Institute of  
Technology



**Hannele Holttinen, Ph.D.**  
Principal Scientist at VTT Technical  
Research Centre of Finland



**Marek Miara, Ph.D.**  
Heat Pump professional, Fraunhofer Institute  
for Solar Energy Systems ISE



**Chin-Cheng Huang, Ph. Dr.**  
the Scientist and Director of the Institute of  
Nuclear Energy Research(INER)



**Young-Do Choi, A. Prof., Ph D.**  
Associate professor of Mokpo National University,  
Korea



**Andrea Kruse, Prof. Ph.D.**  
Full professor at the University of Hohenheim,  
Germany