1. The Historic Paris Agreement


- Article 2
  1. “…aims to strengthen the global response to the threat of climate change…”
  (a) “Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels…”

- Article 4
  1. “…achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century…”

- Article 10
  5. “Accelerating, encouraging and enabling innovation is critical for an effective, long-term global response to climate change and promoting economic growth and sustainable development.”
2. What’s ICEF? (1)

About ICEF

• Initiative of Prime Minister Shinzo Abe
• Held in Tokyo every October
• Leaders in academia, industry and government
• Solving climate change through innovation

<Plenary session>

<Networking>
3. What’s ICEF? (2)

Steering Committee

Hosts

International collaboration

IEA
IRENA
G7 Working Group
UNIDO
GCF
CTCN
WBCSD
4. 4th Annual Meeting (1)

- **Date:** October 4-5, 2017
- **Main Theme:** Net-zero anthropogenic CO\(_2\) emissions
- **Participants:** 1,000+ experts from about 80 countries

Source: IPCC WG1 AR5, SPM, 2013
5. 4th Annual Meeting (2)

Opening Session, Plenary Sessions, Side Events

Opening session
(Prime Minister Shinzo Abe)

Opening session
(Hiroshige Seko, Minister of Economy, Trade and Industry)

Plenary session

Side event
### 6. 4th Annual Meeting (3)

#### Concurrent Sessions

<table>
<thead>
<tr>
<th>Reduction of energy consumption by enhancing social system</th>
<th>Blockchain</th>
<th>Managing energy demand and supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Supply</td>
<td>Hydrogen and fuel cells</td>
<td>Nuclear energy</td>
</tr>
<tr>
<td></td>
<td>Energy storage</td>
<td>Biofuels</td>
</tr>
<tr>
<td>Others</td>
<td>CO2 utilization</td>
<td>CCS</td>
</tr>
<tr>
<td>Promotion of institutional innovation</td>
<td>Business action</td>
<td>Technology innovation</td>
</tr>
</tbody>
</table>
7. Outcomes of ICEF2017 (1)

ICEF Statement

- Ultimate necessity of net-zero CO2 emissions
- Importance of technology innovation
- Promotion of social innovation
- Role of the industrial sector
- Strategy to accelerate innovation in a holistic system
8. Outcomes of ICEF2017 (2)

## Top 10 Innovations

<table>
<thead>
<tr>
<th>Area</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar</td>
<td>31.17% solar sunroof triple-junction module efficiency</td>
</tr>
<tr>
<td>Solar</td>
<td>New world record for thin-film solar cells</td>
</tr>
<tr>
<td>Solar</td>
<td>World’s highest conversion efficiency of 26.33% achieved in a crystalline silicon solar cell</td>
</tr>
<tr>
<td>Energy Storage</td>
<td>High-power all-solid-state batteries using sulfide superionic conductors</td>
</tr>
<tr>
<td>Energy Storage</td>
<td>Long-lasting flow battery could run for more than a decade with minimum upkeep</td>
</tr>
<tr>
<td>Biomass</td>
<td>Flight powered by biofuel made from residual wood</td>
</tr>
<tr>
<td>Biomass</td>
<td>100 Percent Bio-Based Plastics for Beverage Bottles</td>
</tr>
<tr>
<td>Smart Grid</td>
<td>Demonstration of peer to peer electricity trading using blockchain technology</td>
</tr>
<tr>
<td>Smart Grid</td>
<td>Pioneering the networking of storage batteries with blockchain technology</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>Water splitting–biosynthetic system with CO2 reduction efficiencies exceeding photosynthesis</td>
</tr>
<tr>
<td>Wind</td>
<td>World’s tallest wind turbine integrated with pumped storage hydro</td>
</tr>
<tr>
<td>ZEB / ZEH</td>
<td>Demonstration of Positive Energy Building Begins in Lyon</td>
</tr>
</tbody>
</table>
9. Outcomes of ICEF2017 (3)

ICEF Roadmap Project

CO₂ Utilization 2.0

Presenter: Prof. David Sandalow
Current position: Inaugural Fellow, Center on Global Energy Policy, Columbia University
Country: United States

Energy Storage

Presenter: Dr. Atsushi Kurosawa
Current position: Director, Global Environment Program, Research and Development Division, The Institute of Applied Energy
Country: Japan
10. Conclusion

- Pursue achievement of net-zero anthropogenic CO₂ emissions
- Strengthen international collaboration for innovation
- Take immediate action to overcome climate change
SAVE THE DATE
Innovation for Cool Earth Forum
5th Annual Meeting
OCTOBER 10-11 2018 TOKYO
http://www.icef-forum.org/
Thank you for your attention.