

As of 31 August, 2021

# **From SDGs to Climate Change**

## **Integrating SDGs into climate change actions**

*United Nations University*  
*(UNU-IAS, Operating Unit Ishikawa-Kanazawa-OUIK)*

**Fall 2021**

Location: Online

Time: See schedule

Lecturers:

Dr Kensuke Fukushi; Dr Akio Takemoto, Dr Upalat Korwatanasakul, Dr Juan Pastor-Ivars

Contact Information:

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Office Hours: by appointment

### **1. Course Description**

Since the mid-20th century, humans have increased energy consumption and levels of greenhouse emissions. Such facts have had an unprecedented impact on climate, causing an alteration on a global scale. With recent global warming of 1.1°C and deviations in weather patterns, climate change threatens people with food insecurity, flooding, diseases, extreme heat, displacement, ecosystem transformation, degradation, and the stress it places on political, economic, and social systems. Because of this, the World Health Organization (WHO) claims climate change is the greatest threat to humans in the 21st century. A response to climate change relies on mitigation, reducing climate change, and adaptation, fitting to current or expected change. In the Paris Agreement, adopted in 2015, nations agreed to keep warming well under 2.0 °C. With the COVID-19 pandemic, greenhouse gas emissions are forecasted to decline due to travel restrictions and economic deceleration. However, this

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temporary improvement will not interrupt climate change. Limiting warming to 1.5 °C would require halving emissions by 2030 and achieving near-zero emissions by 2050.

In 2015, countries adopted the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals, including Goal 13: Climate Action, which aims to take urgent action to prevent climate change and its impacts. Sustainable Development Goals (SDGs) can be seen as ‘antibodies’ against climate change: threatened by its effects but the remedy to reduce them. The SDGs framework interconnects society’s prosperity, human health, quality education, energy savings, wildlife conservation, circular economy, cities’ sustainability, correct usage of natural resources, and world peace. Therefore, SDGs should be synchronised between them to achieve Goal 13. While some SDGs goals will act as a mitigating mechanism for climate change, others will become indicators of how appropriately we adapt to it. If so, the SDGs framework will become a valuable tool to alleviate climate change not only until the 2030 Agenda but for the rest of the 21st century. In this course, we will address Goal 13 as a focal point for the mitigation and adaption of climate change interconnecting the rest of the SDGs, keeping in mind the Goals complexity.

## **2. Course Objectives and Learning Goals:**

This course aims to explore knowledge on the relationships between climate change actions and multiple SDGs. The course also examines scientific, social, and political ways to prevent climate change. First, the course overviews the international policy framework on climate change and the 2030 Agenda for Sustainable Development. Second, it examines positive and negative social, economic, and environmental impacts caused by climate change mitigation and adaptation actions at the national and local levels. The positive effects extend to various areas, such as economic growth, development of infrastructure, enhancement of cost-effectiveness, and health benefits. In contrast, inequity, energy poverty, job loss, biodiversity degradation, and food insecurity have emerged as negative impacts. Third, the course provides an opportunity to understand how climate policy interventions can sustainably transform society by enhancing synergies and reducing trade-offs with socio-economic impacts.

The course is comprised of the three Blocks as follows:

1. Block 1: Giving an overview of the climate science and policy framework on climate change and the 2030 Agenda for Sustainable Development: What is the scientific

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evidence of climate change? What is the Paris Agreement? What is the 2030 Agenda for Sustainable Development?

2. Block 2: Identifying synergies and trade-offs between climate change actions and social, economic, and environmental impacts, and finding solutions: What are the social, economic, and environmental impacts related to climate change mitigation and adaptation actions? How do specific climate change actions influence SDGs? How can climate actions enhance synergies and reduce trade-offs between climate change actions and social, economic, and environmental impacts?
3. Block 3: Designing climate change actions that have co-benefits on the SDGs: How can the climate policy be designed to contribute to the SDGs in a selected city or country?

### **3. Requirements and Grading Policy**

#### **Class participation and discussion (10%)**

##### **Assignment 1: Class Presentation -1 (20%)**

- Time: 5 minutes
- Contents: Identify climate change policies and associated social issues in a selected country/city

##### **Assignment 2: Class Presentation -2 (30%)**

- Time: 10 minutes
- Contents: Proposals for actions to synergise climate change measures and SDGs in a selected country/city

##### **Assignment 3: Research paper (40%)**

- Write a research paper on a relevant topic to assignments 1 and 2. Provide an overview of climate change mitigation/adaptation actions and associated social issues in a selected country/city and identify relevant Sustainable Development Goals. Provide an overview of interventions taken by the government and non-state actors to address trade-offs and enhance synergies between climate change mitigation/adaptation actions and socioeconomic co-benefits in a selected country/city, or propose innovative measures to reduce the trade-offs and enhance the synergies.
- Propose what research is needed to understand the problems related to three prioritised SDGs better.
- Format:

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- Arial 12, 1.5 space, justified alignment, double side, cover page, references (in-text citation and bibliography can include both reports and academic articles)
- Harvard referencing style
- Maximum of 3,500 words (excluding references)

## 1. Course Outline

Lecture / Assignment	Date	Content	Instructor
<b>Block 1: Overview of Climate Change and SDGs</b>			
Lecture 1 KF	October 5 <sup>th</sup> 16:00-17:30	Introduction of the course. Overview of the climate change science	Dr Kensuke Fukushi
Lecture 2 AT	October 12 <sup>th</sup> 16:00-17:30	Overview of Paris Agreement and relevant socioeconomic aspects	Dr Akio Takemoto
Lecture 3 AT	October 19 <sup>th</sup> 16:00-17:30	Overview of the 2030 Agenda for Sustainable Development	Dr Okitasari Mahesti
<b>Block 2: Social, economic and environmental impacts on climate actions</b>			
Lecture 4 AT	October 26 <sup>th</sup> 16:00-17:30	Climate change and sustainable energy	Dr Suzuki Masachika
Lecture 5 JPI	November 2 <sup>nd</sup> 16:00-17:30	Climate change and green-blue cities	Dr Juan Pastor Ivars
Lecture 6 KF	November 9 <sup>th</sup> 16:00-17:30	Climate change and water management	Dr Geetha Mohan
Lecture 7 KF	November 16 <sup>th</sup> 16:00-17:30	Climate change and circular economy	Dr Kensuke Fukushi
Lecture 8 KF/AT/UK/JPI	November 30 <sup>th</sup> 16:00-17:30	Assignment 1 (Class presentation): Identification of a research topic	
Lecture 9 UK	December 7 <sup>th</sup> 16:00-17:30	Climate change and economic development	Dr Upalat Korwatanasakul
Lecture 10 AT	December 14 <sup>th</sup> 16:00-17:30	Climate change and biological diversity conservation	Dr Kanako Morita
<b>Winter break</b>			
Lecture 11 UK	January 11 <sup>th</sup> 16:00-17:30	Climate change and residential sector	Dr Ranjeeta Mishra (ADBI)
Lecture 12 UK	January 4 <sup>th</sup> 16:00-17:30	Climate change and financial policy	Dr Dina Azhgaliyeva (ADBI)
Lecture 13 JPI	January 18 <sup>th</sup> 16:00-17:30	TBC	TBC
<b>Block 3: Design of climate policy synergising SDGs</b>			
Lecture 14 KF/AT/UK/JPI	January 25 <sup>th</sup> 16:00-17:30	Assignment 2 (Class presentation): Proposal for actions (group 1)	Dr Kensuke Fukushi
Lecture 15 KF/AT/UK/JPI	February 1 <sup>st</sup> 16:00-17:30	Assignment 2 (Class presentation): Proposal for actions (group 2) Summary of classes	Dr Kensuke Fukushi
<b>Assignment 3: Research Article</b>			

## 2. Course Readings

Lecture	Topics	Overview, title and recommended readings
Lecture 1	Introduction of the course. Overview of the climate change science	
Lecture 2	Overview of Paris Agreement and relevant socioeconomic aspects	
Lecture 3	Overview of the 2030 Agenda for Sustainable Development	
Lecture 4	Climate change and sustainable energy	
Lecture 5	Climate change and green-blue cities	<p><u>Title</u>: "Green and Blue Infrastructure for Climate Change and Mitigation. The case of Kanazawa City"</p> <p><u>Outline</u>: The benefits of a green and blue infrastructure will be introduced, in concrete when mitigating and adapting climate change. The case of Kanazawa city will explained.</p> <p><u>Recommended readings</u>:</p> <p>1- Bai, Xuemei, Richard J. Dawson, Diana Ürge-Vorsatz, Gian C. Delgado, Aliyu Salisu Barau, Shobhakar Dhakal, David Dodman, Lykke Leonardsen, Valérie Masson-Delmotte, and Debra Roberts. "Six research priorities for cities and climate change." <i>Nature</i> 555, no. 7694 (2018): 23-25.</p> <p>2- Beninde, Joscha, Michael Veith, and Axel Hochkirch. "Biodiversity in cities needs space: a meta-analysis of factors determining intra-urban biodiversity variation." <i>Ecology letters</i> 18, no. 6 (2015): 581-592.</p>

Lecture	Topics	Overview, title and recommended readings
		<p>3- Cocks, M.L., &amp; Shackleton, C.M. (Eds.). (2020). Urban Nature: Enriching Belonging, Wellbeing and Bioculture (1st ed.). Routledge. Chapter 2: Pastor-Ivars, Juan. The veil, the clearing and the flow New commons of Japanese traditional gardens in Kanazawa city <a href="https://library.unu.edu/cgi-bin/koha/opac-detail.pl?biblionumber=41947">https://library.unu.edu/cgi-bin/koha/opac-detail.pl?biblionumber=41947</a></p> <p>4- Connop, Stuart, Paula Vandergert, Bernd Eisenberg, Marcus J. Collier, Caroline Nash, Jack Clough, and Darryl Newport. "Renaturing cities using a regionally-focused biodiversity-led multifunctional benefits approach to urban green infrastructure." <i>Environmental Science &amp; Policy</i> 62 (2016): 99-111.</p> <p>5- Childers, Daniel L., Mary L. Cadenasso, J. Morgan Grove, Victoria Marshall, Brian McGrath, and Steward TA Pickett. "An ecology for cities: A transformational nexus of design and ecology to advance climate change resilience and urban sustainability." <i>Sustainability</i> 7, no. 4 (2015): 3774-3791.</p> <p>6- Gill, S.E., Handley, J.F., Ennos, A.R., Pauleit, S., 2007. Adapting cities for climate change: the role of the green infrastructure. <i>Built Environ.</i> 33 (1), 115–133</p> <p>7- Jabareen, Yosef. "Planning the resilient city: Concepts and strategies for coping with climate change and environmental risk." <i>Cities</i> 31 (2013): 220-229</p> <p>8- Josh Foster, Ashley Lowe, Steve Winkelman, 2011. The Value of Green Infrastructure for Urban Climate Adaptation. Centre for clean air policy. <a href="http://ccap.org/assets/The-Value-of-Green-Infrastructure-for-Urban-Climate-Adaptation-CCAP-Feb-2011.pdf">http://ccap.org/assets/The-Value-of-Green-Infrastructure-for-Urban-Climate-Adaptation-CCAP-Feb-2011.pdf</a></p> <p>9- Kabisch, Nadja, Niki Frantzeskaki, Stephan Pauleit, Sandra Naumann, McKenna Davis, Martina Artmann, Dagmar Haase et al. "Nature-based solutions to climate change mitigation and adaptation in urban areas: perspectives on indicators, knowledge gaps, barriers, and opportunities for action." <i>Ecology and Society</i> 21, no. 2 (2016).</p> <p>10- Malcolm, Stephanie E. Austin, Lea Berrang-Ford, and James D. Ford. "Public health adaptation to climate change in large cities: A global baseline." <i>International Journal of Health Services</i> 46, no. 1 (2016): 53-78.</p> <p>11- Masson, Valéry, Colette Marchadier, Luc Adolphe, Rahim Aguejdad, Paolo Avner, Marc Bonhomme, Geneviève Bretagne et al. "Adapting cities to climate change: A systemic modelling approach." <i>Urban Climate</i> 10 (2014): 407-429.</p> <p>12- McDonnell, Mark J., and Ian MacGregor-Fors. "The ecological future of cities." <i>Science</i> 352, no. 6288 (2016): 936-938.</p> <p>13- McPhearson, Timon, Susan Parnell, David Simon, Owen Gaffney, Thomas Elmqvist, Xuemei Bai, Debra Roberts, and Aromar Revi. "Scientists must have a say in the future of cities." <i>Nature News</i> 538, no. 7624 (2016): 165.</p> <p>14- Nick Watts et.al Health and climate change: policy responses to protect public health. <i>The Lancet</i>, Volume 386, Issue 10006, 2015, Pages 1861-1914</p> <p>15- PASTOR-IVARS, Juan. ed. (2019) Restoring Kinship with Nature through Japanese Gardens: The Challenge to Achieve a Sustainable Commons in Kanazawa UNU-IAS OUIK, Kanazawa, Japan. 132pp. <a href="https://ouiik.unu.edu/wp-content/uploads/Booklet5-Restoring-Kinship-with-Nature-through-Japanese-Garden.pdf">https://ouiik.unu.edu/wp-content/uploads/Booklet5-Restoring-Kinship-with-Nature-through-Japanese-Garden.pdf</a></p> <p>16- Prieur-Richard, A.-H., Walsh, B., Craig, M., Melamed, M. L., Colbert, L., Pathak, M., ... Ürge-Vorsatz, D. (2018). Extended version: Global Research and Action Agenda on Cities and Climate Change Science. Montreal. Puppim De Oliveira, J. A. (2013).</p> <p>17- The Economic Value of Green Infrastructure. Natural Economy North West</p>

Lecture	Topics	Overview, title and recommended readings
		<p>(2008)  <a href="http://www.greeninfrastructurenw.co.uk/resources/The_Economic_Value_of_Green_Infrastructure.pdf">http://www.greeninfrastructurenw.co.uk/resources/The Economic Value of Green Infrastructure.pdf</a>            18- Yang, Li, and Yanan Li. "Low-carbon city in China." <i>Sustainable Cities and Society</i> 9 (2013): 62-66.</p>
Lecture 6	Climate change and water management	<p><u>Title:</u> "Adaptation Strategies for Food Sustainability under Climate Change Stress"  <u>Overview:</u>            Climate change would have serious impacts on food systems; therefore, the challenge of adapting to climate change is widely thought to be of utmost importance. This lecture provides the evidence of global climate change impact on food production, different crop yields, and food security. In addition, this lecture considers how case study research in Asia and African communities addresses the adaptation strategies for enhancing resilience to climate change and challenges that climate risk poses to sustainable food systems.  <u>Recommended readings:</u>            1- Reilly, J., Baethgen, W., Chege, F., van de Geijn, S., Erda, L., Iglesias, A., Kenny, G., Patterson, D., Rogasik, J., Rotter, R., Rosenzweig, C., Somboek, W., Westbrook, J., 1996. Agriculture in a changing climate: impacts and adaptations. In: Watson, R., Zinyowera, M., Moss, R., Dokken, D. (Eds.), <i>Climate Change</i>            2- 1995: Intergovernmental Panel on Climate Change Impacts, Adaptations, and Mitigation of Climate Change. Cambridge University Press, Cambridge, UK.            3- Pearce D.W., Cline, W.R., Achanta A.N., Fankhauser, S., Pachauri, R.K., Tol, R.S.J. and Vellinga, P. 1996. The social costs of climate change: Greenhouse damage and benefits of control. In J. Bruce, H. Lee, and E. Haites, eds., <i>Climate Change 1995: Economic and Social Dimensions of Climate Change</i>. Cambridge: Cambridge University Press            4- Rosenzweig, C., Parry, M.L. 1994. Potential impact of climate change on world food supply. <i>Nature</i> 367, 133 – 138.            5- Burke M, Lobell D (2010) Food security and adaptation to climate change: what do we know? In: <i>Climate change and food security</i>. Springer, Dordrecht, pp 133–153.</p>
Lecture 7	Climate change and circular economy	
Lecture 8	Assignment 1: Class presentation:	



Lecture	Topics	Overview, title and recommended readings
	Identification of topics	
Lecture 9	Climate change and economic development	
Lecture 10	Climate change and biological diversity conservation	
Lecture 11	Climate change and financial policy	
Lecture 12	Climate change and residential sector	
Lecture 13	TBC	
Lecture 14	Assignment 2 : Class presentation: Proposal for actions (group 1)	
Lecture 15	Assignment 2: Class presentation : Proposal for actions (group 2)  Summary of classes	

