

GEOG 37100_ Sustainability and Water in Developing Countries

Spring 2025, Hunter College

City University of New York

Time: Monday and Thursday, 2:30-3:45 PM

Room: North 1022

Instructor: Marzieh Parisa Setayesh (She/Her)

Office Hours: By Appointment (in-person or via Zoom)

Email: msetayesh@gradcenter.cuny.edu

Please email me from your @myhunter email, include "GEOG-37100" in the subject line, and sign your name as it appears in CUNYfirst. I will typically respond within 48 hours.

Course Description

This course examines the complex relationship between sustainability, water management, and societal development, focusing on global and local challenges. With a particular emphasis on the developing world, the course integrates historical, social, and technological perspectives on water and sanitation systems. Through case studies, readings from international organizations, and discussions on socio-cultural factors, students will explore pressing issues such as water scarcity, climate change impacts, governance, and infrastructure development.

Student Learning Outcomes

By the end of this course, students will:

- Understand the historical evolution and socio-cultural dimensions of water infrastructure systems.
- Critically analyze global water management challenges, with emphasis on developing world contexts.
- Assess the impact of water scarcity, sanitation, and climate change on communities, focusing on health and equity.
- Explore the role of international organizations and governance models in addressing water and sanitation issues.
- Develop skills in integrating technological and policy solutions to real-world water challenges.
- Effectively communicate and collaborate through case studies, discussions, and written assignments on water sustainability.

Hunter College Policy on Academic Integrity:

Hunter College regards acts of academic dishonesty (e.g. plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

Hunter College's Policy on Students with Disabilities:

In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical and/ or Learning) consult the Office of AccessABILITY located in Room E1124 to secure necessary academic accommodations. For further information and assistance please call (212- 772- 4857)/TTY (212- 650- 3230).

Hunter College Policy on Sexual Misconduct

In compliance with the CUNY Policy on Sexual Misconduct, Hunter College affirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationship. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College. Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, on contacting the College's Public Safety Office (212-772-4444)

All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose (jtrose@hunter.cuny.edu or 212-650-3262) or Colleen Barry 5 (colleen.barr7@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.

Policy on Sexual Misconduct can be found at <http://www.hunter.cuny.edu/diversityandcompliance/title-ix>

Preferred Gender Pronoun

All people have the right to be addressed and referred to in accordance with their personal identity. In this class, we will have the chance to indicate the name that we prefer to be called and, if we choose, to identify pronouns with which we would like to be addressed. I will do my best to address and refer to all students accordingly and support classmates in doing so as well."

Attendance

You are expected to attend class on time and for the full duration. Students are allowed no more than 2 absences over the semester. Additional absences will negatively impact your grade. Notify me as soon as possible in case of illness, emergency, or unavoidable circumstances. You are responsible for catching up on missed material.

Classroom Culture

We will engage with challenging topics and diverse perspectives. Respectful dialogue is essential. Please approach class discussions with openness and care.

Assignments and Evaluation

Group Discussion Lead Assignment (20%)

Twice during the semester, students will lead the discussion of our reading materials in groups of two.

The day before our class meetings, 'discussion leader', will collaboratively post on Brightspace (due Sunday and Wednesday by 5pm):

- A concept map outlining the connections between the most important concepts in our reading.
- The three (3) biggest takeaways/conclusions from the reading.
- Two (2) questions we could discuss as a class to better understand the reading and the argument the author is making.
- During the class sessions, we will allot ~30 minutes for the discussion leaders to explain and discuss their concept map with the entire class and to lead a discussion of the questions they came up with.

Participation (20%)

Active participation through discussions, and group activities. This is a foundational part of our class.

Midterm Project (20%)

This is a Mapping Project that you will do in groups mainly during our class time and will present on midterm presentation day.

Documentary Reflection (10%)

These include individual and group tasks, to be detailed in the course schedule.

Final Project (30%)

Required Course Material

Complete assigned readings before class. Materials may change; I will provide updates with at least two weeks' notice.

Course Schedule

Monday, January 27: Course Overview and Introduction

- **UNESCO World Water Assessment Programme. (2024).** *Water for prosperity and peace: The United Nations World Water Development Report 2024 (Executive Summary)*. United Nations Educational, Scientific and Cultural Organization (UNESCO).
<https://en.unesco.org/wwap>

Thursday, January 30: Historical and Global Perspectives on Water

- Biswas, A. K. (1999). *Water Crisis: Current Perceptions and Future Realities*.
- Biswas, A. K. (2004). *From Mar del Plata to Kyoto: An Analysis of Global Water Policy Dialogue*.

Monday, February 3: Historical Water Infrastructures (*Readings to be assigned*)

- Nasiri, F., & Mafakheri, M. S. (2015). Qanat water supply systems: a revisit of sustainability perspectives. *Environmental Systems Research*, 4, 1-5.
- Esrey, S. A., Feachem, R. G., & Hughes, J. M. (1985). *Improving Water Supplies and Excreta Disposal*.

Thursday, February 6: Urban Sanitation and Health

- Cairncross, S. (2018). *Public Health Benefits of Urban Sanitation*.
- Bishoge, O. K. (2021). Challenges facing sustainable water supply, sanitation and hygiene achievement in urban areas in sub-Saharan Africa. *Local Environment*, 26(7), 893-907.

Monday, February 10:

- Documentary: "Blue Gold: World Water Wars(2008)
- This documentary explores the global water crisis, privatization of water resources, and conflicts emerging from water scarcity.
 - The role of multinational corporations in water management.
 - The ethics of water privatization: is water a commodity or a human right?
 - Connections between water conflicts and global security.

Thursday, February 13: Pro-Poor Water Governance

- Connors, G. (2005). "Pro-Poor Governance in Bangalore's Public Water Sector." *Environment and Urbanization*.
- Salameh, M. T. B., Alraggad, M., & Harahsheh, S. T. (2021). The water crisis and the conflict in the Middle East. *Sustainable Water Resources Management*, 7, 1-14.

Monday, February 17: Flow: For the Love of Water

- This film investigates the global water crisis and highlights grassroots movements working toward sustainable water access.
 - The impact of corporate control on local water sources.
 - Case studies of successful community-led water sustainability initiatives.
 - Connections between water access and public health.

Thursday, February 20: Social Justice in Water Distribution

- Barlow, M. (2007). *Our water commons: toward a new freshwater narrative*. The Commons.
- Davis, J. (2004). *Corruption in Public Service Delivery: South Asia's Water Sector*.

Monday, February 24: Groundwater and Sustainability

- Winter, T. C., et al. (1998). *Ground Water and Surface Water: A Single Resource*.
- Alley, W. M., & Konikow, L. F. (2015). Bringing GRACE down to earth. *Groundwater*, 53(6), 826-829.

Thursday, February 27: Droughts and Resilience

- Haile, G. G., Tang, Q., Sun, S., Huang, Z., Zhang, X., & Liu, X. (2019). Droughts in East Africa: Causes, impacts and resilience. *Earth-science reviews*, 193, 146-161
- Hallegatte, S., et al. (2013). *Future Flood Losses in Major Cities*.

Monday, March 3: Wastewater Management

- Hawkins, Peter & Blackett, Isabel & Heymans, Chris. (2013). Poor-Inclusive Urban Sanitation: An Overview. 10.13140/RG.2.2.30353.02406.
- Adelodun, A., et al. (2021). *Socioeconomic Inequality in Virus-Contaminated Water Usage*.

Midterm Project: Mapping water

Thursday, March 6: Water Mappers

1. Water Pollution & Quality

- [**Water Quality Portal \(WQP\) \(USGS, EPA, NWQMC\)**](#)
 - Aggregates water quality data from over 400 federal, state, tribal, and local agencies in the U.S.
 - Useful for tracking pollutants, chemical concentrations, and contamination trends.
- [**Global Freshwater Watch**](#)
 - A citizen science initiative that crowdsources water quality data worldwide.
 - Great for studying local variations in water pollution.
- [**UN Environment GEMS Water Data Centre**](#)
 - Provides global water quality data with historical trends and current assessments.

2. Flooding & Flood Risk

- [**Flood Hazard Map \(World Resources Institute – Aqueduct\)**](#)
 - Global map showing riverine and coastal flood risks.
 - Useful for visualizing past, present, and future flood vulnerabilities.
- [**FEMA Flood Map Service Center**](#)
 - Interactive maps showing flood zones and risks in the U.S.
 - Useful for policy discussions around flood management and resilience.
- [**European Space Agency \(ESA\) World Flood Mapping Tool**](#)
 - Satellite-based real-time and historical flood mapping across the globe.
 - Shows flood extent data for major flood events.

3. Water Scarcity & Stress

- [**Aqueduct Water Risk Atlas \(World Resources Institute\)**](#)
 - Maps water stress, droughts, and water risk globally.
 - Great for discussions on climate change impacts and water scarcity.
- [**Global Groundwater Watch \(GGMN\)**](#)
 - Maps groundwater availability, depletion trends, and recharge rates.
 - Helps understand underground water dynamics and long-term sustainability.
- [**Drought Monitor \(USDA, NOAA, UNL\)**](#)
 - Tracks drought conditions in the U.S. using climate and soil moisture data.
 - Important for discussions on agricultural water use and adaptation strategies.

4. Climate Change & Water Resources

- [**NASA Sea Level Change Data Visualization**](#)
 - Shows rising sea levels and how they impact coastal communities worldwide.
 - Useful for discussions on climate-driven water risks.
- [**NOAA Climate Resilience Toolkit: Water**](#)
 - Includes various mapping tools for water-related climate adaptation.
 - Covers freshwater availability, sea-level rise, and extreme weather risks.

Monday, March 17: Midterm Work Session

Thursday, March 20: Midterm Presentations

Reflections: Water Documentaries

Monday, March 24: Day 01

Thursday, March 27: Day 02

Monday, March 31: Global Governance in Water Policy

- UN-Water (2020). *A Global Goal for Water Governance Post-2015*.
- Davis, J. (2004). *Corruption in Public Service Delivery: South Asia's Water Sector*.

Thursday, April 3: Agricultural Water Usage

- IWMI (2007). *Water for Food, Water for Life: A Comprehensive Assessment of Water Management in Agriculture*.
- Hoekstra, A. Y. (2012). *The Hidden Water Resource Use Behind Meat and Dairy*.

Monday, April 7: Climate Change and Coastal Resilience

- Hallegatte, S., et al. (2013). *Future Flood Losses in Major Cities*.
- Snover, A. K., et al. (2005). *Uncertain Future: Climate Change Effects on Puget Sound*.

Thursday, April 10th: Technological Innovations for Water Access

- Skinner, B. (2003). *Small-Scale Water Supply Technologies*.
- MacDonald, A., et al. (2005). *Developing Groundwater: A Guide for Rural Water Supply*.

Monday, April 21st: Appropriate Technology for Water Supply

- Skinner, B. (2003). *Small-Scale Water Supply Technologies*.
- MacDonald, A., et al. (2005). *Developing Groundwater: A Guide for Rural Water Supply*.

Thursday, April 24th: Case Studies in Water Scarcity

- Watts, J. (2017). *The Amazon Effect: How Deforestation is Starving São Paulo of Water*.
- Fowler, C. (2020). *Just Water: Funding for Water Infrastructure in Tribal Areas*.

Monday, April 28th : Public Awareness and Water Literacy

- Esrey, S. A., et al. (1985). *Interventions for the Control of Diarrheal Diseases*.
- Fowler, C. (2020). *Just Water: Funding for Water Infrastructure in Tribal Communities*.

The Final Project:

Thursday, May 1st: Class Panel and Final Project work session

Monday, May 5th: Final Project work session

Thursday, May 8th: Final Project Presentations

Monday, May 12: Final Project Presentations