The Limits to Growth: Sustainability and the Circular Economy

Lecture 0: Organization

Prof. Dr. Benjamin Leiding
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License

Team

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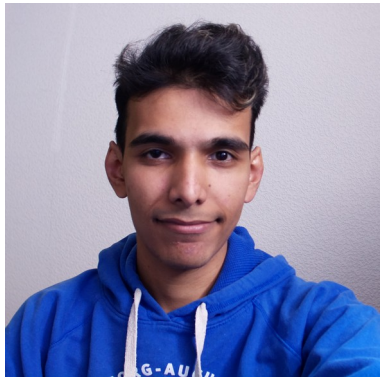

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Research Group

- **E**merging **T**echnologies for the **C**ircular **E**conomy → **ETCE**
- Research focus:
  - Intersection of IT and sustainability
  - Circular Economy
  - Self-organized, decentralized and distributed systems
  - Machine-to-Everything Economy (M2X Economy)
- Other courses:
  - Emerging Technologies for the Circular Economy (SS – M.Sc.)
  - Requirements Engineering (WS – M.Sc.)

Research Group

- ETCE Website – Link
  - Course material
  - Theses/project topics

- Our research in action:
  - ZDF documentary (German) – Link
  - Klartext Preis 2020 (German) – Link

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You want join us? Write us an email!

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Course Content

- Introduction to the circular economy, sustainability, and related concepts (biocapacity, etc.)
- Sustainability goals
- Basics of climate change, environmental pollution, and dwindling non-renewable resources
- Feedback loops and tipping points
- Implications of closed systems with a finite supply of resources
- The sub-processes and steps of a circular economy – incl. the era of R and era of D
- Approaches towards sustainability

Learning Outcome

- Understanding the concept of a circular economy, sustainability, and
- related concepts (biocapacity, etc.).
- Gain a basic understanding of causes, dimensions, and the characterization of climate change, environmental pollution, and dwindling non-renewable resources.
- Being able to make high-level, transdisciplinary assessments of decisions and measures in a social, economic, and political context.
- The ability to critically assess upcoming technological solutions enabling/facilitating sustainability and the circular economy.

Lecture Plan

- 25.04.2022 → Organization (L00) Organization + Introduction I (L01)
- 02.05.2022 → Introduction II (L02)
- 09.05.2022 → Introduction III (L03)
- 16.05.2022 → What Happened So Far? (L04)
- 23.05.2022 → Life-cycle Assessment – LCA (L05)
- 30.05.2022 → World3 (L06)
- 13.06.2022 → Circular Economy I (L07)
- 20.06.2022 → Circular Economy II (L08)
- 27.06.2022 → Beyond the Circular Economy (L09)
- 04.07.2022 → Technologies for Sustainability (L10)
- 11.07.2022 → Action Plan (L11)
- 18.07.2022 → Invited Lecture
- 25.07.2022 → Invited Lecture

Course Organization

- Course website – Link
- News and updates:
  - CLZ students + DigiTec: StudIP (Link)
  - Everyone else: Mailing list (Link)
- Slides will be uploaded to StudIP (Link) and to Github (Link)
  - Please report bugs ;)
- Lecture recordings will be available on StudIP and on Github
  - Questions? Write us an email: etce-ltg@tu-clausthal.de ← **We will only respond to emails written to this specific email address!**

Dates/Times/Locations

- Please note:
  - The Gotec in Goslar is limited to ca. 15-20 seats due to the current COVID restrictions. Thus, **only DigiTec** students may join us in Goslar.
  - We kindly ask everyone else to use the BBB rooms (links below).

- Lecture:
  - Monday **1 pm to 2:30 pm** (Berlin time) – **25.04**.2022 to **27.07**.2022
  - Location: Goslar Gotec (Am Stollen 19 C, 38640 Goslar, Germany) or via BigBlueButton (Link)
- Exercise / Q&A:
  - Monday **3 pm to 4:30 pm** (Berlin time) – **25.04**.2022 to **27.07**.2022
  - Location: Goslar Gotec (Am Stollen 19 C, 38640 Goslar, Germany) or via BigBlueButton (Link)

Exercises

- Individual work → no group submissions
- Submission of **each** exercise is **mandatory**
- You pass by submitting an exercise – even if it is an empty page
- You will receive feedback on your submission
- Exercise = learning feedback

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- Bonus task:
  - Form groups of 2 or more people
  - Come up with a great idea that revolves around sustainability in general
  - Push the idea as far as possible throughout the semester
  - Record a 60s video explaining your idea and what you did throughout the semester
  - Selection of the 5 best ideas → bonus points for the exam (e.g., better grade – instead of 2.0 → 1.7 or something similar)

Examination

- Prerequisite for admission to the final exam (all criteria have to be fulfilled):
  - Submit all exercises

- Final exam:
  - No Specific date yet
  - Either written exam (120min) **or** oral examination (20-25min)
  - Online vs. lecture room examination → depends on the pandemic and the number of students

Self-Study Star

Self-Study Star → 

- Slides with the self-study star indicate optional/additional study material that is **not** mandatory but could be helpful or interesting

Literature

- This course is not based on a single book and you **do not** need to buy a book to pass the exam.

- Donella H. Meadows, Jorgen Randers, and Dennis L. Meadows. *The Limits to Growth* (1972).
- Donella H. Meadows, Jorgen Randers, and Dennis L. Meadows. *Limits To Growth: The 30-Year Update* (2004).
- Baccini et al. *Metabolism of the Anthroposphere: Analysis, Evaluation, Design* (2012).
- Walter R. Stahel. *The Circular Economy: A User's Guide* (2019).
- XR. *This is not a Drill* (2019)
- W. Brian Arthur. *The Nature of Technology: What It Is and How it Evolves* (2011).
- David Wallace-Wells. *The Uninhabitable Earth, Annotated Edition* (2017).
- James Lawrence Powell. *The 2084 Report: An Oral History of the Great Warming* (2020).
- Rutger Bregman. *Utopia for Realists* (2017).

Further Resources

- Climate University – Teaching and learning for a sustainable future – Link
- Circular Societies (German) – Link
- Server Infrastructure for a Global Rebellion – Link

- Podcasts:
  - Drilled (Link)
  - How to Save a Planet (Link)
  - 1,5 Grad – der Klima-Podcast mit Luisa Neubauer (German) (Link)

Questions?