New Perspectives in Science Education
International Conference
NEW PERSPECTIVES in SCIENCE EDUCATION

A CLIMATE ACADEMY in a Secondary School,

A New Pedagogical Strategy for Climate Education

Duquenne Nicolas[1], Epps Tereza[2]

European School of Brussels 2, Belgium[1]

European School of Brussels 2, Belgium[2]

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Place of the Climate Change Education

- International and European Legislative Context
- Local Educational Context

The Climate Academy in the European School of Brussels 2

- Teachers and Academics' Perspective
- Members Students' Perspective
- Results

Discussion

- Teaching the Systemic Dimension of the Climate Academy
- A New and Comprehensive Subject in Education
- Long-term Scope of Education vs Climate Emergency

Perspectives and Conclusion

Co-funded by
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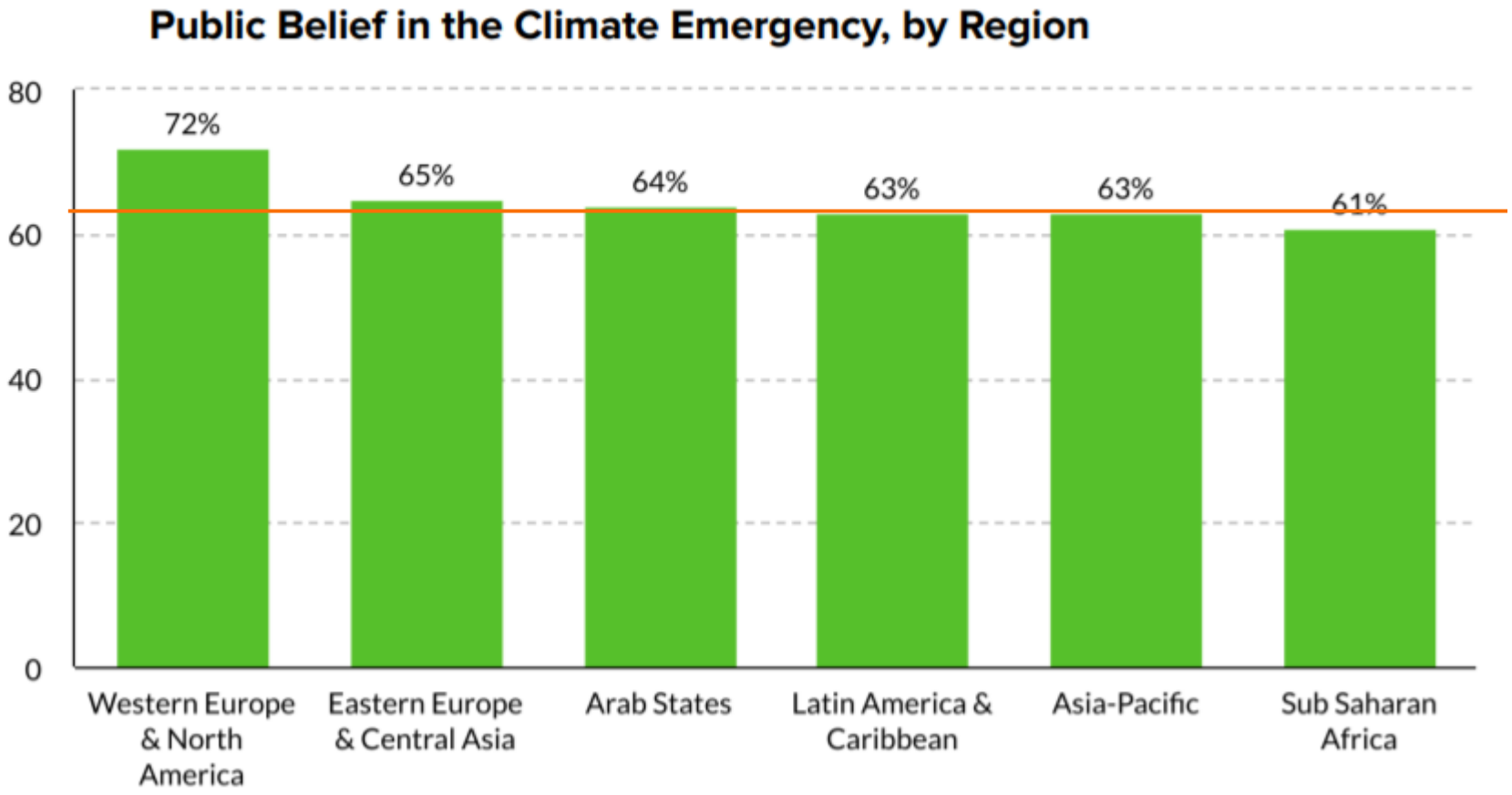
1. PLACE OF THE CLIMATE CHANGE EDUCATION

➢ INTERNATIONAL CONTEXT



All Regions Average = 64 %

Peoples' Climate Vote

RESULTS

UNIVERSITY OF OXFORD

UNDP

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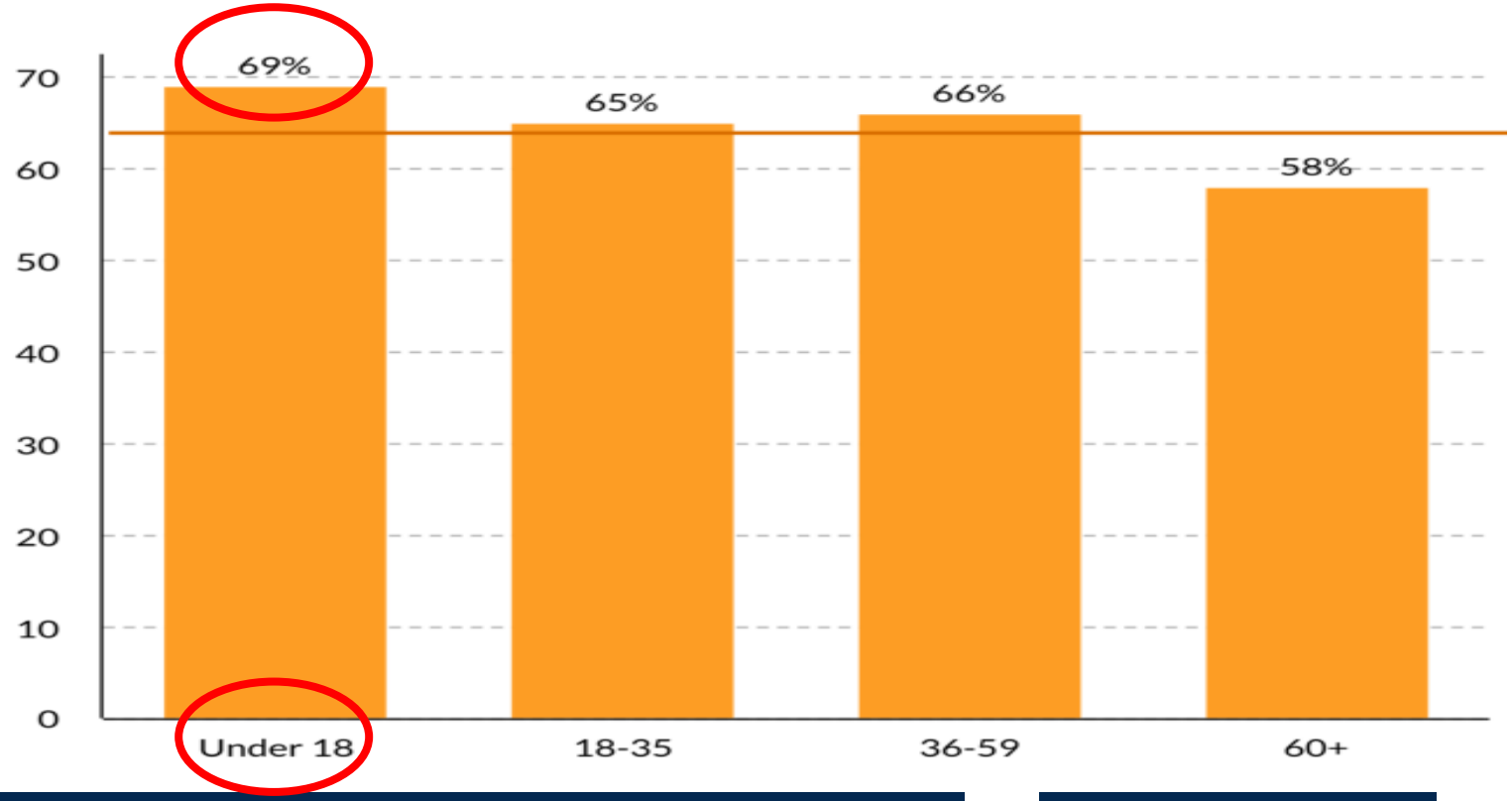
1. PLACE OF THE CLIMATE CHANGE EDUCATION

➢ INTERNATIONAL CONTEXT

Figure 31. Public Belief in the Climate Emergency, by Age Group



All Ages Average
= 64 %

Peoples' Climate Vote

RESULTS

UNIVERSITY OF OXFORD

UNDP

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1. PLACE OF THE CLIMATE CHANGE EDUCATION

➢ INTERNATIONAL CONTEXT

PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

Article 12

Parties shall cooperate in taking measures, as appropriate, to enhance climate change education, training, public awareness, public participation and public access to information, recognizing the importance of these steps with respect to enhancing actions under this Agreement.

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1. PLACE OF THE CLIMATE CHANGE EDUCATION

➢ EUROPEAN CONTEXT

HARD SKILLS	*SOFT SKILLS*
MULTILINGUAL	LEARNING
STEM	CITIZENSHIP
LITERACY	ENTREPRENEURSHIP
DIGITAL	CULTURE

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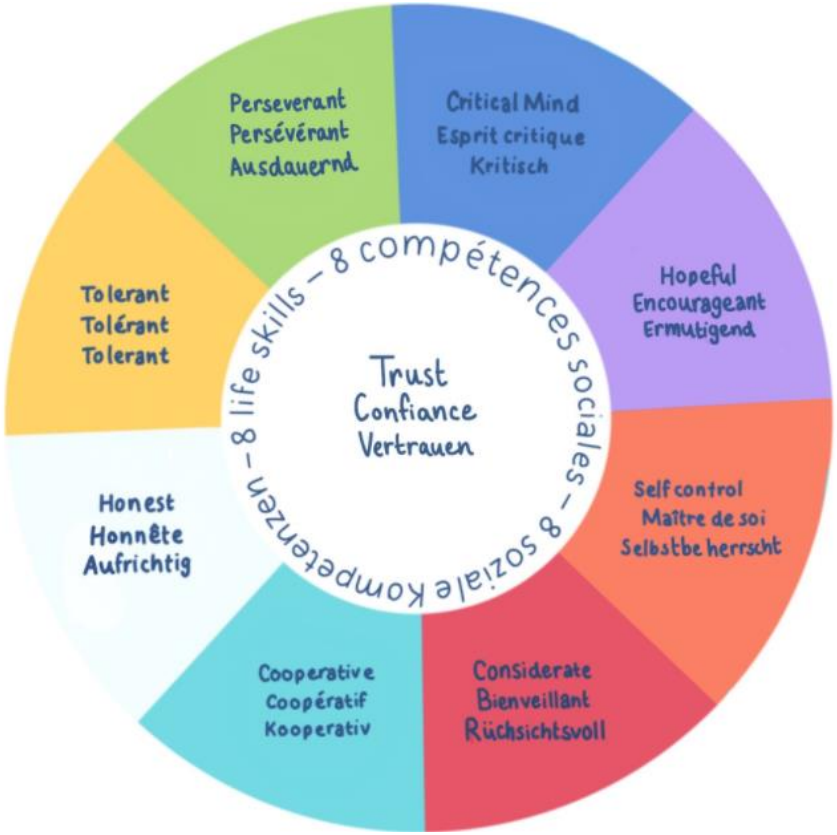
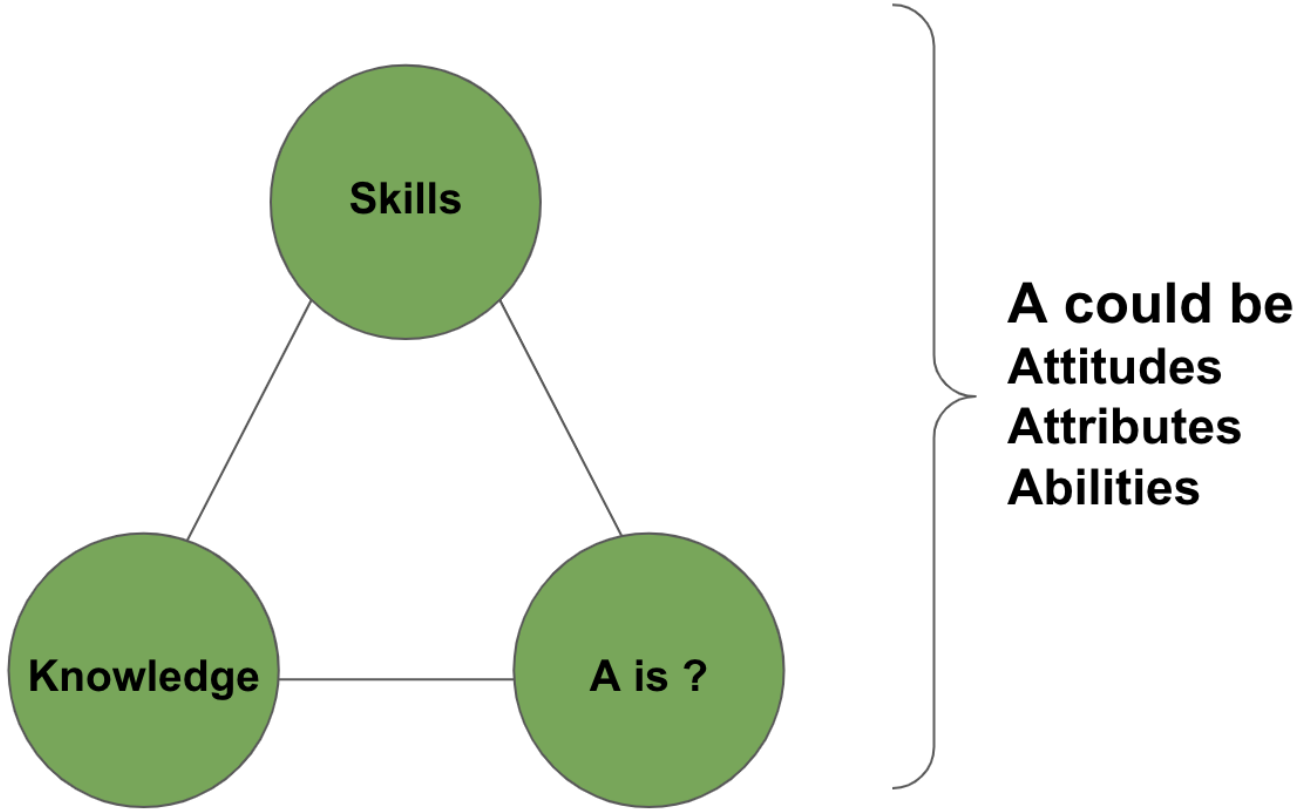
1. PLACE OF THE CLIMATE CHANGE EDUCATION

➢ LOCAL - SCHOOL CONTEXT



Life-skills in EEB2



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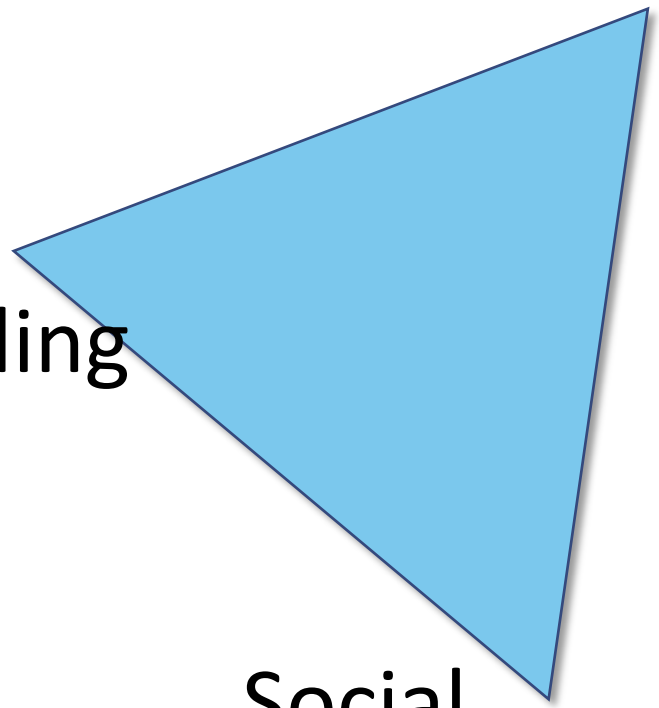
2. THE CLIMATE ACADEMY IN THE EUROPEAN SCHOOL OF BRUSSELS 2

➢ TEACHERS AND ACADEMICS' PERSPECTIVE

The 3 pillars of the Climate Academy



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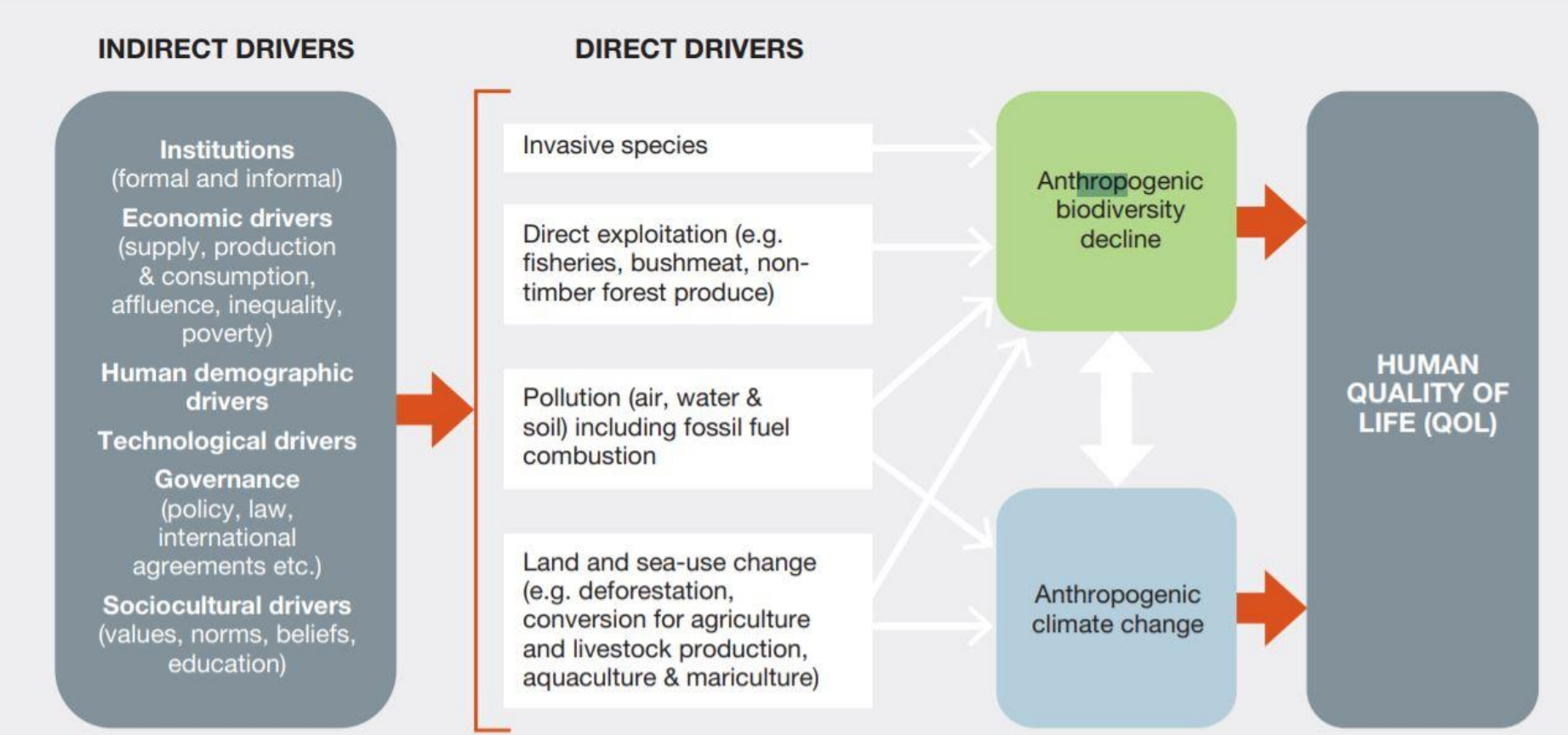
2. THE CLIMATE ACADEMY IN THE EUROPEAN SCHOOL OF BRUSSELS 2

➢ TEACHERS AND ACADEMICS' PERSPECTIVE



Indirect and direct drivers of biodiversity loss and climate change due to human activities.

Climate change and biodiversity loss share common underlying drivers, and both impact (mostly in negative ways) people's quality of life.

Scientific outcome of the IPBES-IPCC // June 2021 p29

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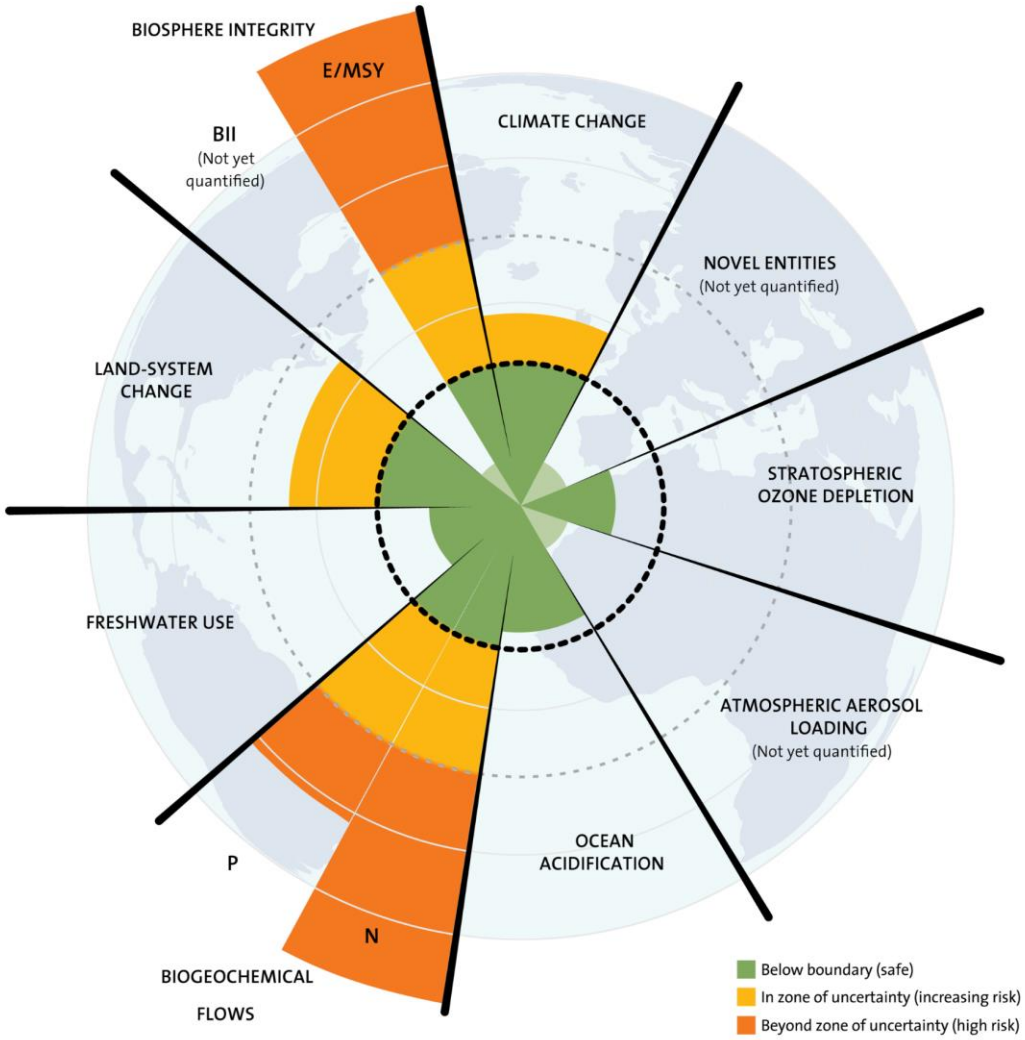
2. THE CLIMATE ACADEMY IN THE EUROPEAN SCHOOL OF BRUSSELS 2

➢ TEACHERS AND ACADEMICS' PERSPECTIVE



First pillar : systemic Understanding → Planetary boundaries

credit: J. Lokrantz/Azote based on Steffen et al. 2015.

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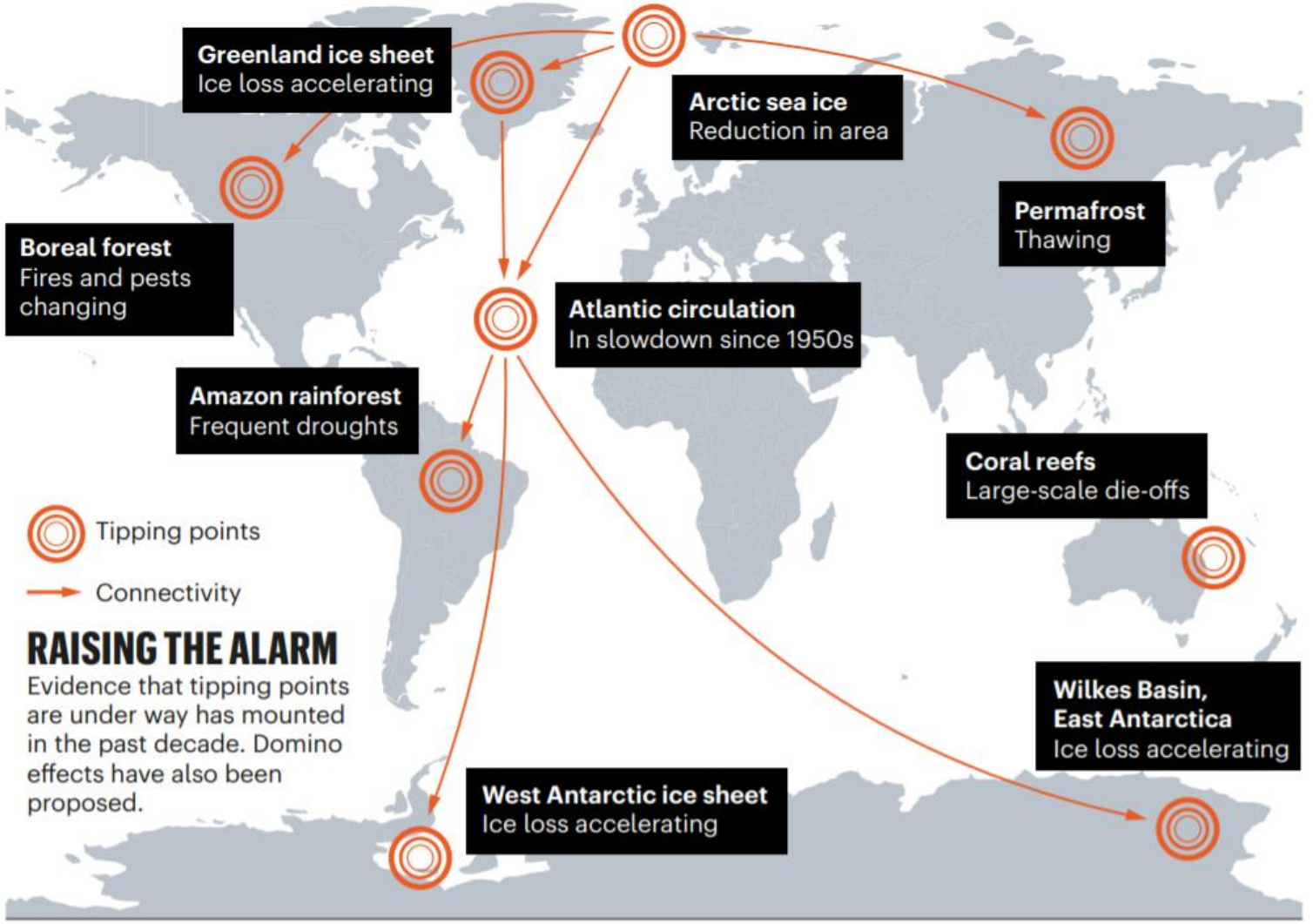
2. THE CLIMATE ACADEMY IN THE EUROPEAN SCHOOL OF BRUSSELS 2

➢ TEACHERS AND ACADEMICS' PERSPECTIVE



First pillar : systemic Understanding

→ Tipping Points

Timothy M. Lenton. Johan Rockström

Nature | Vol 575 | 28 November 2019 | 595

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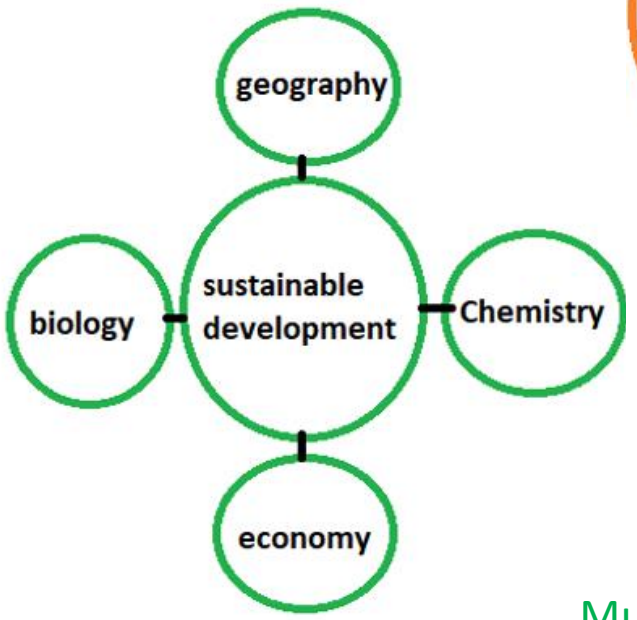
2. THE CLIMATE ACADEMY IN THE EUROPEAN SCHOOL OF BRUSSELS 2

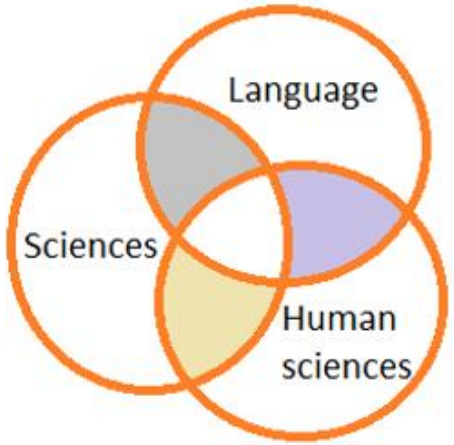
➢ TEACHERS AND ACADEMICS' PERSPECTIVE

Developing an integrated curriculum



Multidisciplinary organisation

Multiplidisciplinary --> Content, skills, assessments are specific to each discipline BUT disciplines share a common concept.



Interdisciplinary organisation

Interdisciplinary --> even if disciplines remain distinct, boundaries vanish for the profit of a complex competence : ie critical thinking

Transdisciplinary organisation

Transdisciplinary --> The starting point of the teaching is a real life issue rather than a discipline. ie: Climate Change

Adapted from Frontiers Education, 14 July 2020 https://doi.org/10.3389/feduc.2020.00122

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2. THE CLIMATE ACADEMY IN THE EUROPEAN SCHOOL OF BRUSSELS 2

➢ TEACHERS AND ACADEMICS' PERSPECTIVE

GreenComp

Competence areas	*Embodying sustainability values*	*Embracing complexity in sustainability*	*Envisioning sustainable futures*	*Acting for sustainability*
Competences	Valuing sustainability	Systems thinking	Futures literacy	Political agency
	Supporting fairness	Critical thinking	Adaptability	Collective action
	Promoting nature	Problem framing	Exploratory thinking	Individual initiative

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2. THE CLIMATE ACADEMY IN THE EUROPEAN SCHOOL OF BRUSSELS 2

➢ STUDENTS' PERSPECTIVES

Second pillar :
Civic engagement

Amelie Josephine Schoenensberger (s6dea)

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2. THE CLIMATE ACADEMY IN THE EUROPEAN SCHOOL OF BRUSSELS 2

➢ STUDENTS' PERSPECTIVES

Second pillar :
Civic engagement

13 STARS NEWSPAPER

Peer teaching and learning

NEWS-DECODER

CLIMATE ACADEMY

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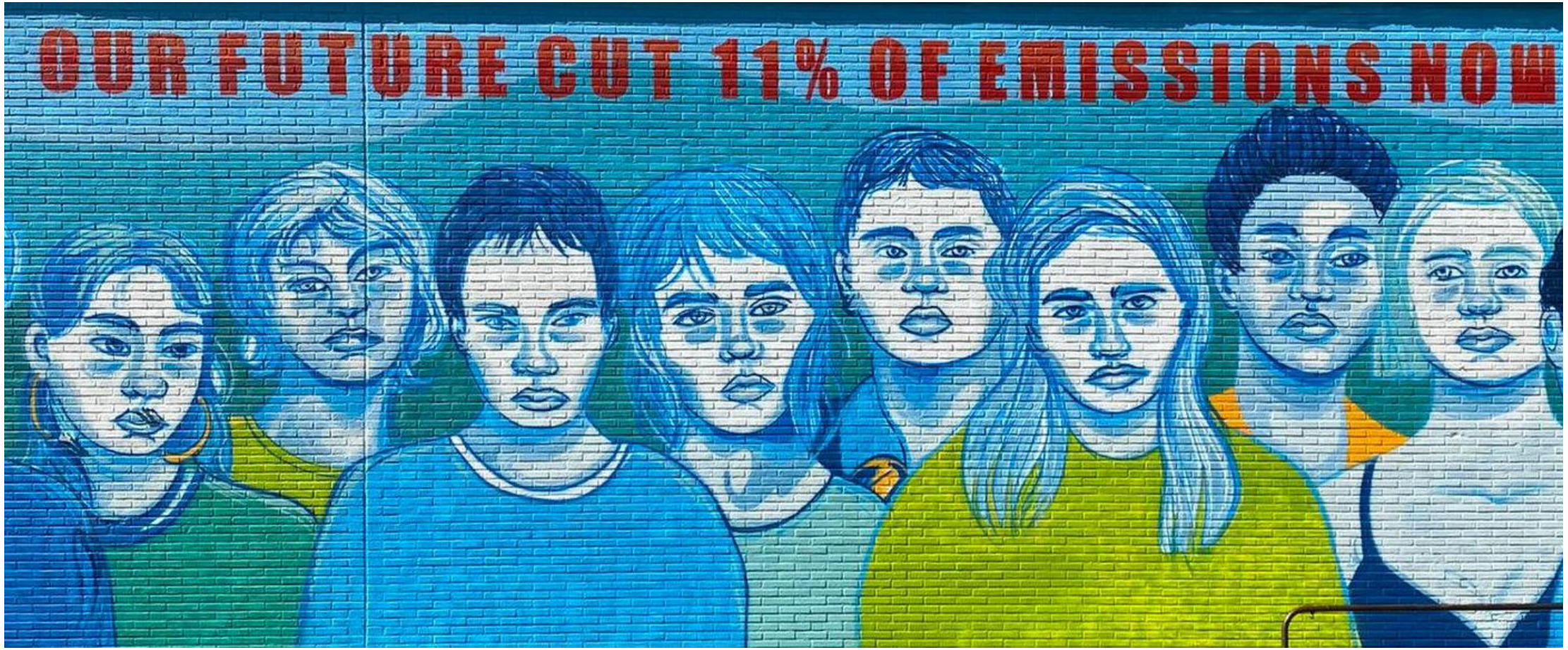
2. THE CLIMATE ACADEMY IN THE EUROPEAN SCHOOL OF BRUSSELS 2

➢ STUDENTS' PERSPECTIVES

Third pillar :
Entrepreneurship



The mural at the European School of Brussels II was painted by Amélie Zimmermann, Sofia Ferraioli, Irene Costagliola, Danny O'Brien, Eva Kastrinos and art teacher Fabrice Thomasseau

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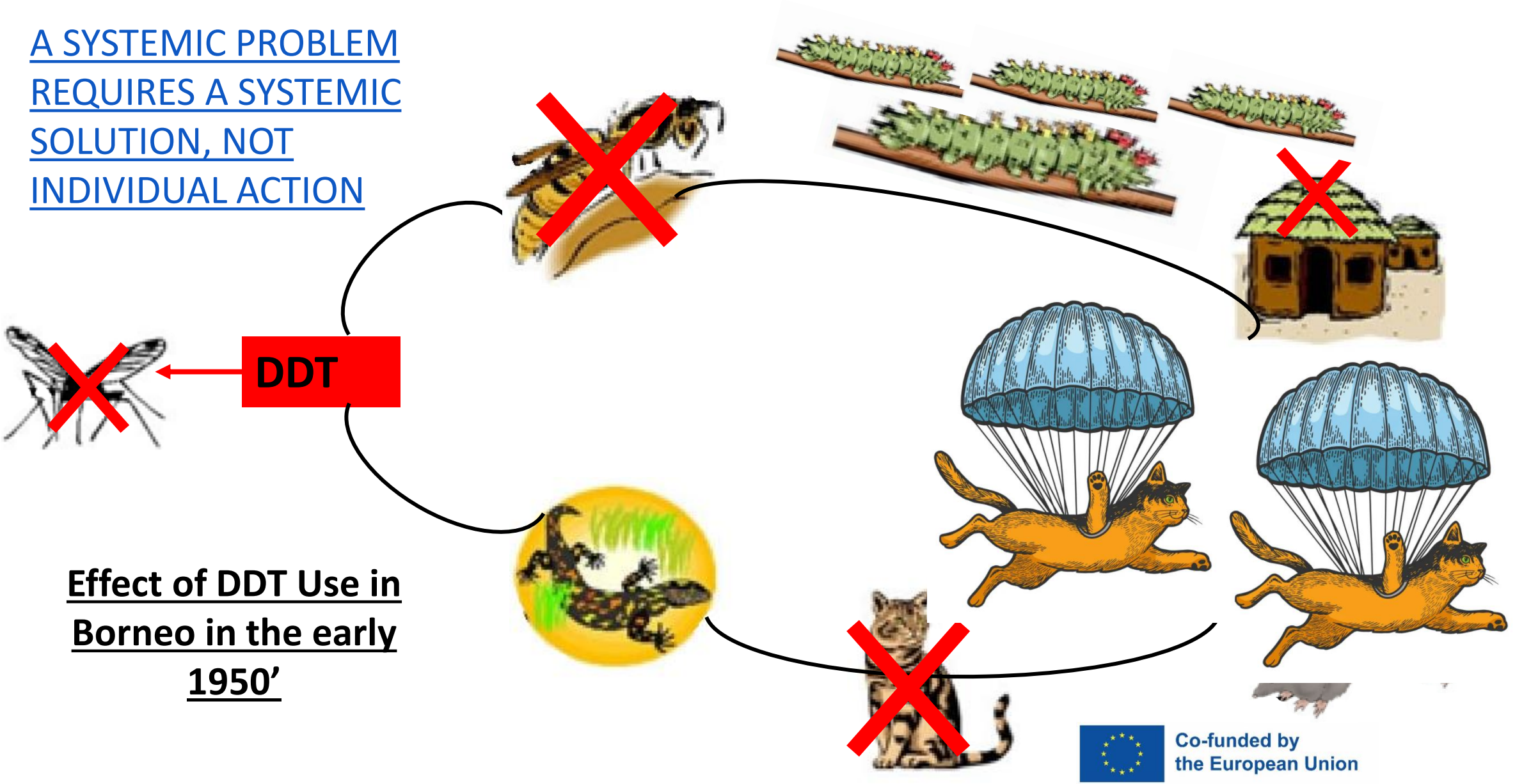
2. THE CLIMATE ACADEMY IN THE EUROPEAN SCHOOL OF BRUSSELS 2

➢ STUDENTS' PERSPECTIVES

A SYSTEMIC PROBLEM REQUIRES A SYSTEMIC SOLUTION, NOT INDIVIDUAL ACTION



Effect of DDT Use in Borneo in the early 1950'

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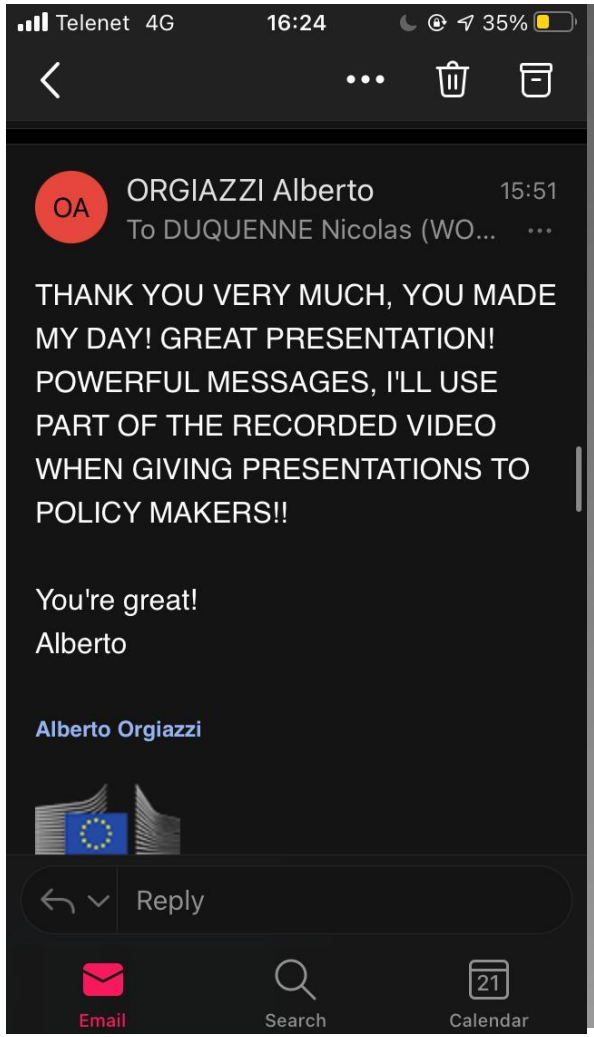
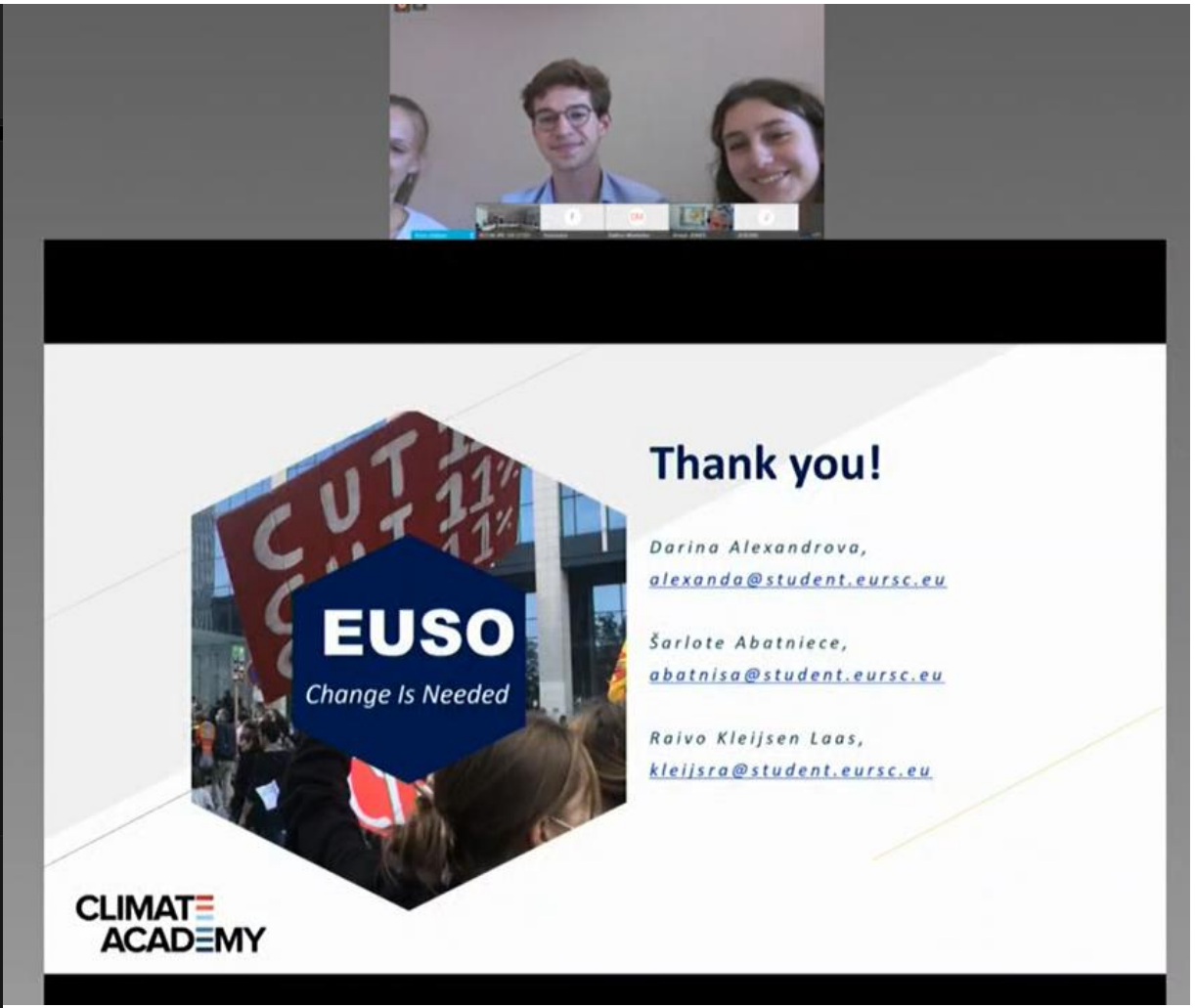
2. THE CLIMATE ACADEMY IN THE EUROPEAN SCHOOL OF BRUSSELS 2

➢ RESULTS

EUropean Soil Observatory





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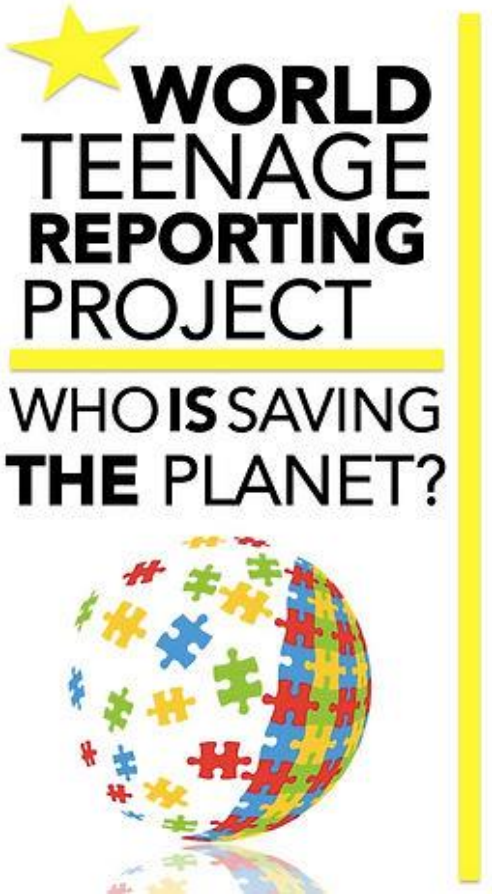
2. THE CLIMATE ACADEMY IN THE EUROPEAN SCHOOL OF BRUSSELS 2

➢ RESULTS



- Ms Malik head master of EEB2 says “Every day, when I walk in front of the wall, I can feel that I am surrounded by conscious people. If this unique place contributes to changing the attitude of a single unconscious person, I definitely think it was worth creating it.”.
- Joachim Schmelz, depute director, said he was honored to be the director of such an engaged community. “The spirit must be spread and I am sure it will,” he said.

Extract from Maya Blenkinsop’s awarded article

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2. THE CLIMATE ACADEMY IN THE EUROPEAN SCHOOL OF BRUSSELS 2

➢ RESULTS

Endorsement of the Climate Academy

Source : screenshot of a video on Cut11% website

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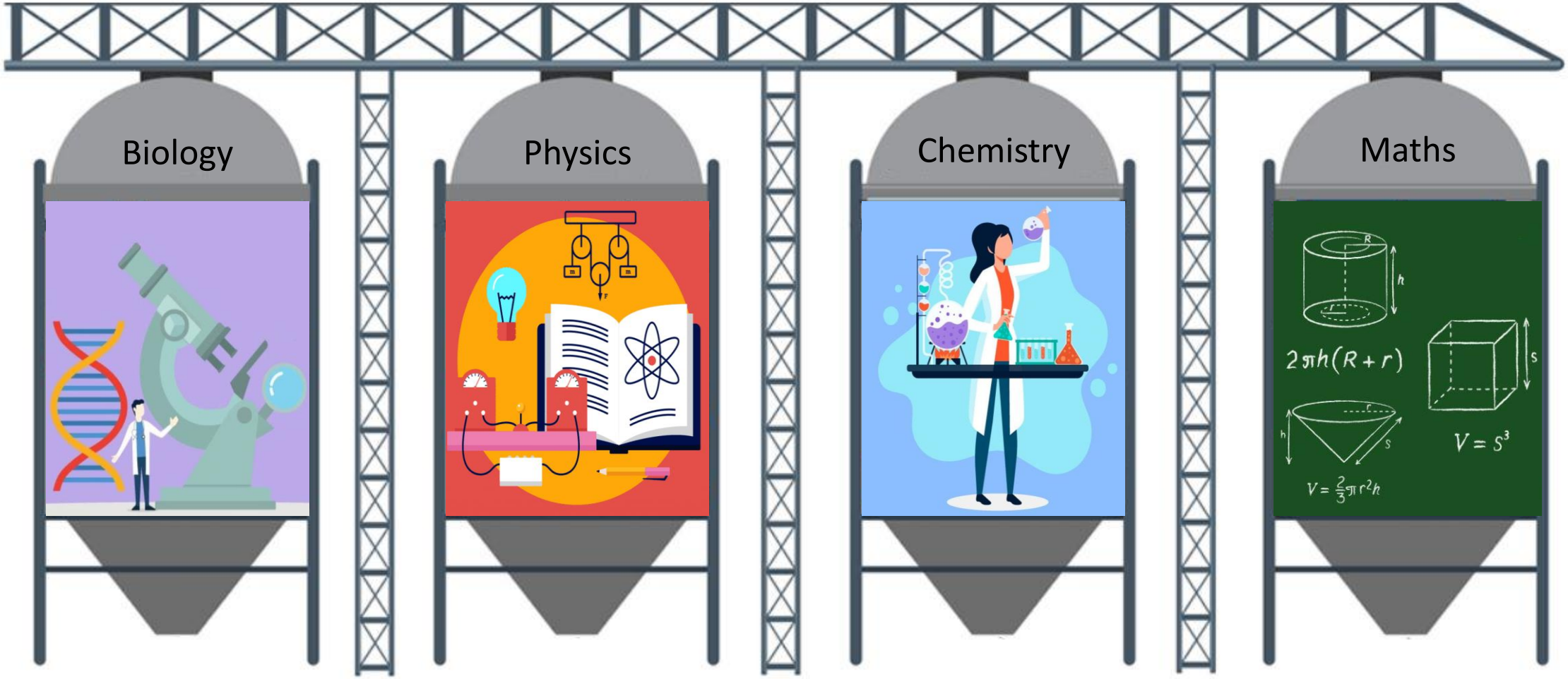
3. DIDACTICAL CONSIDERATIONS

➢ SYSTEMIC DIMENSION OF THE CLIMATE ACADEMY



SILO THINKING MODEL

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3. DIDACTICAL CONSIDERATIONS

➢ SYSTEMIC DIMENSION OF THE CLIMATE ACADEMY

Article **Will Steffen, Paul J. Crutzen and John R. McNeill**

The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?

We explore the development of the Anthropocene, the current epoch in which humans and our societies have become a global geophysical force. The Anthropocene began around 1800 with the onset of industrialization, the central feature of which was the enormous expansion in the use of fossil fuels. We use atmospheric carbon dioxide concentration as a single, simple indicator to track the progression of the Anthropocene. From a preindustrial value of 270–275 ppm, atmospheric carbon dioxide had risen to about 310 ppm by 1950. Since then the human enterprise has experienced a remarkable explosion, the Great Acceleration, with significant consequences for Earth System functioning. Atmospheric CO_2 concentration has risen from 310 to 380 ppm since 1950, with about half of the total rise since the preindustrial era occurring in just the last 30 years. The Great Acceleration is reaching criticality. Whatever unfolds, the next few decades will surely be a tipping point in the evolution of the Anthropocene.

- How does the magnitude and rate of human impact compare with the natural variability of the Earth's environment? Are human effects similar to or greater than the great forces of nature in terms of their influence on Earth System functioning?
- What are the socioeconomic, cultural, political, and technological developments that change the relationship between human societies and the rest of nature and lead to accelerating impacts on the Earth System?

Steffen, W., Crutzen, P. J., & McNeill, J. R. (2007). The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature? *Ambio*, *36*(8), 614–621. http://www.jstor.org/stable/25547826

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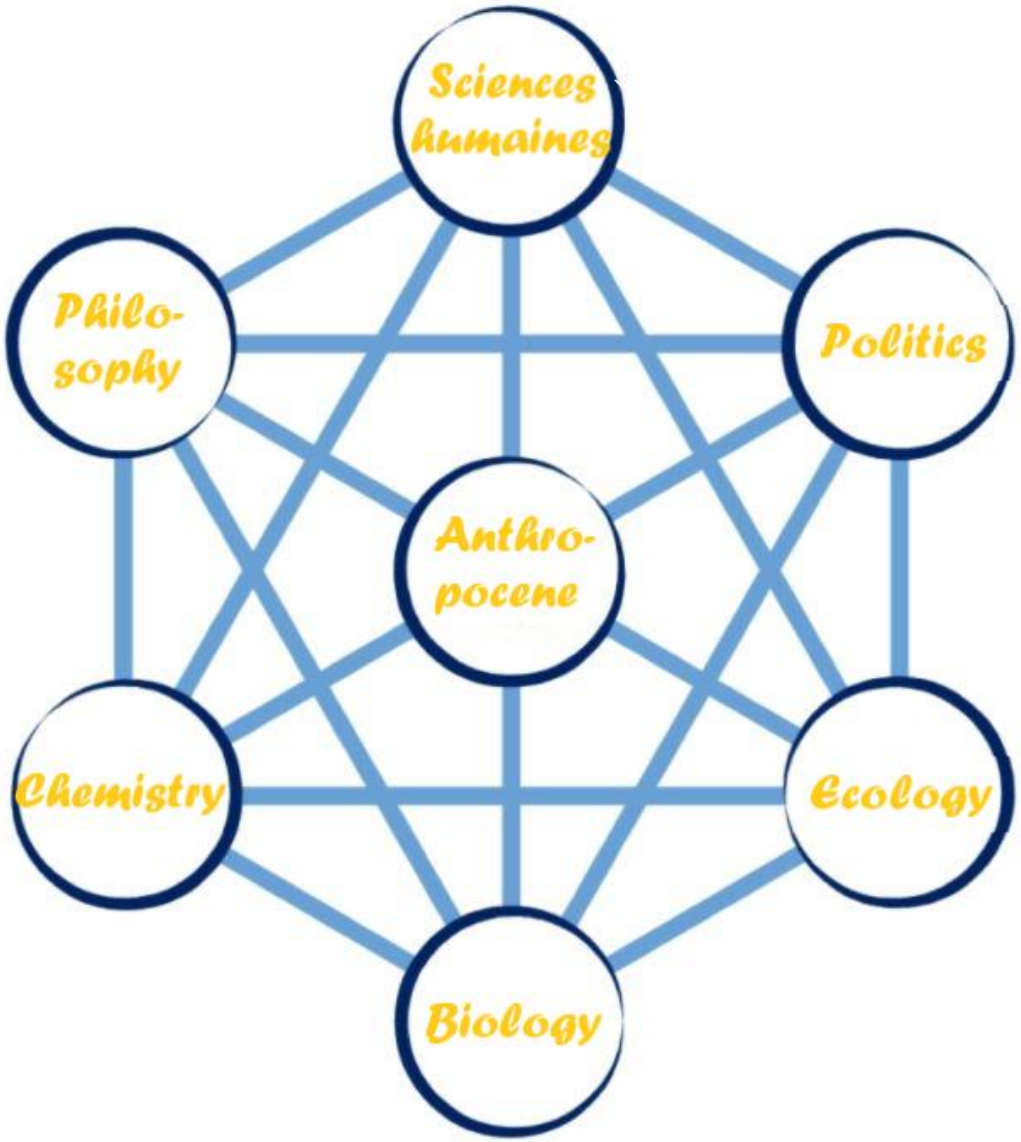
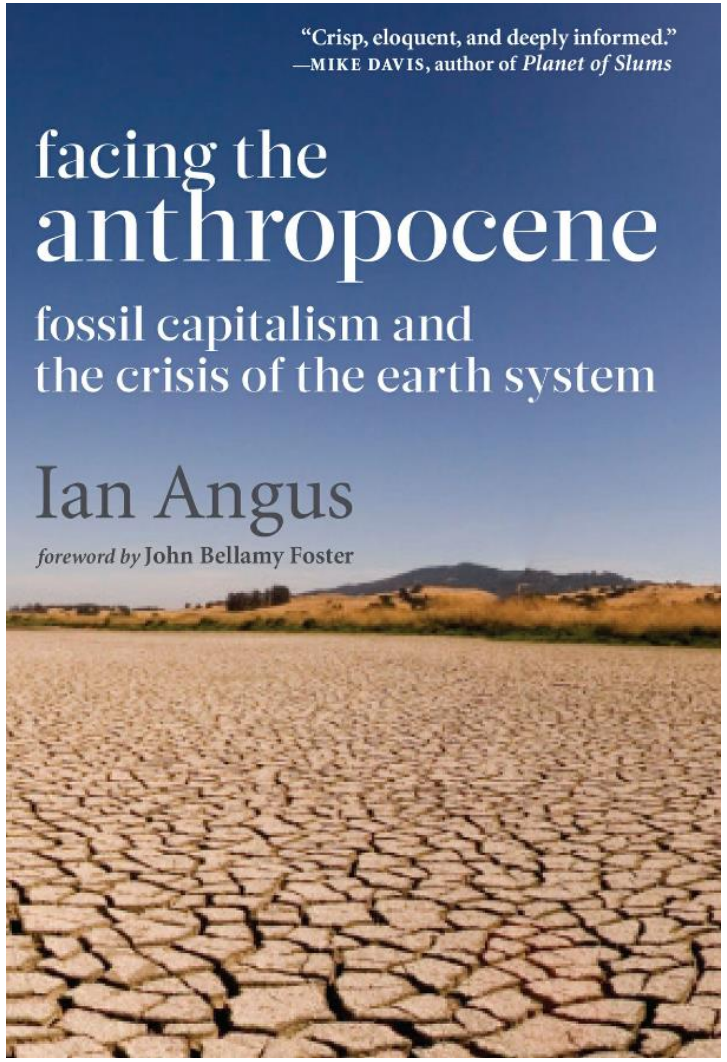
3. DIDACTICAL CONSIDERATIONS

➢ SYSTEMIC DIMENSION OF THE CLIMATE ACADEMY





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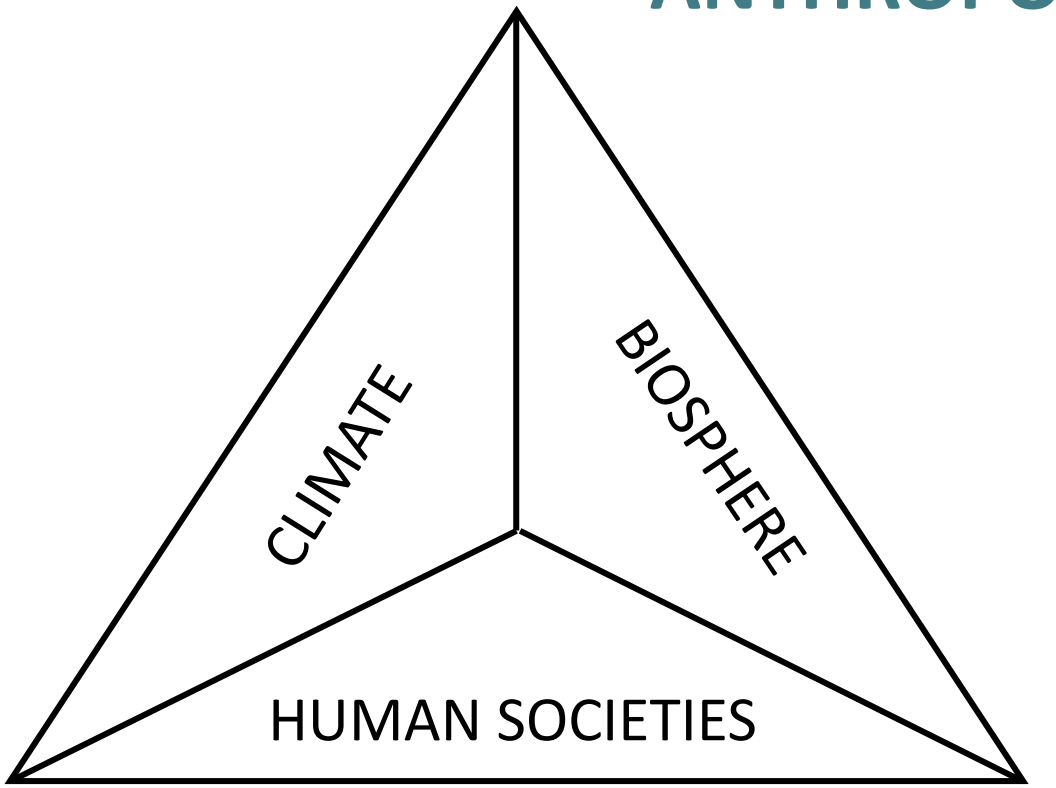
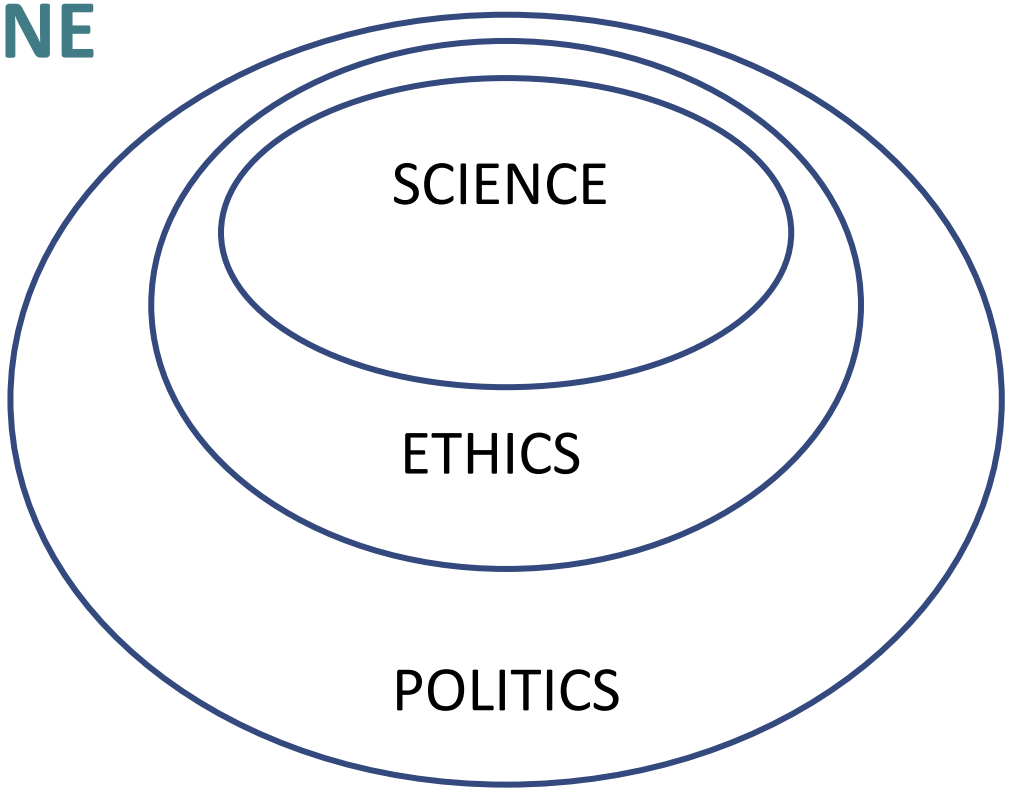
3. DIDACTICAL CONSIDERATIONS

➢ A NEW AND COMPREHENSIVE SUBJECT

ANTHROPOCENE





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3. DIDACTICAL CONSIDERATIONS

➢ LONG-TERM SCOPE vs CLIMATE EMERGENCY

Acceleration – Resonance
Hartmut Rosa

Crédit : Kimimasa Mayama/ dpa

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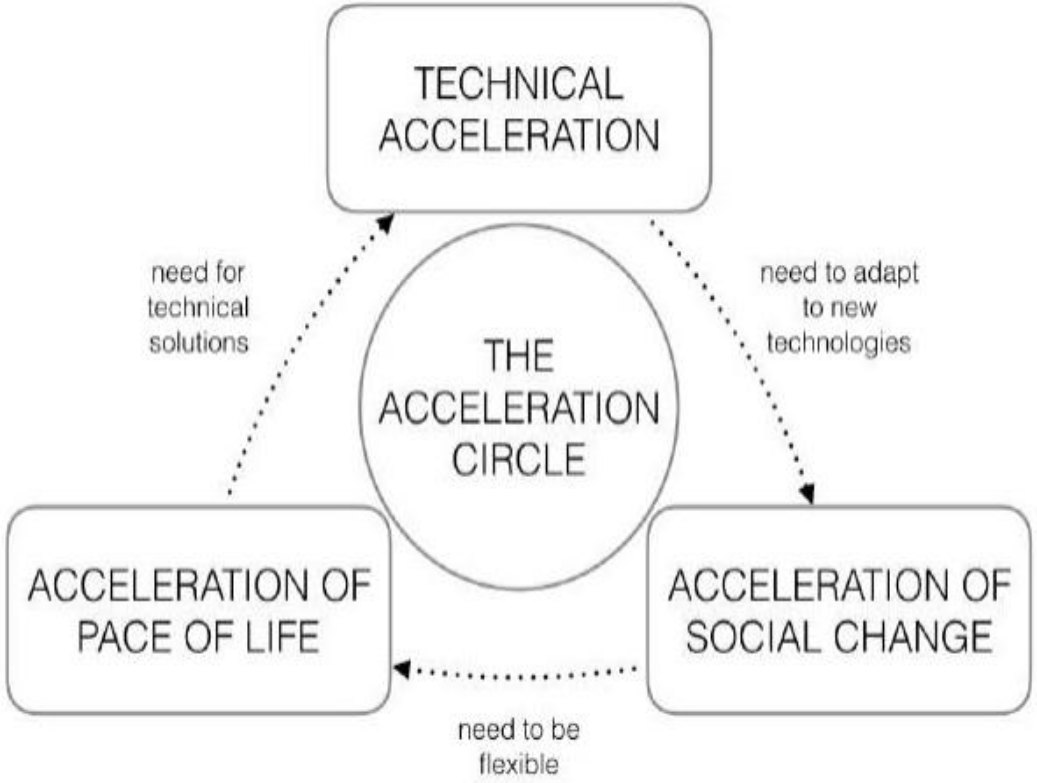
3. DIDACTICAL CONSIDERATIONS

➢ LONG-TERM SCOPE vs CLIMATE EMERGENCY

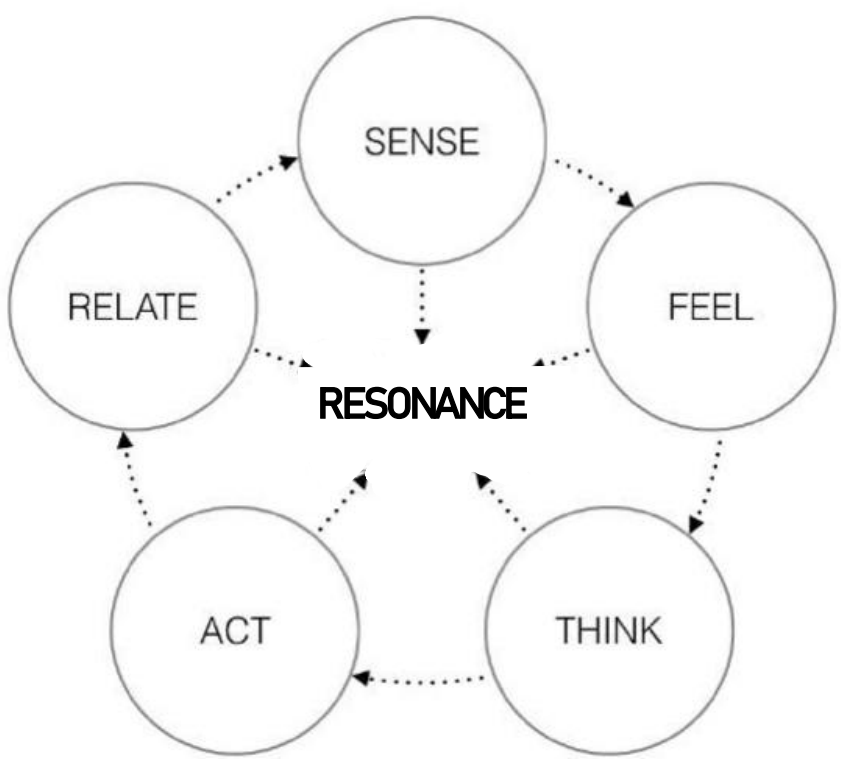
CIMMINO ALBERTCAN

A food retail company achieve fast growth in the social acceleration context while staying true to a slow food brand ideology? evidence from eataly's case

Master Thesis 2016/2017



Acceleration circle - Source: rework from Rosa, 2013



Source: rework from Schmitt, 1999

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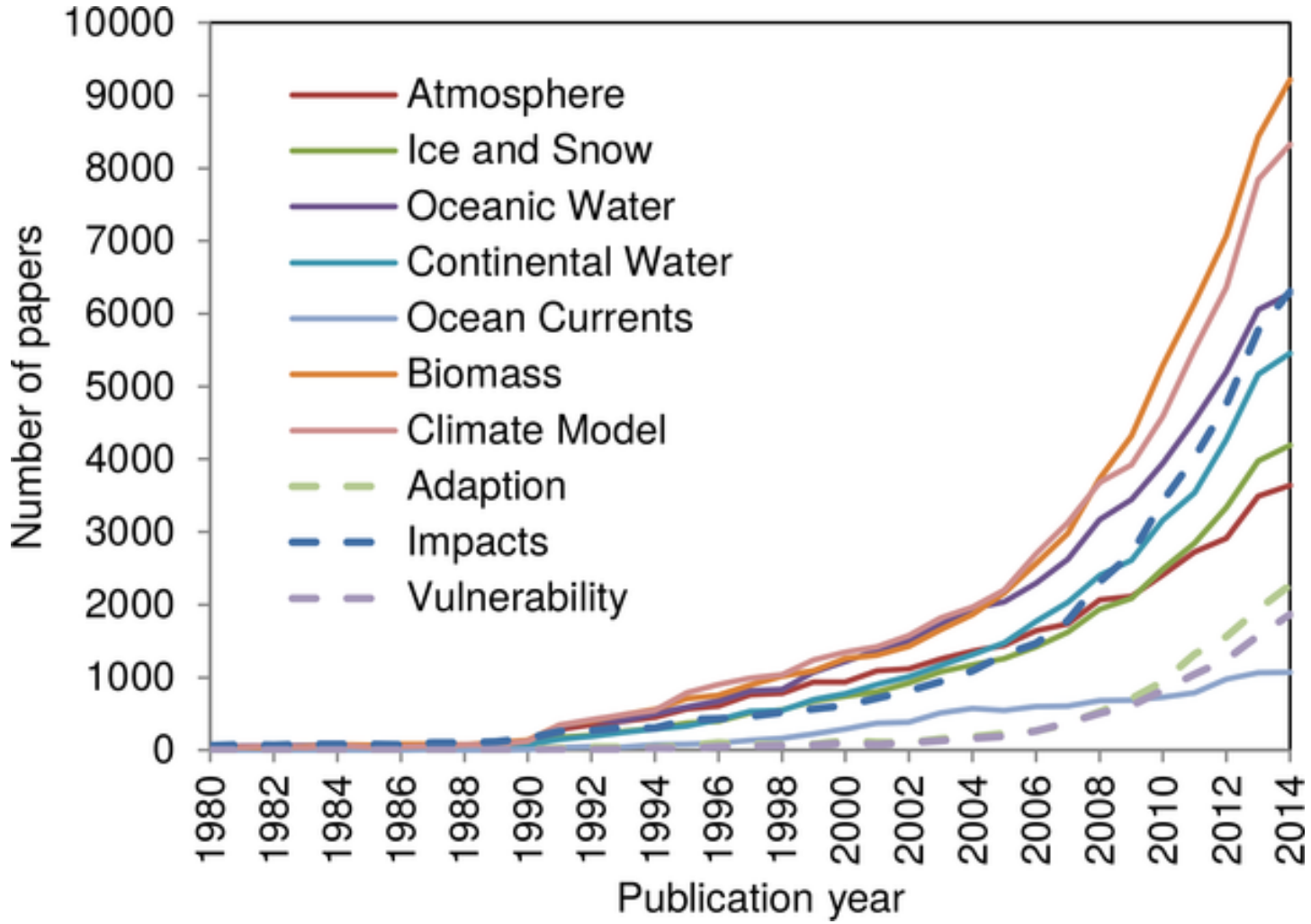
4. PERSPECTIVES AND CONCLUSION

➢ ACCESS TO RELEVANT DATA



Time evolution of the papers of the major subfields within climate change research.

Haunschild R, Bornmann L, Marx W (2016) Climate Change Research in View of Bibliometrics. PLOS ONE 11(7): e0160393. https://doi.org/10.1371/journal.pone.0160393
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0160393

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4. PERSPECTIVES AND CONCLUSION

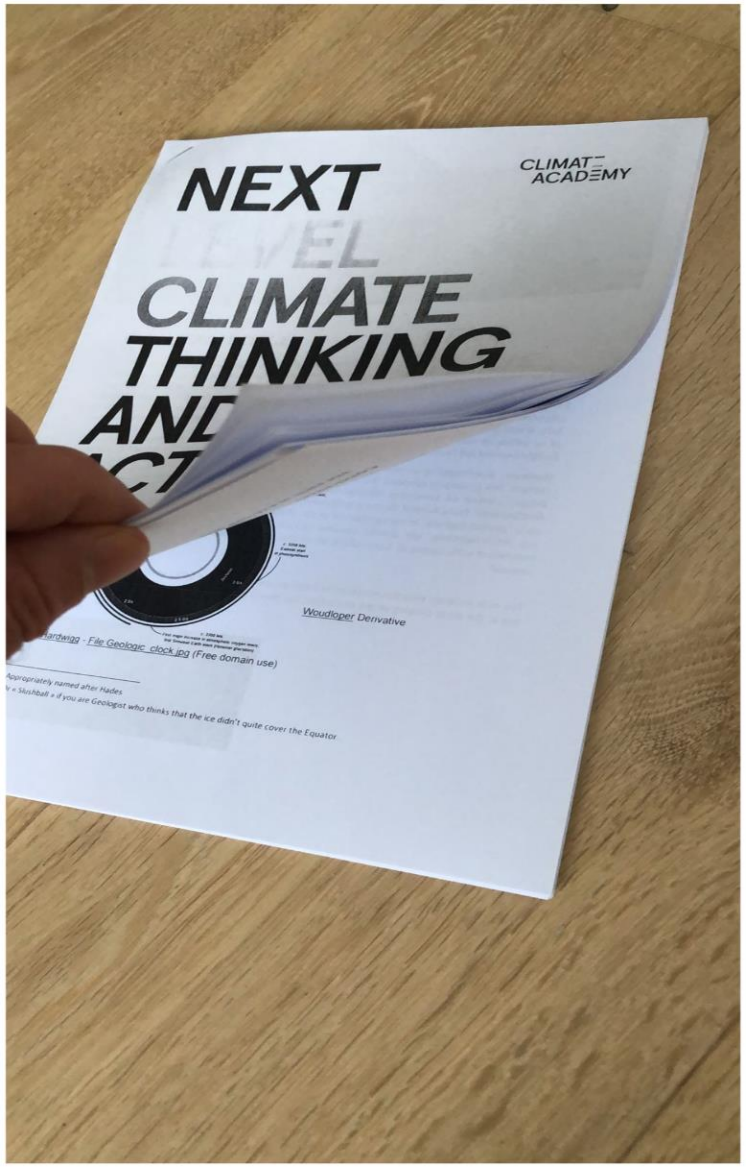
➢ REALISATIONS

Climate Academy Textbook

10 Chapters

25 minutes each. Hybrid Learning.

1. The Absolute Basics
2. Mass Extinction Events
3. Spaceship Earth
4. Vital Statistics
5. Tipping Points
6. Cut11 percent
7. The United Nations?
8. Who is responsible?
9. Paradigm Shift
10. System dynamics



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4. PERSPECTIVES AND CONCLUSION

➢ TRAINING CERTIFICATION

Certification

Aim : to become the **standard recognized certificate** on secondary school climate education / system thinking.

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