

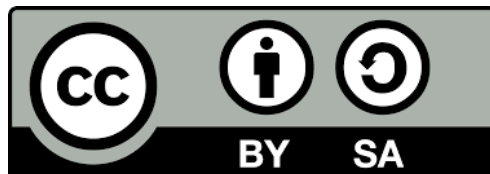
Alternative approaches in research for sustainable futures and imaginaries: Openness, Commons & Low-tech

SICT 2023

Sacha Hodencq

07/07/2023

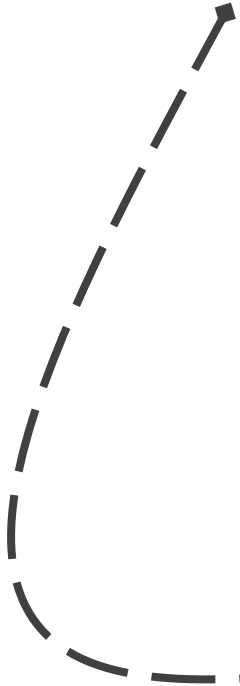
sacha.hodencq@univ-grenoble-alpes.fr



To discuss today...

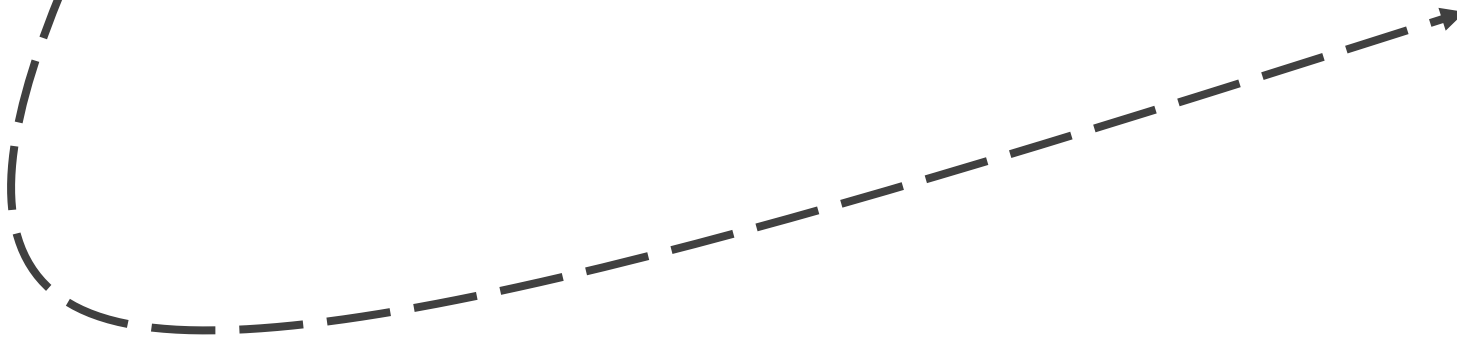
The journey of a young researcher

• Open Science



• Low-tech

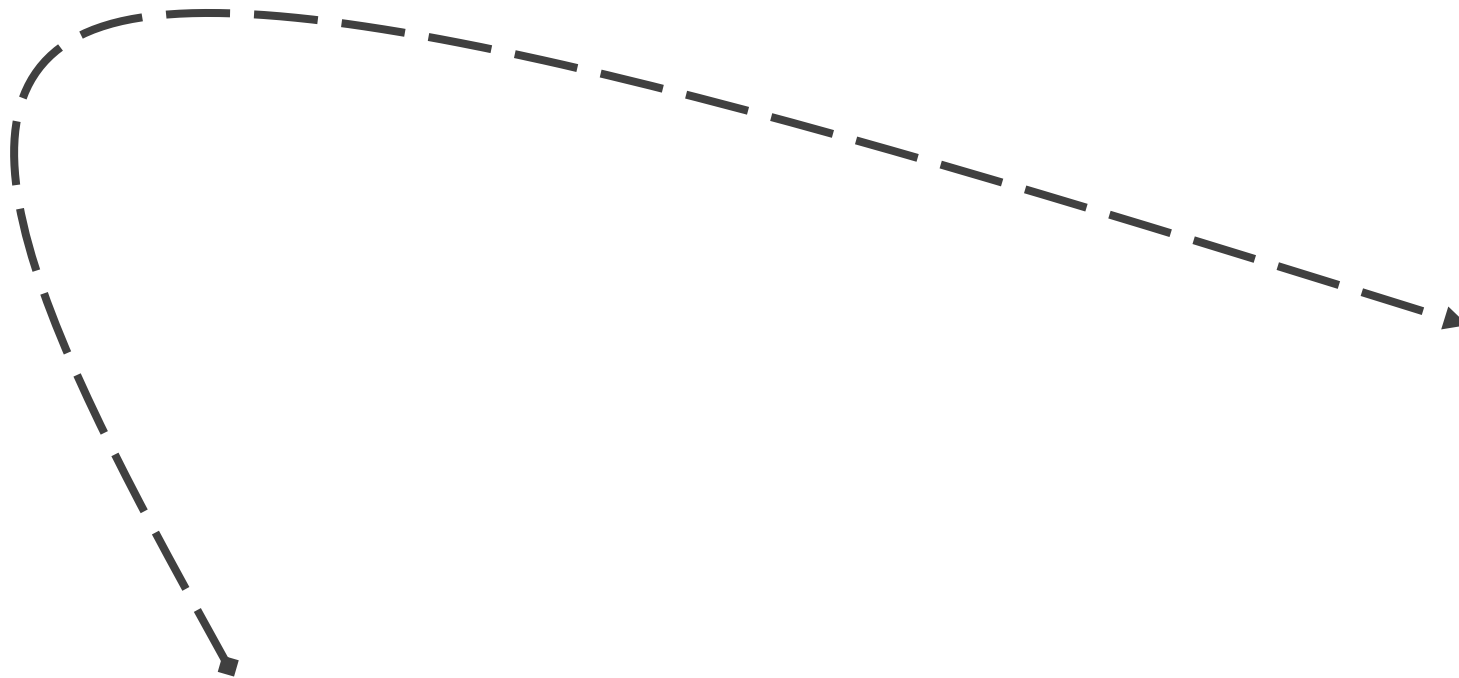
• Commons



To discuss today...

The journey of a young researcher

• Open Science



• Low-tech

• Commons

Low-Tech: definition(s)

. Semantic question: Low-Tech = Tech...

- “Not using the most recent equipment or methods” Cambridge Dictionary
- 1970’s: Appropriate (E.F. Schumacher); Conviviality (I. Illich) ; Autonomous (A. Gorz); Liberatory (M. Bookchin) ; Democratic (L. Mumford).
- Small scale, sufficient, environmentally-friendly, labour-intensive
→ **Non-neutrality of technology**

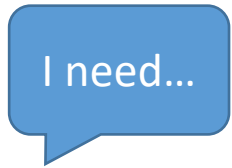
. Plural definition of Low-Tech

- [Low-Tech Lab](#) (2014): **useful, sustainable, accessible**;
- [ADEME](#) (2022): ...& local, favouring autonomy;
- Philippe Bihouix: sufficient, dignified, **societal concept** [Bihouix 2014].

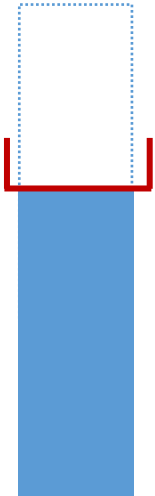


[Low-Tech Lab](#)
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Low-Tech: definition(s)



Useful



Low-Tech: definition(s)

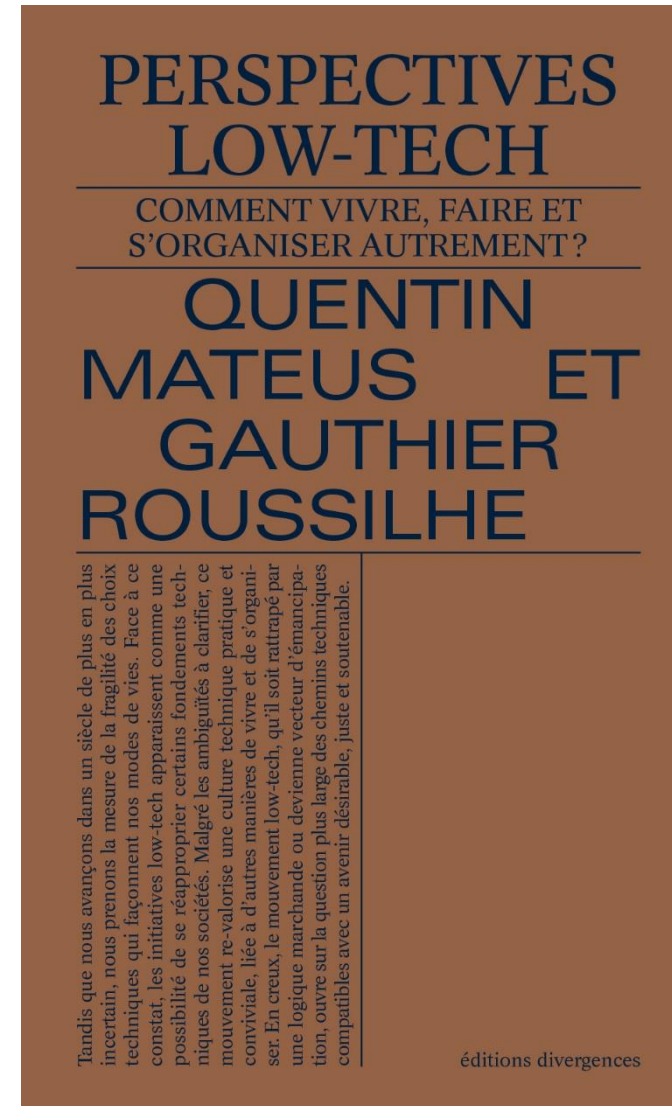
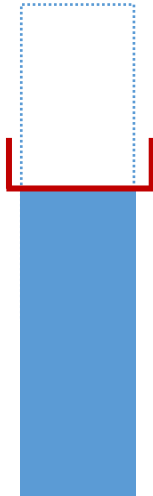
I need...

~~Useful~~



What is sufficient for us
to flourish collectively
in a constrained world?

Democratising technological choices



Perspectives Low-Tech - 2023
Quentin Mateus, Gauthier Roussilhe
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Examples of Low-Tech

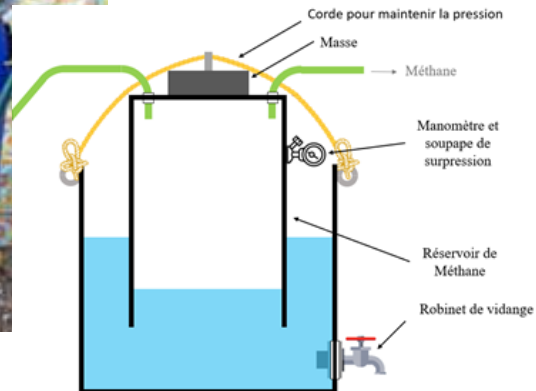
Solar hoven & bakery



[The Low-Tech Lab investigations](#)

Bio methaniser

© [Julien Lemaistre](#) - Low-tech Lab,



Dry toilets collection



© [Julien Lemaistre](#) - Low-tech Lab

Examples of Low-Tech



Miroir piloté - Heliostat - Lumière
(et chauffage) côté Nord !



Tubes de stérilisation solaire



Phytoépuration eaux usées



Chauffage solaire version ardoise



Pédalier multifonction



Filtre à eau céramique



Poelito - Poêle de masse semi-
démontable



Serre tunnel 20 m2



Les Pleurotes sur marc de café et
copeaux de bois



Four solaire (cuiser type boîte)



Serre à structure PVC



Lessive à la cendre



Nettoyant à sec



Conception et réalisation d'un
séchoir solaire autonome



Graines germées



Frigo du désert

<https://wiki.lowtechlab.org/>

Personnal experience of Low-Tech

• Towards sustainable futures: **DO NO HARM**

Socio-technical alternatives

• **Effective solutions**

- Contexts and uses
- Transdisciplinarity
- A floating concept in time and space

• **Beyond the quantitative: empowering people**



Source : [© Julien Lemaistre - Low-tech Lab.](#)



***COMMUNITY LOW-TECH
RESEARCH & TEACHING***

Since 2020, >150 people



<https://forum-lowtre-ecosesa.univ-grenoble-alpes.fr>

LOW-TECH in RESEARCH

- **Low-Tech Research & Research on Low-Tech**
- First instances in urban planning, ergonomics, sociology, metallurgy, electrical engineering, ... and in institutions.

LOW-TECH in RESEARCH

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TEACHING

- Responding to student requests
- Ethics & history of technology
- Completing the cycle from theory to practice
- Educational objects, manual work
- Compatible with the school environment

low tech +
sustainability

LEARNING IN LOW-TECH TO PROMOTE SUSTAINABILITY



<https://lt4sustain.eu/>

Low-Tech & ICT

Or how to look at digital technology through the lens of Low-Tech?

No Low-tech ICT ([Stéphane Crozat](#)): social and ecological impacts

• Unsustainable: materials & waste

- “Zombie” technology : frenetically invading the world to the detriment of humans and the biosphere. And hard to kill! ([José Halloy](#))
- Accessible (for assembly, services, etc.)? Part of what we need to flourish?



Low-Tech & ICT

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• **Holistic nature of ICT**

"Are we going to look back 50 years from now and see how we designed our world around digital, with the same regret that people look back at how we designed cities around cars ?"

([Ben Reinhardt on Twitter](#))

- People are attached to it and are working with it.

• Need for **democratic choices** about what we're getting rid of [Monnin 2021]



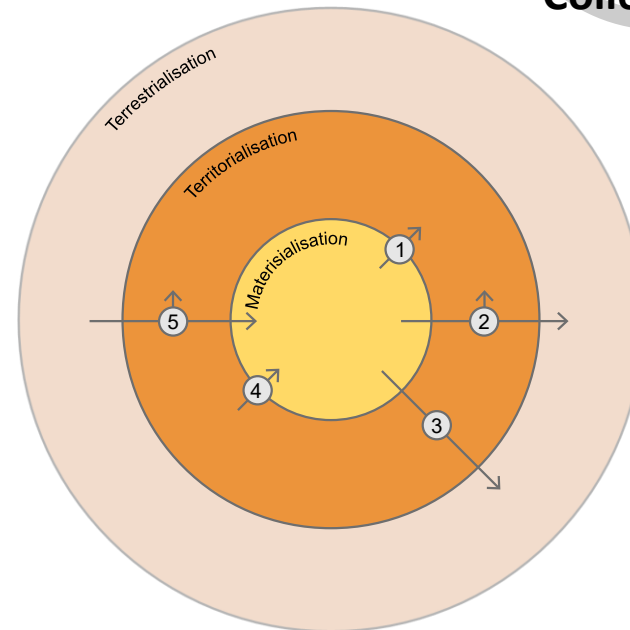
Low-Tech & ICT

Or how to look at digital technology through the lens of Low-Tech?

→ Dismantling

→ Low-Technicising
([Stéphane Crozat](#))

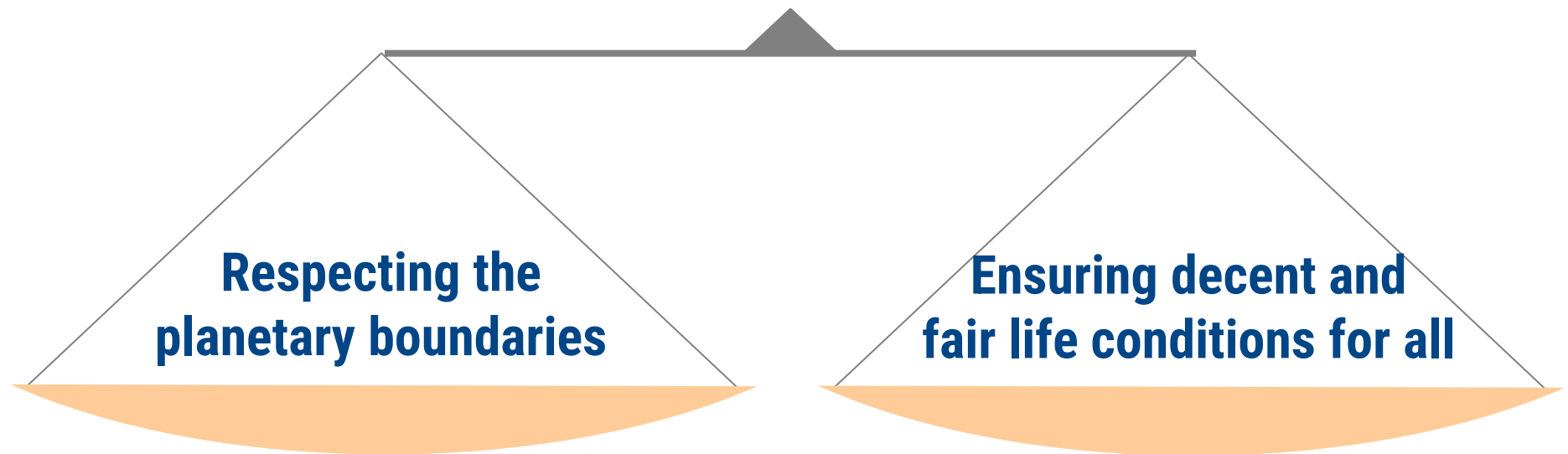
→ Territorialising
([Gauthier Roussilhe](#))



Thanks for listening

What questions does this raise?

Towards sustainable futures



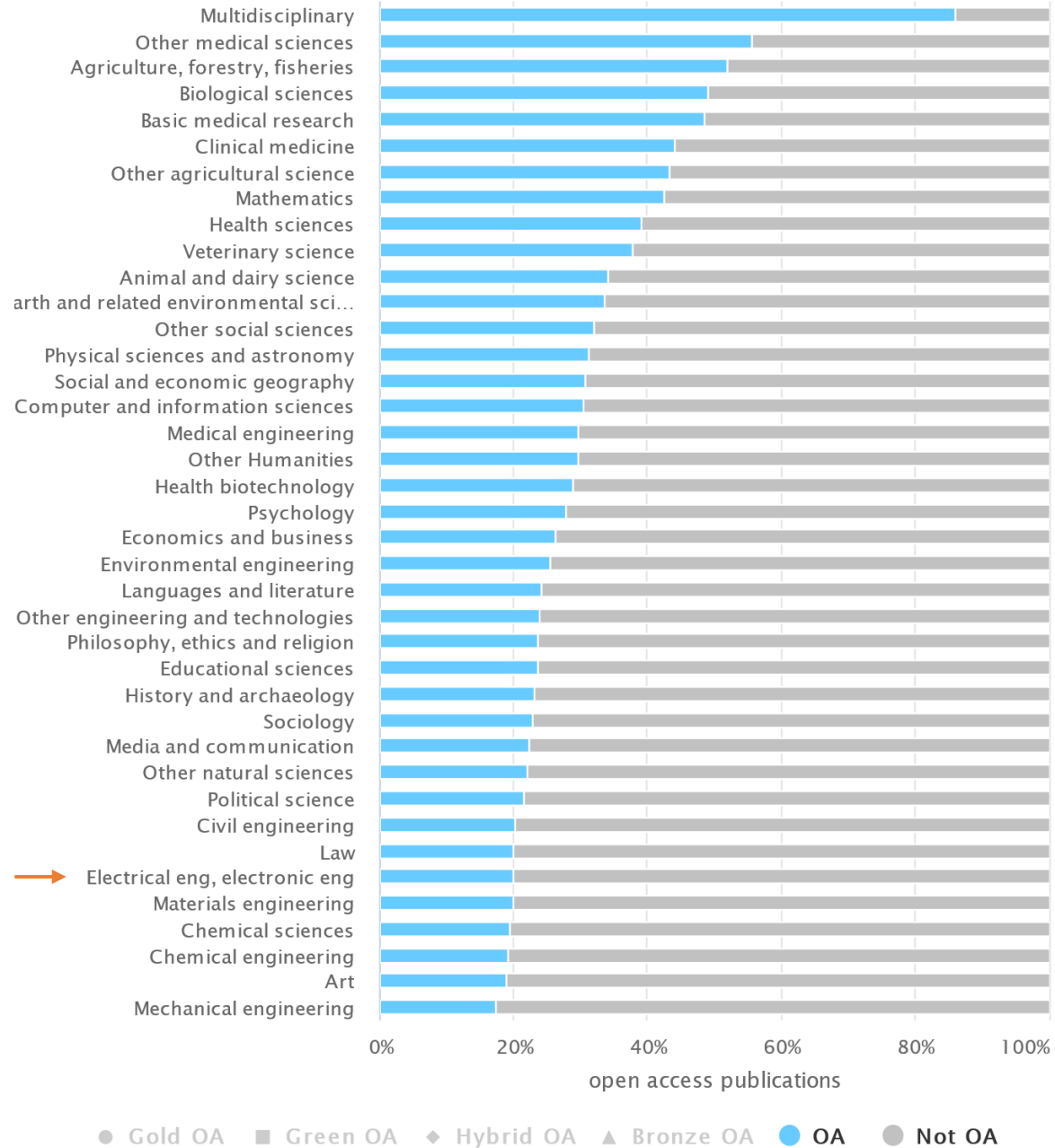
→ *Is research up to face such challenges?
Can it provide useful knowledge?*

A limited access to knowledge

Open-access articles per field

Source: EU Open Science Monitor,
2009-2018

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Issues for research and society



Studies are opaque,
not reproducible
[RAN_18], or even
biased or erroneous
[REP_15];

Parallel efforts
on common issues:
wasted resources
[RAN_18] and difficult
collaboration

Trust crisis
from citizens and
politicians

Barriers to adoptions
from public institutes
and bodies that cannot
access commercial
knowledge and tools

Open Science definition

Open Science is [FOS]:

- A **movement** to make scientific research, data and dissemination accessible to all levels of a questioning society.
- **Knowledge** that is transparent and accessible, shared and developed via collaborative networks.

The 5 Rs of open content definition

R

retain
revise
re-mix
reuse
redistribute

In concrete terms: **opening the whole research process**, both in practice and legally.

Open Science interests

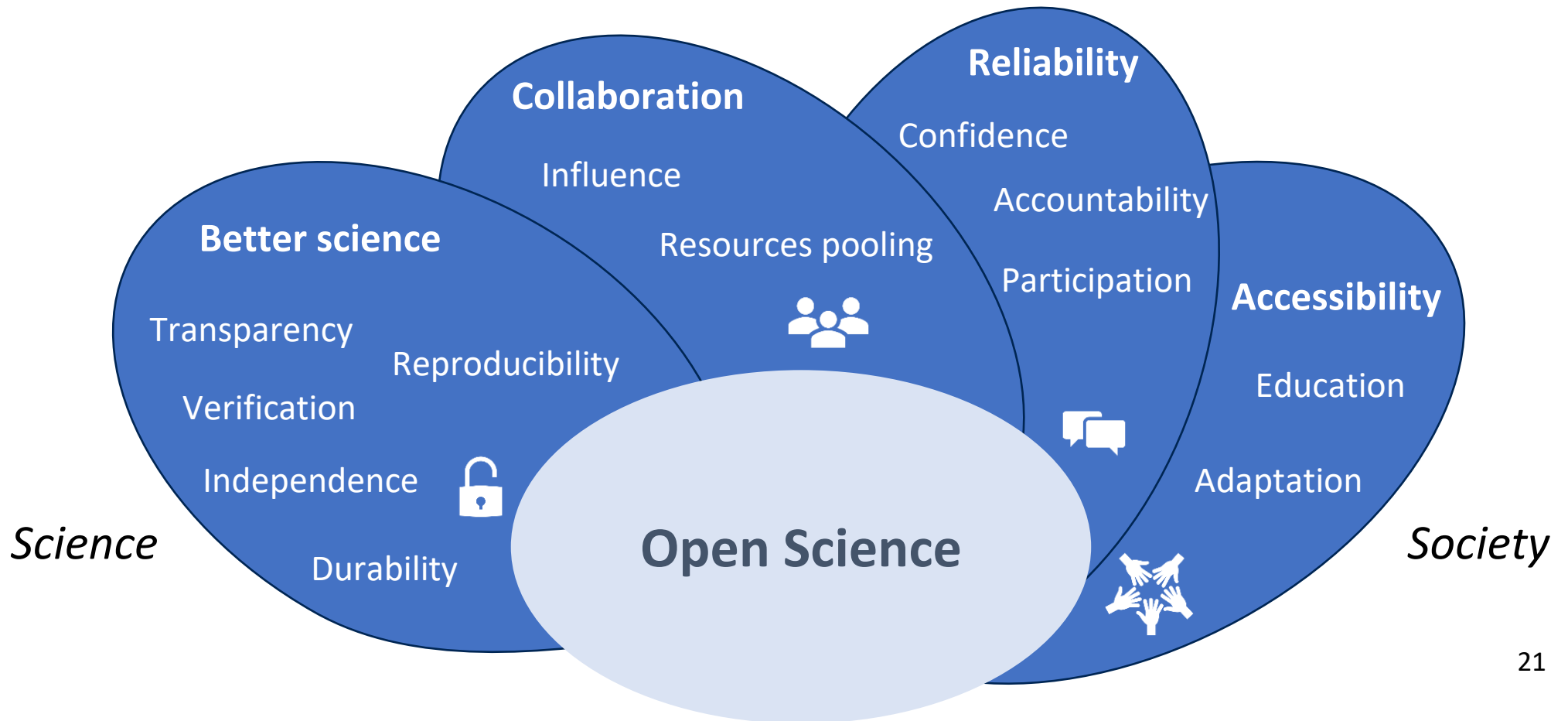
ISSUES

Studies are opaque

Parallel efforts

Trust crisis

Barriers to adoption



Personal experience of Open science

Energy modelling field

.Transparency is new compared to mainstream practices

– Sustainable access and common choices

. A rigorous, rewarding process that encourages *reflexivity*

. A paradigm shift

– From competition to collaboration

General barriers: lack of awareness, lock-in strategies, political incentives.

The limits of (open) science

Making science open, is it enough to face crises?

The limits of (open) science

Making science open, is it enough to face crises?

1. Open science enables reflexivity and research assesment, but does not ensure a **responsible research**.

→ **Probably necessary, but not sufficient.**

2. We are facing **social and ecological crises = complex issues**

- Mutually influencing variables,
- A context of great uncertainty,
- Multiple players with divergent value systems.

→ **Science appears to be ineffective for decision-making in situations of conflict of interest and high uncertainty [Pielke 2007].**

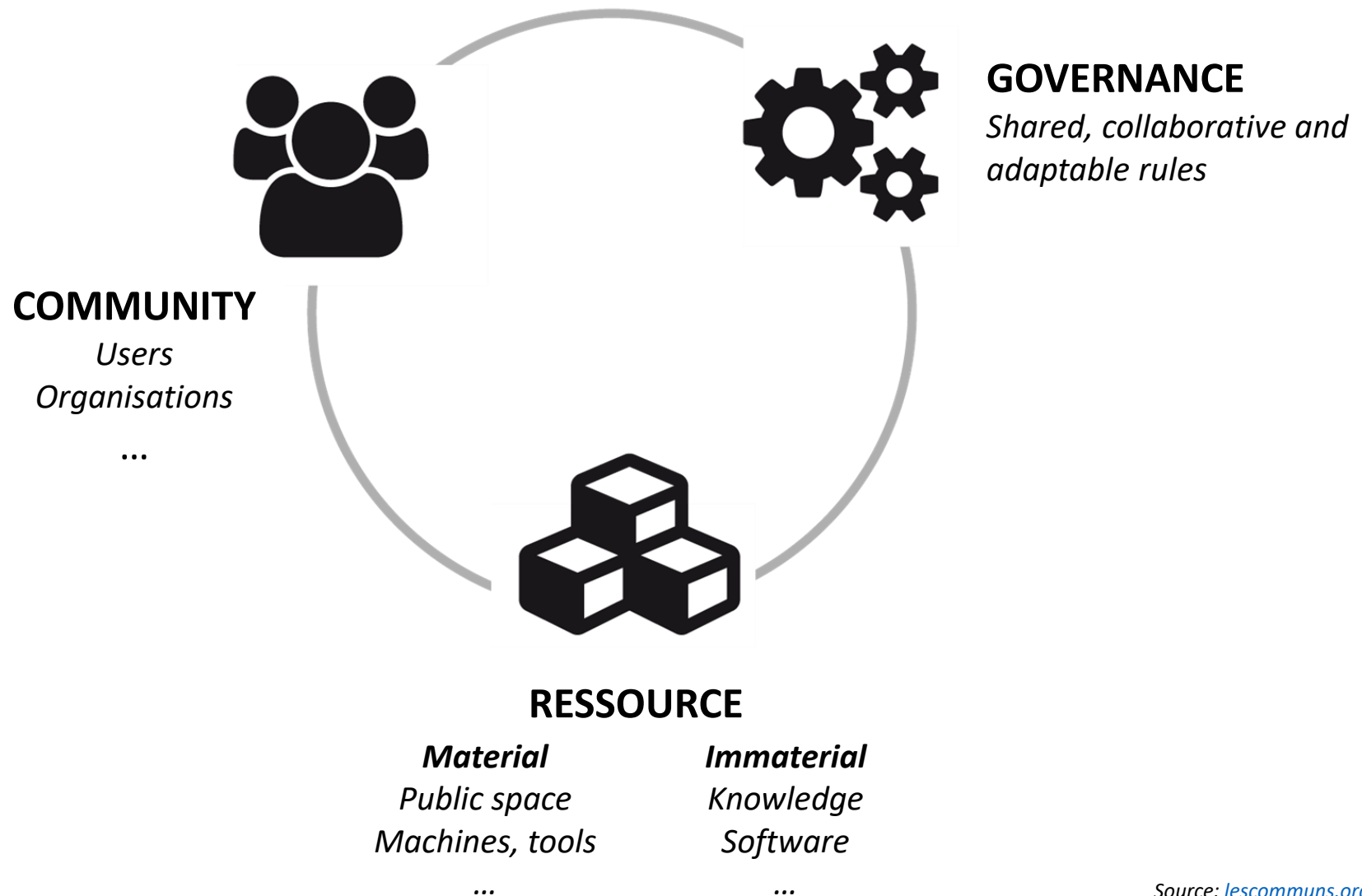
Decision making is a political process → governance tools.



The scientific research: a Common?

Preliminary thinking...

Collective exploitation mode can be efficient, just and sustainable [Ostrom 1990]



The scientific research: a Common?

Community

- Research staff
- People in the Field
- People involved



The scientific research: a Common?

Resource



- Knowledge
- Human resources
- Materials, facilities

The scientific research: a Common?

Governance

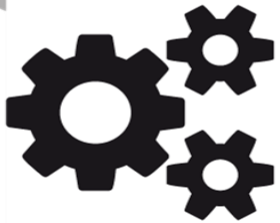
- Access to knowledge
 - Open Science practices



The scientific research: a Common?

Governance

- **Access to knowledge**
 - Open Science practices [Usage Right license?](#)
- **Research orientation**
 - *Horizon Terre* [Science Citoyennes]
- **Scientific activities in and out of laboratories**
 - Citizen Science [ECSA]
- **Knowledge development**
 - Deliberation [Jaeger], Procedures [Callon]
- **Materials development and uses**
 - Large instruments, ICT



The scientific research: a Commons?

Materiality of informational Commons

In the governance, a tension between [Broca 2015] ...

- **Knowledge produced via the scientific research**

- **Information Commons:** *free circulation of knowledge favours its enrichment*

- **Major research instruments and digital infrastructures** [Roussilhe; Monnin]

- **Negative Commons:** *need for democratic choices about what is disposed of.*

Some takeaways

- **Low-Tech as socio-technical alternatives**

- Democratising technological choices

- **Open science seems necessary and needs to be developed in research**

- Need to raise awareness

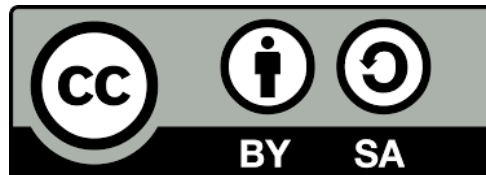
- **Question of the role of researchers facing crises**

- Governance is necessary; Commons can be a path.

- **Need to embody these concepts!**

Thanks for listening

What questions does this raise?



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Low-Tech: definition(s)

. Accessible?

In terms of

- **Knowledge:** open hardware principles, make knowledge open, accessible and understandable for anyone.
- **Skills:** the design is doable with limited skills.
- **Finance:** the Low-Tech can be developed for free or with limited budget.

Open Hardware principles

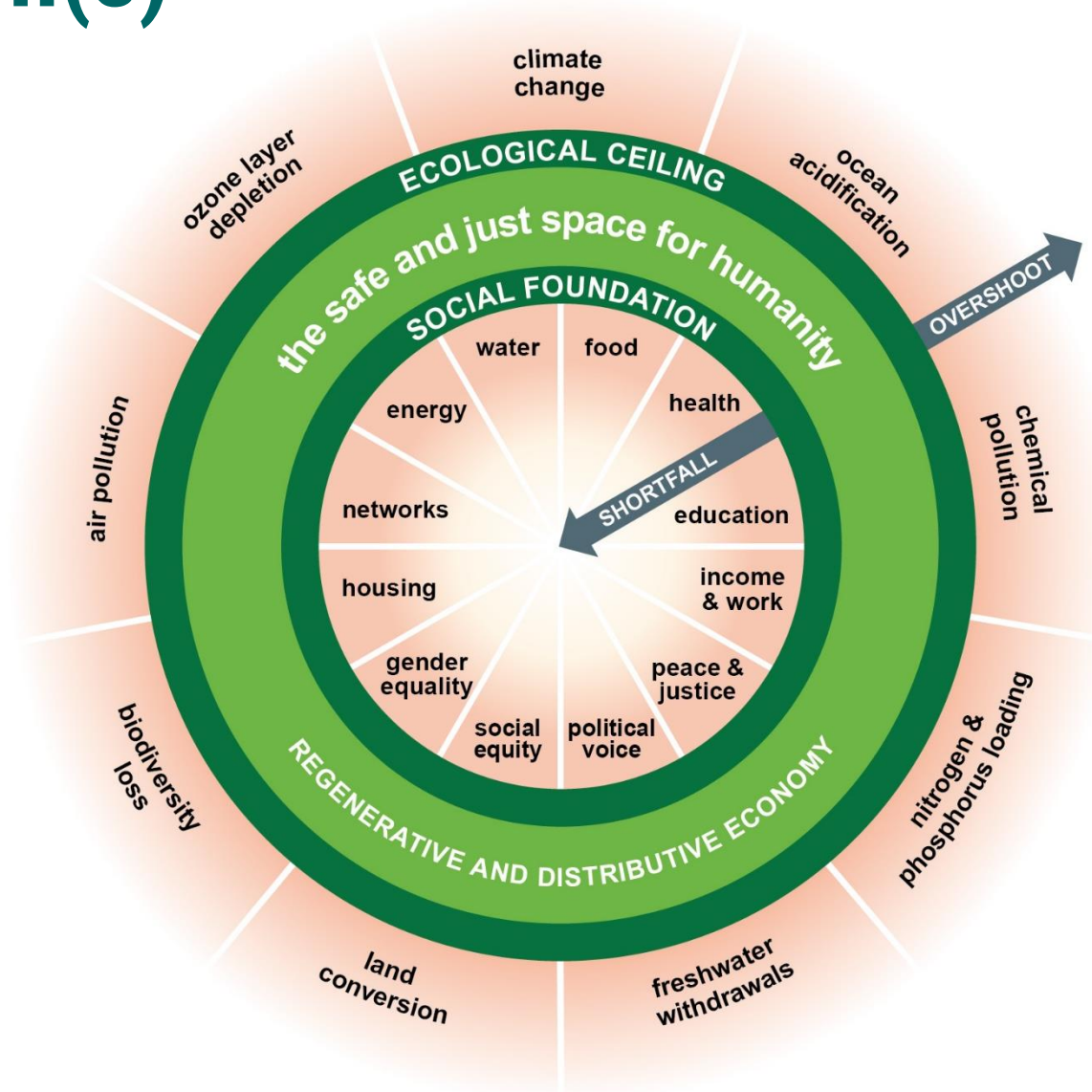
A low-tech must be one that as many people as possible can make their own – both technologically and financially. As such, you must be able to make it and/or repair it locally, so its functioning principles must be simple to understand and its costs adapted to a large part of the population. It encourages the population to be more independent on all levels, and value or work are more evenly distributed

Low-Tech: definition(s)

. Sustainable?

→ Respecting the planetary boundaries

→ Ensuring decent and fair life conditions for all



Absolute sustainability principles

Hjalsted et al.

[DoughnutEconomics](#) – CC-BY-SA 4.0

Low-Tech related initiatives out of France

- **Low-Tech Journal, Kris de Decker** <https://solar.lowtechmagazine.com/>
- **Open Source Ecology** <https://www.opensourceecology.org/>
- **Appropedia** https://www.appropedia.org/Welcome_to_Appropedia
- **Cosmolocalism** <https://www.cosmolocalism.eu/>

A responsible research

Sustainable development is a policy that has been pursued by governments for decades, yet the situation continues to worsen. The position of scientists needs to be questioned: while research and innovation can provide ingenious solutions, they are also at the root of the exploitative excesses we have seen in recent years.

Laure Teulières, [Atécopol](#), student [COP2](#), January 2021

Reflective posture: How did we get here? Why hasn't anything changed?

Putting an end to the 'Research as Usual' towards a **responsible research**.

- That takes responsibility for its involvement in a context,
- That assesses the consequences of its actions.

... that evaluates and compares future alternatives to guide through deliberations & decision making.

The scientific research: a Commons?

Preliminary thinking...

- **Using the Commons for an efficient governance of research.**

- Public / Private / Common

- **Political principle for an ecological & democratic requirement [LAV].**

- Tackling the appropriation of resources,

- Giving citizens back control over their activity.