

HEC MONTRÉAL

Paludiculture – first results from a global survey of practical paludiculture initiatives

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Rationale for the survey

- Paludiculture, as an explicit concept, is of recent vintage (Hans Joosten, Wendelin Wichtmann and colleagues)
- There is an emerging interest around the globe
- Emerging knowledge base: emissions from peatland, impact on water quality etc. (prevailing natural science perspective)
- **Proposal : study paludiculture via innovation lenses from the social sciences**
- Rationale of the survey:
 - What do we know about practical paludicultures around the world?
 - Their goals and contexts?
 - Their benefits and innovations in practice?
 - Opportunities and barriers?

Conceptual approach: Paludiculture as a critical sustainability innovation mission

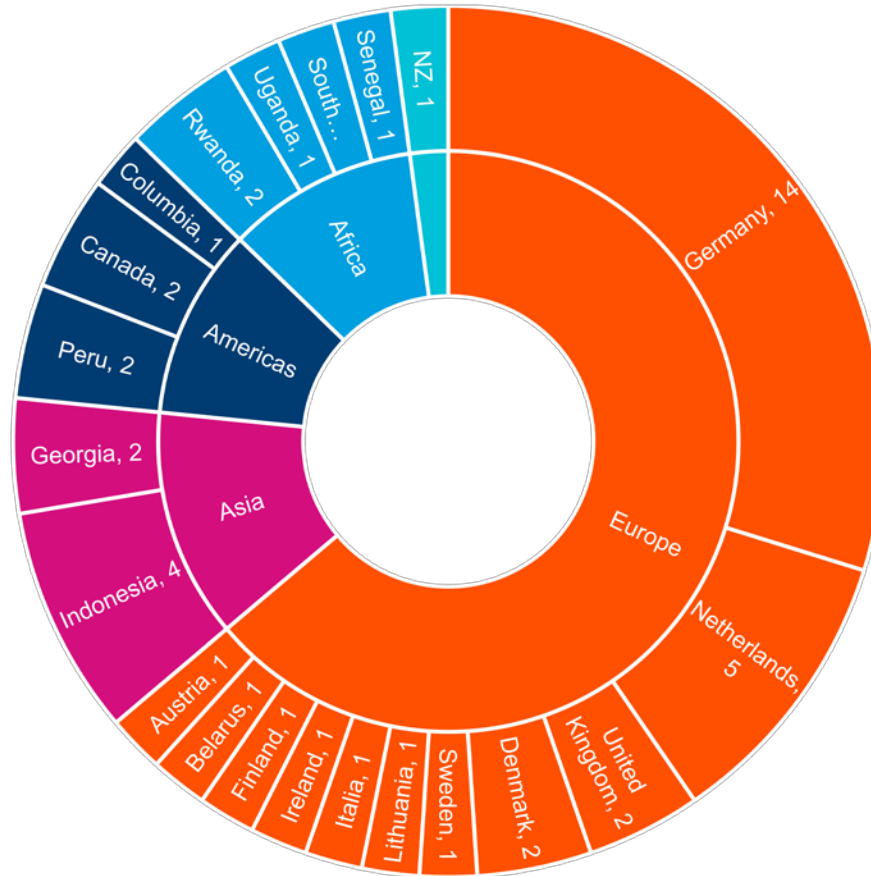
- **Sustainability goals** (e.g. Paris, SDGs) and sustainability conceptions
- **Innovation mission** “between” projects and abstract goals (“SDGs”); various domains of the mission: sphagnum farming for horticulture, wet agriculture on rewetted land, traditional wet land use, restoration of drained peatlands and conservation of intact ones
- **Critical:** a) as including innovation and exnovation, restoration and resistance; b) path-creating (not just market-creating)
- **Main conceptual sources:** Mazzucato (2018), Beckert (2010), (Kemp et al. 1998), for elaboration see Ziegler (2020)

Methodology

- Target
 - Practical paludicultures around the world.
- Field
 - Qualtrics-Survey open between October 16th 2020 and January 9th 2021
 - Survey invitation via:
 - Projects data base (personal emails) created via own research
 - Greifswald Mire Center Paludiculture newsletter
 - FAO/Global Peatlands Initiative
 - Ramsar Wetlands Forum
- Sample of a long survey (30-45 minutes)
 - Total sample varies because:
 - Some respondents have skipped questions.
 - Some respondents did not fill all the sections of the survey.
- Limits
 - There was a technological barrier in reaching traditional projects in Asian and African countries, hence there is potential overrepresentation of European and research lead projects.
 - Our analysis is based on survey responses (and some follow-ups)

*Big thank
you to all
who took
time
responding
to the
survey!*

Results: Participating initiatives and their location



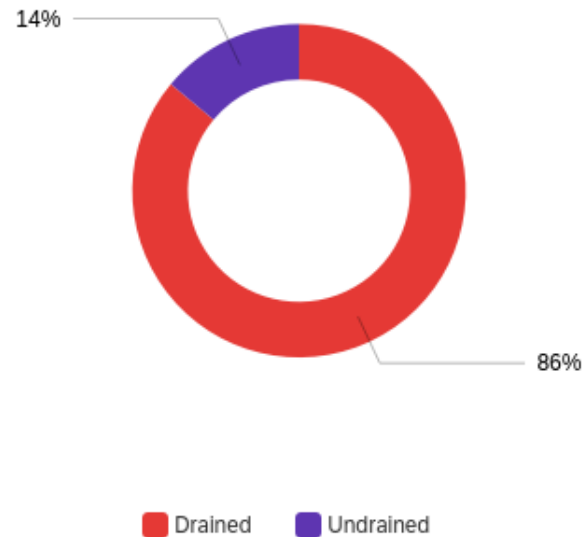
■ Africa ■ Americas ■ Asia ■ Europe ■ Oceania

Base : Total sample (n=47)

Q3: What is the location of your site?

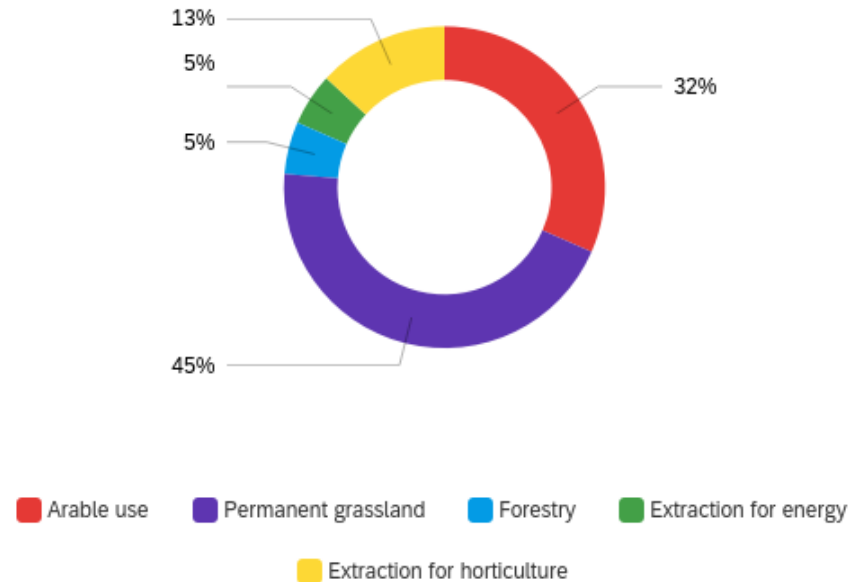
Results: Sustainability

A necessity-driven innovation



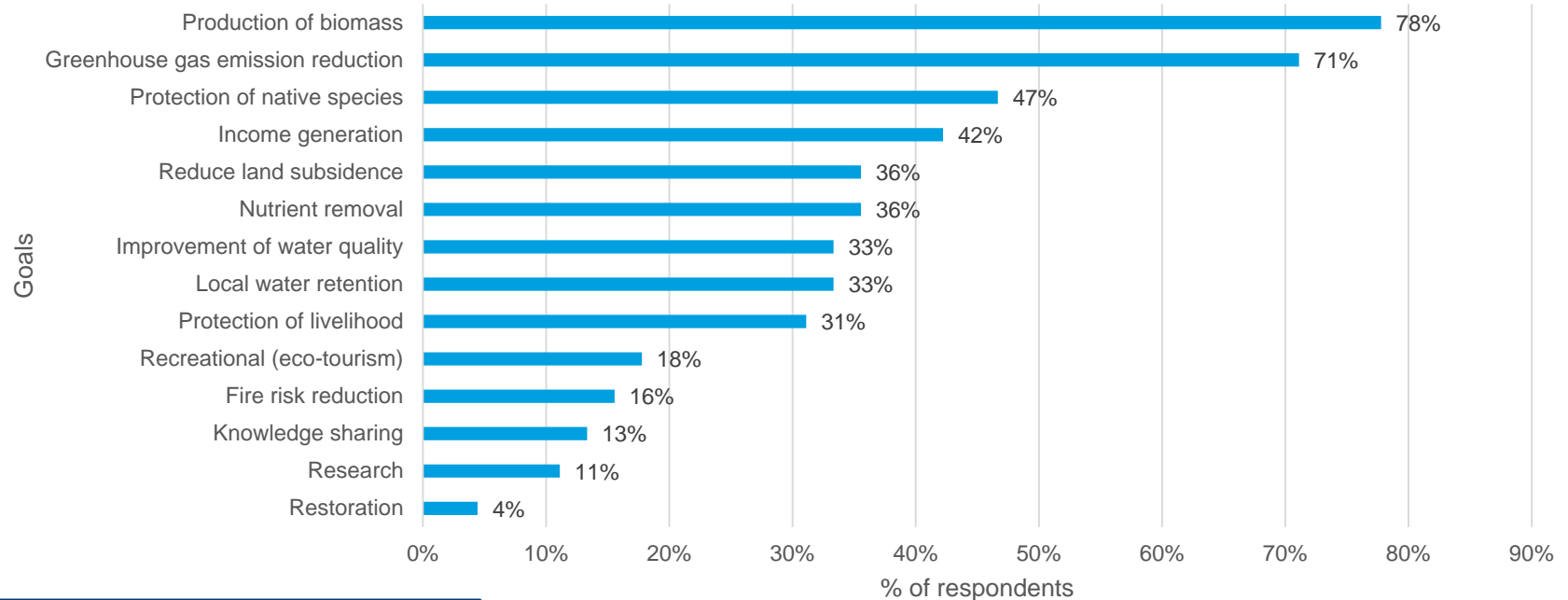
Results: Sustainability

- Agriculture, and to a lesser extent horticulture, forestry and energy drive the demand for drained land
- Change in land use due to agriculture is one of 5 direct drivers of current unsustainability (IPBES 2019).



Results: General characterization

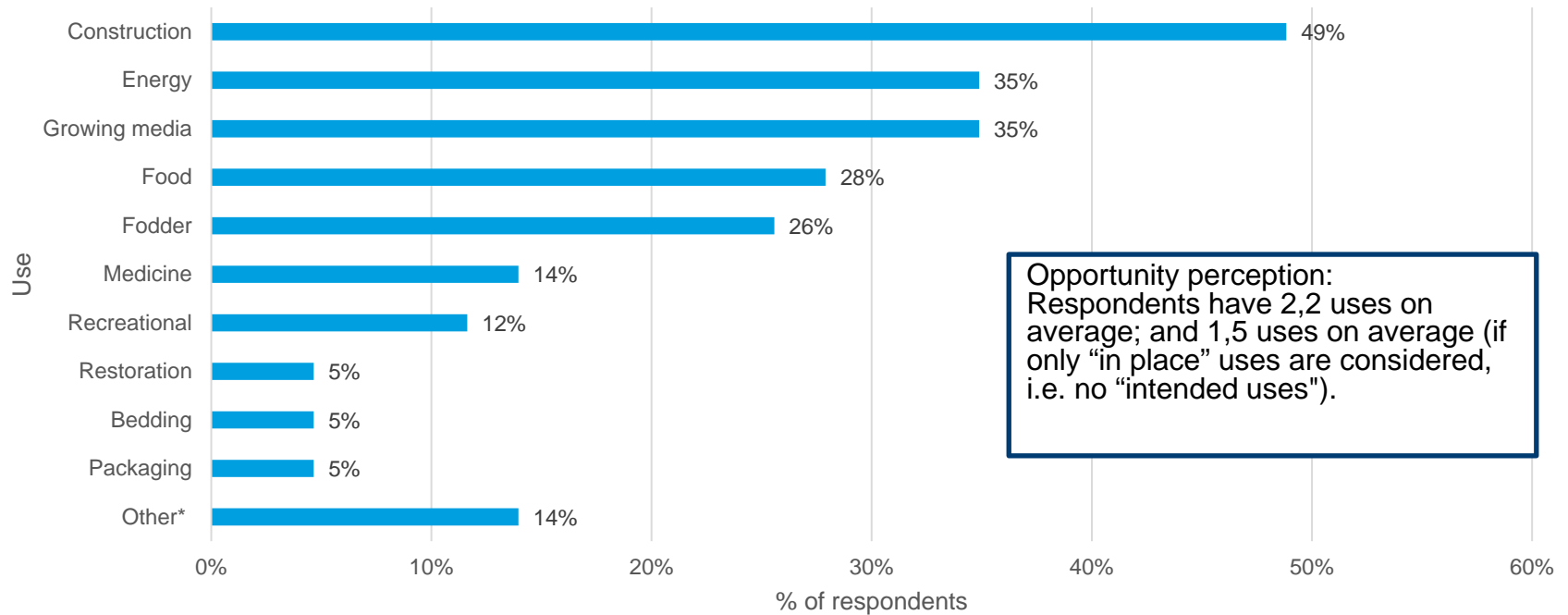
Multiple Goals of the paludicultures



Respondents have 4,6 goals on average

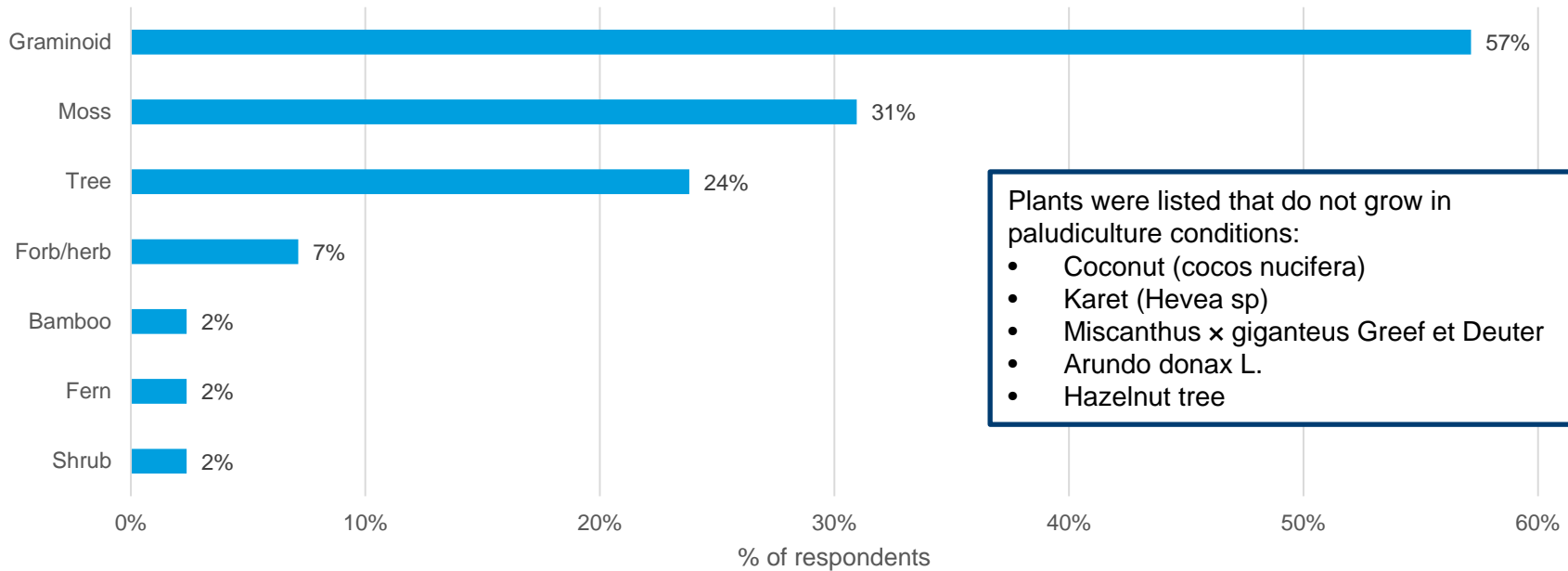
Results: General characterization

Multiple uses of the biomass



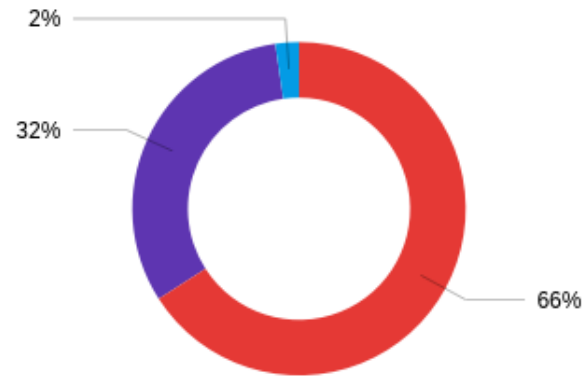
Results: General characterization

Plant types (coded)



Results: General characterization

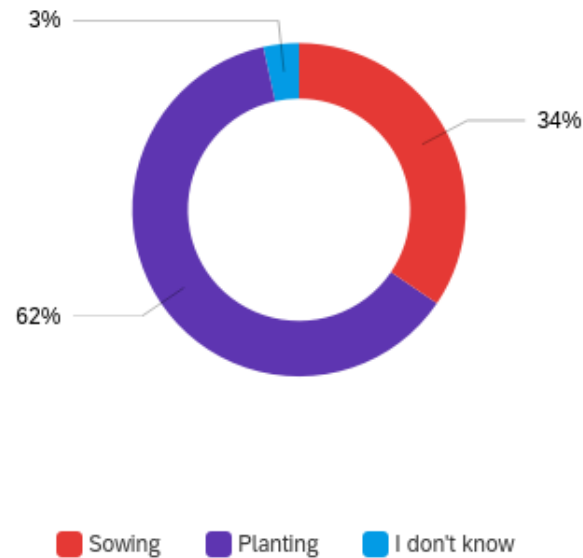
Grown or developed by succession?



■ Grown the paludiculture (target oriented) ■ Developed by succession ■ I don't know

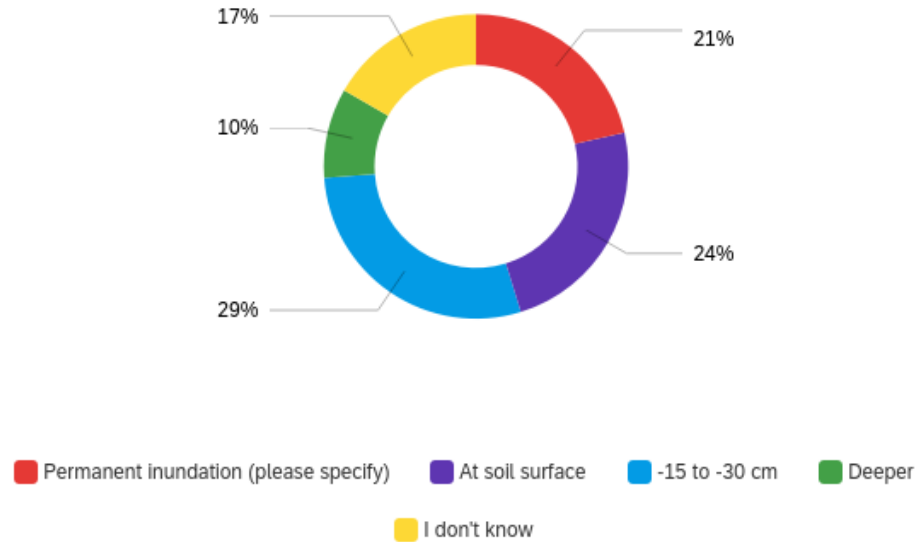
Results: General characterization

Sowing vs planting



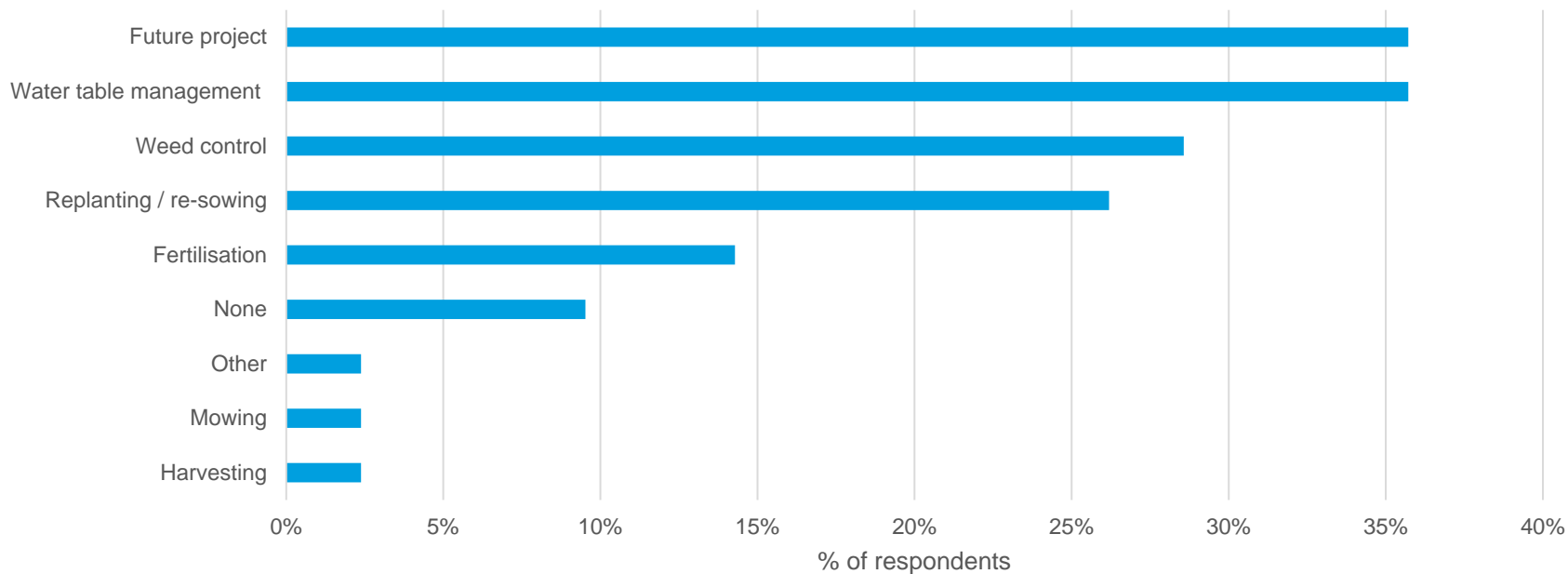
Results: General characterization

Average water level



Results: General characterization

Maintenance of the paludiculture

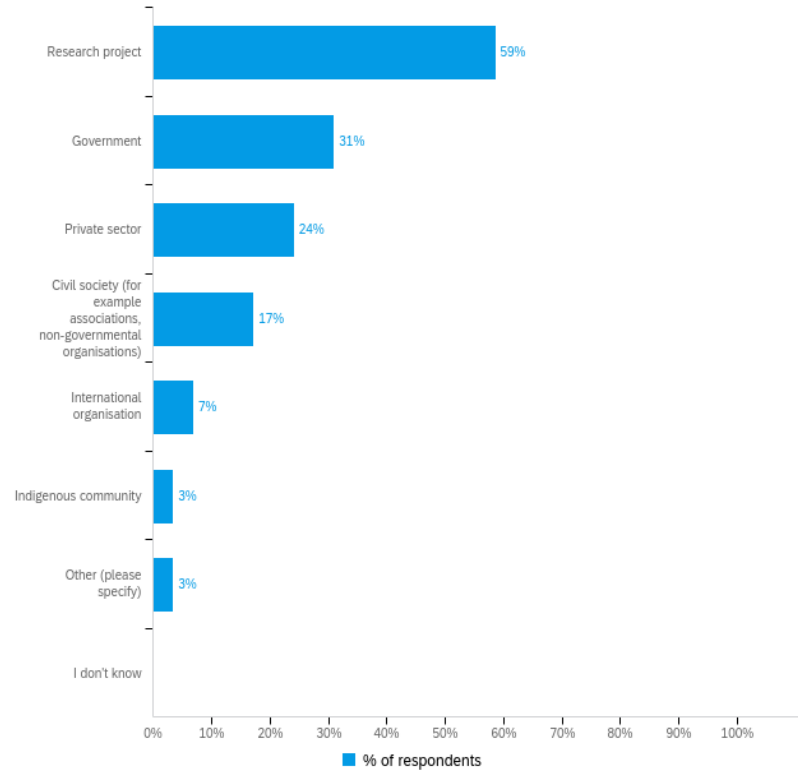


Base: Total sample (n=42)

Q45: What activities do you do in order to maintain the paludiculture Please select all that apply.

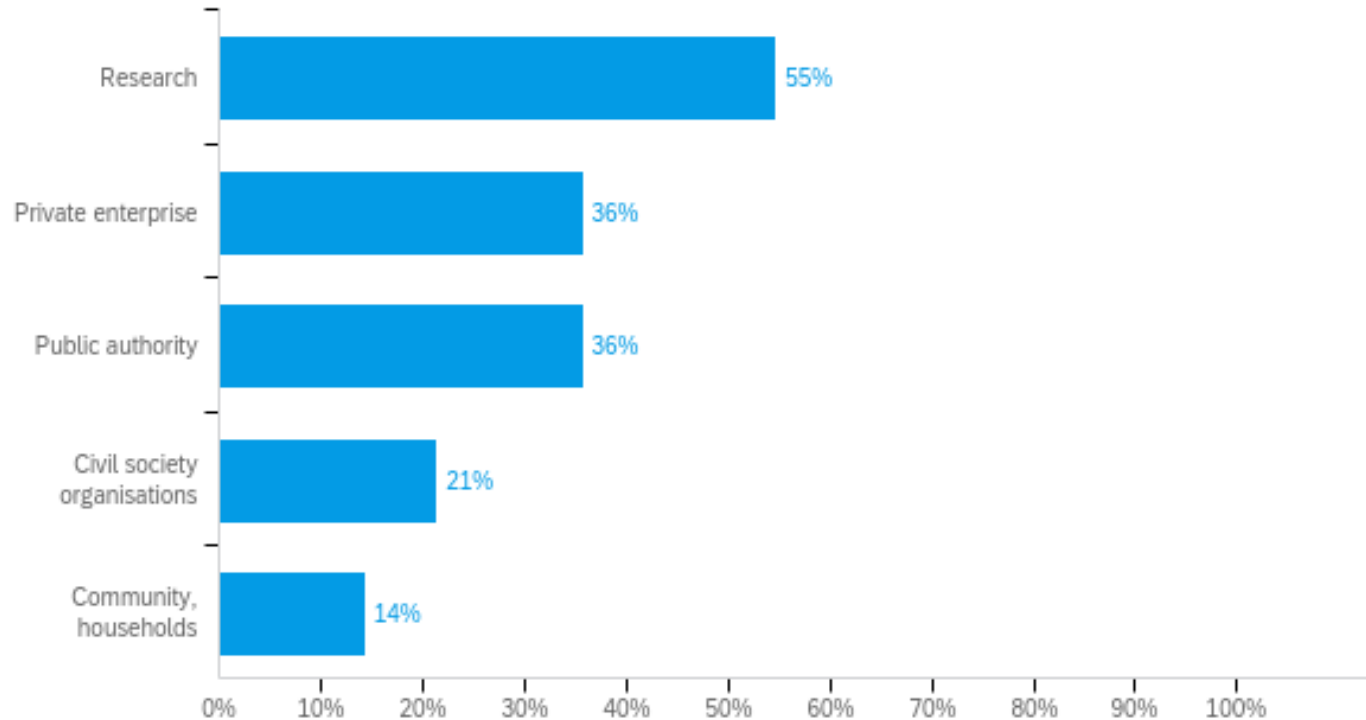
Results: General characterization

A Science-initiated innovation (1)



Base: 'New Projects' only (Q5) (n=29)
Q8: Who initiated the paludiculture?

Results general characterization: A Science-initiated innovation (2)

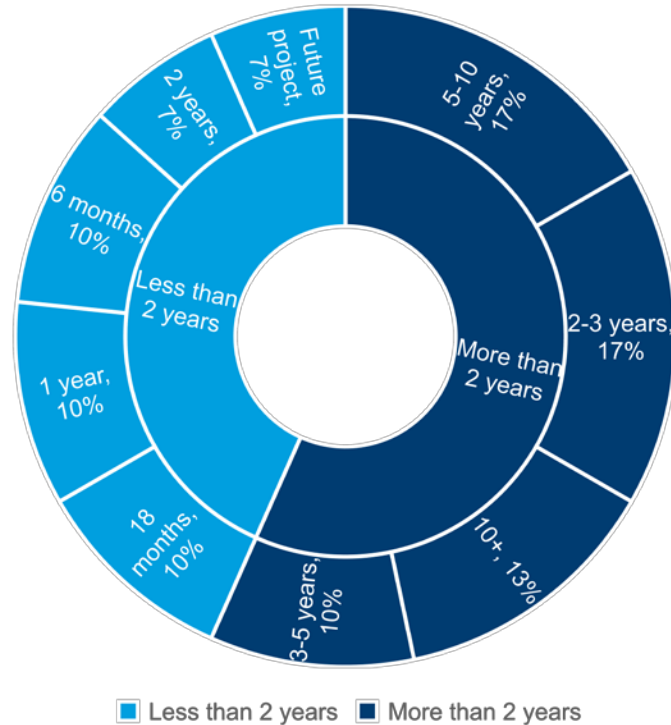


Results: General characterization

An emerging phenomenon (1)

61% less than three years

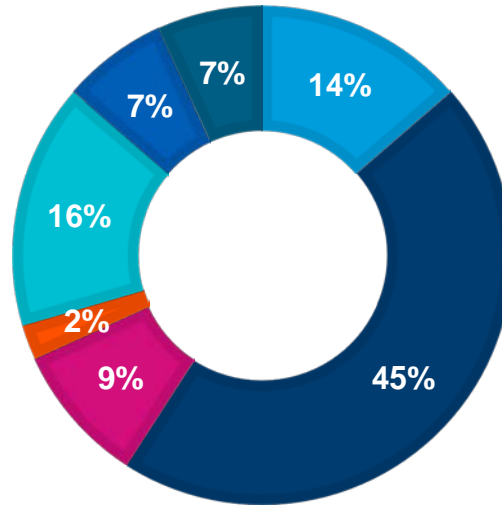
13% more than 10 years



Results: General characterization

An emerging phenomenon (2)

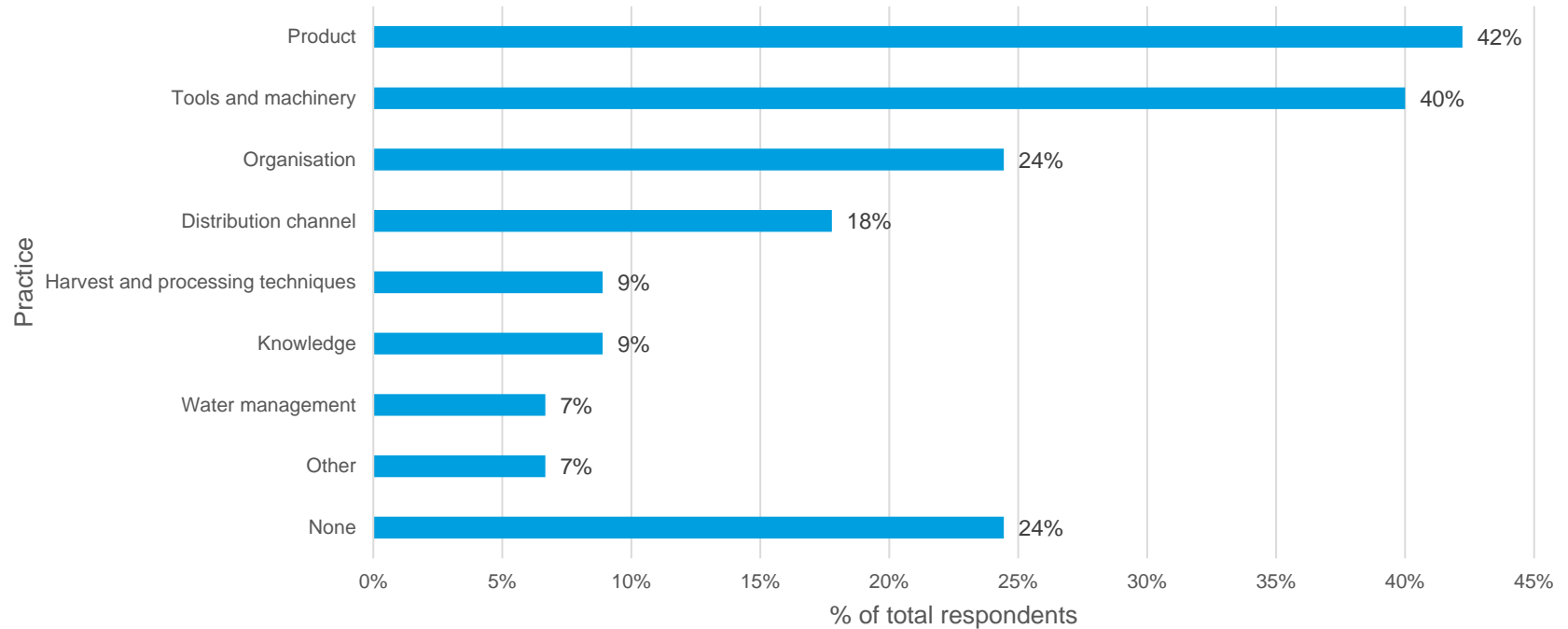
- 59%: project size less than 10 hectares



■ Less than 1 ■ 1 to 10 ■ 11 to 25 ■ 26 to 100 ■ 101 to 1000 ■ 1001 to 10,000 ■ 10,001+

Results: General characterization

An emerging phenomenon (3) Novel practices



Results: General characterization

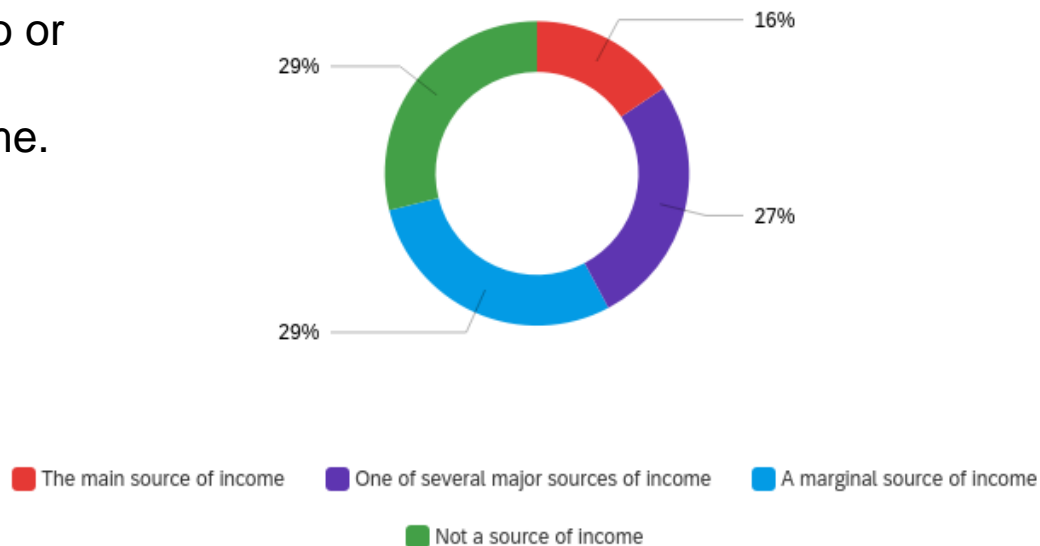
An emerging phenomenon (4) Patent vs open access



Results: General characterization

An emerging phenomenon (5)

58% say
paludiculture no or
only marginal
source of income.



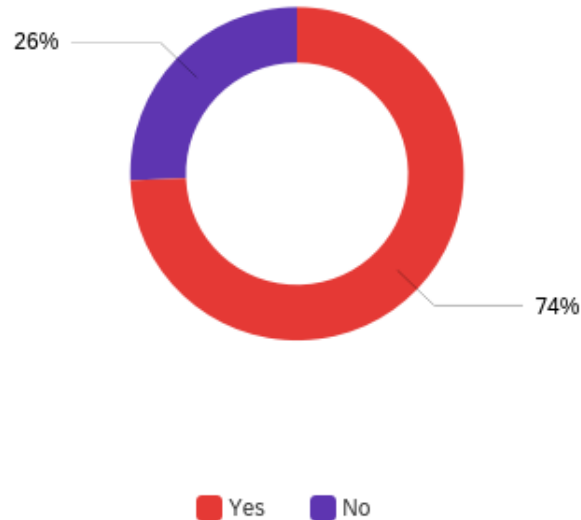
Base: Total sample (n=45)

Q27: For the land user, the harvested biomass is the main source of income, one of several major sources of income, a marginal source of income, or not a source of income?

Results: General characterization

An emerging phenomenon (6)

78% of initiatives depend on external funding

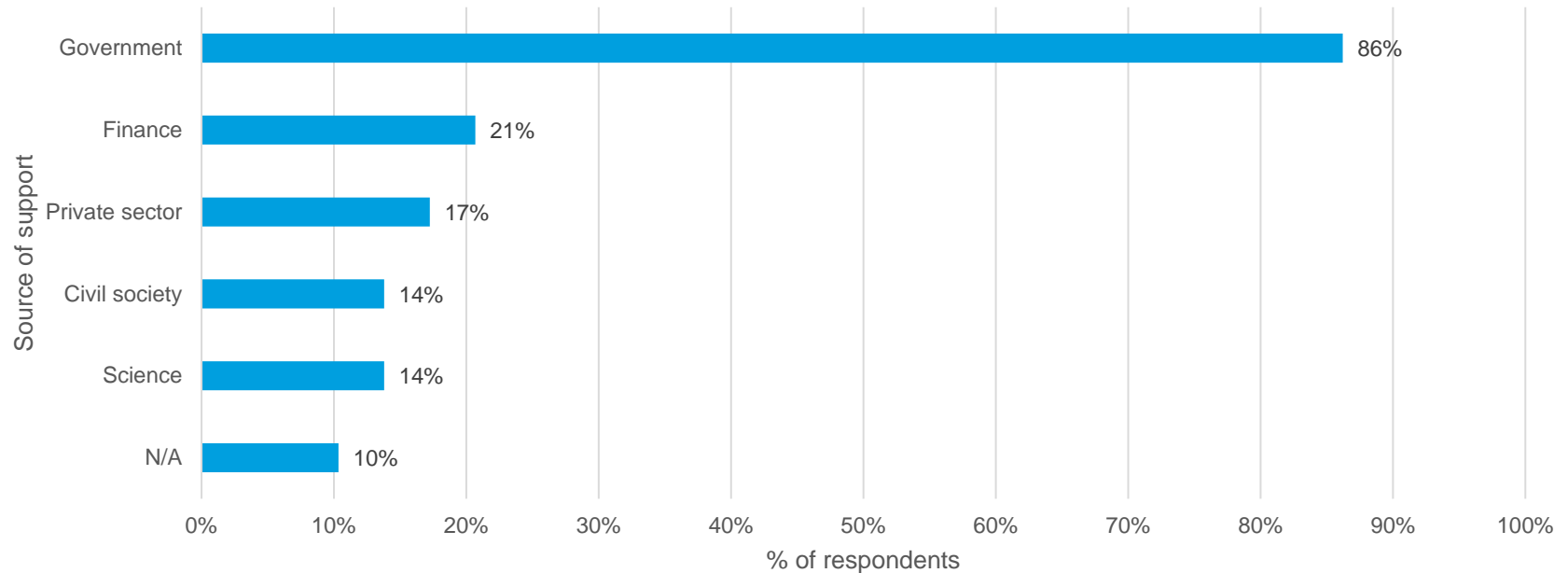


Base: Total sample (n=39)

Q69 - Is the economic viability of your paludiculture dependant on a subsidy or other external payment in addition to the actual products produced?

Results: General characterization

An emerging phenomenon (7): government funded



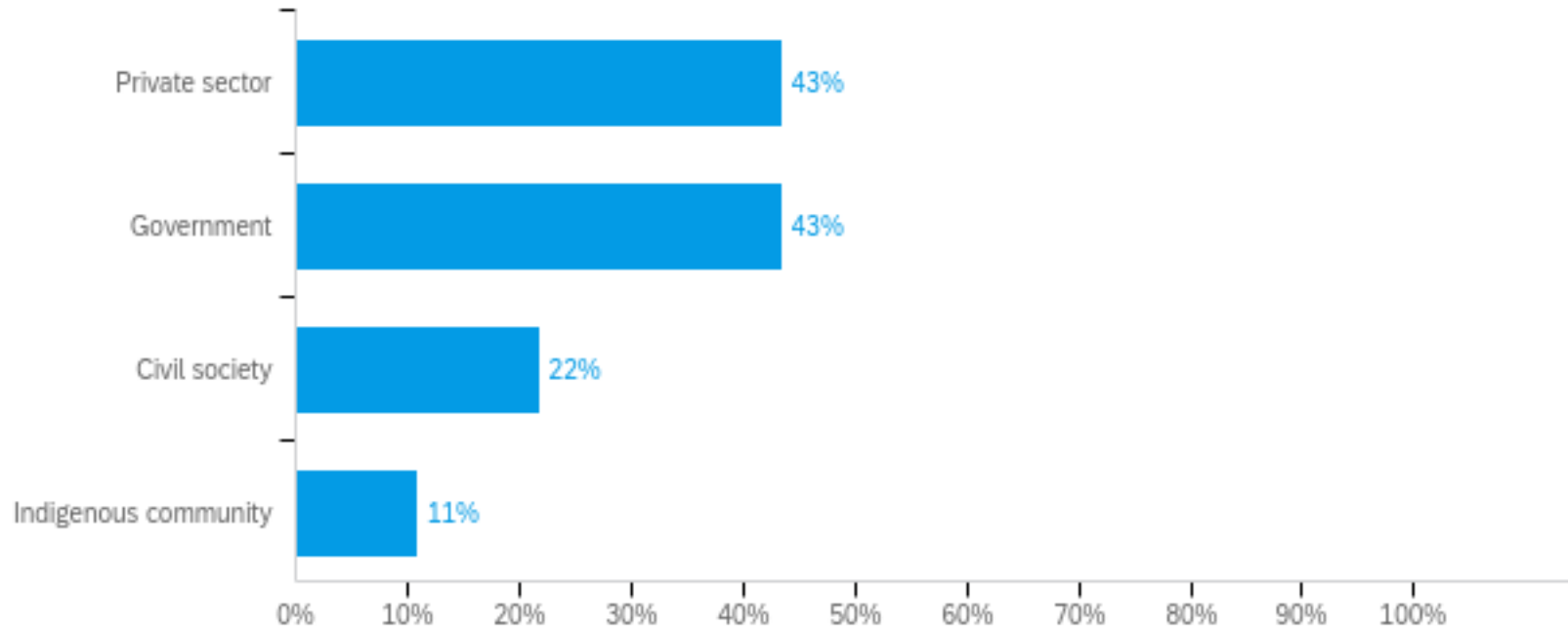
Results: General characterization

A collaborative phenomenon (1)

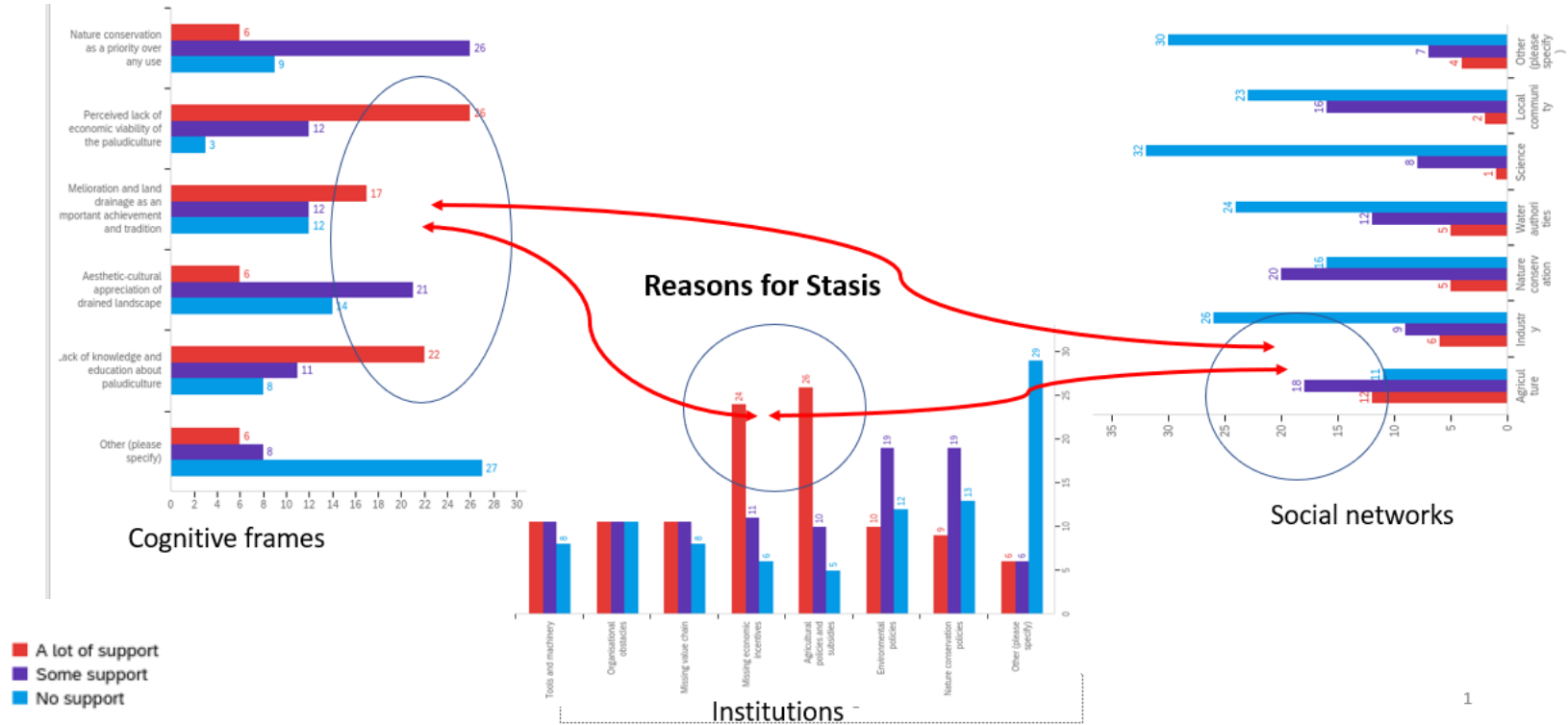
- Responses did not identify specific legal entities with the exception of 3 cooperatives, 3 companies and 1 limited liability company.
- Rather they characterized who is organizing the project: Research-private industry collaboration; research-public authority collaboration; public authority-civil society collaboration; Private enterprise; Research Project; Public project (municipality, local government).

Results: General characterization

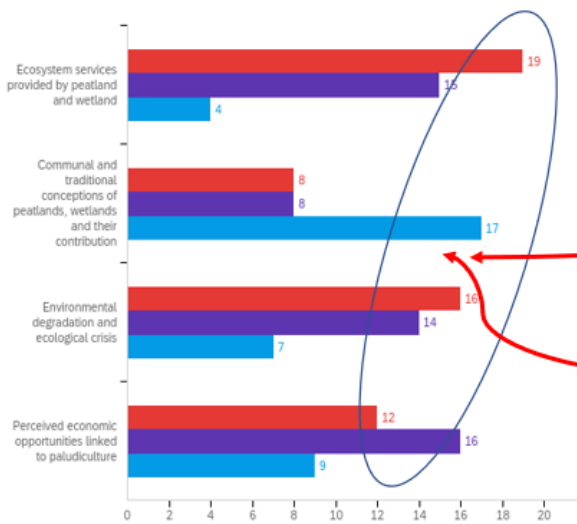
A collaborative phenomenon (2): Land ownership



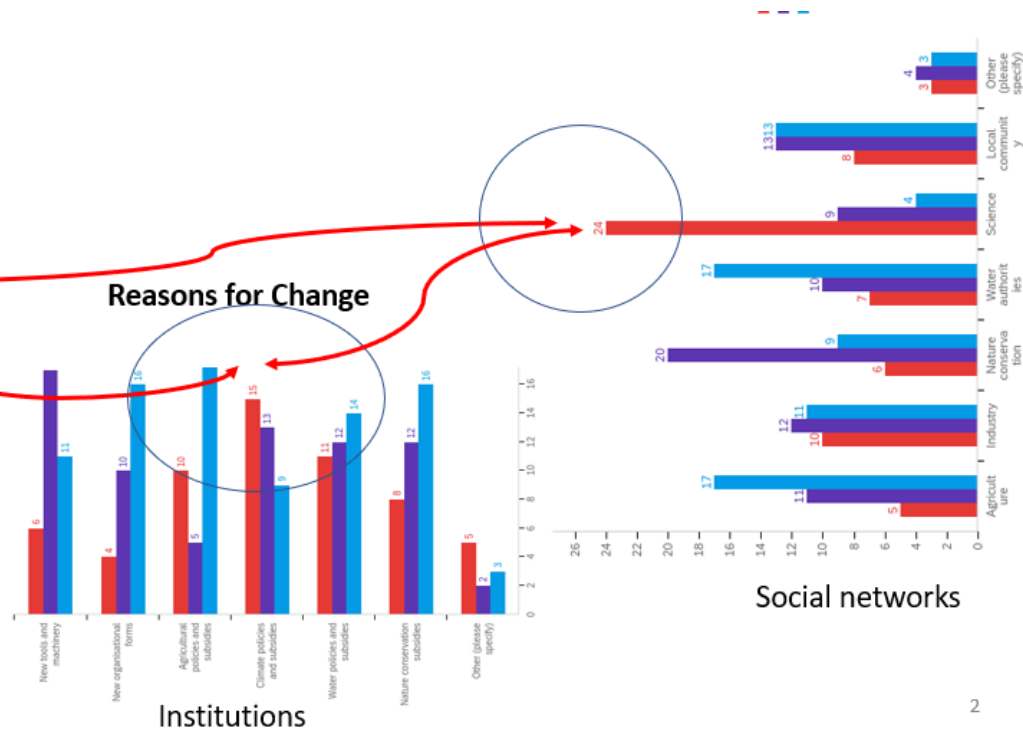
Results: Barriers and Path Dependency



Results: Opportunity – Socio-Economic Dynamic



Cognitive frames



Reasons for Change

Institutions

Social networks

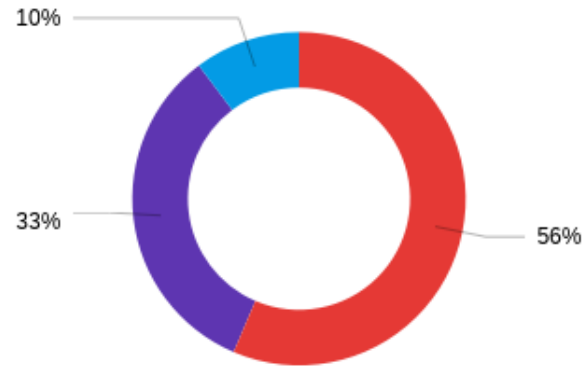
- A lot of support
- Some support
- No support

Intermediary conclusion (1)



Intermediary conclusion (2): A cautiously optimistic outlook

- 89% of participants expect/think it likely that there will be more paludiculture initiatives in their country five years from now.



■ Yes ■ Probably ■ Probably not ■ No

Discussion: Paludiculture and Paludicultures (1)

A global “innovation mission “

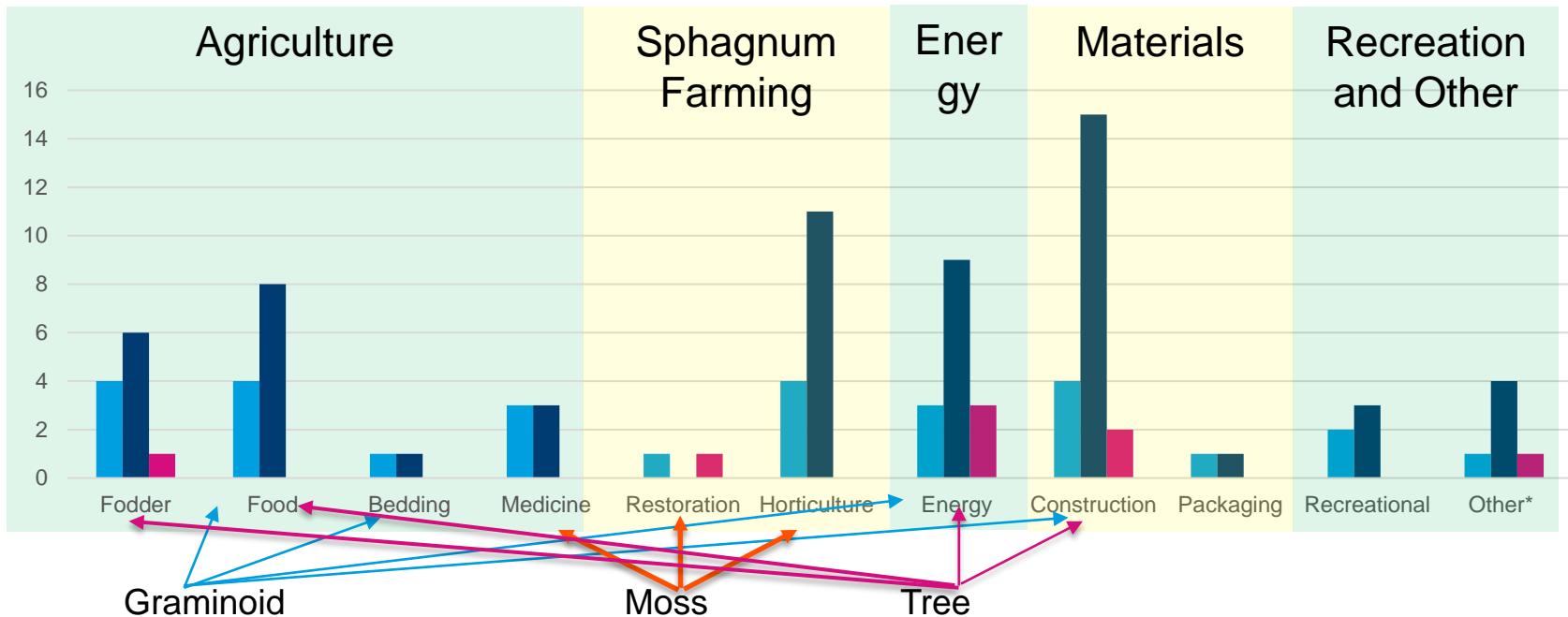
- varieties of paludicultures and need for more specialized typologies
- Type-specific controversies, trade offs and conflicts
- Importance of recognizing traditional uses



Discussion: Paludiculture and Paludicultures (1)

Varieties of paludicultures

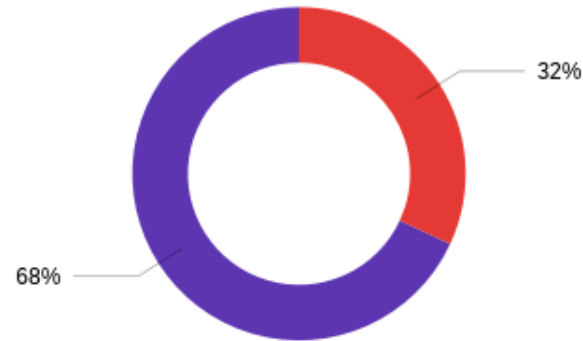
With a view to the productive function, we can identify paludiculture contributions to:



Examples of plant types and their productive uses as identified by respondents (Q20-Q30)

Discussion: Paludiculture and Paludicultures (1)

New project “or” traditional land use

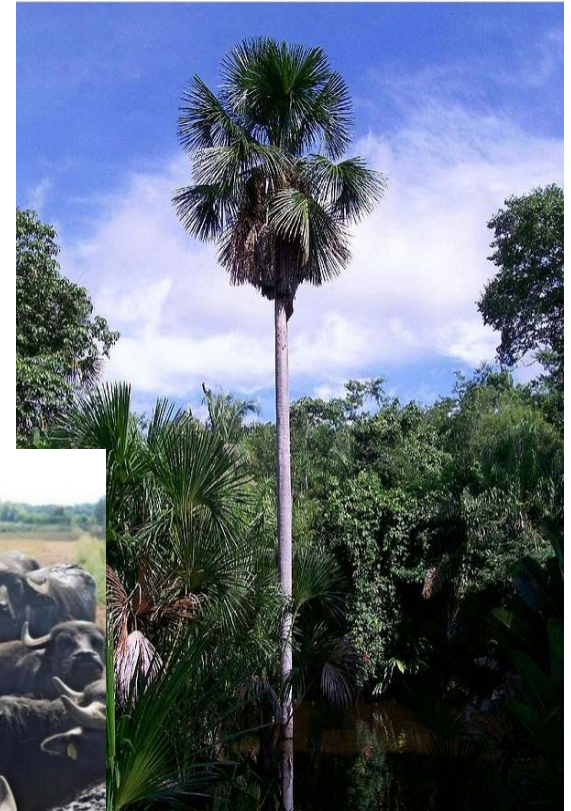


■ In continuation with traditional land use ■ A new or recent paludiculture project

Discussion: Paludiculture and Paludicultures (1): The creativity in tradition

Varieties of « continuity with tradition »
in survey responses (coded):

- Sustaining traditional use
- Expanding traditional use
- Returning to and strengthening traditional use
- Co-existence



Discussion: Paludicultures and Paludi-Culture (2)

How to frame the transformation challenge?

Narrow definition: use of spontaneously grown or cultivated biomass from wet peatlands under conditions in which the peat is conserved or even newly formed

Wide definition: a culture of living sustainably with peatlands (caring for peat but without further use as requirement)

- Culture: “the set of values, conventions, or social practices associated with a particular field, activity, or societal characteristic” (dictionary definition)
- The climate emission reduction reason: Pure restoration and no productive use of biomass; Carbon « harvesting » and carbon finance (ex. Moor Futures); exnovation and ending practices
- The climate adaptation reason: Thawing permafrost soils; new ways of living with the land – sustainably!?



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Discussion: Peat and People (3)

- **Paludiculture on (partly) drained land:**

26% of responses water level 15-30 cm;

10% even deeper below surface (Q43)

→Likely continued peat reduction and climate emission.

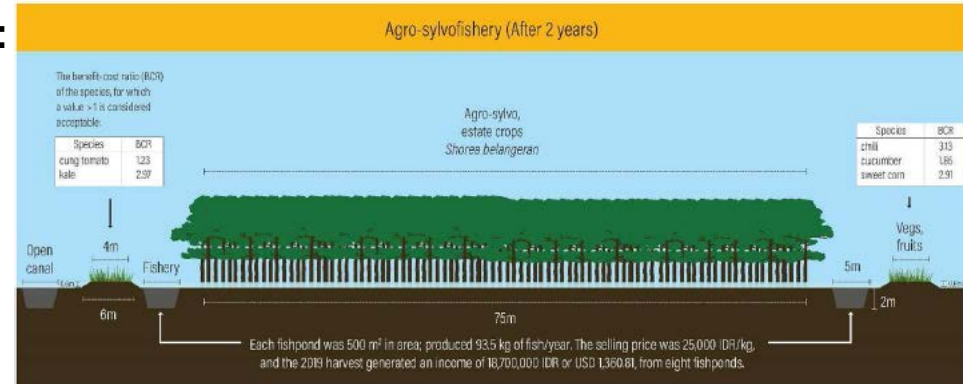
Example of agro-silvofishery

- **Paludiculture on undrained land?**

Example of harvesting on nature conservation areas

- **Sustainable Development and “compromised paludiculture”** (Budiman et al 2020)

Environmental protection “versus” basic needs/local livelihoods. Challenge suggested by the survey: Top-down tendency in paludiculture initiatives. Needed: Complementary social policy and long-term innovation policy



Source: Budiman et al. 2020

Discussion: Politics of Peat – rewetting of what?

(4): “Responsible peat” vs “sustainable paludiculture” - the battle of the mire ecologists

The heart of the controversy: is there a case for continued peat extraction?

- The “responsible” argument: Work with peat extractors and find improved solutions (i.e. for restoration); alternatives to extraction need to be compared with full life cycle .
 - Survey support for argument: alternative is at the very beginning, not an established commercial model
- The “sustainable” argument: 1) Work with peat *innovators* – climate neutrality demands no net loss of sinks and additional sinks (peatlands can be restored but peat cannot be regrown by human time scales); 2) Responsible peat industry in well regulated country sets precedent for other countries (extraction without restoration)
 - Supported by survey: a) Documented “misunderstandings” of paludiculture; 2) Global emergence of the topic: affluent countries such as Canada can show the way how a just transition of the industry is possible
- Shared points: Peat extraction is not sustainable; artificial cultivation (“sphagnum farming”) and substrate innovation is in principle a desirable alternative that needs more support

Thank you, merci und Danke

The full survey responses are available upon request from rafael.ziegler@hec.ca.

We will have more time for the discussion of survey responses and their implication for users this afternoon, **16:30, Workshop A « Global network for paludiculture – needs & options for exchange”**

References

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