Food and Agriculture Organization
of the United Nations

Can agroecology help us achieve the SDGs?

Building the evidence and learning from diversity

9th Sustainability conference Agroscope – January 2022

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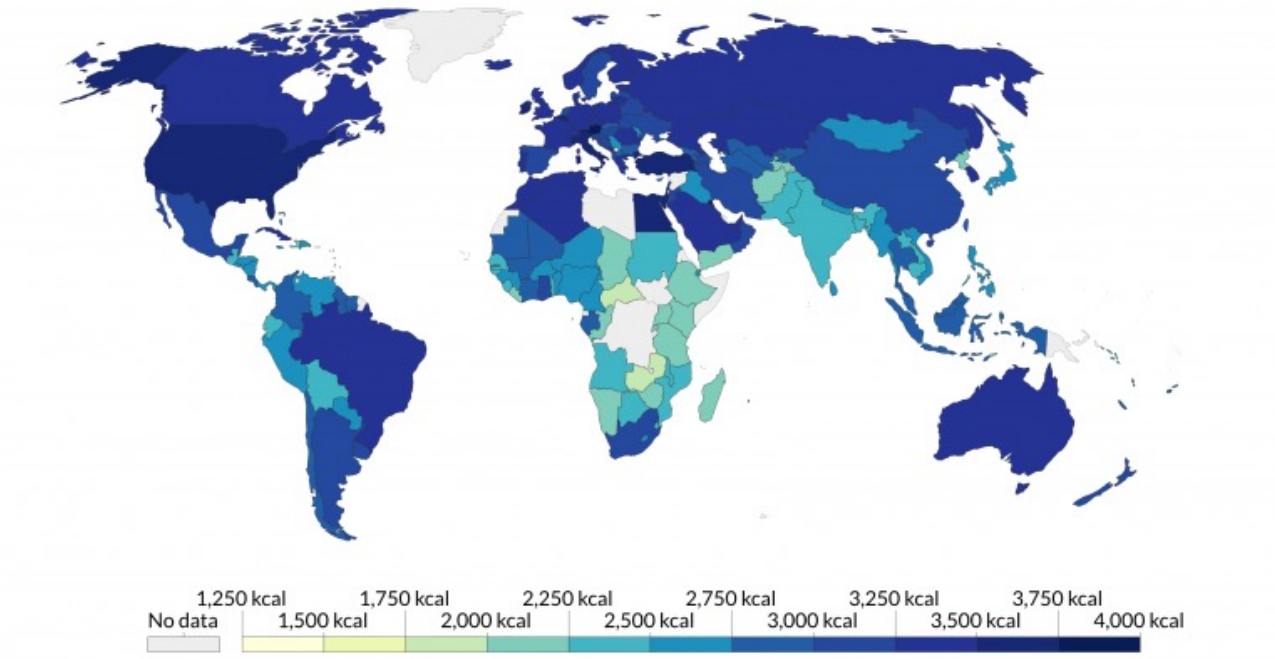
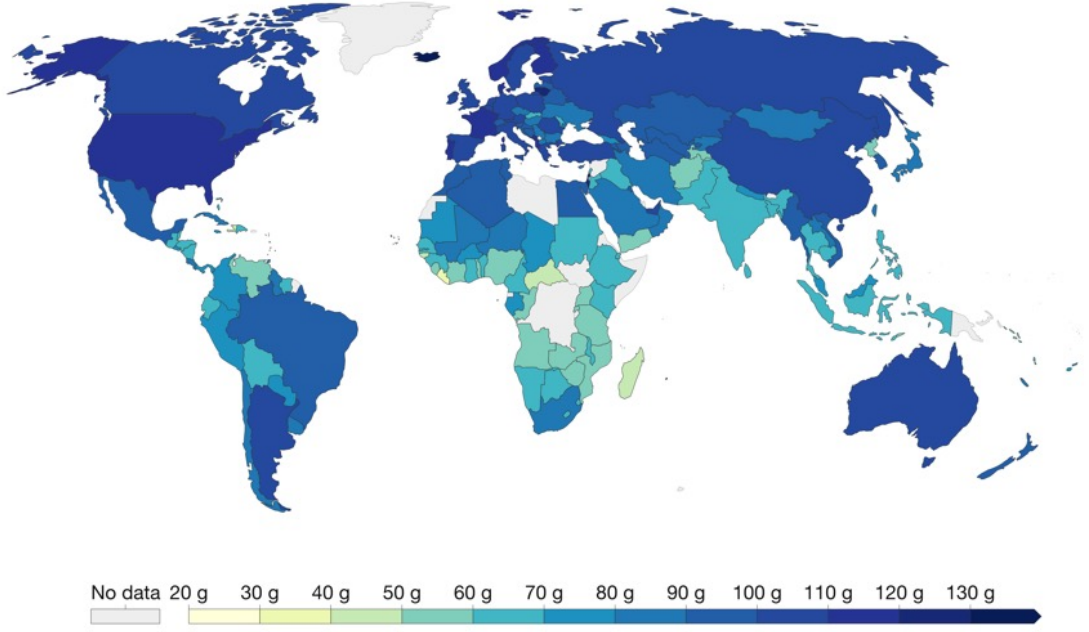
A QUICK OVERVIEW OF WHAT'S WRONG WITH OUR CURRENT FOOD SYSTEM

Food distribution: Energy supply (kcal/cap/day)



Source: FAO (2017) & Various historical sources
Note: Historical data for the USSR is highly uncertain – it likely gives an overestimate of caloric supply

Food distribution: Protein supply (g/cap/day)

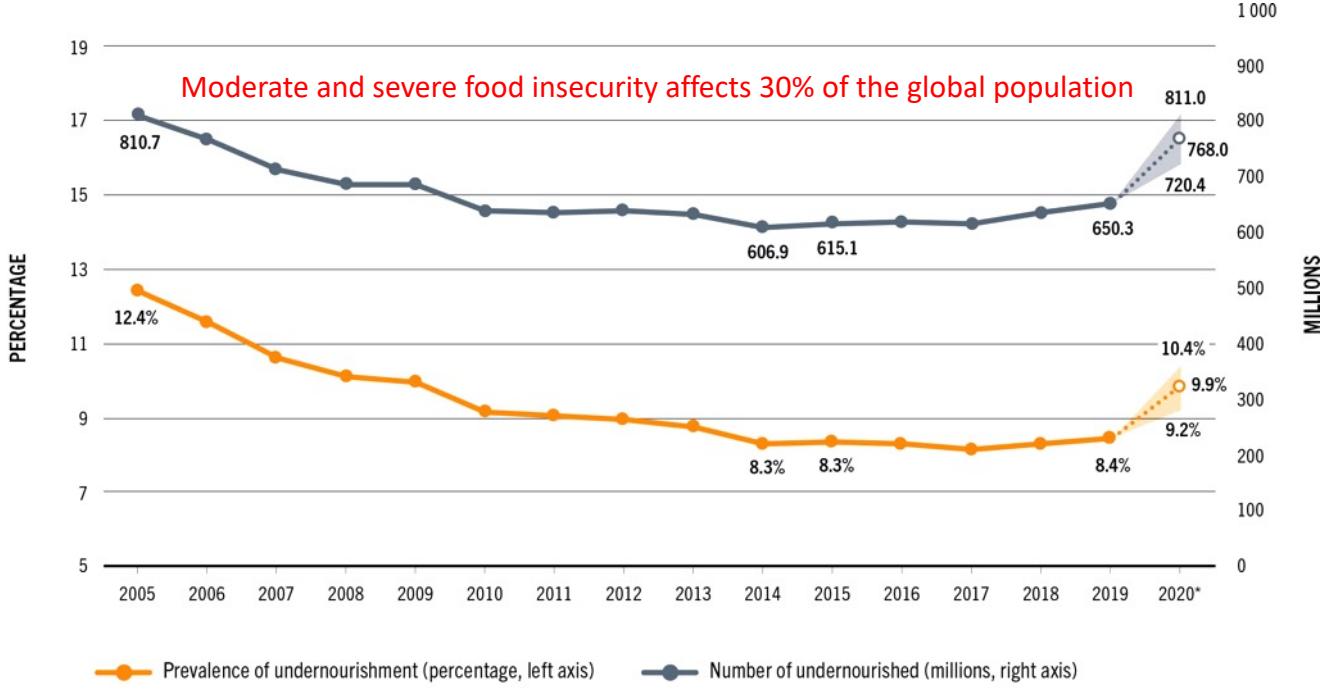


Source: UN Food and Agriculture Organization (FAO)

OurWorldInData.org/food-supply • CC BY

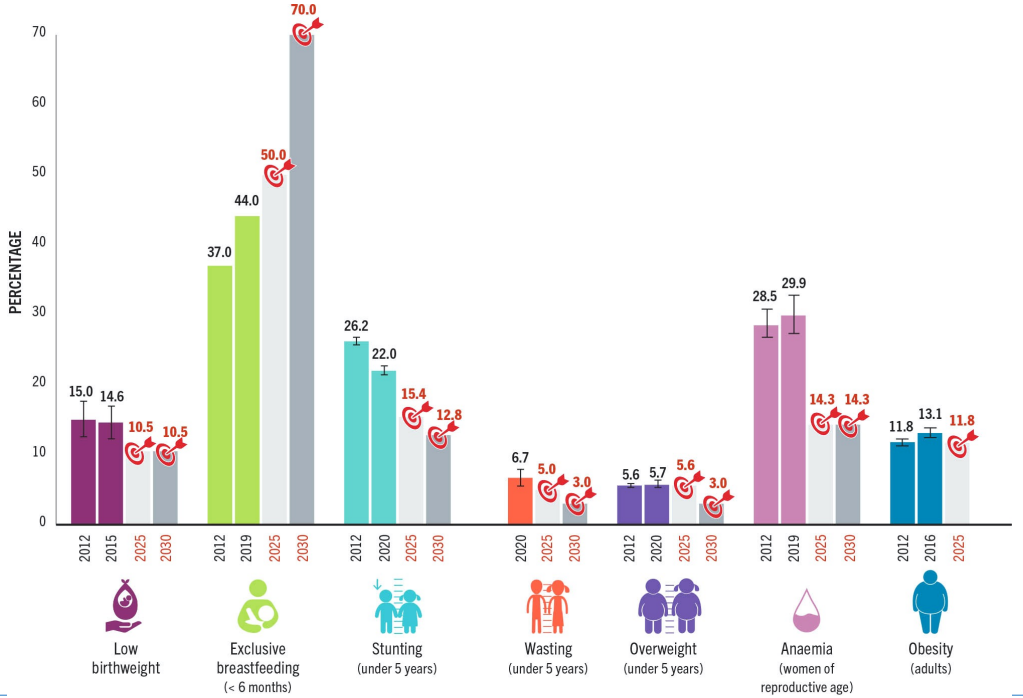
Note: Data measures the availability delivered to households but does not necessarily indicate the quantity of protein actually consumed (food may be wasted at the consumer level).

Hunger is on the rise



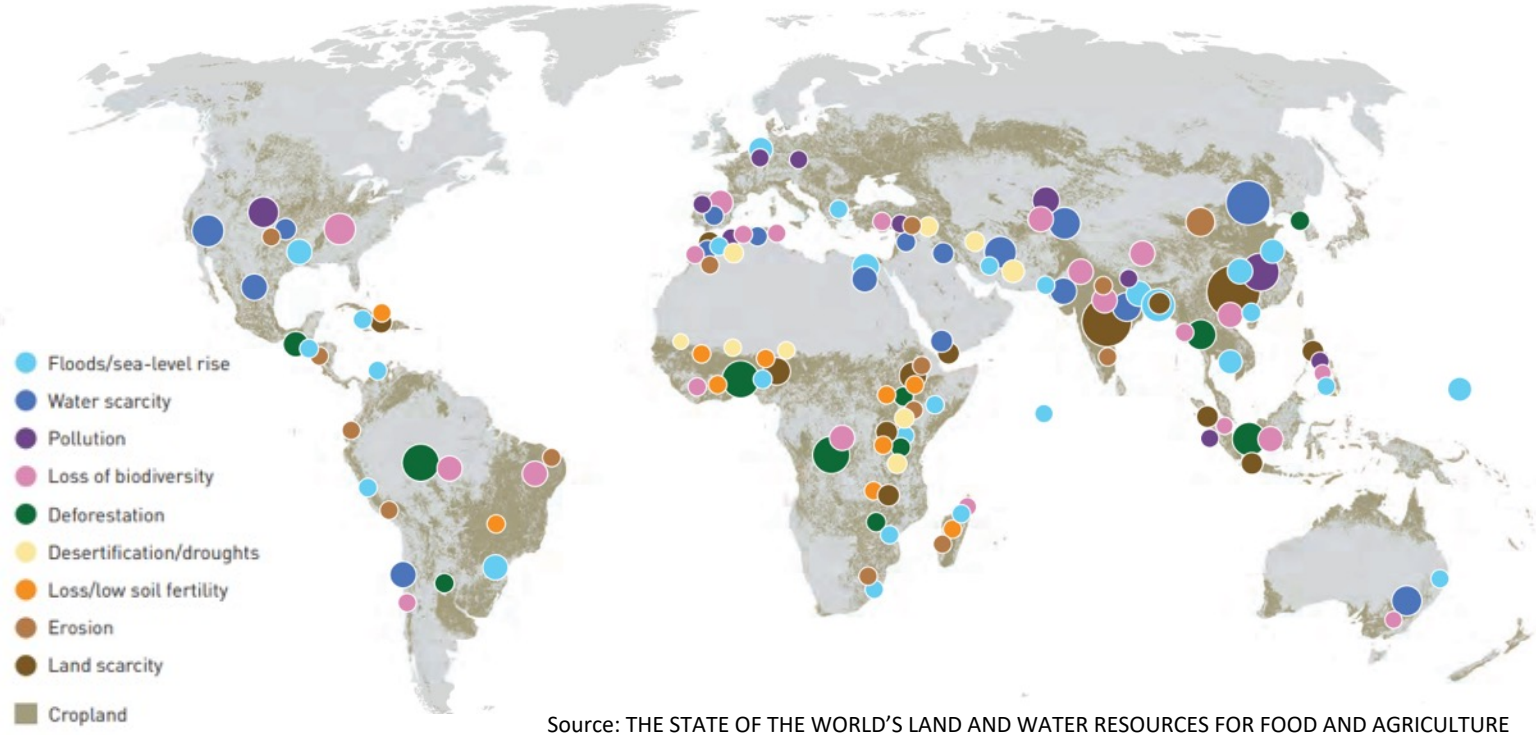
http://www.fao.org/3/cb4474en/online/cb4474en.html#chapter-2_1

And other forms of malnutrition are growing



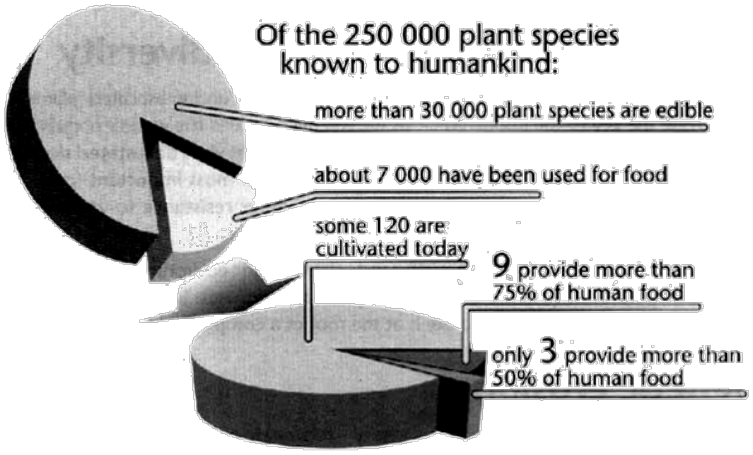
http://www.fao.org/3/cb4474en/online/cb4474en.html#chapter-2_2

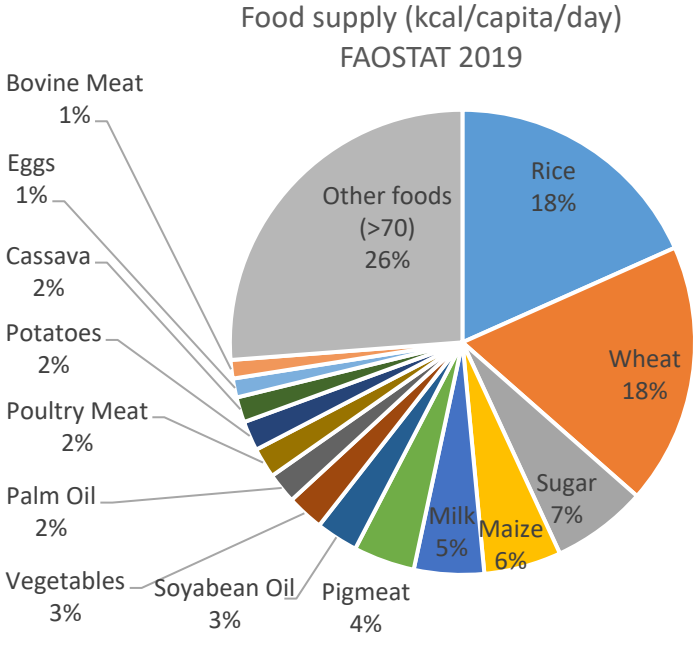
GLOBAL DISTRIBUTION OF RISKS ASSOCIATED WITH MAIN AGRICULTURAL PRODUCTION SYSTEMS - A SCHEMATIC OVERVIEW



Source: THE STATE OF THE WORLD'S LAND AND WATER RESOURCES FOR FOOD AND AGRICULTURE

Important losses in agricultural biodiversity

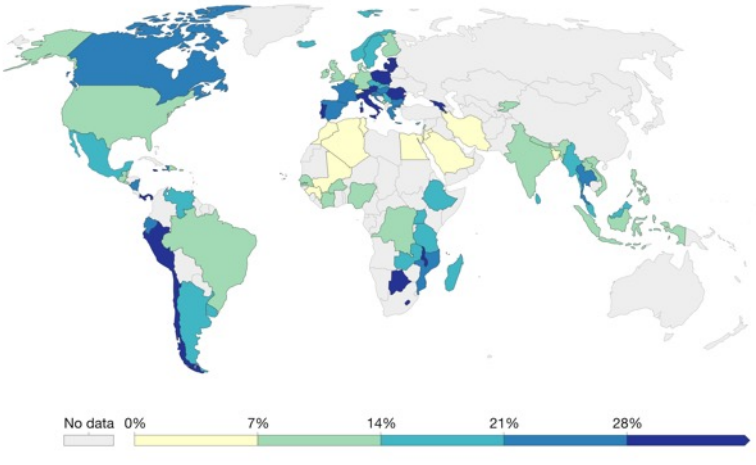




Women work but have less access to resources

Share of agricultural landowners who are female

Share of female agricultural landowners among all landowners. Landowner are those that own land solely or jointly with someone inside or outside the household.

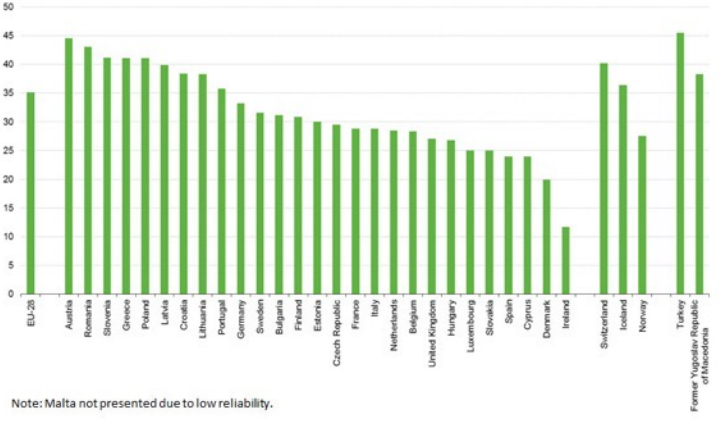


Source: FAO Gender and Land Rights Database

OurWorldInData.org/employment-in-agriculture • CC BY

Note: Note that due to poor data availability, the year of measurement varies between countries (whilst most countries are represented in 2010-11, some extend to 1993.

Women as share of agricultural workforce (%), 2016



Note: Malta not presented due to low reliability.

ec.europa.eu/eurostat

HOW CAN WE MAKE OUR FOOD SYSTEMS MORE SUSTAINABLE?

AGROECOLOGY, A TRANSFORMATIVE AND INNOVATIVE APPROACH

Agroecology, not only a science

Science (since the 30s)

- Ecology of the food system (Francis et al., 2003)
- Application of ecological concepts and principles to the design and management of sustainable food systems (Gliessman, 2007)
- Integration of research, education, action and change that brings sustainability to all parts of the food system (Gliessman, 2018)

Social movement (since the 80s)

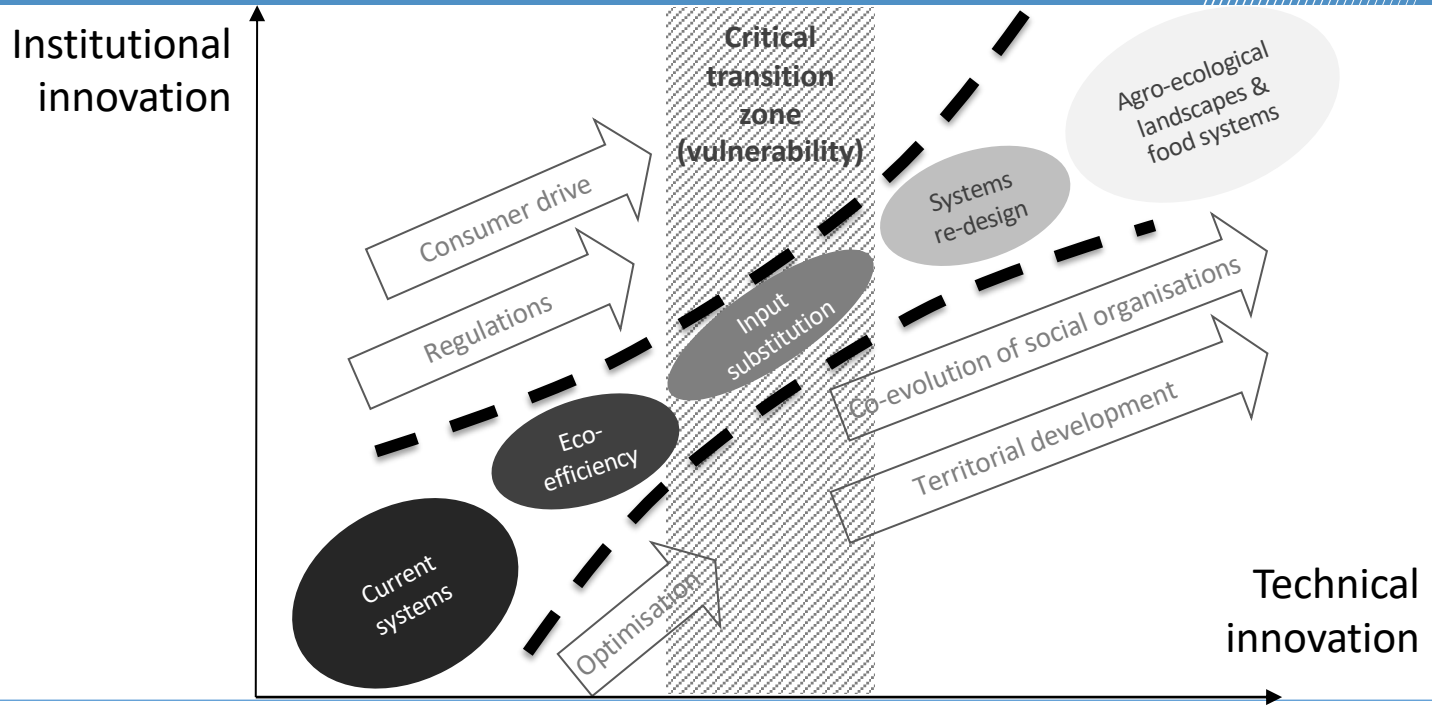
- A solution to current challenges (CC, malnutrition…)
- By opposition to "industrial" model, build locally relevant food systems that strengthen the economic viability of rural areas based on short marketing chains, fair & safe food production.
- Smallholder food production and family farming, rural communities, food sovereignty, local knowledge, social justice, local identity and culture, indigenous rights for seeds/breeds (Altieri and Toledo, 2011; Rosset et al., 2011; Nyéléni, 2015).
- As a political movement : becoming increasingly prominent (Gonzalez de Molina, 2013; Toledo and Barrera-Bassols, 2017).

Practices (since the 60s)

Aiming at improving agroecosystems by harnessing natural processes, creating beneficial biological interactions and synergies among their components (Gliessman, ed, 1990) and using, in the best way, ecological processes and ecosystem services for the development and implementation of practices (Wezel et al., 2014).

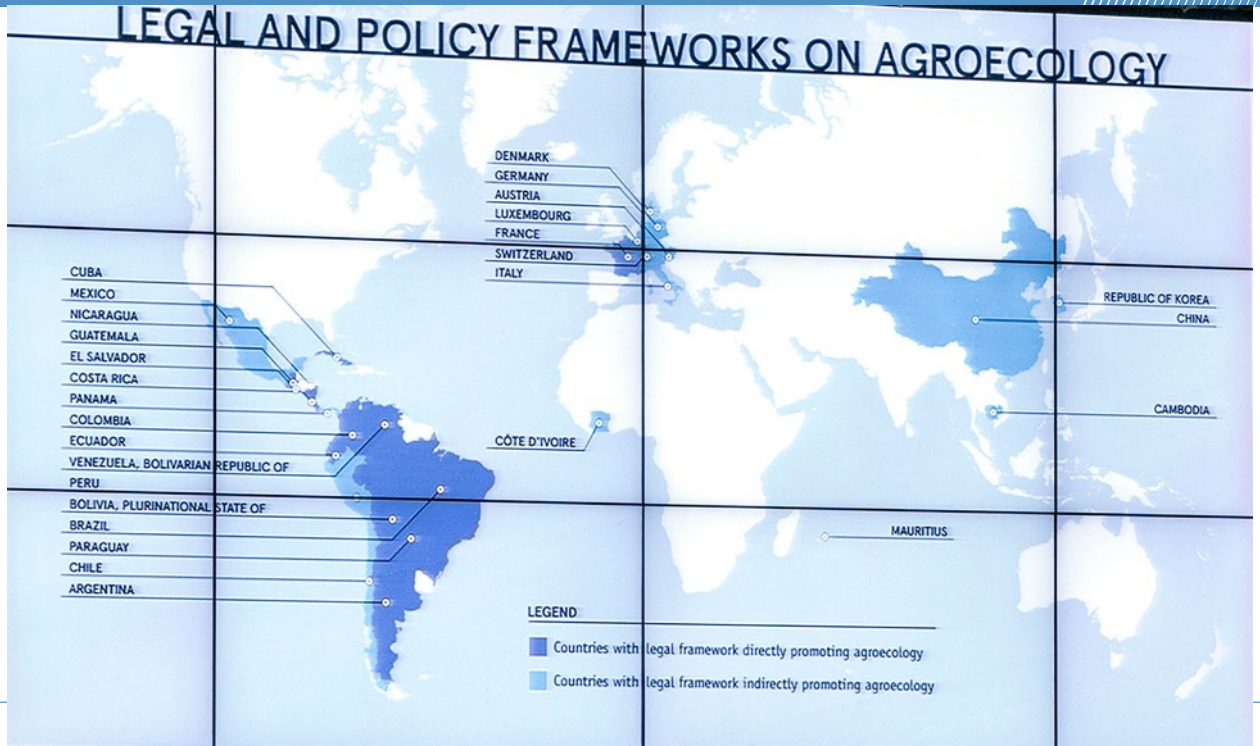
Sources: HLPE (2019), FAO (2017a), Agroecology Europe (2017)

Transition or transformation?



Sources: Tittonell, 2017

From the 2nd International Symposium on agroecology (2018)



Still need better consensus on…

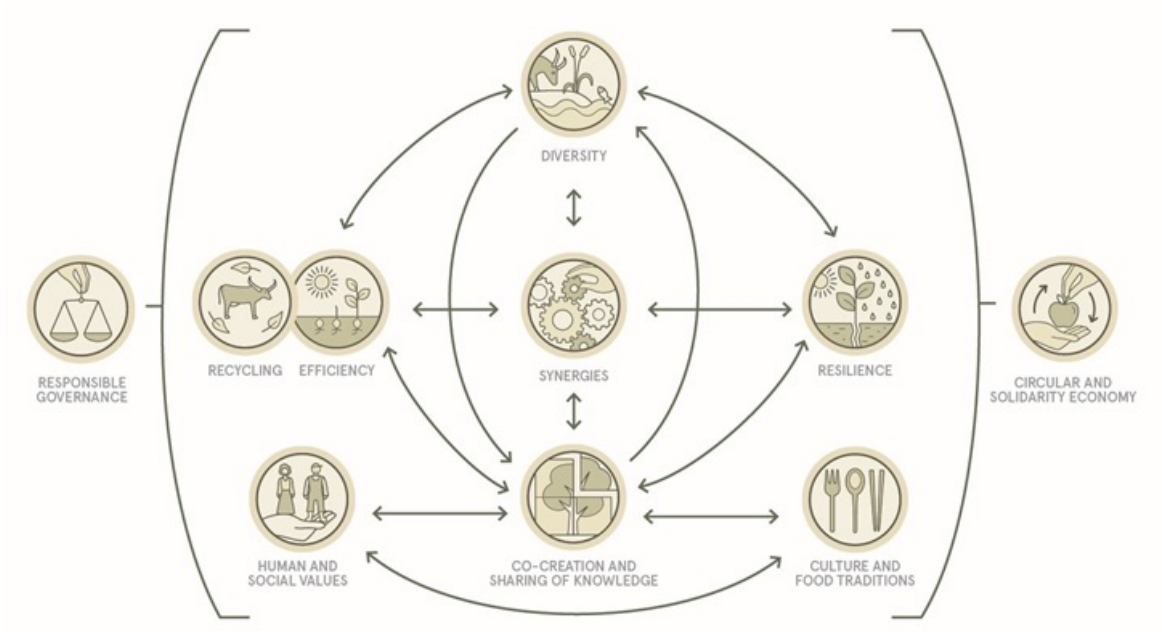
- **Political and social dimensions of food production**: smallholders and marginalised population, redistribution of added value, working conditions, women, local markets…
- **Difficulty in providing labels/certifications**: convergence or not with organic agriculture, lessons to be learnt for agroecological labels
- **Can agroecology feed the world?** Increase in production and productivity (food supply) vs system design/inequalities (utilisation and access). Moreover, agroecology doesn't mean less productivity!
- **Knowledge systems**: the role of farmers, indigenous and local food producers, and systems approaches
- **Knowledge gaps**, because of funding (e.g. to diversification) and education. Focus is on yield gap (or lack thereof) and upscaling
- **Consolidating the evidence**: currently scattered and addressing one or two criteria (e.g. climate resilience and income)

Sources: HLPE (2019) and authors

What is roughly the agroecological focus in Europe?

- **Environment**: biodiversity, soil health, pollution, GHG emissions etc. Cf recent call for Horizon Europe on agroecology, climate change and biodiversity
- **Economic performances**: less documented, and less easy as long as there is no standard set of definitions/certifications (e.g. organic ag.)
- **Social performances** : while the body of work exists (e.g. labour in ag), it doesn't really happen in the same circles as AE. Need for trans-disciplinarity and discussion about the meaning of "science"
- Opportunities with the living labs to integrate the various dimensions and at the same time work on harmonizing the approaches, methodologies and tools.

The 10 elements of agroecology proposed by FAO: the result of a global consultation with all stakeholders and a validation by member nations

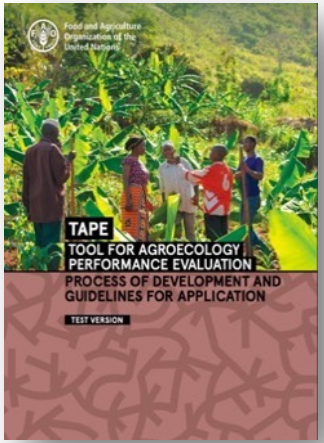


https://www.fao.org/agroecology/overview/overview10elements/en/

IN PRACTICE
BUILDING THE EVIDENCE AND LEARNING FROM DIVERSITY

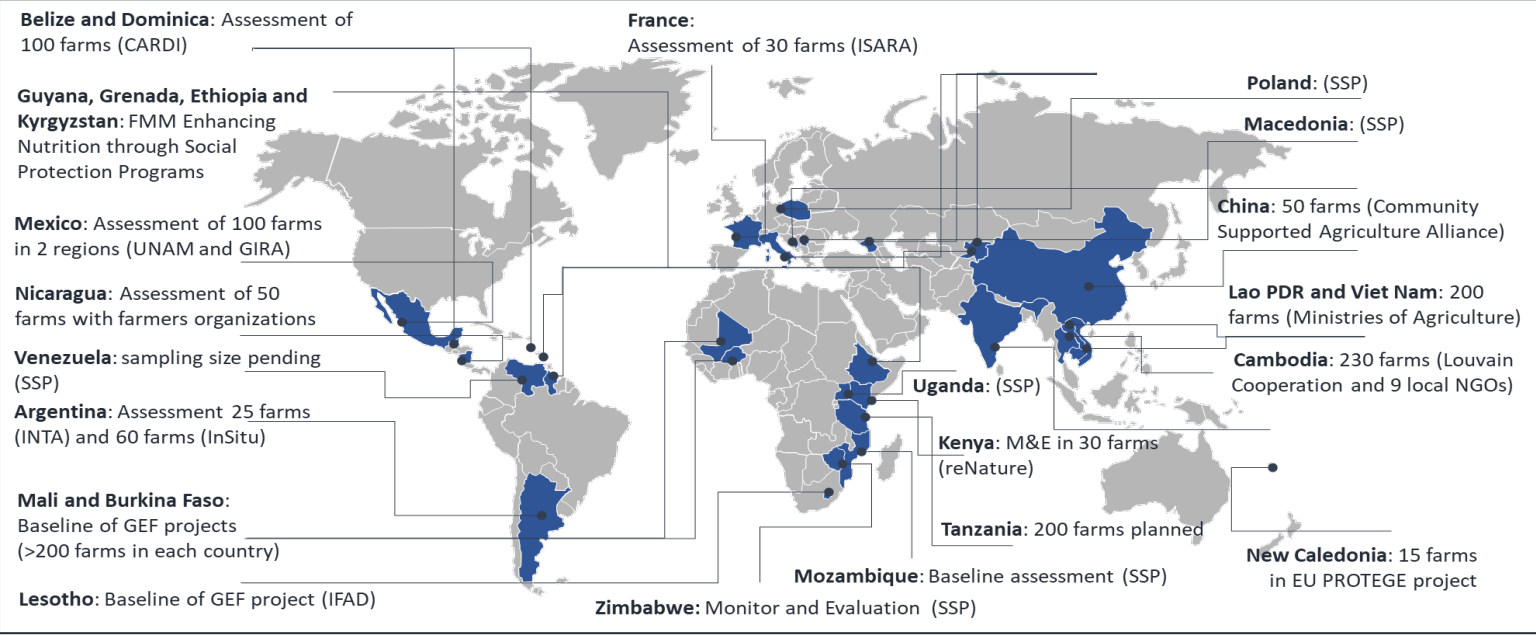
Tool for Agroecology Performance Evaluation

A tool for sustainability assessment in agriculture that is using the 10 elements of agroecology for a diagnostic and producing evidence on multiple criteria



- Developped through a large consultative process led by FAO, based on existing evaluation frameworks, including SDGs
- Response to a mandate received by countries (COAG), using the 10 elements approved by countries and validated methodologies on sustainability criteria
- Stepwise approach with
  - analysis of enabling environment
  - diagnostic of the status (10 elements)
  - 10 quantitative criteria of performance
  - participative interpretation of results.
- Collects data at farm level, provides information and results at community and territorial level.

http://www.fao.org/3/ca7407en/ca7407en.pdf



33 **COUNTRIES** by the end of 2021

5 **REGIONS**

~4.000 **Farms/households** by the end of 2021

6 **UN official languages**

11 **Other languages**

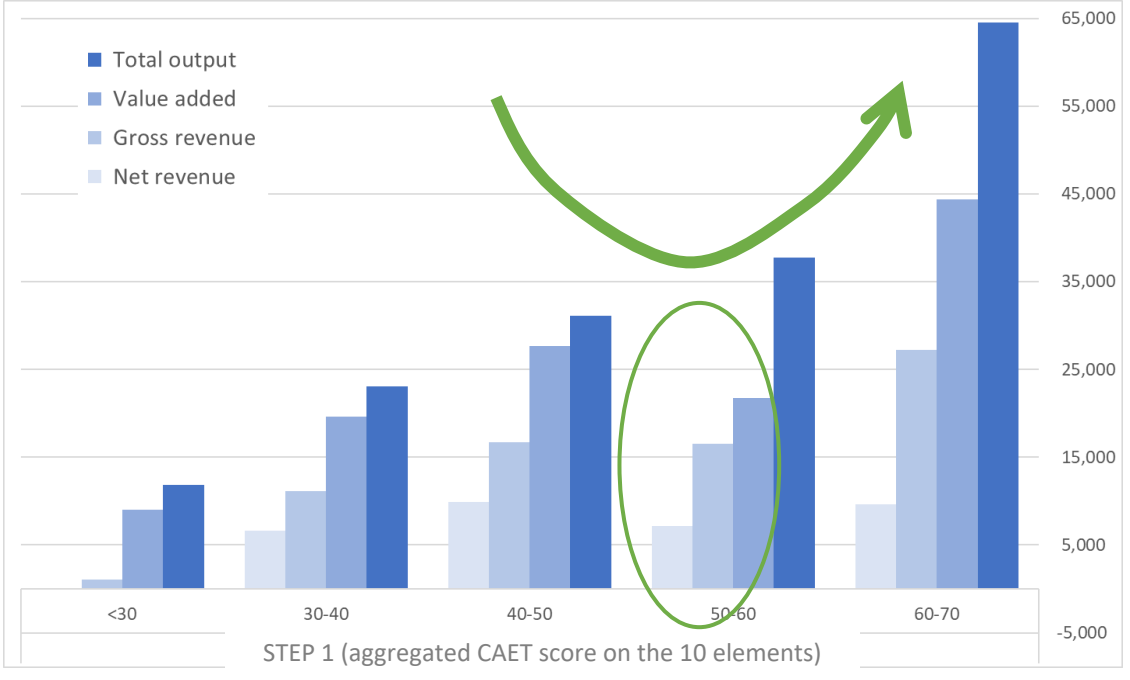
Characterizing the level of agroecological transition of 200 farms in Lesotho

Results for all 10 criteria of performance in France (20 farms): social and environmental performances could be improved

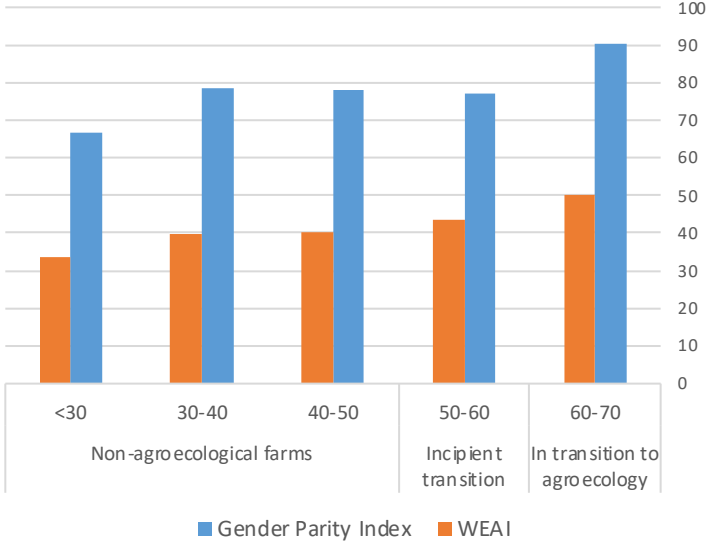
	Governance		Economy				Health and nutrition		Society and Culture		Environnement	
Farm	Man land tenure score	Women land tenure	Productivity/ha	Productivity/pers	Added value	Income	Exposure to pesticide	Dietary diversity	Women empowerment	Youth score	Soil health	Agricultural biodiversity
1	100	NA	5 360	143 119	221 816	35 029	50	70	NA	63	3,5	39
2	100	100	6 194	108 984	5 139	- 54 656	100	90	66	NA	3,8	72
3	100	50	4 965	62 031	73 693	21 435	100	70	50	75	3,3	66
4	100	50	2 707	72 300	56 019	17 701	50	70	45	NA	3,2	50
5	100	50	4 549	75 300	15 443	16 689	50	90	58	NA	3,6	72
6	100	50	4 650	132 430	18 658	22 136	50	80	48	0	3,6	50
7	100	100	5 562	207 363	40 605	21 157	100	90	68	50	3,3	50
8	100	50	8 700	179 735	287 817	70 015	100	80	59	50	3,0	44
9	100	50	3 849	166 024	71 746	- 16 311	50	90	56	67	2,8	44
10	100	100	4 820	104 822	137 868	77 316	100	90	66	NA	3,0	44
11	100	100	3 808	65 560	46 954	16 088	50	80	45	88	3,5	22
12	100	50	4 203	331 475	346 493	6 190	50	70	49	88	2,9	66
13	100	50	2 827	159 361	54 645	50 511	100	70	66	NA	3,3	50
14	100	50	5 405	118 570	229 176	49 489	100	90	63	70	3,1	50
15	100	50	4 276	107 337	102 446	51 417	50	70	50	NA	3,6	50
16	100	50	8 305	128 695	221 636	22 076	100	80	45	6	3,1	50
17	100	50	2 368	112 518	57 810	61 145	100	80	61	NA	3,6	66
18	100	100	3 935	130 593	95 220	16 783	50	80	60	NA	3,4	50
19	100	50	4 561	84 698	71 359	7 101	100	100	54	NA	3,0	77
20	100	50	4 058	138 661	167 554	33 040	27	70	53	NA	3,4	66

Source: Anthonioz, 2021. MsC thesis. THE SUITABILITY OF THE « TOOL FOR AGROECOLOGICAL PERFORMANCE EVALUATION » (TAPE) IN A EUROPEAN CONTEXT

More advanced agroecological farms in Lesotho (200) have better economic performances



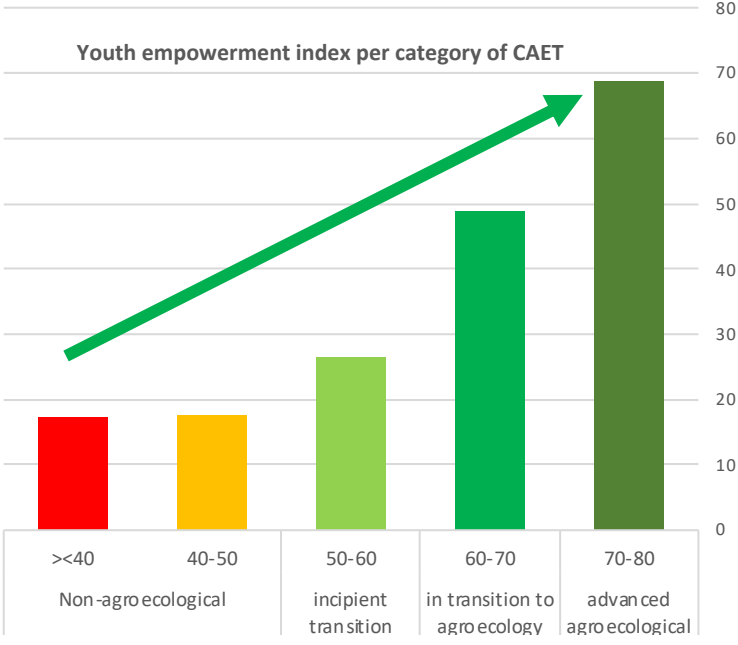
More advanced agroecological farms in Burkina Faso have better women's empowerment and gender parity

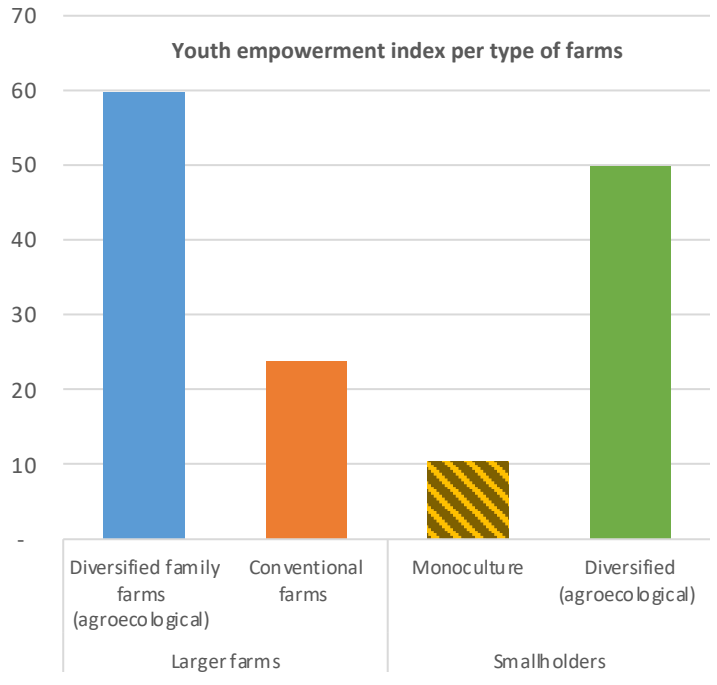


STEP 1
(aggregated CAET score on the 10 elements)

Characterisation of Agrecological Transition (CAET)	Non-agroecological farms			Incipient transition	In transition to agroecology
	<30	30-40	40-50	50-60	60-70
Women Empowerment in Ag Index (WEAI)	**32%**	**40%**	**40%**	**43%**	**50%**
Decision making on production	29%	39%	37%	43%	46%
Perception of decision making	26%	31%	31%	32%	41%
Decision making on revenue	18%	22%	19%	20%	11%
Leadership	24%	48%	47%	52%	64%
Time burden	48%	58%	65%	70%	88%

More advanced agroecological farms in Mali have higher youth empowerment in agriculture



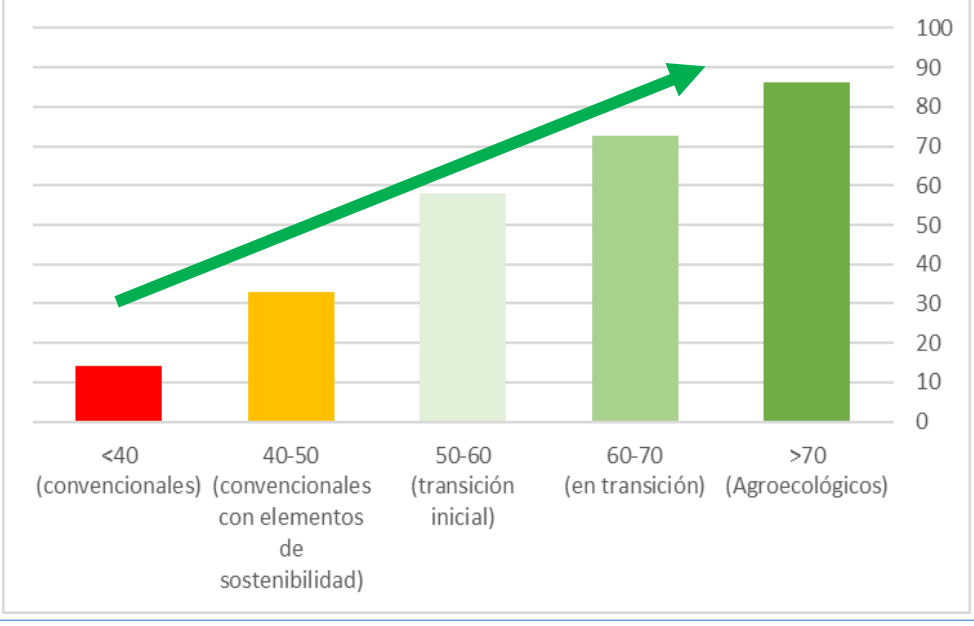


STEP 1

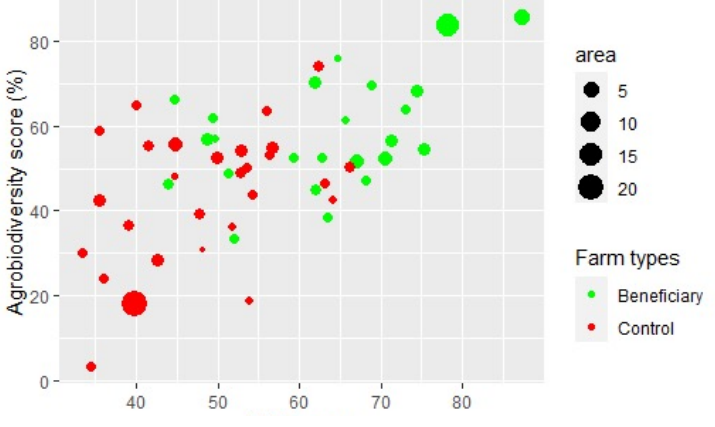
(aggregated CAET score on the 10 elements)

More advanced agroecological farms in Argentina have higher health and environmental performance (use of pesticides)

Pesticide score in Argentina (exposure, mitigation measure and use of alternative practices)



More advanced agroecological farms in Tanzania have higher environmental performances (soil health and agrobiodiversity)



Conclusions

- Agroecology is a science, a set of practices and a social movement that can help transform our food systems to achieve the SDGs
- In practice, agroecology contributes to **minimize the trade offs** between the various dimensions of sustainability (cf social and evidence from TAPE in various countries)
- CFS policy recommendation 2: *Establish, improve and apply comprehensive performance measurement and monitoring frameworks* […] including metrics and indicators such as TAPE
- The role of science is key, not so much for defining agroecology anymore but for measuring it, in an effort of harmonization. In addition: foster knowledge co-creation, knowledge sharing and colearning (CFS policy recom. 4)
- The role of governments remains decisive in providing policy instruments to farmers, but also to academia, especially monitoring systems and sharing information
- Some of the big opportunities : 1) harmonization, 2) the discussion about certification/ standards, 3) a systems approach, and 4) the loaded discussion about what is "science"- not only agronomy, but also environmental science, social science, data science, economics, etc

THANK YOU!