Innovationscenter
for Økologisk Landbrug

Regenerativt Landbrug

- hvem, hvad og hvorfor?

STØTTET AF
Promilleafgiftsfonden for landbrug

Jon Aagaard Enni, konsulent, Team Planter og Jord, jone@icoel.dk

Agenda

- **Introduktion**
  - Regenerativt som begreb
  - Principper for regenerativt økologisk landbrug i DK
- **Hvorfor?**
  - Behovet for omstilling af landbruget
  - De største trusler mod jordens sundhed i DK
- **Hvem?**
  - Danmark
  - EU
  - Globalt
- **Hvad?**
  - Praksistiltag
  - Systemtænkning
  - Fra "Naturbaserede løsninger" til Agroøkologi
  - Hvad med det økologiske landbrug?

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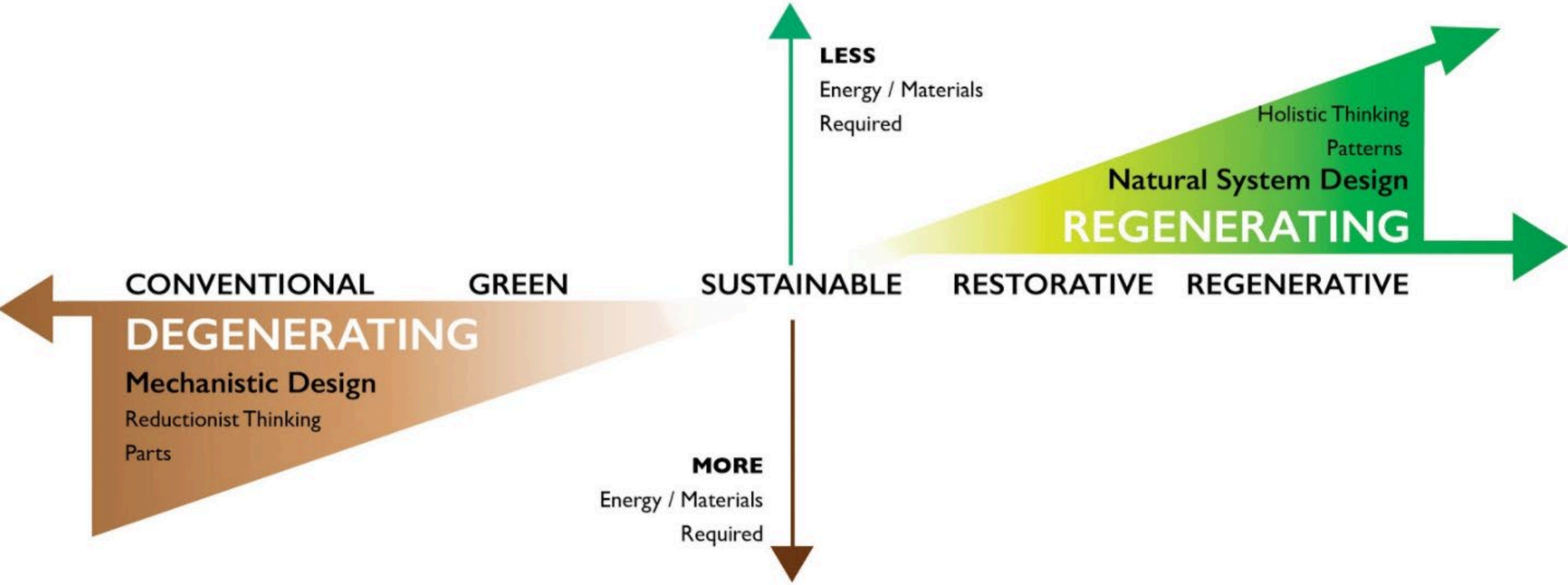
Fotograf: Jon Aagaard Enni

Hvad betyder ”regenerativt”?



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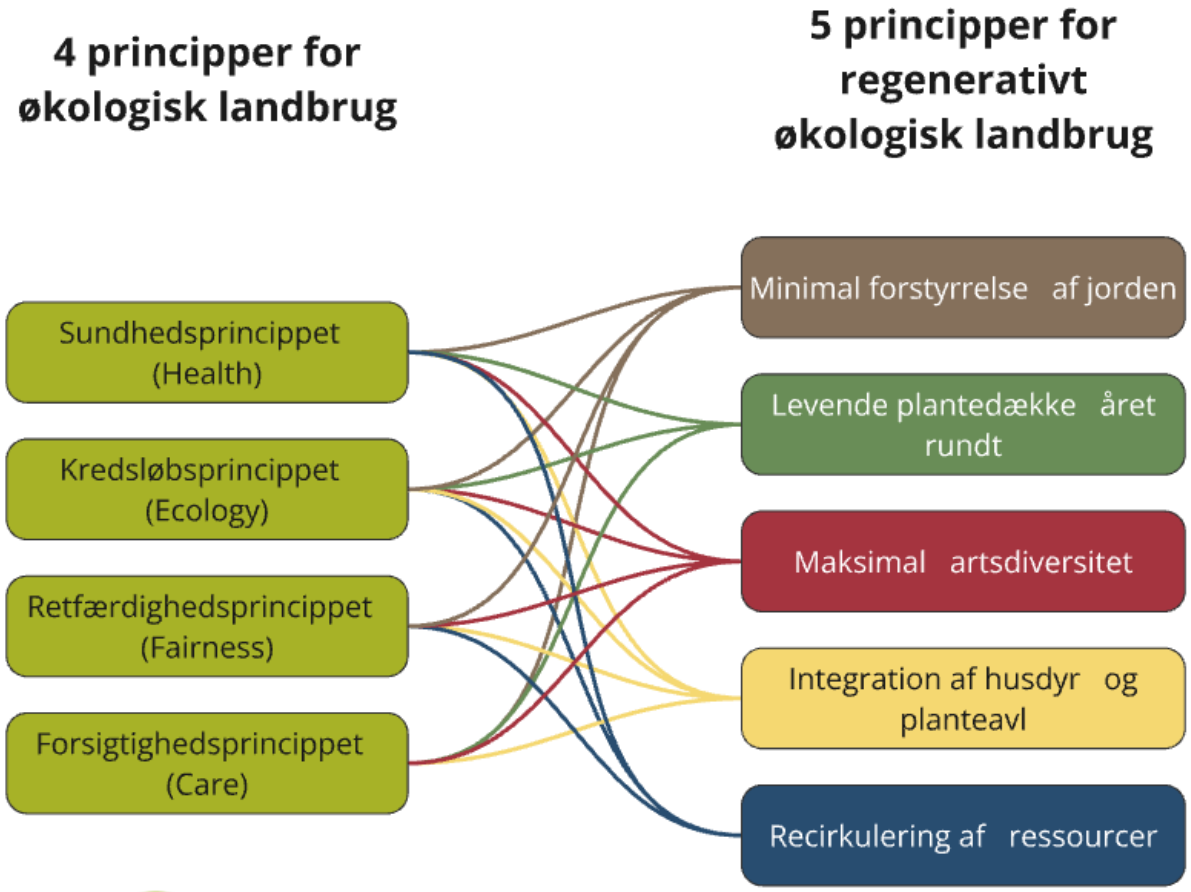
Kilde: https://www.slowood.hk/blogs/eco-stories/the-regenerative-power-of-soil
Formentlig adapteret fra Bill Reed, Regenesis: https://good-design.org/designing-the-possible-this-decade/figure-1-trajectory-of-ecological-design-bill-reed-regenesis/

Principper for regenerativt, økologisk landbrug i DK



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IFOAM ORGANICS INTERNATIONAL

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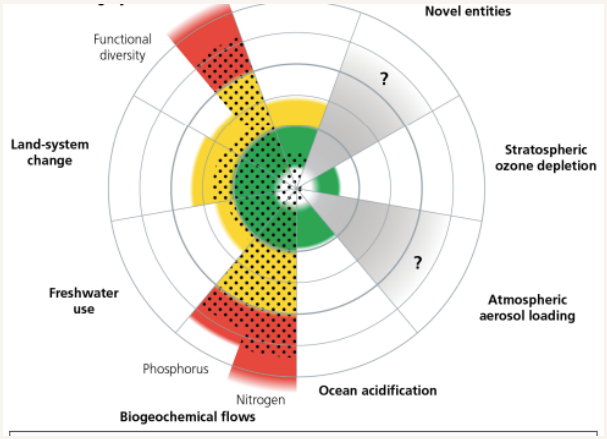
Hvorfor?

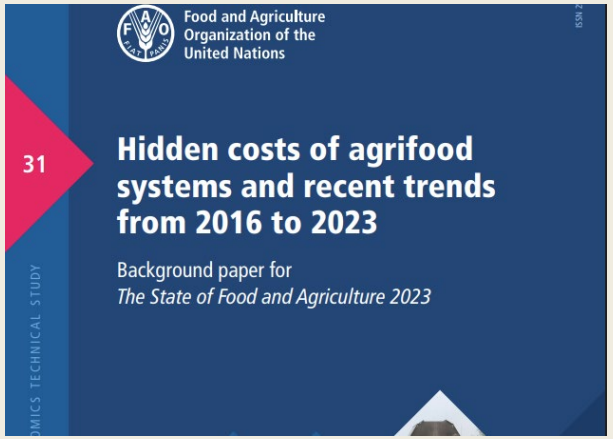
Behovet for systemisk forandring af landbruget - også det danske



Miljø

Landbruget står for **~37% af DK's samlede klimaaftryk**

Det anslås, at **landbrug er grunden til 80% af biodiversitetstab** globalt (Campbell et al. (2017)

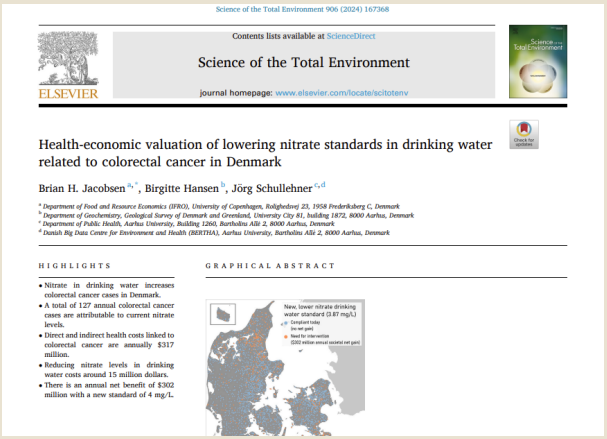


Økonomi

FAO: Dansk landbrug skaber 1,78 kr. i **"eksternaliteter"** for hver 1 kr. det bidrager med til samfundsøkonomien

EU: Klimarelaterede **tab i landbruget mellem**

200-400 mia. kr./årligt



Sundhed

KU: **Samfundet ville spare 2 millarder kr.** - på udgifter til behandling af tarmkræft alene - **hvis grænseværdien for nitrat i drikkevandet blev sænket**

Etisk Råd: Hele svineproduktionen bør lægges om til økologi, fordi **antibiotikaresistens truer folkesundheden**

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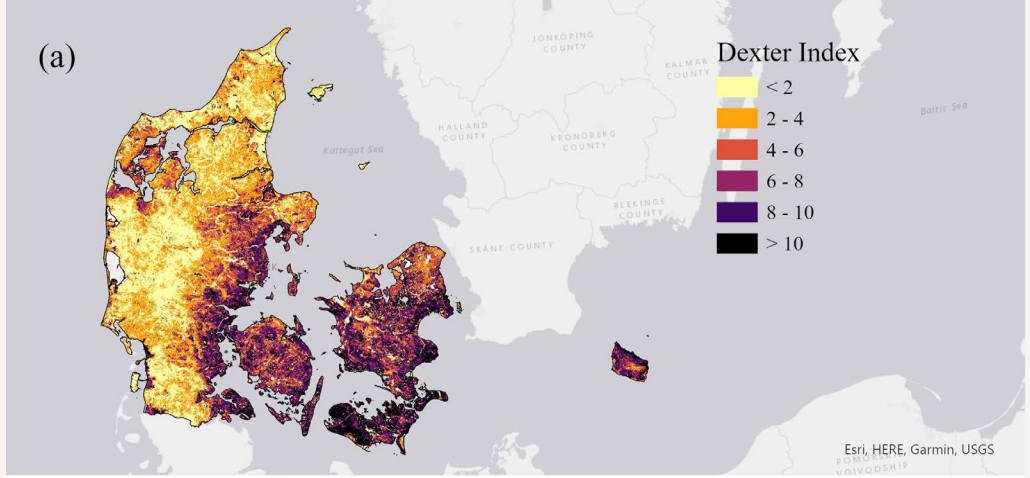
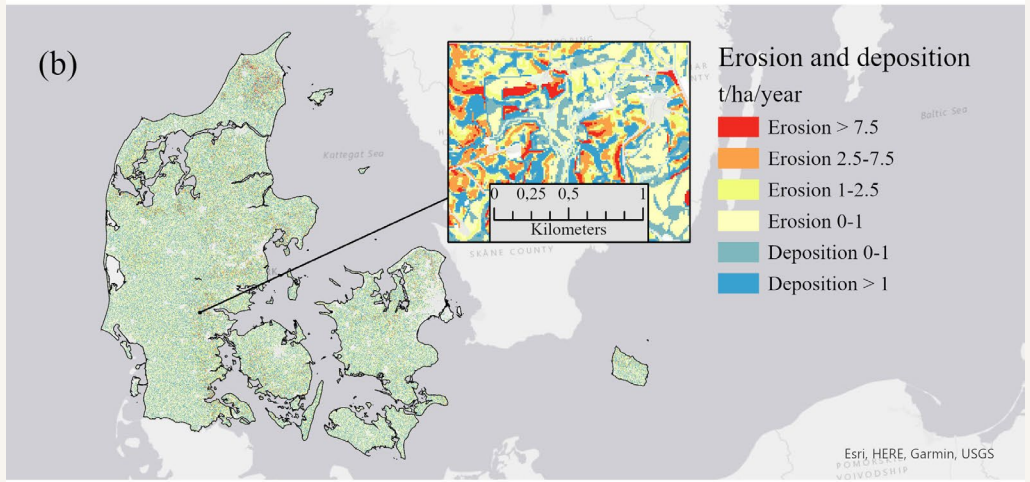
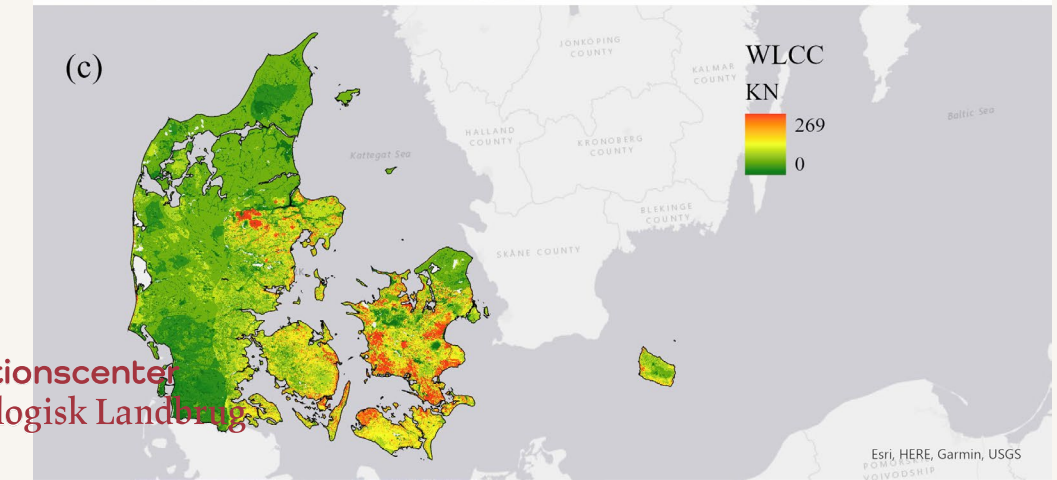
Kilder: Lord, S. 2023. Hidden costs of agrifood systems and recent trends from 2016 to 2023 – Background paper for The State of Food and Agriculture 2023. FAO Agricultural Development Economics Technical Study, No. 31. Rome, FAO. https://doi.org/10.4060/cc8581en; Nielsen, et al. 2024. Denmark's National Inventory Report 2024. Emission Inventories 1990-2022 - Submitted under the United Nations Framework Convention on Climate Change. Aarhus University, DCE – Danish Centre for Environment and Energy, 768 pp.; Jacobsen, B. H., Hansen, B., & Schullehner, J. (2024). Health-economic valuation of lowering nitrate standards in drinking water related to colorectal cancer in Denmark. Science of the Total Environment, 906, 167368. Campbell, B. M., D. J. Beare, E. M. Bennett, J. M. Hall-Spencer, J. S. I. Ingram, F. Jaramillo, R. Ortiz, N. Ramankutty, J. A. Sayer, and D. Shindell. 2017. Agriculture production as a major driver of the Earth system exceeding planetary boundaries. Ecology and Society 22 (4):8. https://doi.org/10.5751/ES-09595-220408 ; fi-compass, 2025, https://www.fi-compass.eu/library/market-analysis/insurance-and-risk-management-tools-agriculture-eu







De tre største trusler mod jordsundhed i DK

(a) Tab af organisk stof

(b) Erosion

(c) Skadelig jordpakning

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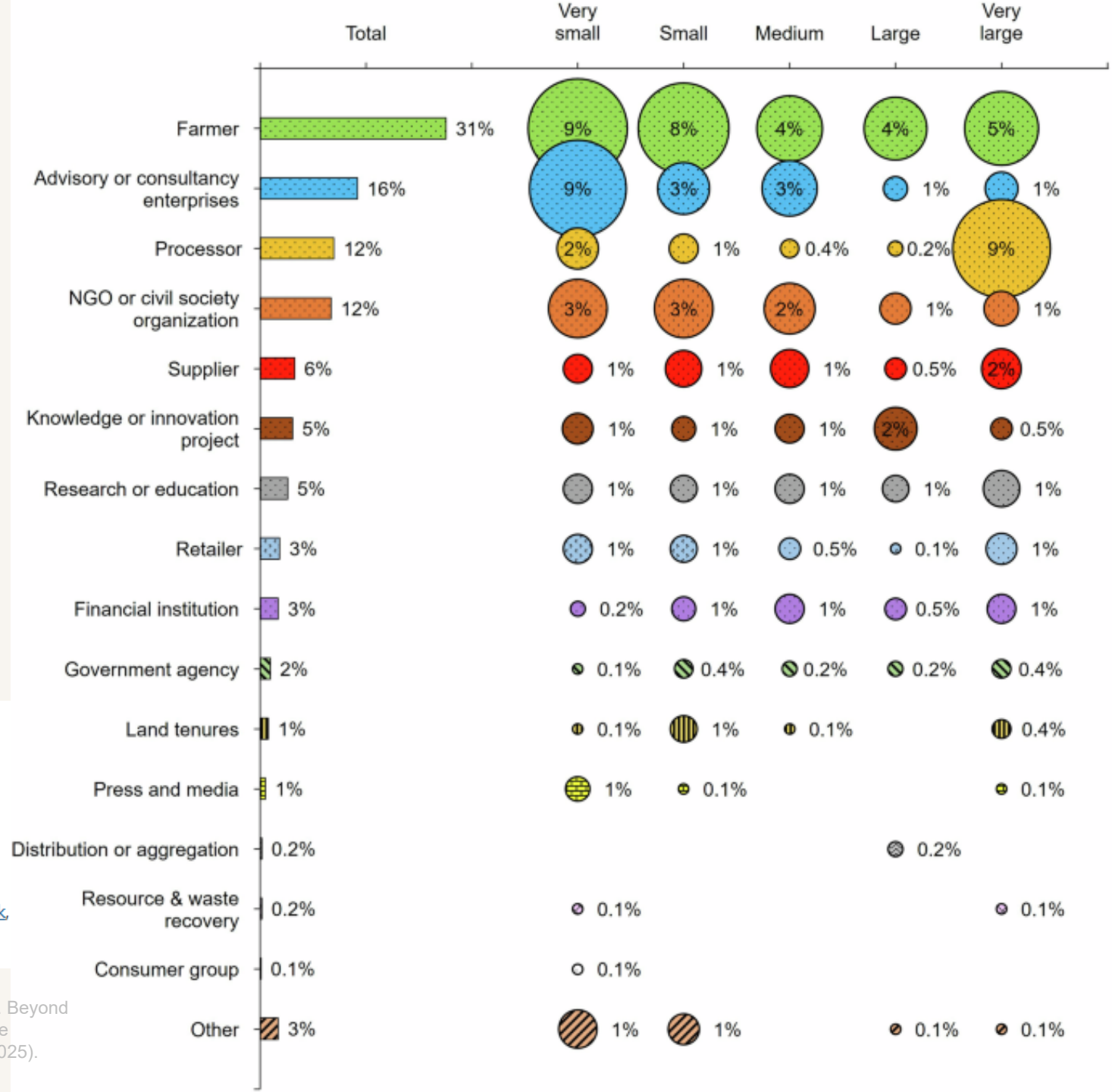
Kilde: Gomes et al. (2023) Soil assessment in Denmark: Towards soil functional mapping and beyond. Front. Soil Sci. 3:1090145. doi: 10.3389/fsoil.2023.1090145

Hvem?


The Potential of
Forenet Kredit
YARA
Nestlé
Agrovi
Den bedste løsning på jorden
frej
Velkommen til lanceringen af vores nye
Partnerskab for Regenerativt Landbrug
BCG
FOOD NATION
novo nordisk fonden
frej

EU

- 849 aktører fra ES, FR, NL og DE
- Flest landbrugere (de mindste fylder mest)
- 3.-flest fødevarevirksomheder (de allerstørste fylder mest)



nature › npj sustainable agriculture › articles › article

Article | Open access | Published: 05 November 2025

Beyond the buzz: analyzing actors promoting regenerative agriculture in Europe

Loekie Schreefel, Emile Steenman, Fabian Adler, Ricardo Buffara, Stephan Freundt, Fabrice DeClerck, Jessica Duncan, Ken E. Giller, Howard Koster & Hannah H. E. van Zanten

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Kilde: Schreefel, L., Steenman, E., Adler, F. et al. Beyond the buzz: analyzing actors promoting regenerative agriculture in Europe. npj Sustain. Agric. 3, 59 (2025). https://doi.org/10.1038/s44264-025-00100-1

EU

European Association for Regenerative Agriculture (EARA)

Figure 1: Overview of regenerating forms of agriculture

Regenerating Full Productivity Index
Europe

	Category	Indicator	Weighing	Relative Difference to Benchmark	Benchmarked Category Results
Economical	Yield and Income	Kcal	x1	-2%	6%
		Protein	x1	-2%	
		Gross Margin	x1	20%	
	Inputs	Fuel	x1	- %	69%
		Nitrogen	x1	61%	
		Phosphor	x1	51%	
		Pesticides	x1	75%	
		Feed	x1	87%	
Ecological	Water	Evapotranspiration	x1	1%	1%**
		Avg Surface Temp	x1	1%	
	Climate	Fuel	x1	- %	37%
		Nitrogen	x1	61%	
		Photosynthesis	x1	25%	
		Soil Cover	x1	24%	
		LSU	x1	- %	
	Biodiversity	Pesticides	x1	75%	35%
		Photosynthesis	x1	25%	
		Soil Cover	x1	24%	
		Plant Diversity	x1	16%	

Regenerating Full Productivity Performance **33%***

*Presenting here the average of all single country RFP scores assessed
**Insufficient technological resolutions in Phase 1. Details can be found in the Discussions chapter at the end of the report.

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Kilde: European Alliance for Regenerative Agriculture. 2025. Farmer-led study on Europe's Regenerating Full Productivity. https://eara.farm/wp-content/uploads/EARA_Farmer-led-Research-on-Europes-Full-Productivity_2025_06_03.pdf

GlobalT

“Regenerative agriculture is an outcome-based farming approach that protects and improves soil health, biodiversity, climate, and water resources while supporting farmer livelihoods.”

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SAI PLATFORM

Globalt

“Regenerative systems improve the environment, soil, plants, animal welfare, health, and communities.

The opposite of Regenerative is Degenerative This is an essential distinction in determining practices that are not regenerative.

Agricultural systems that use Degenerative Practices and inputs that damage the environment, soil, health, genes, and communities and involve animal cruelty are not regenerative. The use of **synthetic toxic pesticides, synthetic water-soluble fertilizers, genetically modified organisms, confined animal feeding operations, exploitive marketing and wage systems, destructive tillage systems, and the clearing of high-value ecosystems are examples of degenerative practices.**
Such systems must be called degenerative agriculture to stop greenwashing and hijacking.
Regeneration International asserts that to heal our planet, all agricultural systems should be regenerative, organic, and based on the science of agroecology.”

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REGENERATION INTERNATIONAL

Kilde: https://regenerationinternational.org/2023/12/22/the-definition-of-regenerative-agriculture

GlobalT

“Regenerative agriculture is an outcome-based farming approach that protects and improves soil health, biodiversity, climate, and water resources while supporting farmer livelihoods.”

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SAI PLATFORM

Eksempel: Bayer

”Potentiale til at *forme* regenerativt landbrug på >160 mio. ha”

Estimerer op til **30 mia. i mersalg**, og nævner følgende:

- Nyt (GMO-) majsdyrkningssystem
- **Et nyt herbicid**
- **To nye fungicider**

Bayer // Global

This is Bayer · Health · Agriculture · Products · Innovation · Sustainability · Media · Investors · Career

Home > Media > News

PRESS KIT

PRESS KIT

Overview
News
Stories
Speeches
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Social Media
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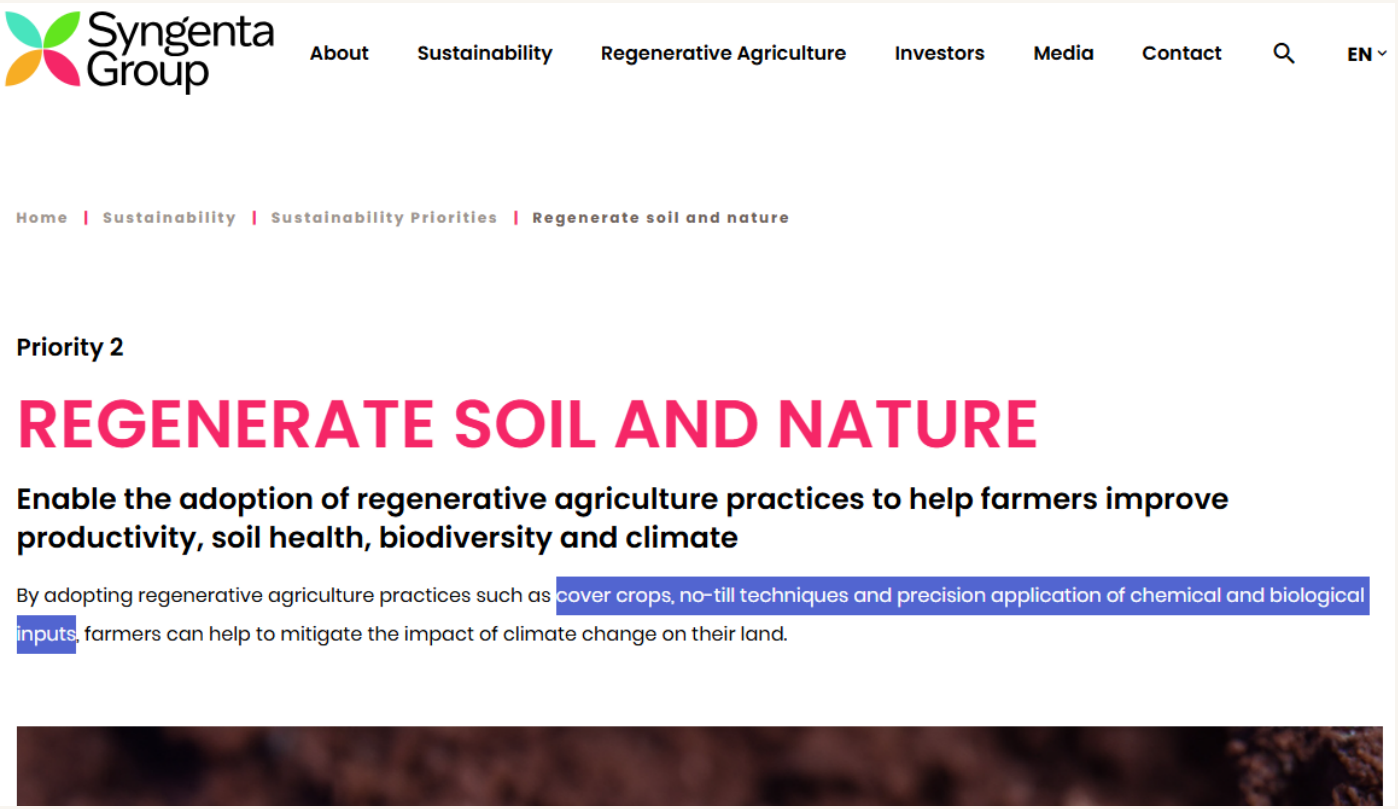
June 20, 2023

Crop Science Innovation Summit 2023:

Bayer sees more than doubling of accessible markets and potential to shape regenerative agriculture on more than 400 million acres

Expectation to tap into more than 100 billion euros of value in accessible and ag-adjacent markets / Unparalleled pipeline with estimated peak sales potential of more than 30 billion euros to promote regenerative agricultural practices and enable farmers to support both global food security and mitigation of climate change / Includes transformative technologies like the Preceon Smart Corn System, next-generation insect and weed control traits in corn and soybeans, hybrid wheat, direct-seeded rice, a new first-of-its-kind herbicide molecule, as well as two new fungicides / Industry-leading technologies such as alternatives to synthetic fertilizer, specialized cover crops and tools for carbon farming create upside potential and allow for productivity increases while preserving the soil and helping reduce the environmental impact of farming

Kilder: https://www.foei.org/wp-content/uploads/2024/03/FOEI_The-Agribusiness-model_ENG-1.pdf
https://www.bayer.com/media/en-us/bayer-sees-more-than-doubling-of-accessible-markets-and-potential-to-shape-regenerative-agriculture-on-more-than-400-million-acres



Eksempel 2: Syngenta

Regenerativt landbrug angives som bæredygtighedsprioritet #2.

Søger at forbedre:

- Produktivitet
- Jordsundhed
- Biodiversitet
- Klima

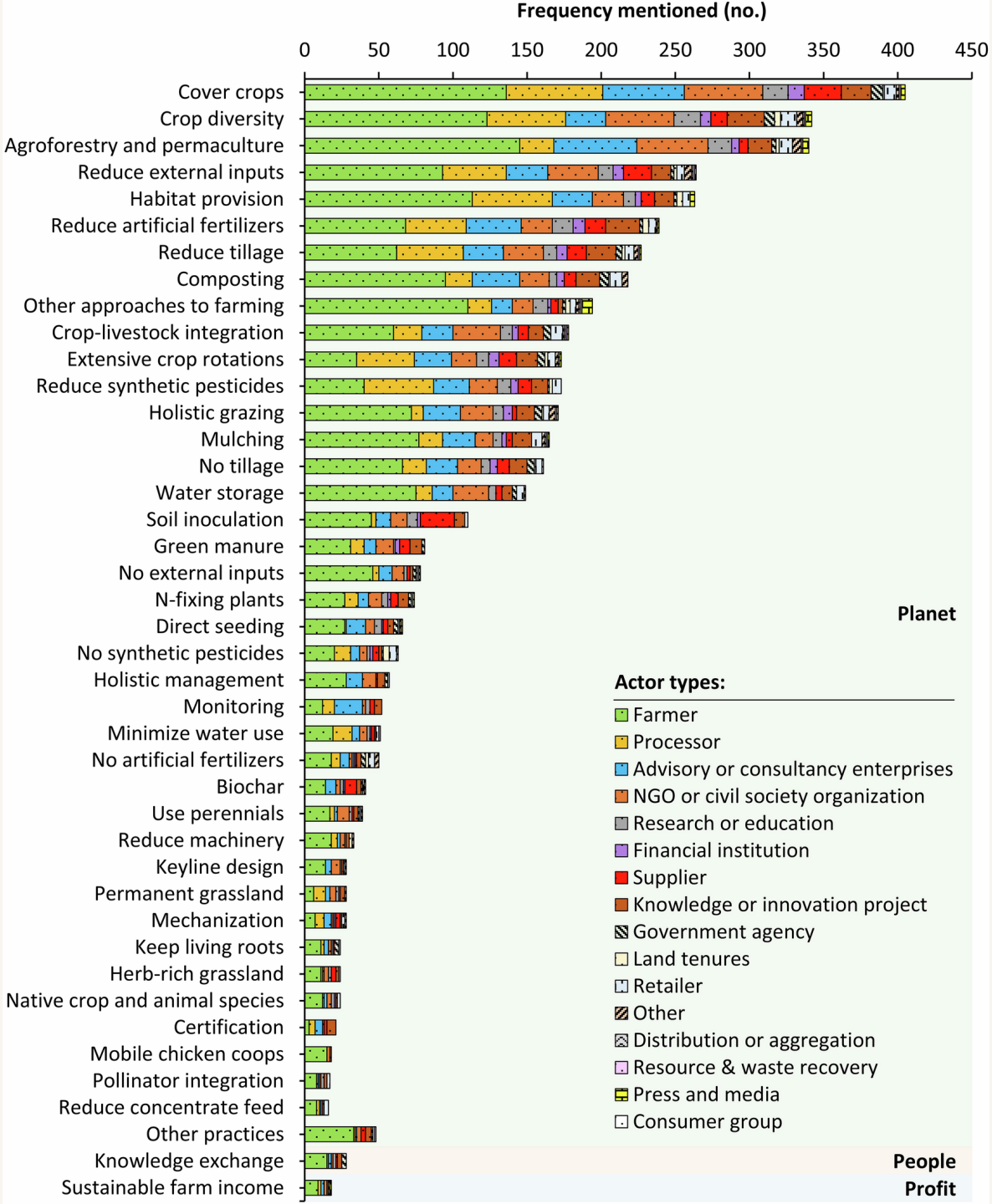
Som eksempler på praksistiltag nævnes:

- Efterafgrøder
- No-Till
- **Præcisionstildeling af kemiske og biologiske input**

Hvad?

Hvilke praksistiltag nævnes?

1. Efterafgrøder
2. Afgrødediversitet
3. Skovlandbrug og permakultur
4. Reduktion af eksterne input
5. Habitatforbedring



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Kilde: Schreefel, L., Steenman, E., Adler, F. et al. Beyond the buzz: analyzing actors promoting regenerative agriculture in Europe. npj Sustain. Agric. 3, 59 (2025). https://doi.org/10.1038/s44264-025-00100-1

Er det agroøkologi?

1. Efterafgrøder
2. Afgrødediversitet
3. Skovlandbrug og permakultur
4. Reduktion af eksterne input
5. Habitatforbedring

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Kilde: https://agroecology-coalition.org/wp-content/uploads/2024/09/principles_infographic_EN_interactif.pdf

Ja, måske…

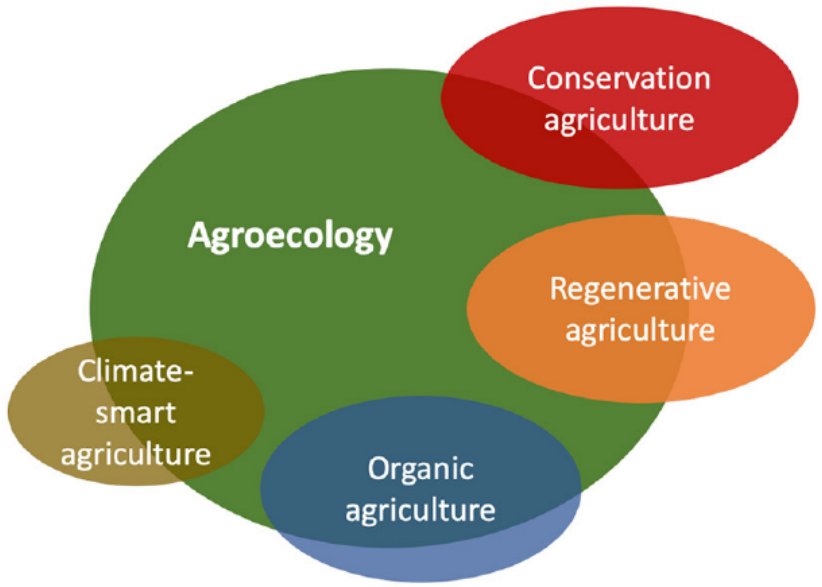

FIGURE 5
The relation between agroecology (science, practice and movement) and other approaches to sustainable agriculture, depicting their degree of overlap as intersecting sets. As a scientific discipline, agroecology provides the ecological knowledge that underpins sustainable practices under the other approaches.

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OPINION article

Front. Sustain. Food Syst., 02 August 2022

Sec. Agroecology and Ecosystem Services

Volume 6 - 2022 | https://doi.org/10.3389/fsufs.2022.844261

Regenerative agriculture—agroecology without politics?

Pablo Tittonell [1,2,3*] Veronica El Mujtar [1] Georges Felix [4]

Yodit Kebede [5] Luciana Laborda [1] Raquel Luján Soto [6,7]

Joris de Vente [6]

1. Agroecology, Environment and Systems Group, Instituto de Investigaciones Forestales y Agropecuarias de Bariloche (IFAB), INTA-CONICET, San Carlos de Bariloche, Argentina
2. Agroécologie et Intensification Durable (AïDA), Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), Université de Montpellier, Montpellier, France
3. Groningen Institute of Evolutionary Life Sciences, Groningen University, Groningen, Netherlands
4. Centre for Agroecology, Water and Resilience, Coventry University, Coventry, United Kingdom
5. Eco&Sols, Université de Montpellier, IRD, CIRAD, INRAE, Institut Agro, Montpellier, France
6. Soil and Water Conservation Research Group, Spanish Research Council (CEBAS-CSIC), Murcia, Spain
7. Agroecology, Food Sovereignty and Commons Research Team, University of Córdoba, Córdoba, Spain

View less

…men lighederne aftager nedstrøms

TABLE 1 A comparison between agroecology and three different types of regenerative agriculture (RA), using the 10 elements that define agroecology (FAO, 2019).

Agroecology	Philosophy RA	Development RA	Corporate RA
Science, practice, movement: social and ecological principles, landscape approaches, bottom-up, different sources of knowledge	RA as adopted by individuals or networks, based on philosophical principles, close to permaculture or biodynamic approaches	RA as promoted by development organizations, social and ecological principles, landscape approaches, often top-down, close to organic and low input farming	RA as proclaimed by enterprises, based on practical agronomic principles and corporate sustainability approaches, close to conservation agriculture
Diversity			
Efficiency*			
Recycling			
Resilience			
Synergy			
Human and social values			
Co-creation and sharing of knowledge			
Food culture and traditions			
Circular and solidarity economy			
Responsible governance			

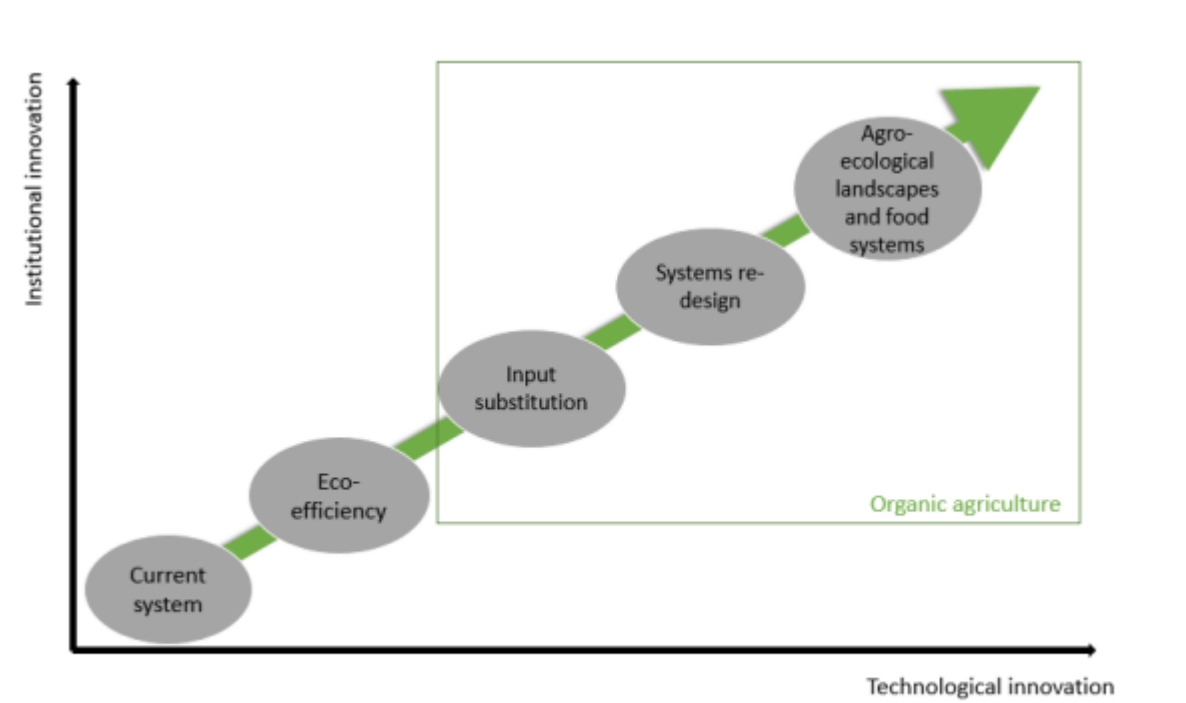
*Efficient use of solar radiation, water, nutrients, energy and labor, based on primary productivity.
Green = close match; Yellow = partial match; Red = no match (for the color blind, respectively: 75% light dotted; 100% even; 25% light dotted).

1. Individuelle landbrugere og græsrodsbevægelser
2. NGO'er og udviklingsinstituttioner
3. Virksomheder

Kilde: Tittonell P, El Mujtar V, Felix G, Kebede Y, Laborda L, Luján Soto R and de Vente J (2022) Regenerative agriculture—agroecology without politics? Front. Sustain. Food Syst. 6:844261.
doi: 10.3389/fsufs.2022.844261

Hvad med det økologiske landbrug?

Agroøkologi og økologisk landbrug



Source: adapted from Tittonel, 2014 and from Barberi et al, 2017

Figure 2: Development of agro-food models and role of organic agriculture

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Kilde: IFOAM (2020)
https://www.organicseurope.bio/content/uploads/2020/06/ifoameu_position_paper_agroecology.pdf?dd

IFOAM EU GROUP MAKING EUROPE MORE ORGANIC

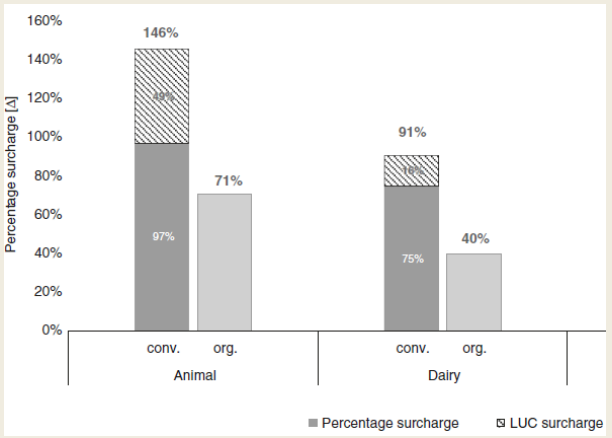
Økologisk landbrug i relation til industrilandbruget

Miljø

DK Øko har ca. **30% mere biodiversitet**

Lavere N-tildeling = **mindre udvaskning**

Lavere klimaaftryk/ha



(Bio-) Økonomi

DK Øko planteavl yder ca. **75% af konv. udbytter** med ca. **50% input**

TCA: Øko kød og mælk burde koste 50% af konv., hvis LUC-klimaeffekter medregnes

Sundhed

Review: Indtag af **økologisk mad** linket til signifikant **lavere risiko for hjerte-karsygdomme**

Antibiotikaforbrug **7% af konv.** (svineproduktion)

Ingen syntetiske input

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Kilder:Pieper, M., Michalke, A. & Gaugler, T. Calculation of external climate costs for food highlights inadequate pricing of animal products. *Nat Commun* **11**, 6117 (2020). https://doi.org/10.1038/s41467-020-19474-6 ; Poulia KA, Bakaloudi DR, Alevizou M, Papakonstantinou E, Zampelas A, Chourdakis M. Impact of organic foods on chronic diseases and health perception: a systematic review of the evidence. Eur J Clin Nutr. 2025 Mar;79(2):90-103. doi: 10.1038/s41430-024-01505-w ; Jespersen, Lizzie Melby; Skovsbøl, Ulla and Halberg, Niels (Eds.) (2015) Økologiens bidrag til samfundsgoder Vidensyntese 2015. Internationalt Center for Forskning i Økologisk Jordbrug og og Fødevaresystemer, Tjele, Denmark. https://orgprints.org/id/eprint/43012/

REGENERATIVT LANDBRUG

I ØKOLOGISK LANDBRUG - EN VIDENSYNTESE

JOHANNES RAVN JØRGENSEN (EDITOR)

DCA RAPPORT NR. 230 • SEPTEMBER 2024 • RÅDGIVNING

AARHUS
UNIVERSITET
DCA - NATIONALT CENTER FOR FØDEVARER OG JORDBRUG

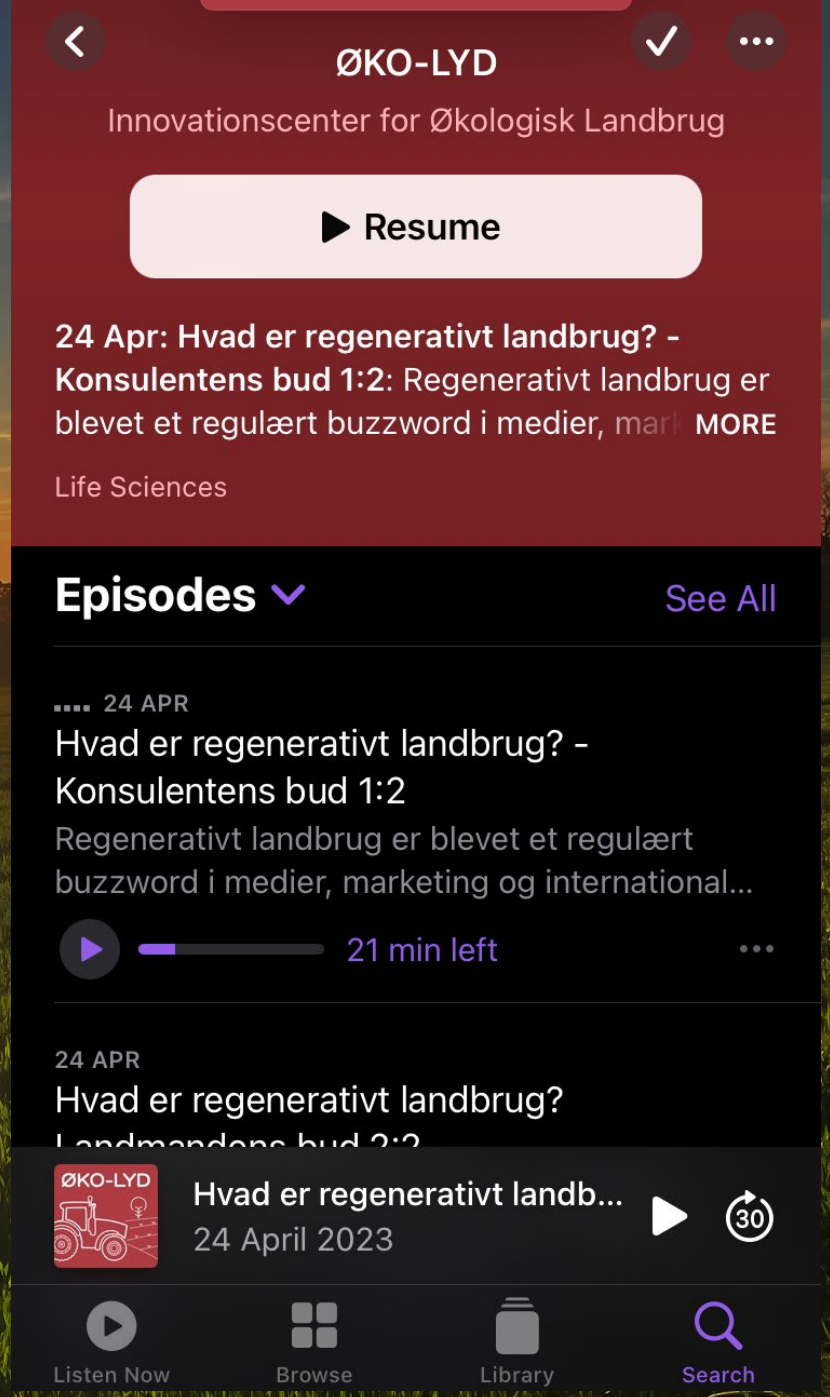
Kan økologerne blive mere regenerative?

- Lavere frekvens og intensitet af jordbearbejdning (uden udbyttetab)
- Mindre skadelig jordpakning
- Flere plantearter i græsmarker, efterafgrøder og hovedafgrøder
- Større fokus på roddybde og -type
- Mere og bedre afgræsning
- Selvforsyning med foder
- Bedre udnyttelse af plantenæringsstoffer

Videnssyntesen konkluderer, at der er betydelige potentialer forbundet med integrationen af regenerative principper i økologisk landbrug, herunder forbedret jordkvalitet, øget biodiversitet og reduceret klimapåvirkning. Samtidig peges der på behovet for yderligere forskning og udvikling af klare definitioner og reguleringer for at sikre en effektiv og konsistent implementering. Der er også et behov for at fremme vidensdeling og uddannelse blandt landmænd for at overkomme de identificerede barrierer.

Tak for jeres tid!

Følg podcasten ØKO-LYD
for mere information om regenerativt landbrug i en dansk, økologisk kontekst.



Fotograf: Jon Aagaard Enni