Introduction to Urban Agriculture

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What do You Know About Food?

What is the Difference Between a Fruit and Vegetable?









What is the Difference Between a Fruit and a Berry?





What is the Difference Between a Herb or Spice?







What do you Know About Global Food Systems?





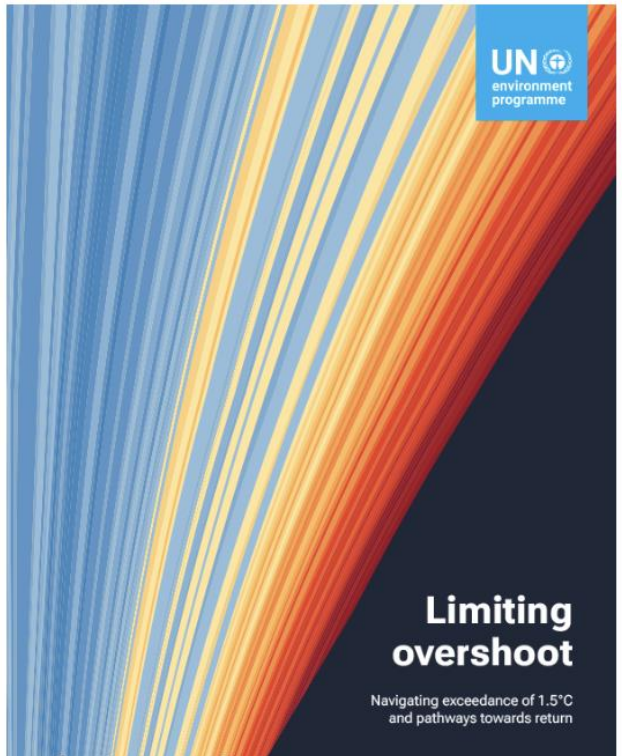


The Global Food System is NOT Sustainable

02 SEPTEMBER 2026 | REPORT

Limiting Overshoot - Navigating exceedance of 1.5°C and pathways towards return

Authors: UNEP

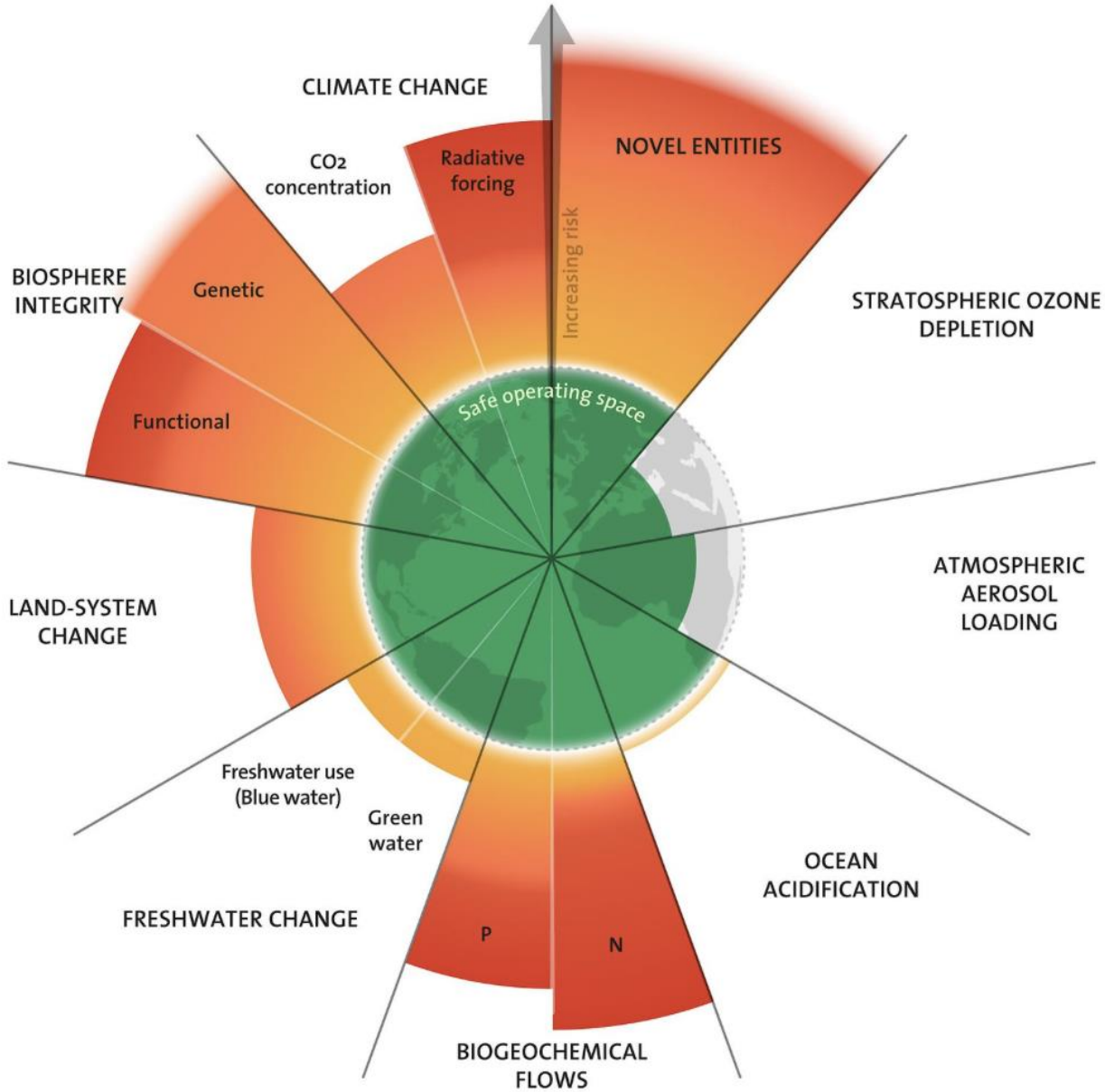


Limiting global warming to 1.5°C remains a cornerstone of the Paris Agreement, yet under current policies and alternative near-term trajectories, exceedance of 1.5°C is now widely assessed as unavoidable.

FULL REPORT

FURTHER RESOURCES

- → Full Report
- → Key messages - Chinese
- → Key messages - English
- → Key messages - Russian
- → Key messages - Spanish
- → Web story: Overshoot explained: 5 things to



The 2025 update to the Planetary boundaries. Licensed under CC BY-NC-ND 3.0. Credit: "Azote for Stockholm Resilience Centre, based on analysis in Sakschewski and Caesar et al. 2025".

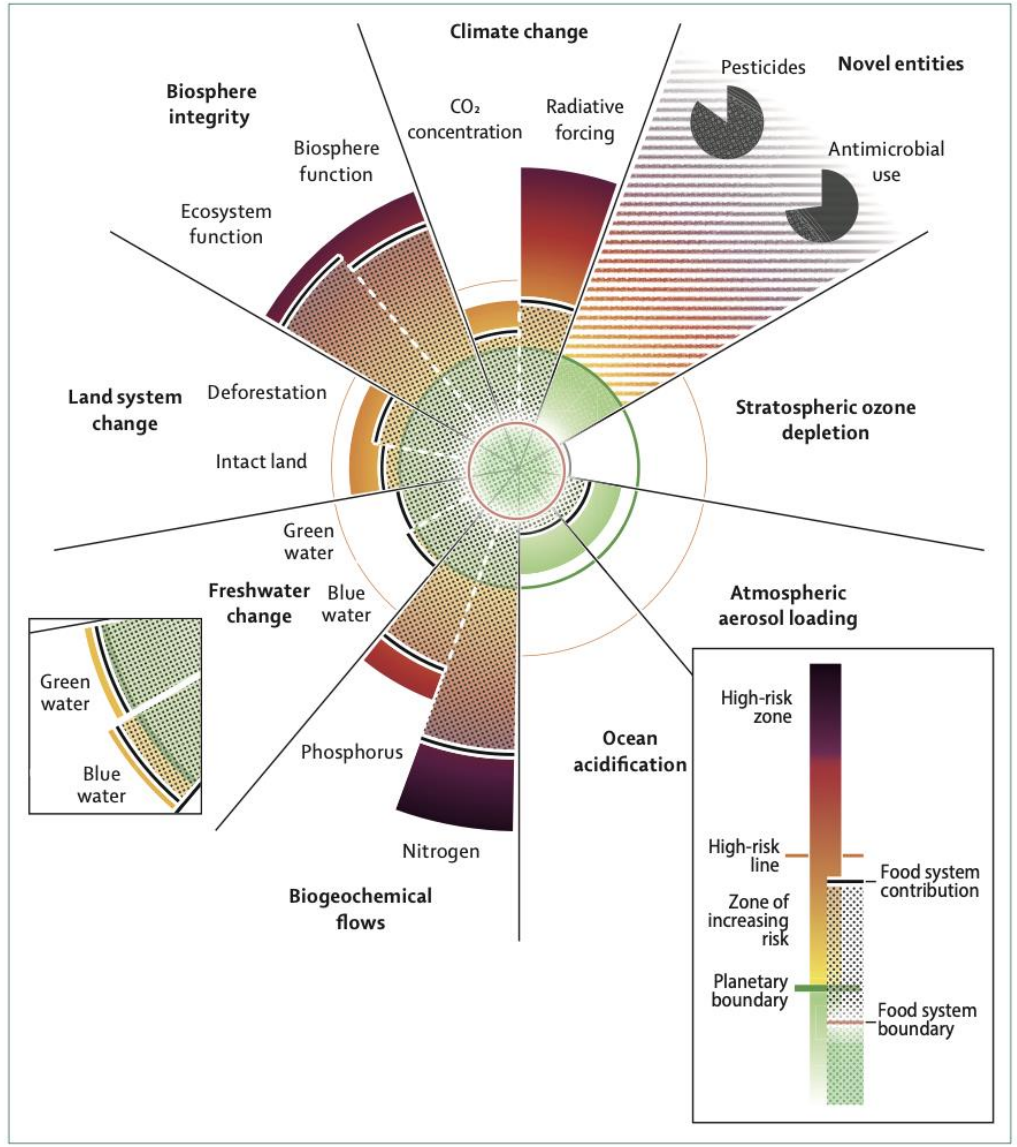
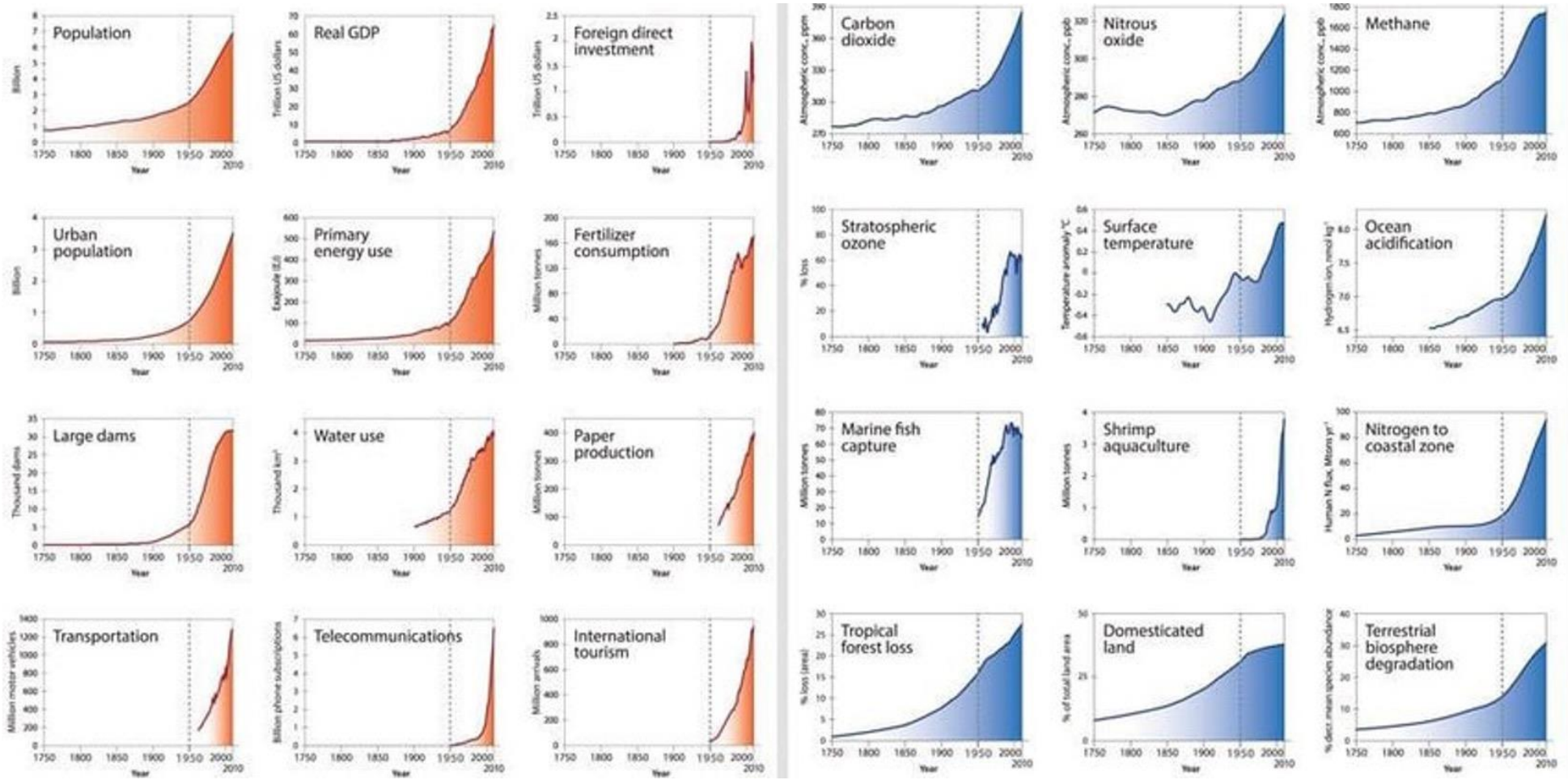


Figure 1: **Status of food system pressures across all nine planetary boundaries (indicated by the black dotted pattern) and the food system boundaries (red line)**

The food system boundaries are normalised in relation to planetary boundaries (green sphere). The radar plot is adapted with permission from Richardson et al (data)[14] and Rockström et al (visual).[15] The food system contribution (in percentages) is projected based on the wedges' lengths, starting from the planetary boundary for the six transgressed boundaries, and the food boundary for the three other boundaries (see te Wierik et al[16] for details). The food system's contributions to pesticides and antimicrobial use are shown as pie charts (with the food system share in grey) within the larger set of all novel entities (which were previously unquantified). Note that CO_2 concentration is provided in terms of CO_2 equivalents, as in table 2. Adapted from te Wierik et al.[16]

The Great Acceleration

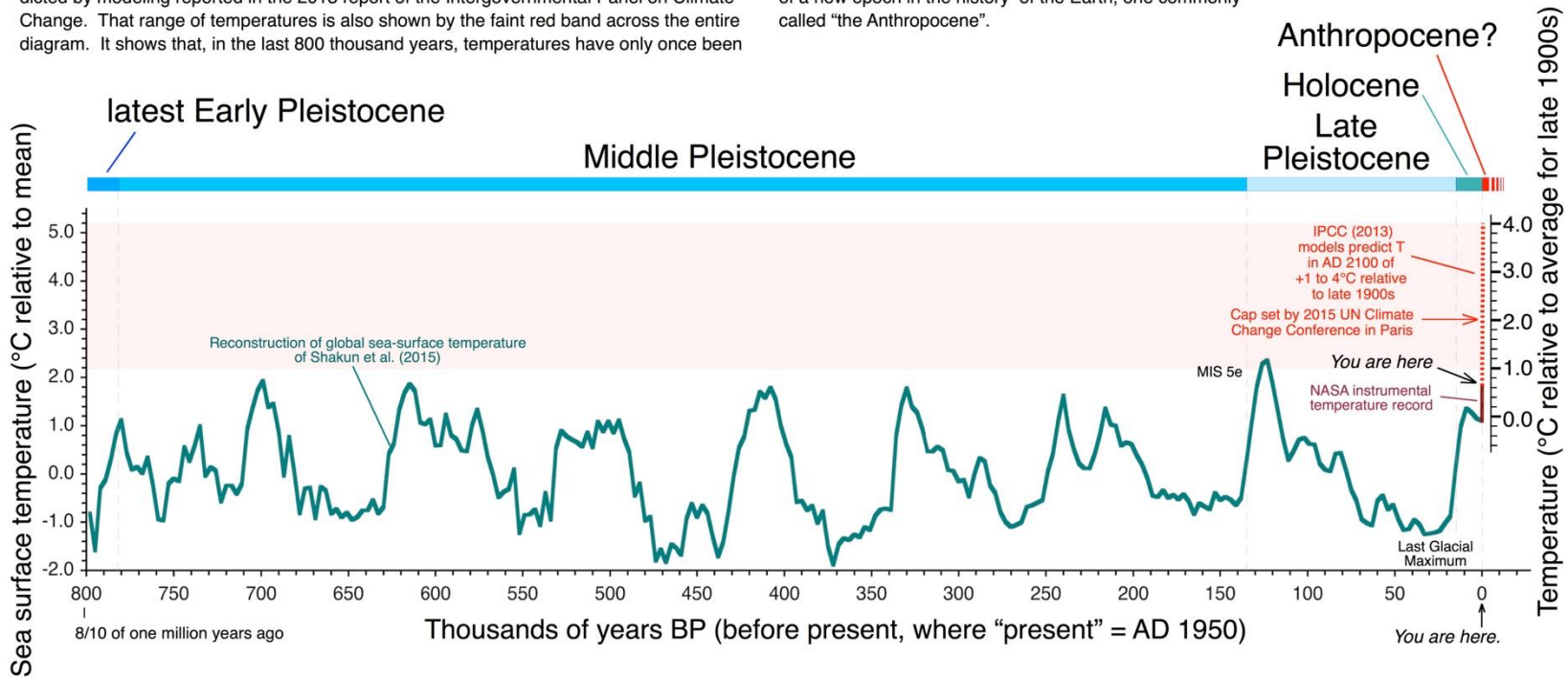


Temperatures from the Middle Pleistocene to the future

The diagram below shows in green a reconstruction of sea-surface temperature made from multiple marine sediment sequences, using the Mg/Ca ratios in the calcite ($CaCO_3$) of fossil planktic foraminifera. The record is plotted relative to its mean because temperatures at lower latitude locations were greater than those at high-latitude locations, but all show the same pattern and thus can be "stacked" to give one record of relative temperature.

In the rightmost part of the diagram, in the part representing the last 150 years, a dark red solid curve shows average Earth-surface temperature as derived from multiple thermometer records. A dashed bright red line shows the range of temperatures predicted by modeling reported in the 2013 report of the Intergovernmental Panel on Climate Change. That range of temperatures is also shown by the faint red band across the entire diagram. It shows that, in the last 800 thousand years, temperatures have only once been as high as those expected by AD 2100. That one time was during the last interglacial, the Eemian or MIS 5e, when sea level was at least six meters higher than present.

Another FQS page shows the last 22 thousand years in more detail; it is called "Temperatures from the Last Glacial Maximum to the future". Like this one, it shows that the rate of temperature increase in the last 150 years and the temperatures expected in the coming century are strikingly unlike those of the Holocene and Pleistocene. The changes that have happened and are expected are so great that they merit great concern from a societal standpoint and, from a geological standpoint, merit recognition of a new epoch in the history of the Earth, one commonly called "the Anthropocene".



Sources, from left to right:

Shakun, J. D., Lea, D.W., Lisiecki, L.E., and Raymo, M.E., 2015, An 800-kyr record of global surface ocean $\delta^{18}O$ and implications for ice volume-temperature coupling. Earth and Planetary Science Letters 426, 58-68.

U.S. National Aeronautics and Space Administration (NASA) GISS Surface Temperature Analysis at data.giss.nasa.gov/gistemp/graphs_v3/ accessed 20 December 2015.

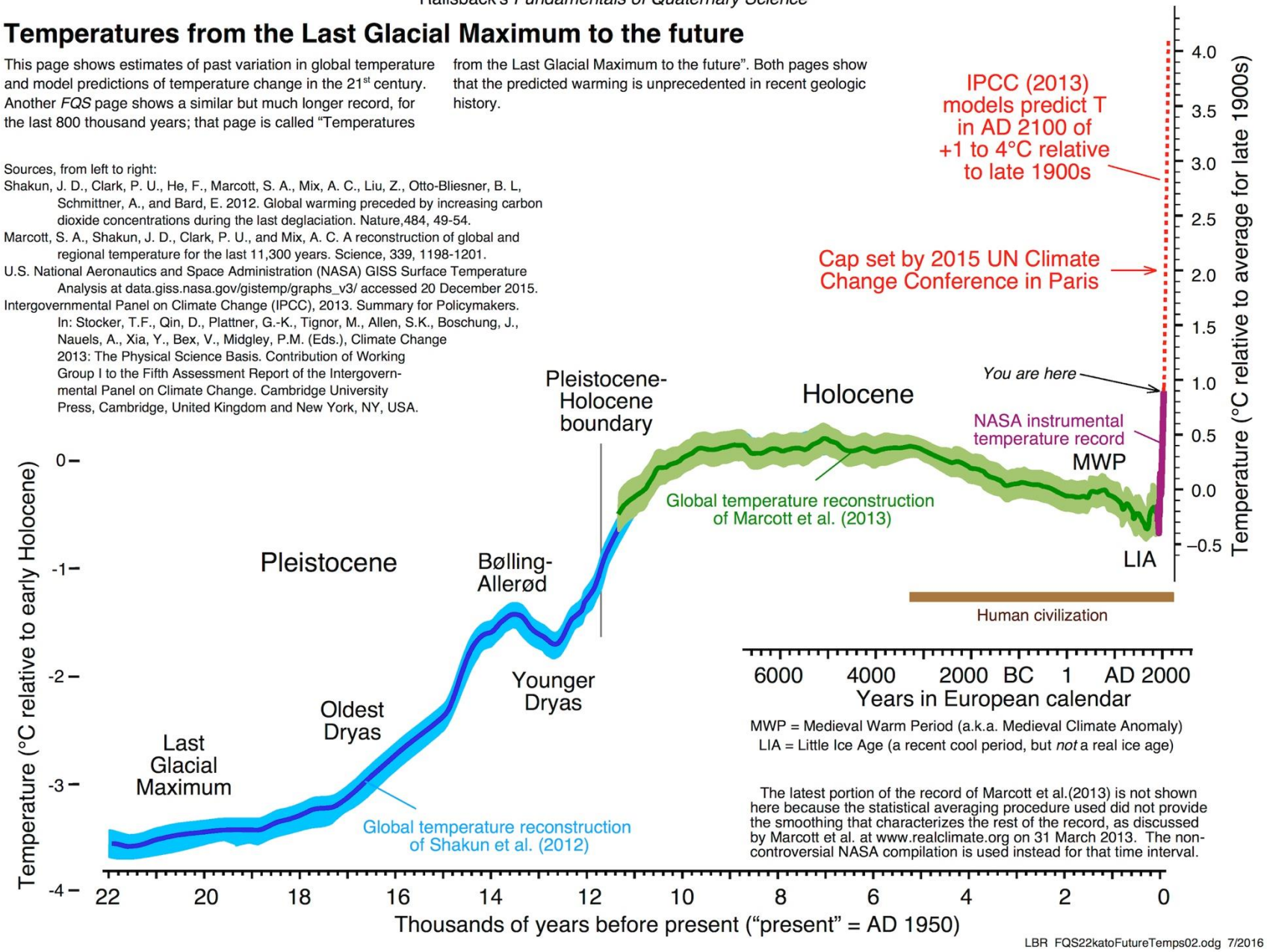
Intergovernmental Panel on Climate Change (IPCC), 2013. Summary for Policymakers. In: Stocker, T.F., Qin, D., Plattner, G.-K., Tignor, M., Allen, S.K., Boschung, J., Nauels, A., Xia, Y., Bex, V., Midgley, P.M. (Eds.), Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

LBR FQS800katoFutureTemps01.odg 12/2015

Temperatures from the Last Glacial Maximum to the future

This page shows estimates of past variation in global temperature and model predictions of temperature change in the 21st century. Another *FQS* page shows a similar but much longer record, for the last 800 thousand years; that page is called "Temperatures from the Last Glacial Maximum to the future". Both pages show that the predicted warming is unprecedented in recent geologic history.

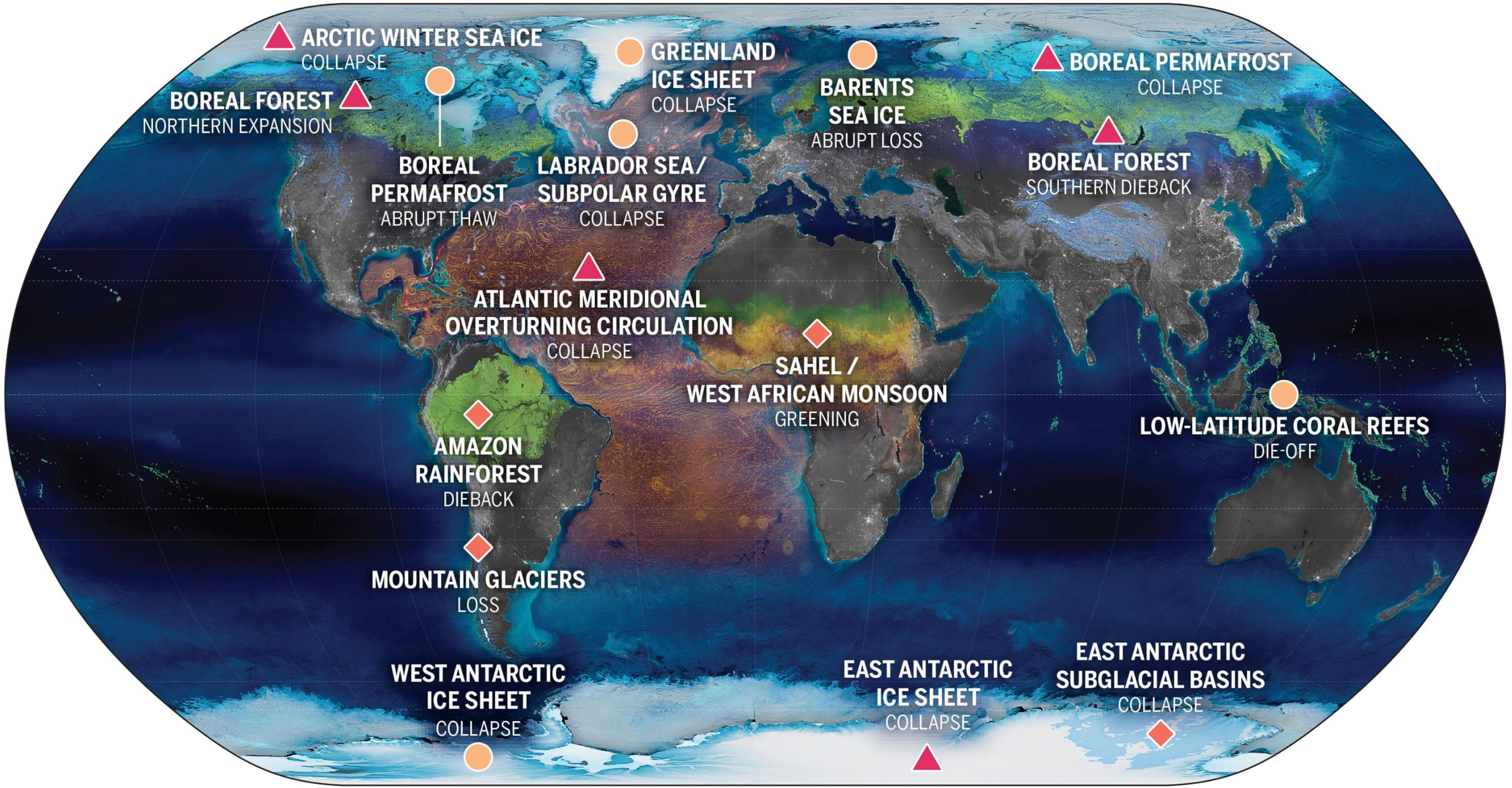
Sources, from left to right:
Shakun, J. D., Clark, P. U., He, F., Marcott, S. A., Mix, A. C., Liu, Z., Otto-Bliesner, B. L, Schmittner, A., and Bard, E. 2012. Global warming preceded by increasing carbon dioxide concentrations during the last deglaciation. Nature,484, 49-54.
Marcott, S. A., Shakun, J. D., Clark, P. U., and Mix, A. C. A reconstruction of global and regional temperature for the last 11,300 years. Science, 339, 1198-1201.
U.S. National Aeronautics and Space Administration (NASA) GISS Surface Temperature Analysis at data.giss.nasa.gov/gistemp/graphs_v3/ accessed 20 December 2015.
Intergovernmental Panel on Climate Change (IPCC), 2013. Summary for Policymakers. In: Stocker, T.F., Qin, D., Plattner, G.-K., Tignor, M., Allen, S.K., Boschung, J., Nauels, A., Xia, Y., Bex, V., Midgley, P.M. (Eds.), Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.



MWP = Medieval Warm Period (a.k.a. Medieval Climate Anomaly)
LIA = Little Ice Age (a recent cool period, but *not* a real ice age)

The latest portion of the record of Marcott et al.(2013) is not shown here because the statistical averaging procedure used did not provide the smoothing that characterizes the rest of the record, as discussed by Marcott et al. at www.realclimate.org on 31 March 2013. The non-controversial NASA compilation is used instead for that time interval.

LBR FQS22katoFutureTemps02.odg 7/2016

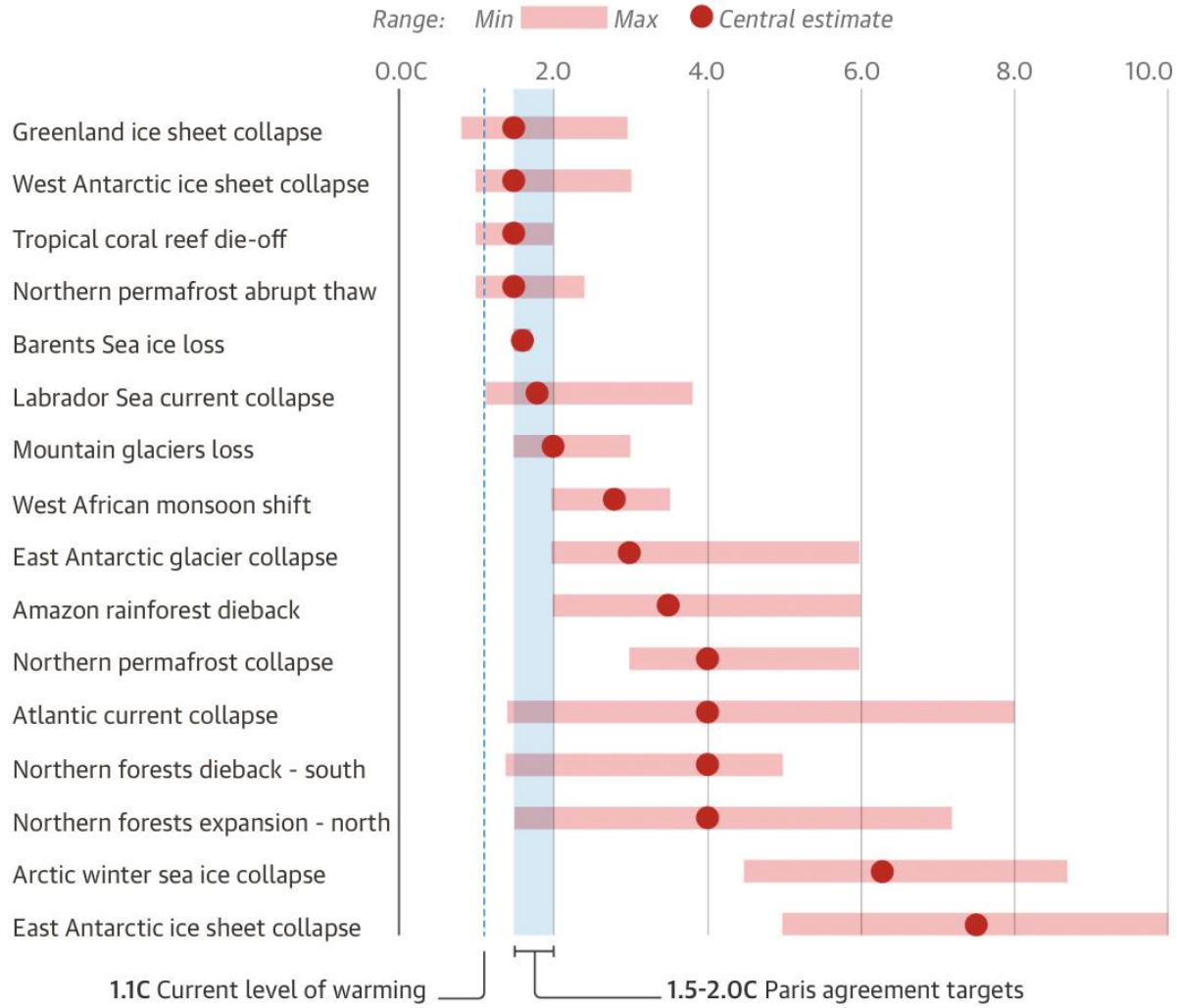


GLOBAL WARMING THRESHOLDS

<2°C 2–4°C ≥4°C

The risk of climate tipping points is rising rapidly as the world heats up

Estimated range of global heating needed to pass tipping point temperature



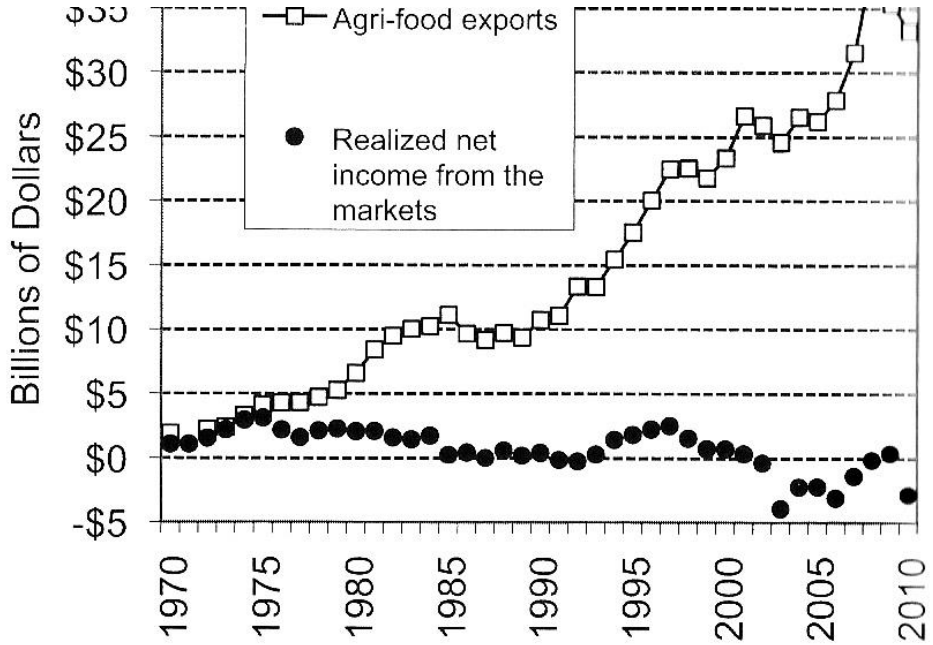
Guardian graphic. Source: Armstrong McKay et al, Science, 2022. Note: Current global heating temperature rise 1.1C
Paris agreement targets 1.5-2.0C

The Global Food System is Also NOT Socially Just, Nor Economically Viable



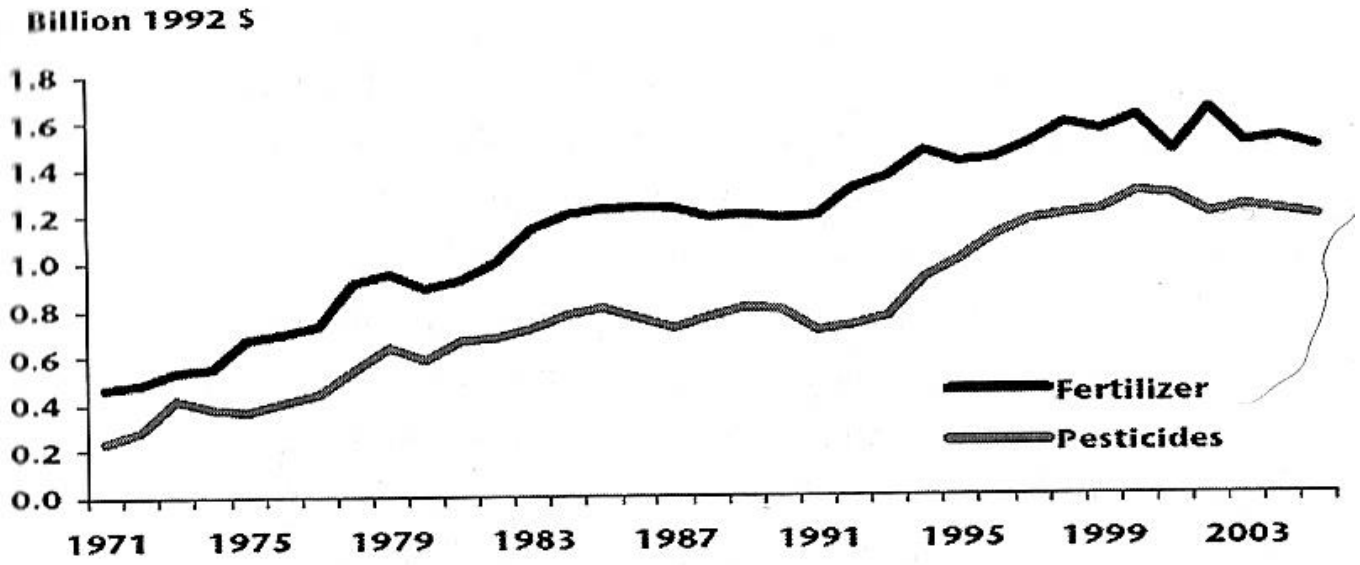


The Global Food System is Not Economically Viable



Sources: Export data provided upon request from Agriculture and Agri-Food Canada; AAFC, Agri-Food Trade Service <www.ats-sea.agr.gc.ca>; AAFC, *Medium Term Outlook for Canadian Agriculture: International and Domestic Markets*, January 2010. Income data from Statistics Canada, 2002, *Agricultural Economic Statistics*, Cat. No. 21-603-E May, Ottawa: Statistics Canada; Statistics Canada, 2010c, *Net Farm Income–Agriculture Economic Statistics*, Cat. No. 21-010-X, May,

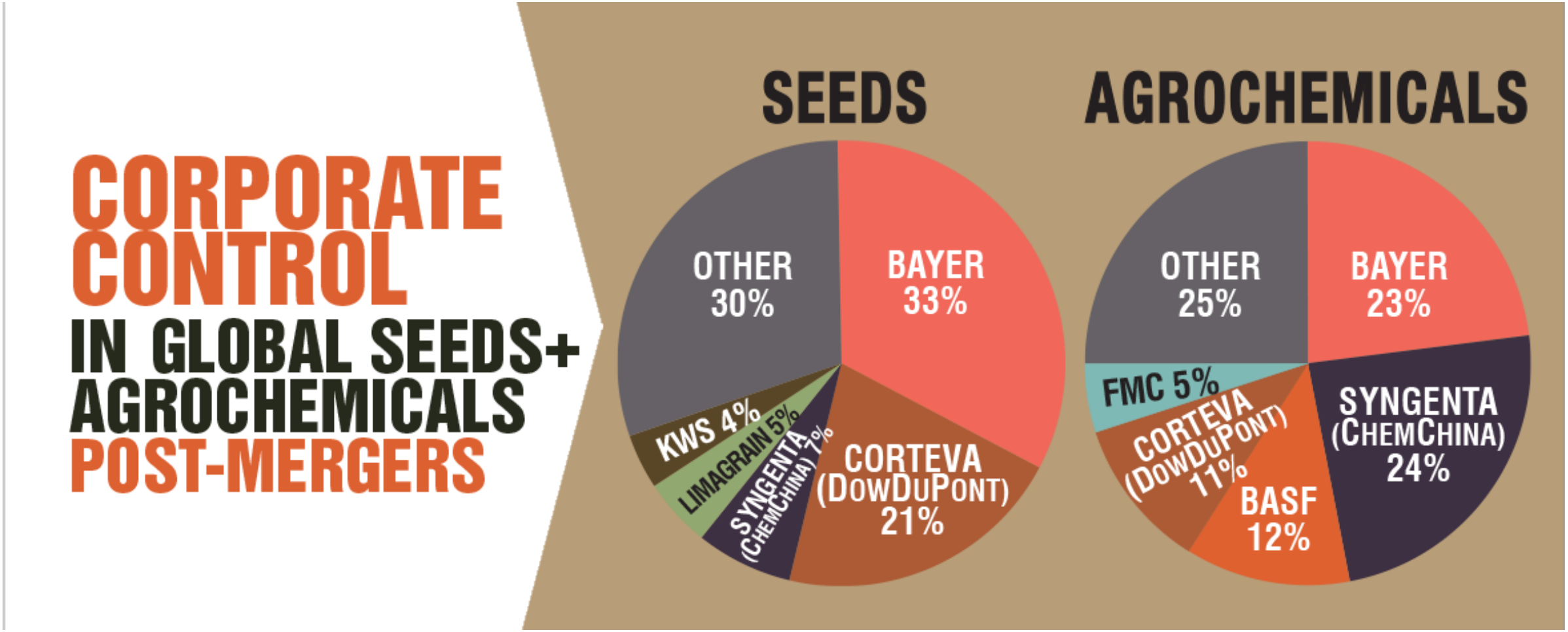
Figure 2-8 Canadian Farm Expenditures on Fertilizers and Pesticides (Adjusted for Inflation): 1971–2005



Sources: Agriculture and Agri-Food Canada, *An Overview of the Canadian Agriculture and Agri-Food System: 2007*, p. 124.

Qualman, D. (2011) Advancing Agriculture by Destroying Farms? The State of Agriculture in Canada, pp. 20–42. In, Wittman, H., Desmarais, A. A., & Wiebe, N. (2011) **Food Sovereignty in Canada: Creating Just and Sustainable Food Systems**, Fernwood Publishin

The Global Food System Becoming Increasingly Concentrated



[Corporate Concentration of the Agrochemical Market]

The Global Food System is Rooted in War, Death and Destruction

Bayer – formerly Monsanto, still uses chemicals that were used to kill people, but in our food

- Monsanto Ghostwriting Academic Papers
- Is Round-Up safe to drink?
- Farmer won lawsuit against Monsanto – Glyphosate causes cancer
- The World According to Monsanto
- Monsanto is now owned by Bayer who used to be part of I.G. Farben, manufacturing poisonous gas (Zyklon B) for concentration camps during the World War.

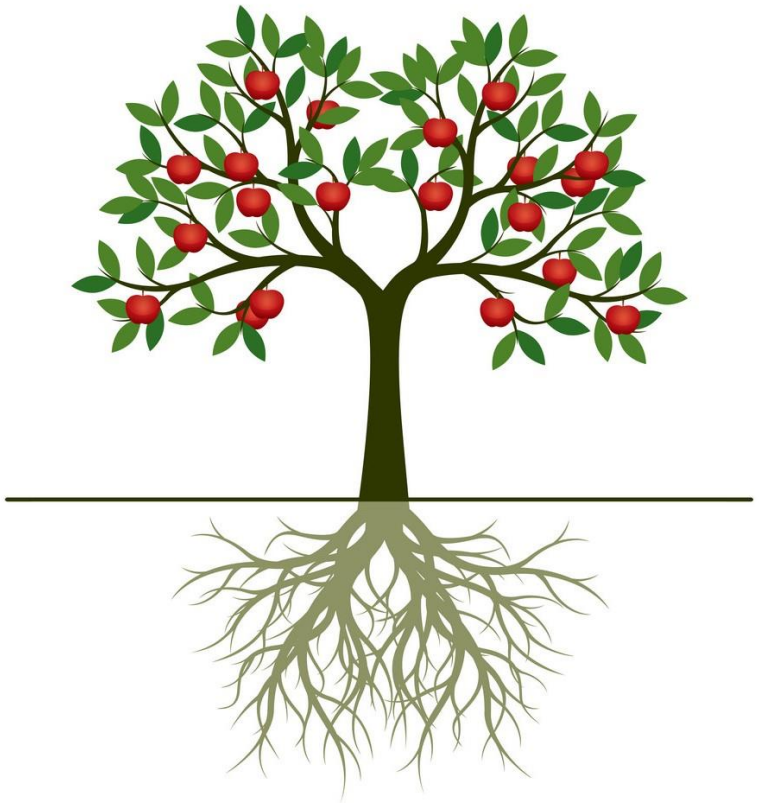
BASF was also part of IG Farben, a company that worked with the Nazis and tested chemicals and drugs on people, including Zyklon B

Dow Chemical Invented Agent Orange

Dow Chemical, now owns Union Carbide was responsible for a large, devastating explosion in Bhopal, India:

- The Bhopal disaster: Toxic legacy
- One Night in Bhopal
- The Bhopal Disaster

What Can We Do to Fix the Problem?

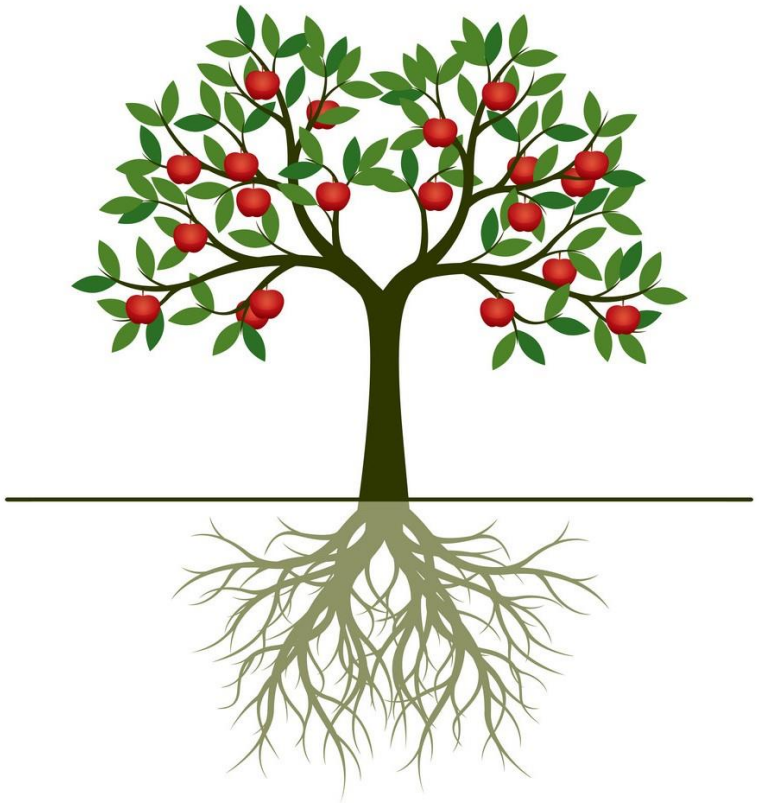


We Need To Transform Our Food System

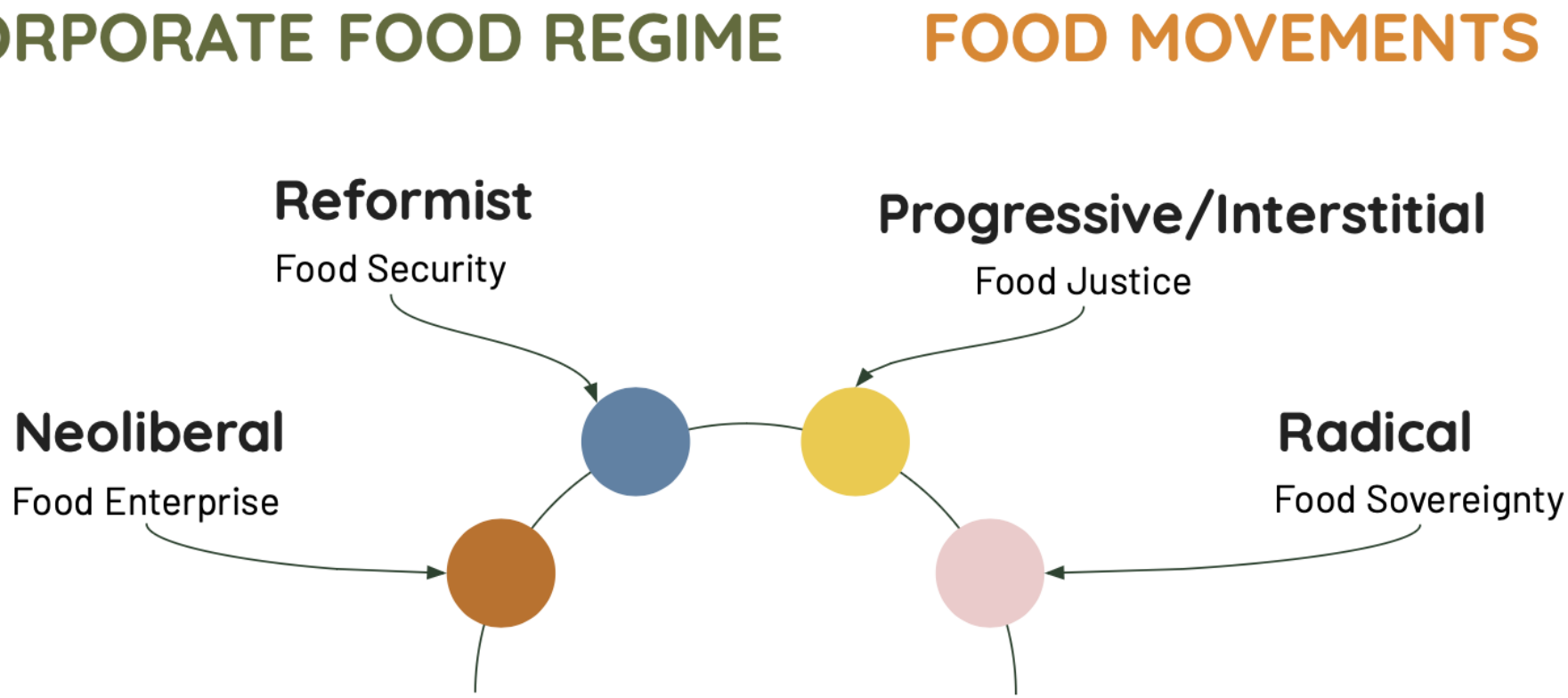
Calls to “fix a broken food system” assume that the capitalist food system used to work well. This assumption ignores the food systems long, racialized history of mistreatment of people of colour. The food system is unjust and unsustainable, but it is not broken. It functions precisely as the capitalist food system has always worked, concentrating power in the hands of the privileged minority and passing off the social and environmental “externalities” disproportionately to racially stigmatized groups.

Holt-Gimenez, E. (2017) A Foodie’s Guide to Capitalism: Understanding the Political Economy of What We Eat, Monthly Review Press, New York.

What Can We Do to Fix the Problem?

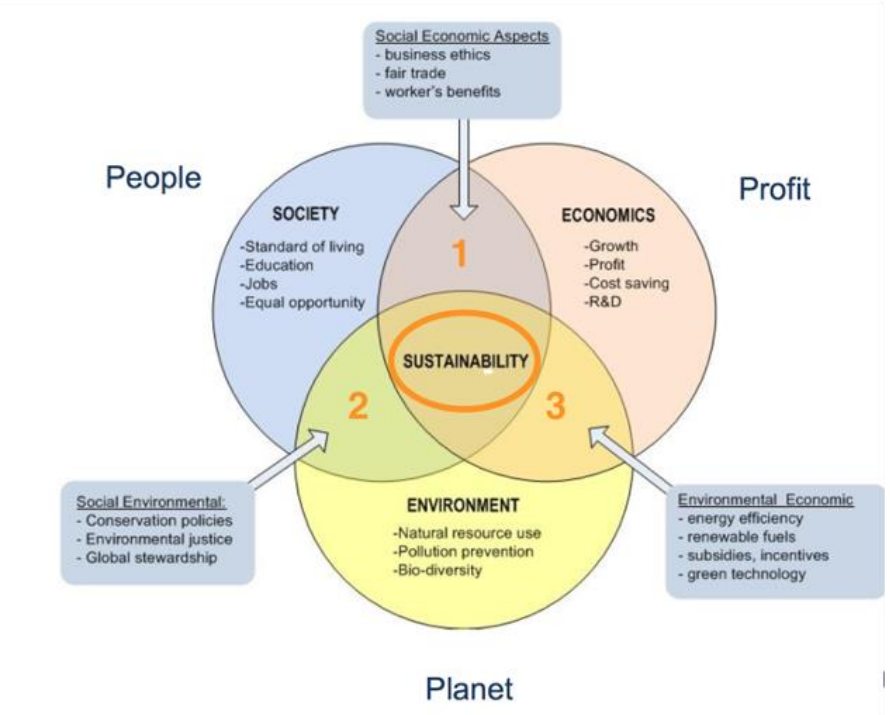


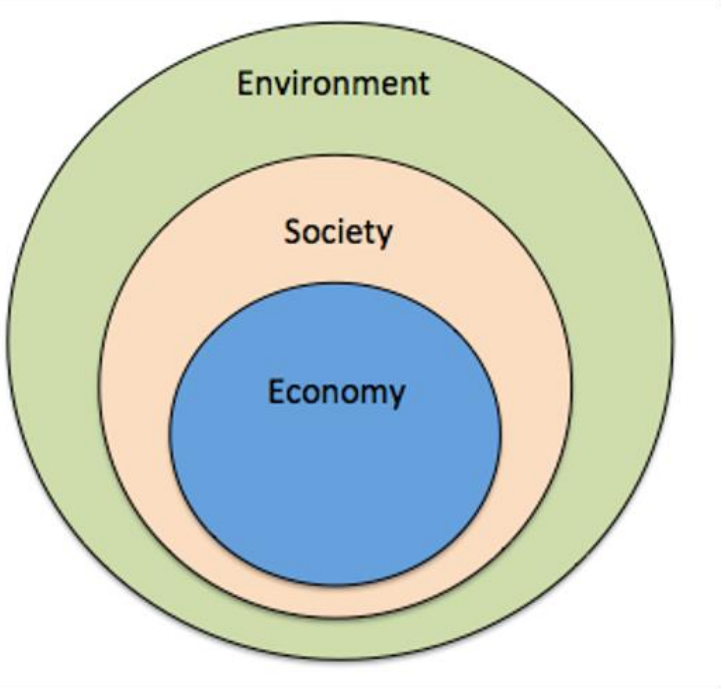
Food System Change

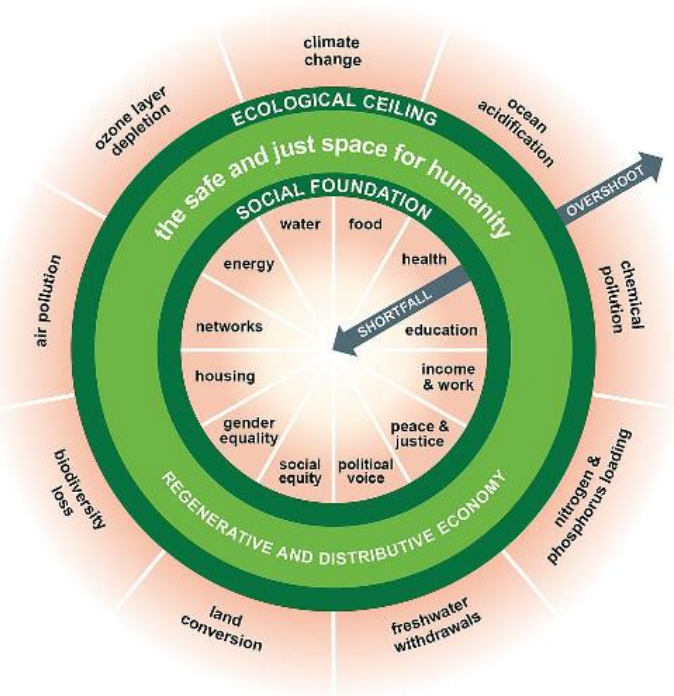


Holt-Gimenez, E. (2017) A Foodie's Guide to Capitalism: Understanding the Political Economy of What We Eat, Monthly Review Press, New York.

From Weak Sustainability to Food Sovereignty









KATHERINE GIBSON INTERVIEW PLAYLIST

Gibson Graham – Take back the Economy

Gibson-Graham, J.K., Cameron, J., Healy, S. (2013) Take Back the Economy: An Ethical Guide for Transforming Communities, University of Minnesota Press

LABOR	TRANSACTIONS	PROPERTY	ENTERPRISE	FINANCE
Wage	Market	Private	Capitalist	Mainstream Markets
ALTERNATIVE PAID Self-employed Reciprocal labor In-kind Work for welfare	ALTERNATIVE MARKET Fair trade Alternative currencies Underground market Barter	ALTERNATIVE PRIVATE State-managed assets Customary (clan) land Community land trusts Indigenous knowledge (Intellectual Property)	ALTERNATIVE CAPITALIST State owned Environmentally responsible Socially responsible Non-profit	ALTERNATIVE MARKET Cooperative Banks Credit unions Community-based financial institutions Micro-finance
UNPAID Housework Volunteer Self-provisioning Slave labor	NON-MARKET Household sharing Gift giving Hunting, fishing, gathering Theft, piracy, poaching	OPEN ACCESS Atmosphere International Waters Open source IP Outer Space	NON-CAPITALIST Worker cooperatives Sole proprietorships Community enterprise Feudal Slave	NON-MARKET Sweat equity Family lending Donations Interest-free loans































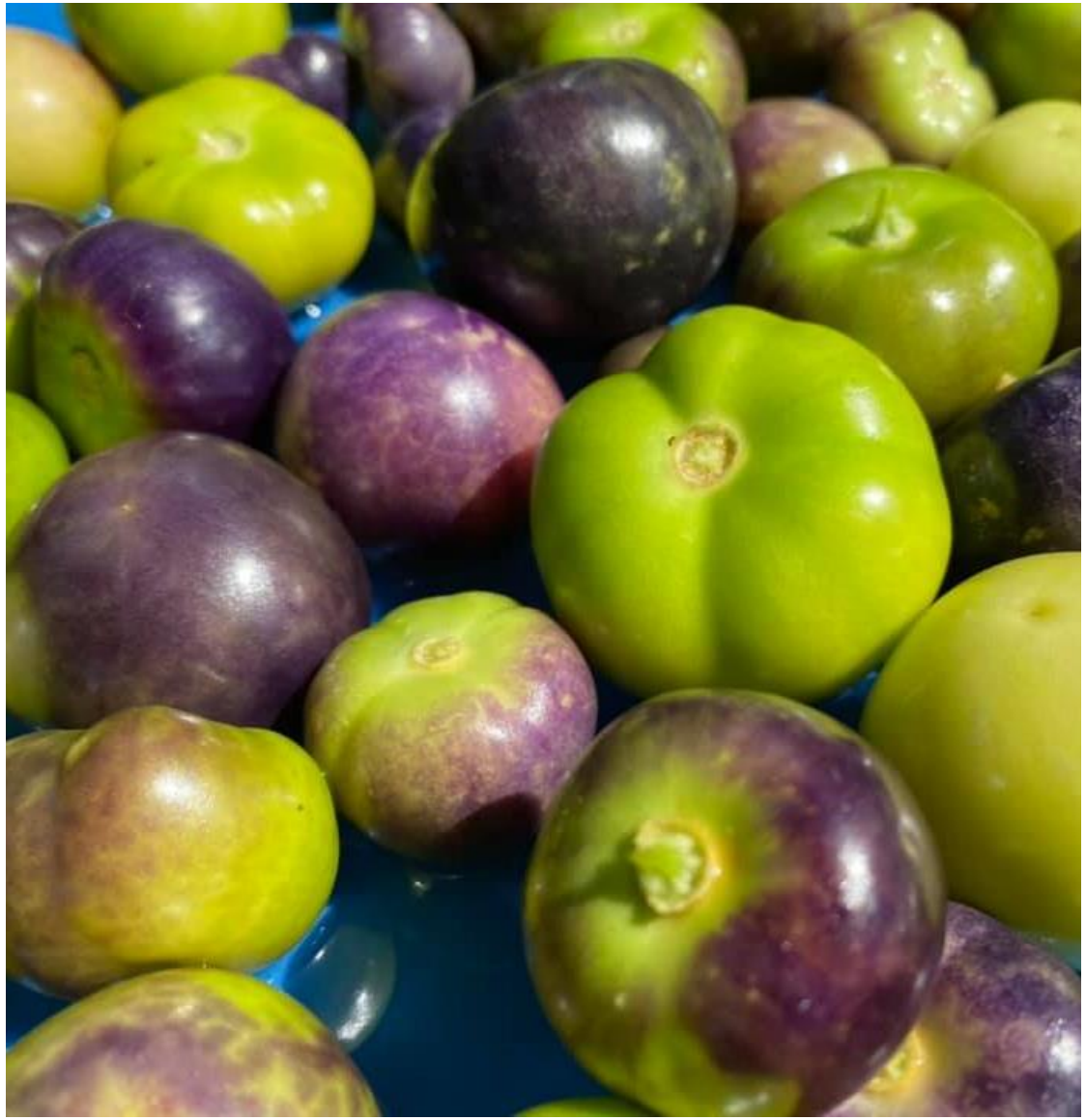














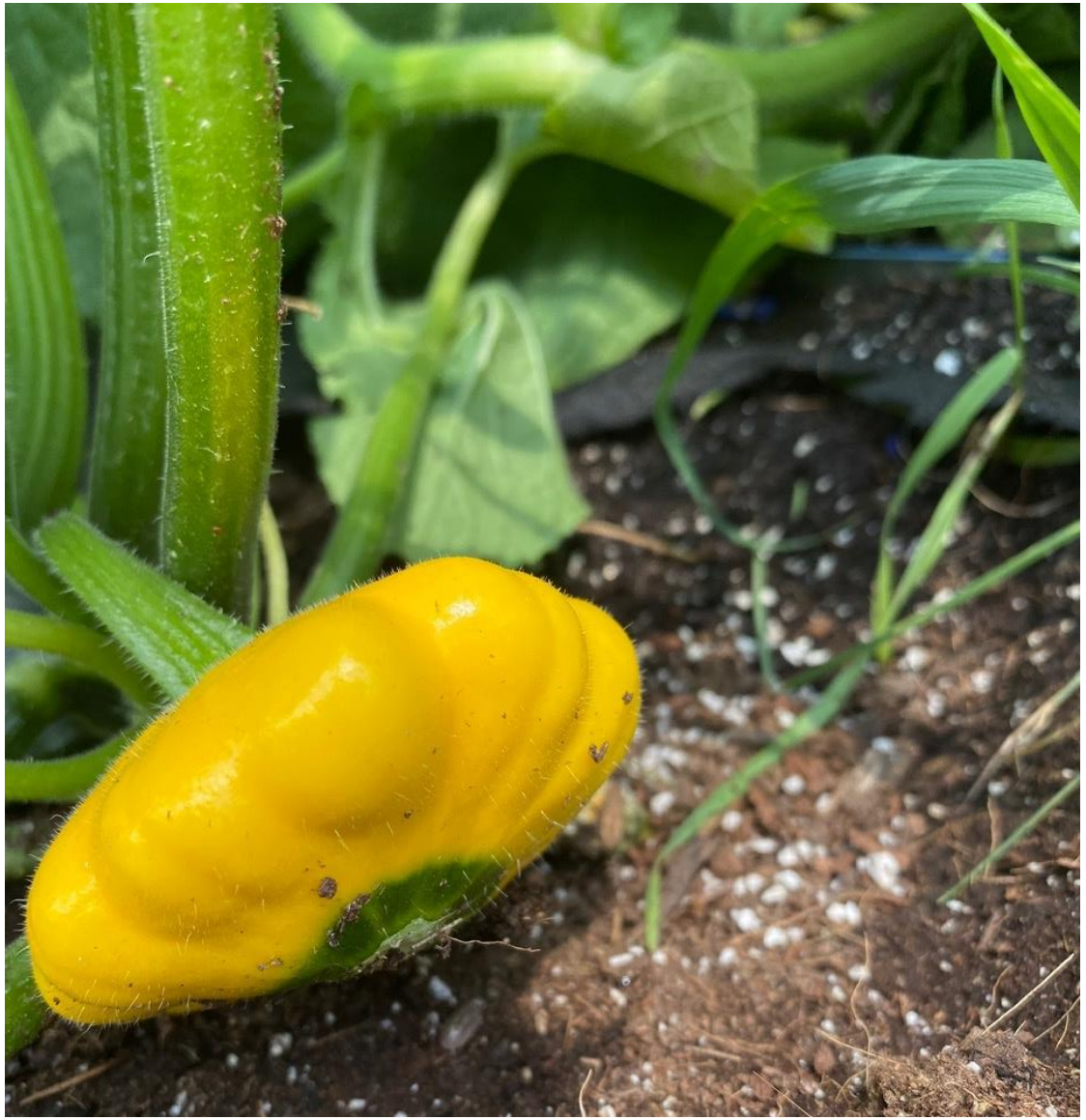









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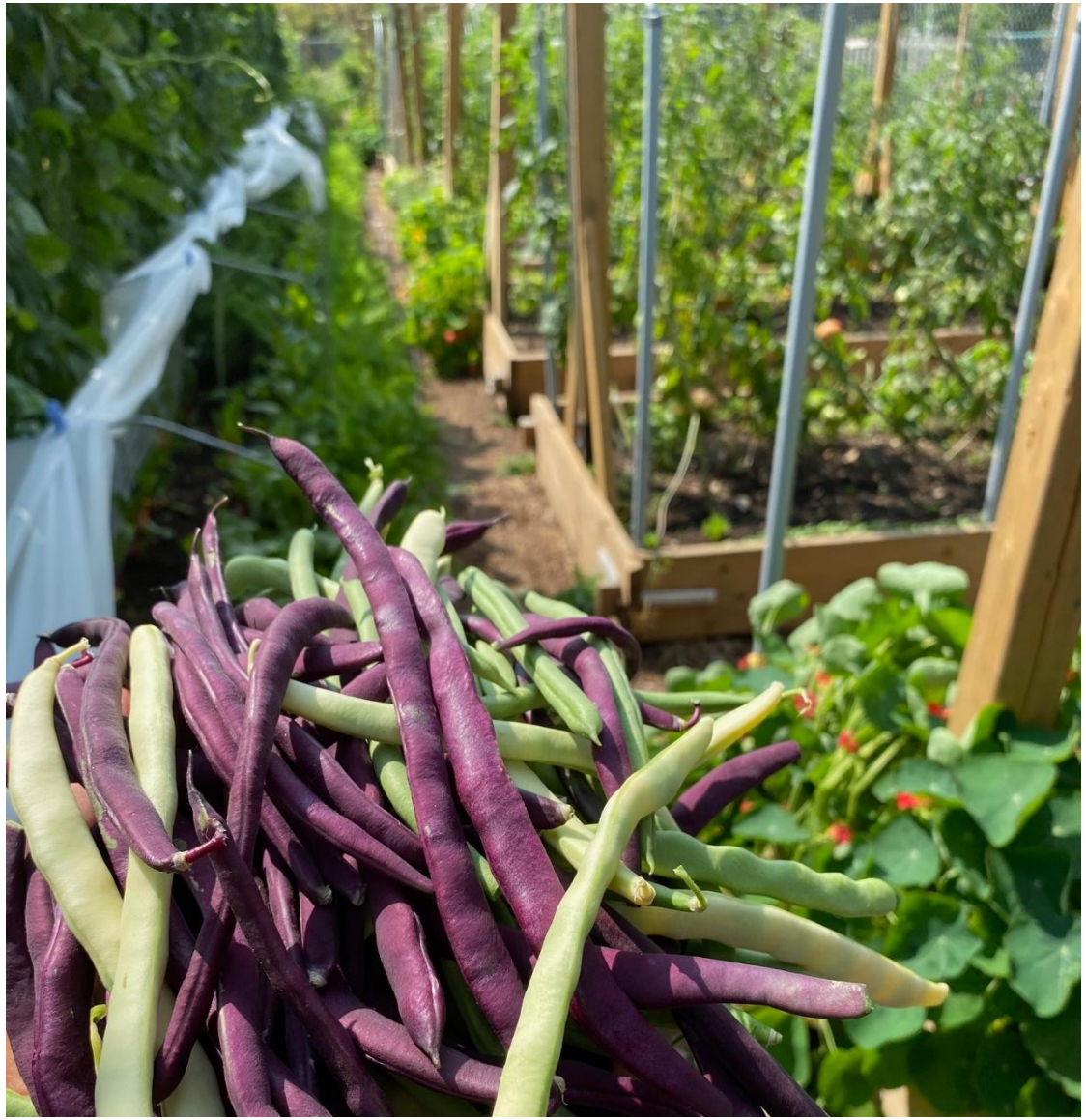







LES
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INTERCROPPING
Is the practice of planting two or more crops in the same field side by side in the same or overlapping season.
COMPANION PLANTING is grouping certain plants that protect each other by attracting pollinators, repelling pests, and increasing productivity.
ROW/STRIP INTERCROPPING: Different crops support different parts of the soil microbiome, so row intercropping is a strategy we use to support all parts of the complex web of soil life.
SQUASH
CALENDULA
KALE
cultivaction






UCT























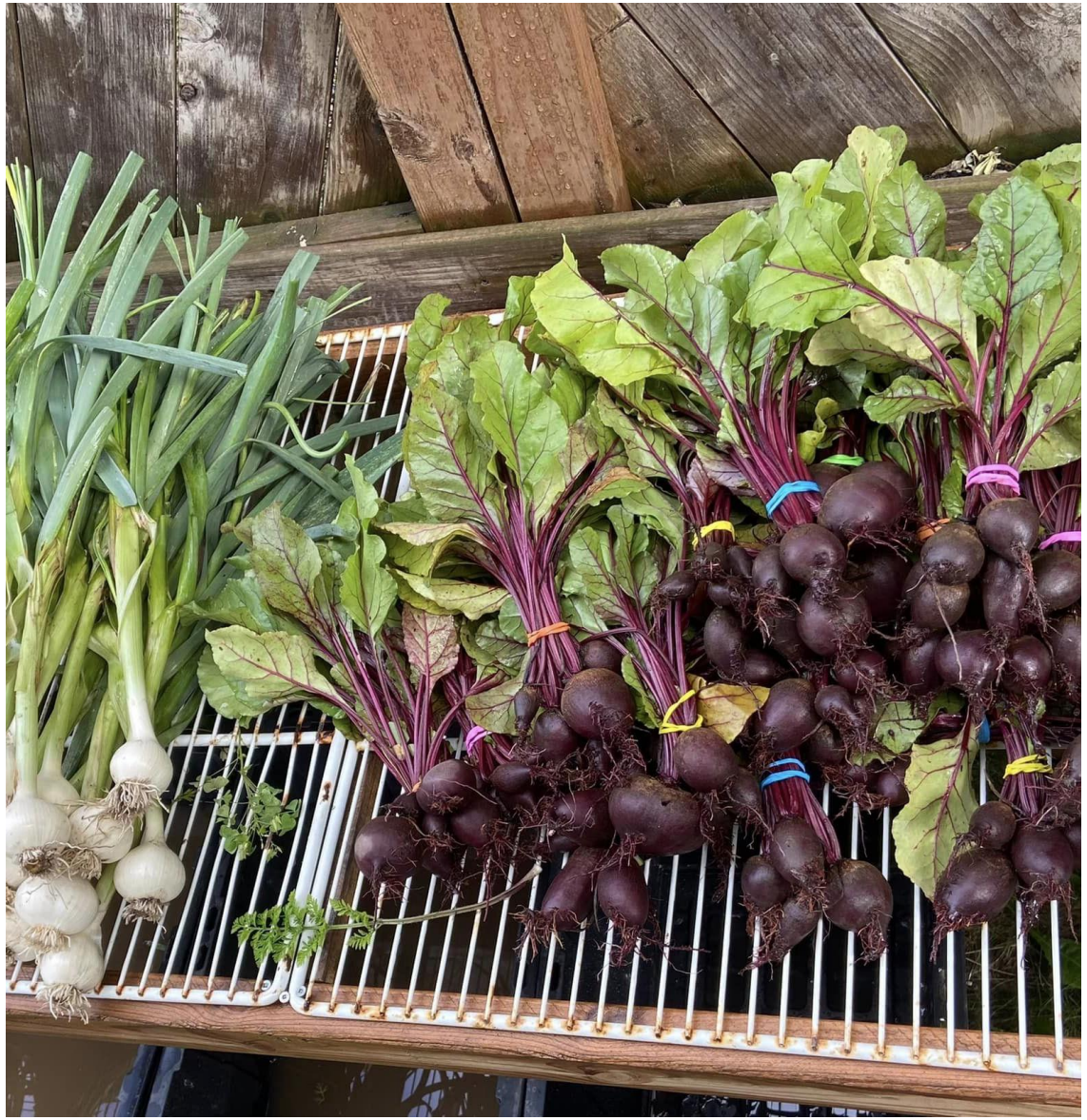














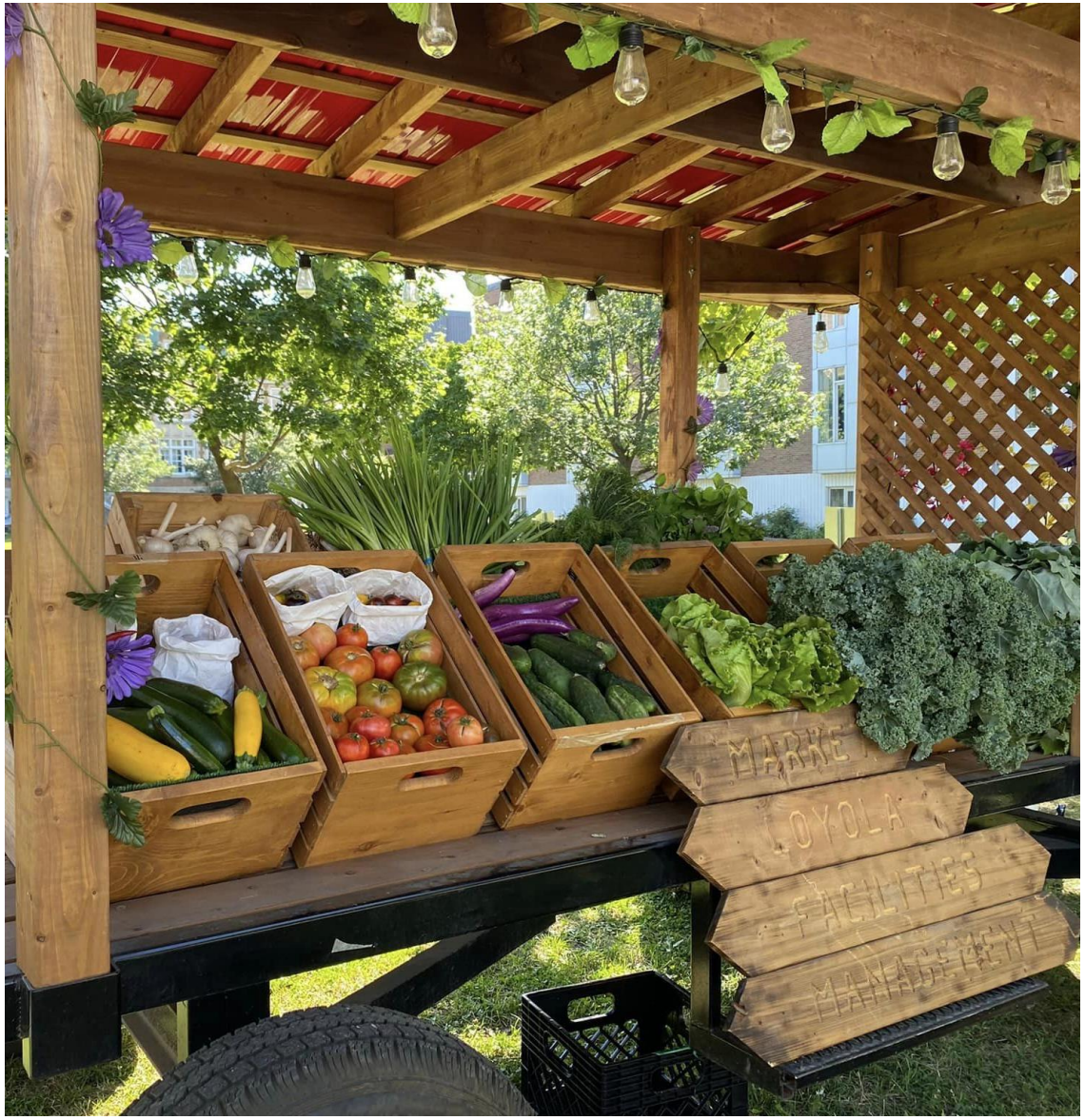




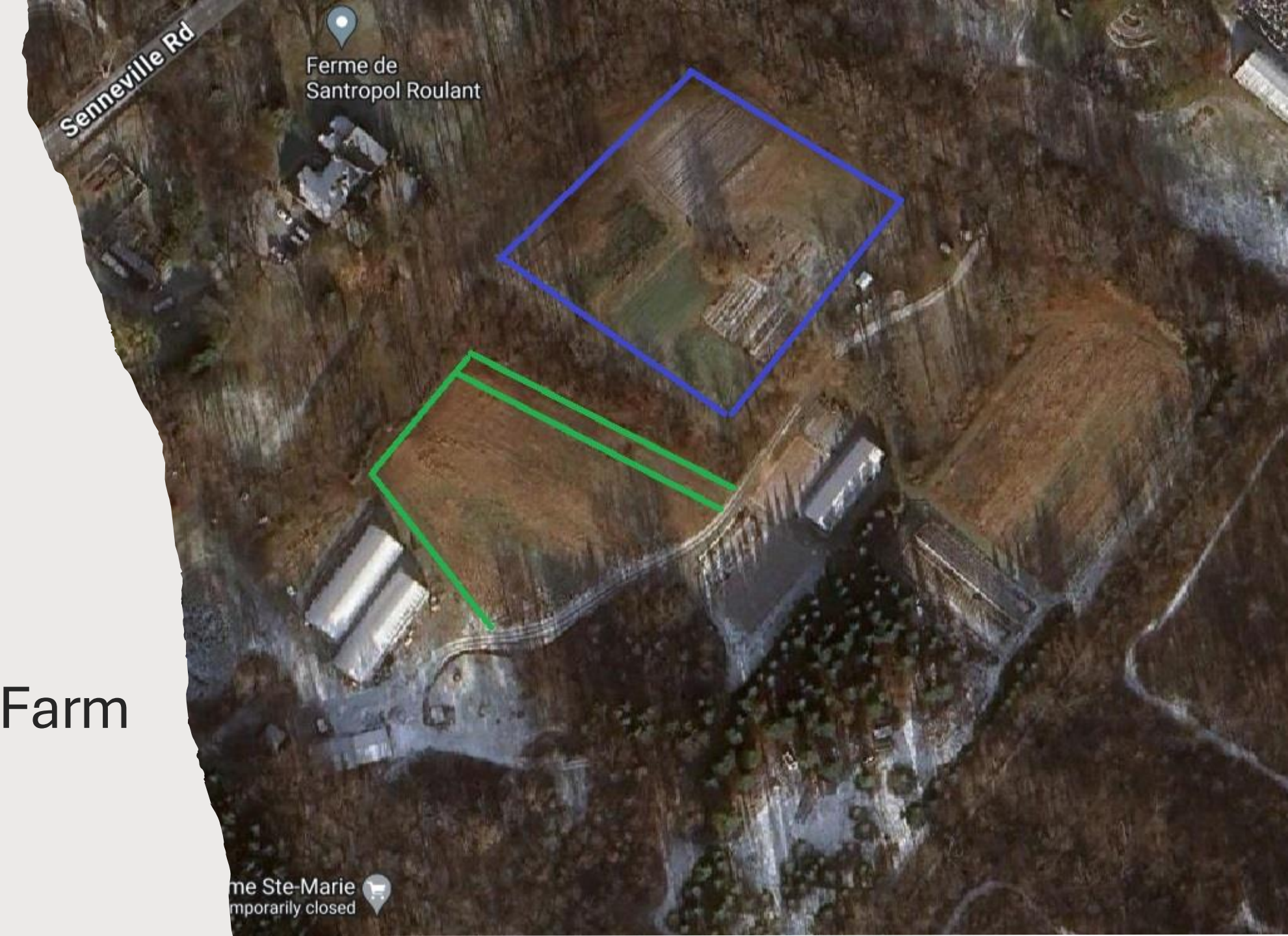





ESPACE 4 TH SPACE


MARKET
LOYOLA
FACILITIES
MANAGEMENT

Senneville Farm













































Get to Know Each Other

1 - What are your names?

2 - What is something interesting about you?

3 - What do you expect to get out of this course?

4 - Why did you take this course?

5 - What is your level of experience with topics related to urban agriculture?

- What is your experience growing plants, fruits, vegetables?
- How would you rate your knowledge of horticulture?
- What do you know about food systems?
- How would you rate your knowledge of theories of transformative sustainability?
- How would you rate your knowledge of theories of food justice, food sovereignty, and food security?

6 - What is your interest level in topics related to urban agriculture?

- What specific topics are you interested you most?
- What topics interest you least?

7 - What do you plan to do with the urban agriculture knowledge after the course ends?



Erik Chevrier

CultivAction Solidarity Cooperative

Concordia Food Coalition

Communal Lunch Project

Duff-Court Urban Farm

Lachine Mapping Project

Concordia Food Groups Research Project

How can postsecondary campuses act as hubs to cultivate food sovereign communities?

Ph.D. = Building Food Sovereign Campuses: A Case Study of the Campus-Community Food Groups at Concordia University

Postdoctoral Research = How can urban agroecology farms sustain themselves through diverse economic frameworks?













Plant a Seed Activity on Friday

Bring a Plastic 2 Liter Bottle

1 – Use seed starting earth – loose, small amounts of N-P-K, mycorrhizal fungi, and micronutrients.

2 – Plant a few seeds in a small seeding pot that drains about 10 centimetres into the soil.

3 – Keep soil moist but not drenched.

4 —Put the newly seeded pot in a warm (for seed germination) but not hot (for mold production) place. Keep the soil moist but not drenched.

5 – Once the seeds germinate, bring them to a sunny area and keep watering as needed.

6 – Eat plant and share with others.

What do the following terms (phrases) mean?

1 - Diverse economies
2 - Ecological economics
3 - Strong (transformative) sustainability
4 - Triple Bottom Line Sustainability (weak sustainability)
5 – Agroecology
6 – Permaculture
7 - Perennial plants
8 - Plant hardiness zones
9 – Mycelium
10 - Food system (what are the components)
11 - Food security
12 - Food sovereignty
13 - Food justice
14 - GMO vs Seed breeding
15 - N-P-K
16 - Planting successions
17 - SPIN Farming
18 – Biodiversity
19 - Food regimes
20 - Root causes of global food issues



Thank You!

QUESTIONS, CONCERNS, COMMENTS?

WWW.CULTIVACTION.CA
WWW.ERIKCHEVRIER.CA