Shifting to Neutral

Ecological economics for a carbon-neutral economy

Presented by Eric Miller, David Suzuki Fellow, to City of Stratford, Energy and Environment Advisory Committee, on May 26 2021


STOP
ALL-WAY
Robinson St


touch
CHERRY
Barq's
TAYLOR


A&W


Feminist Economics Today
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Microeconomics in Context
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An Introduction
ECOLOGICAL economics
OXFORD
INTRODUCTION TO
CONOMICS
Hanley | Jason Shogren | Ben White
Ecological Economics
Marc Lavoie
EE
POST-KEYNESIAN ECONOMICS
New Foundations
Environmental and Natural Resource Economics
A Contemporary Approach

ecological economics

sustainability

efficiency

distribution

accounting needed for net-zero emissions

how to efficiently get to net-zero

future burdens of today’s GHG emissions

Social Cost of Carbon

Estimated value of future damages (net of benefits) from emitting 1 tonne CO_2 today

Rises over time with rising emissions since damages grow with accumulated emissions

Between about $140 and $450 CDN per tonne of CO_2 today
depending on assumptions and models used

Social Cost of Carbon

vs

Carbon Price in a jurisdiction

“Carbon Pricing”

Direct OR **Indirect**

set a price on emissions to affect quantity of emissions

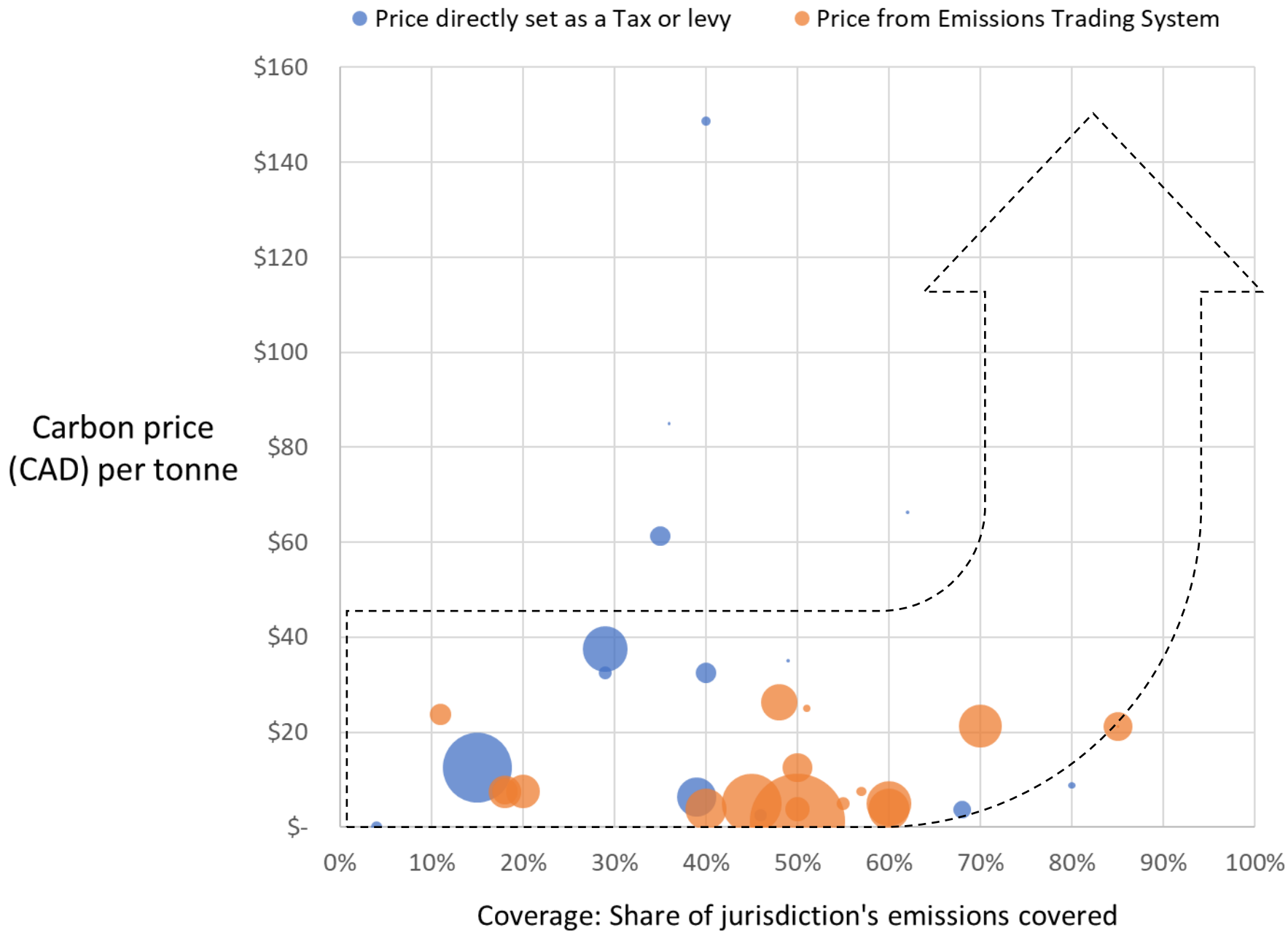
set a cap on quantity of emissions to affect price of emissions

e.g. BC Carbon Tax, (AB Carbon Levy)
Federal Backstop (ON 2019-2022)

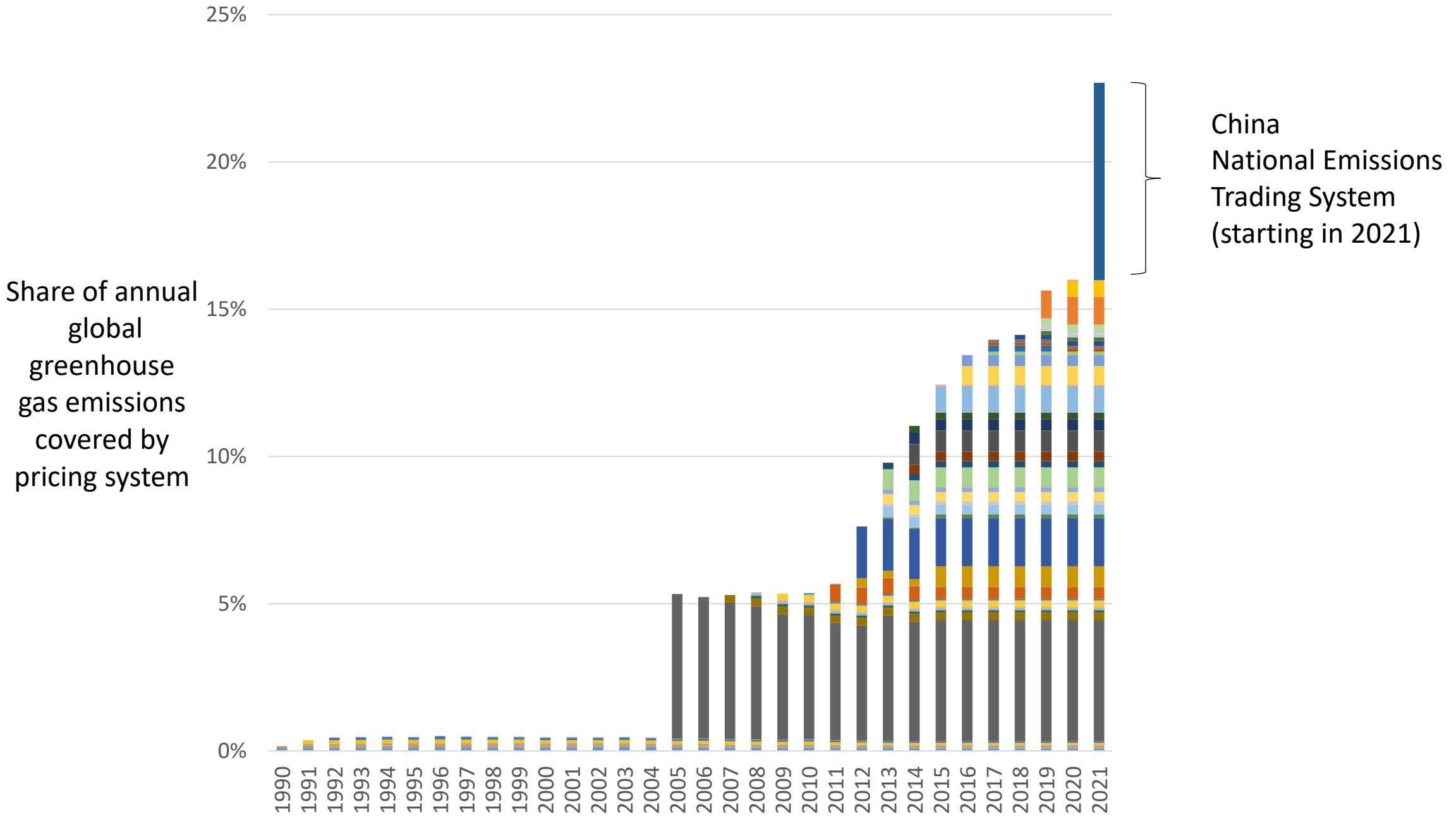
e.g. Cap and Trade system in QC
(Former ON system 2017-2018)

Makes the price of goods and services more inclusive of their emissions

Incentivizes ongoing conservation by producers and consumers and investors



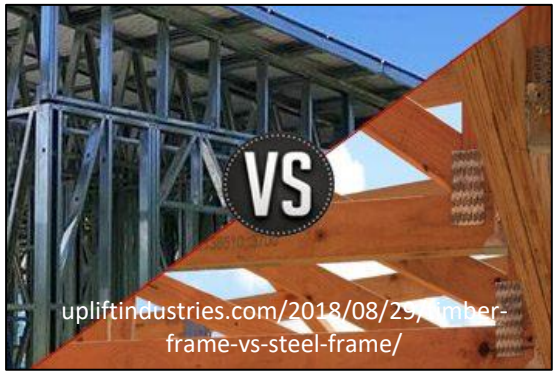
Data from World Bank (2021)

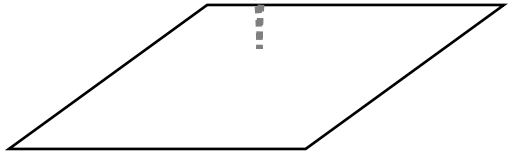


Data from World Bank (2021)

Carbon pricing needs to be adequate, comprehensive in coverage, and lasting

“Nature-based solutions” as key to getting to *NET* zero



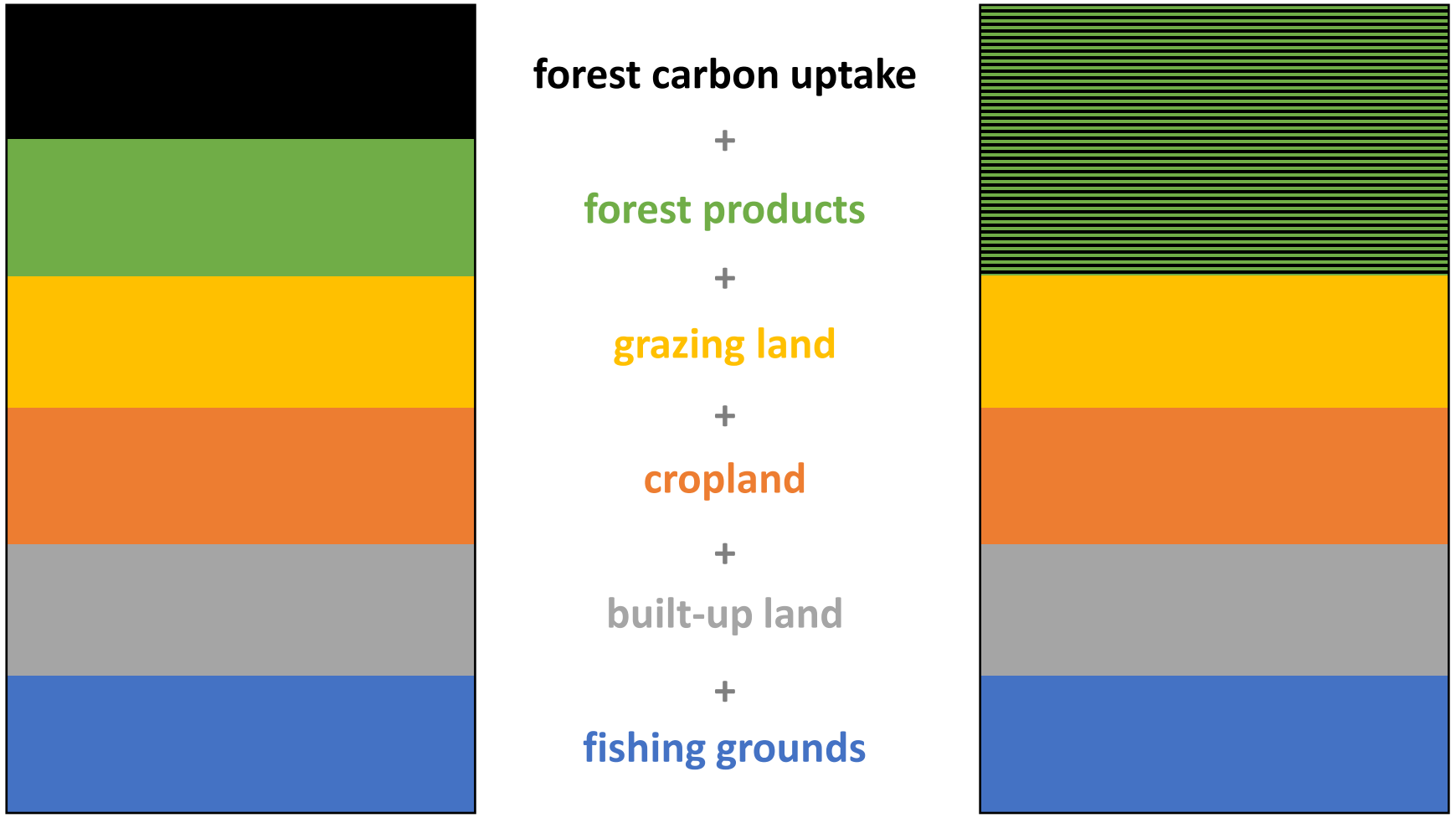


We need area-based accounting of possibilities and trade-offs

Do the math

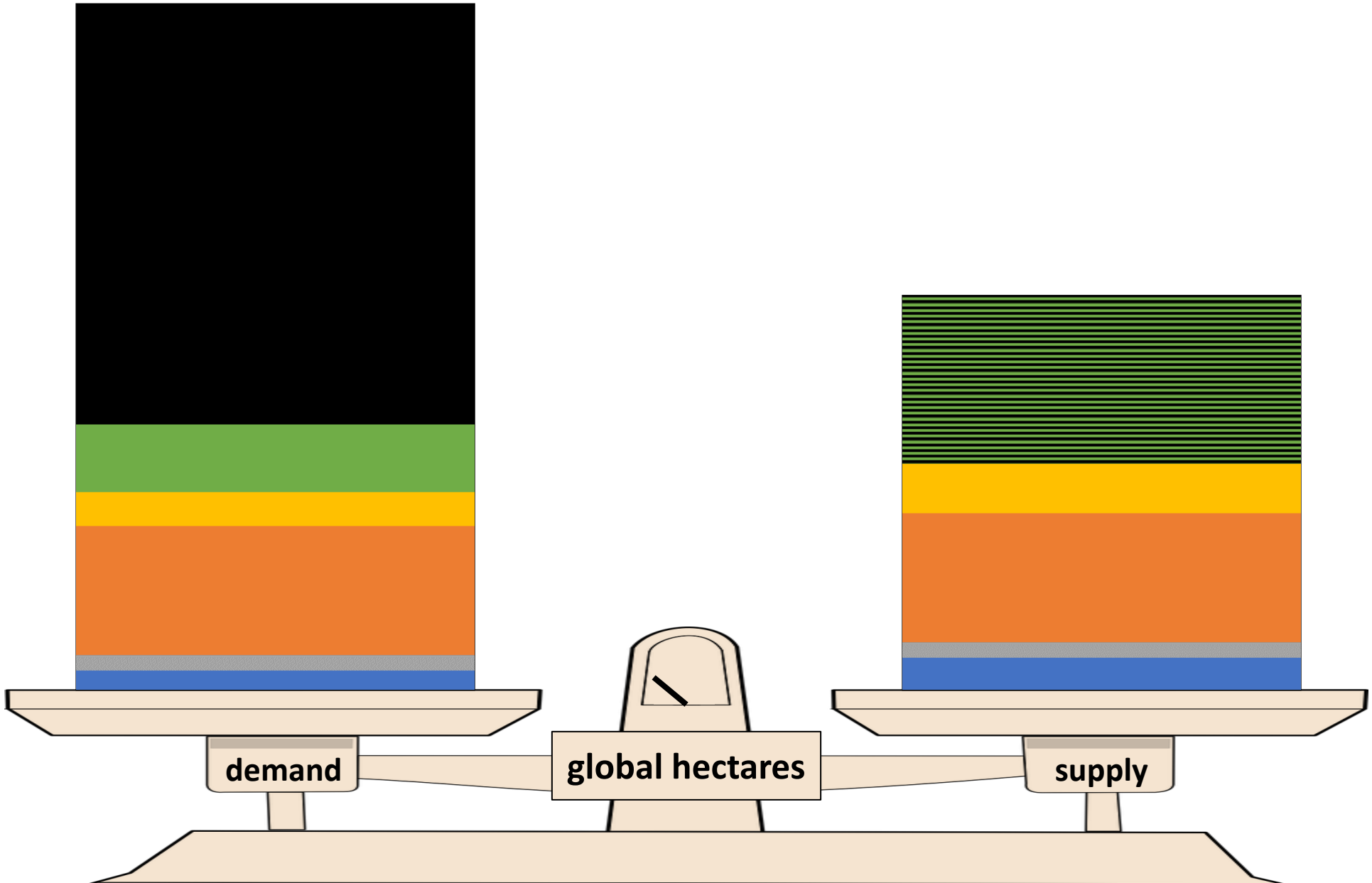
(of a carbon budget)

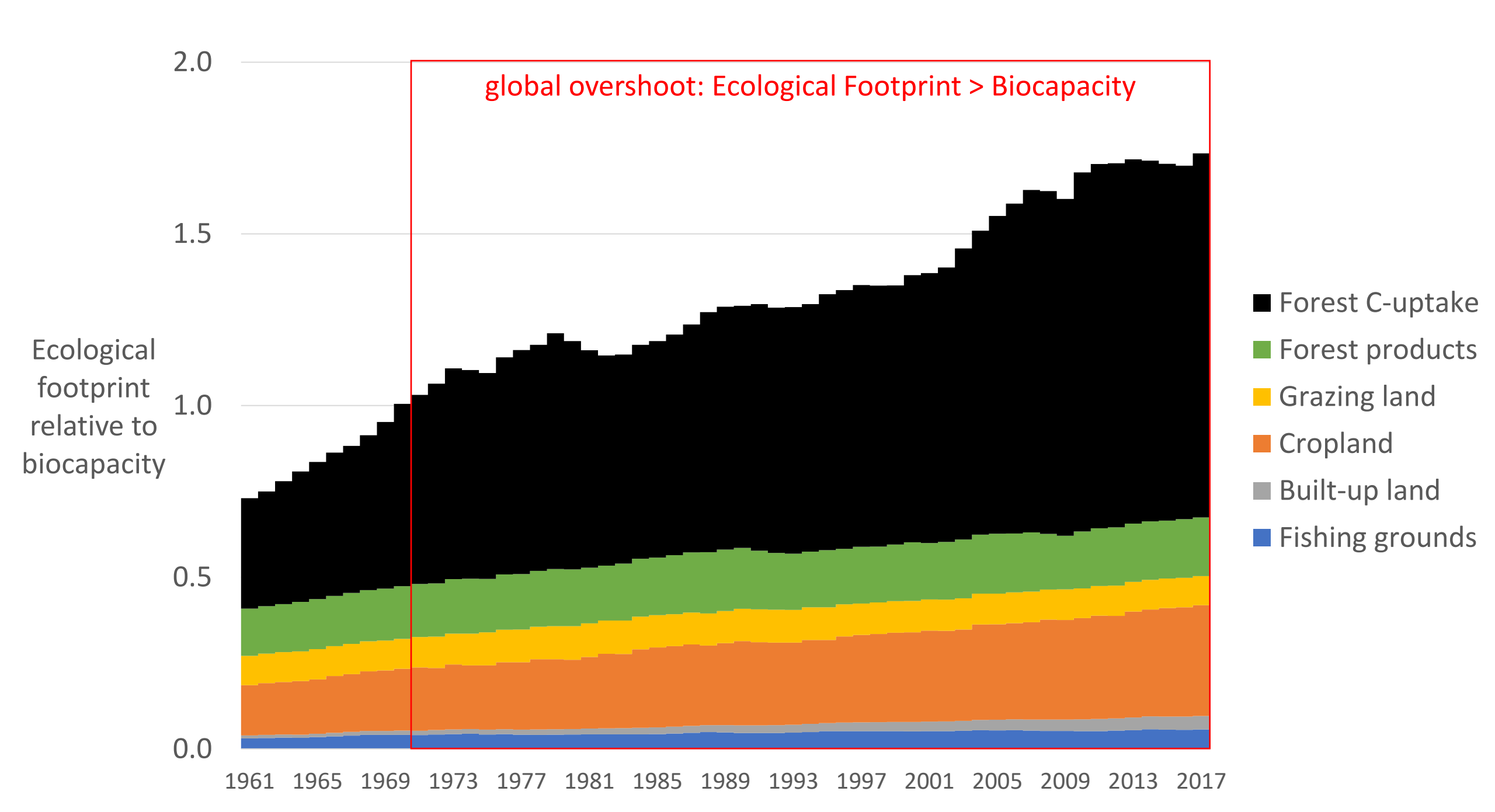
and do spatial analysis


Ecological Footprint
Biocapacity
forest carbon uptake
+
forest products
+
grazing land
+
cropland
+
built-up land
+
fishing grounds
demand
global hectares
supply

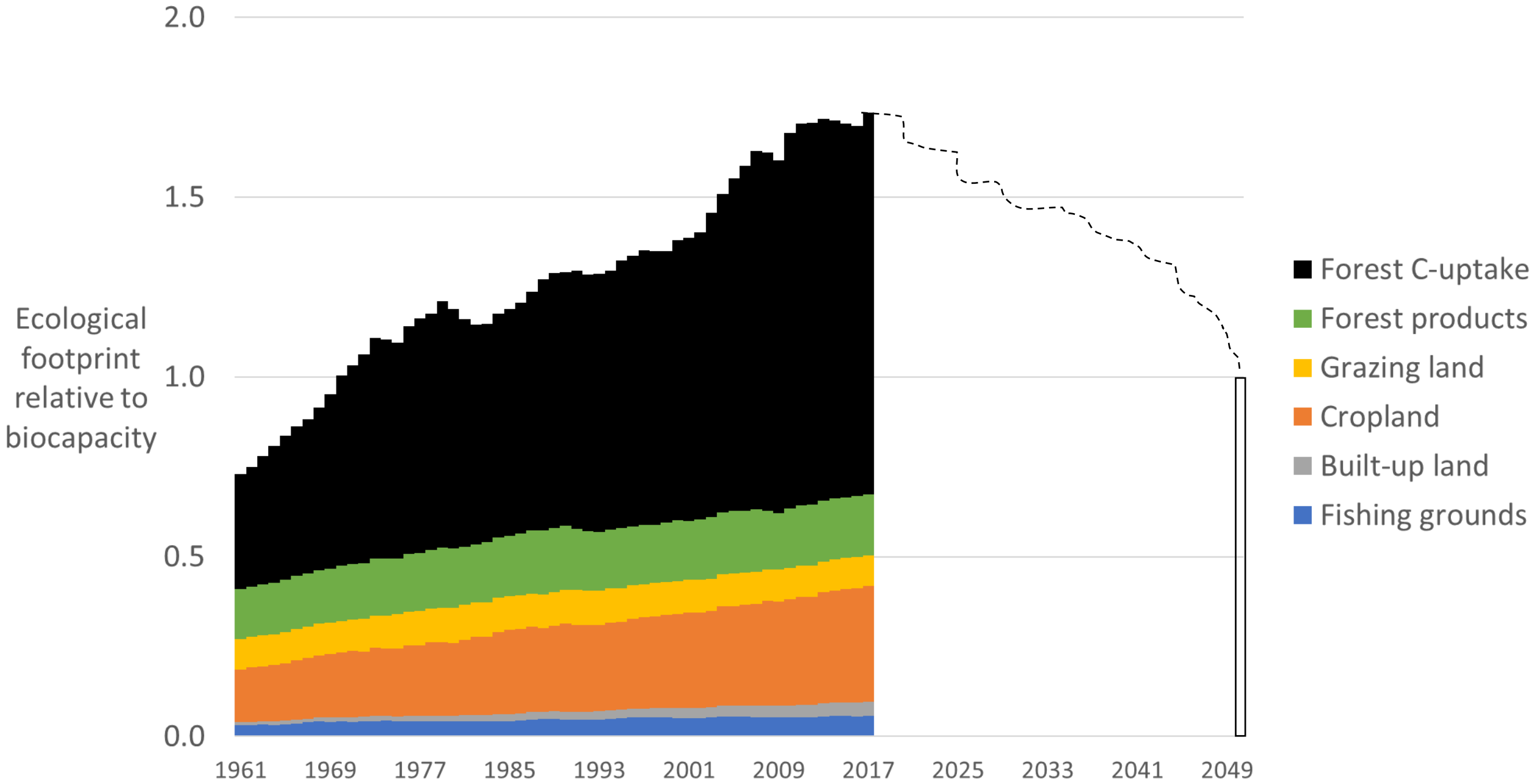
Ecological Footprint of humanity in 2017

Biocapacity of planet earth in 2017



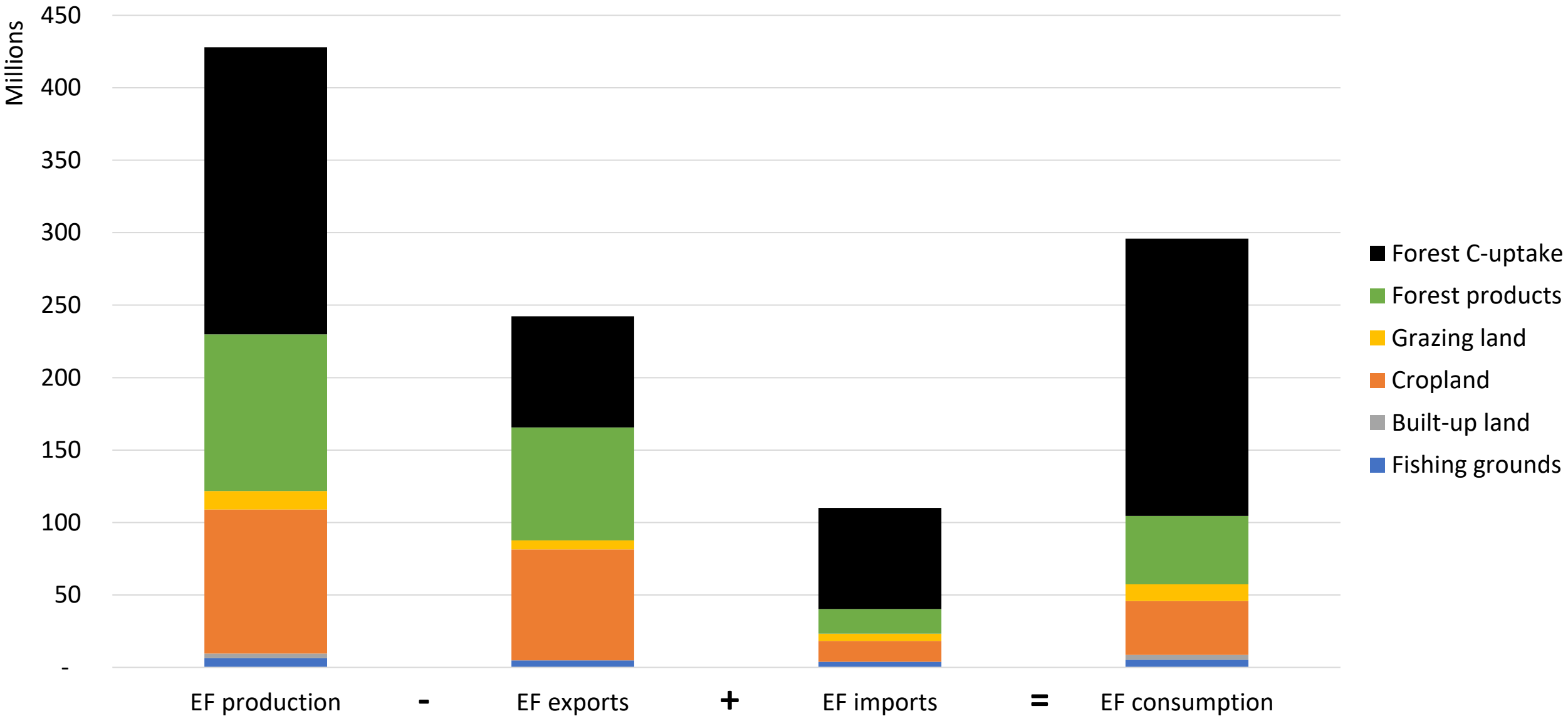


Data from: York University Ecological Footprint Initiative & Global Footprint Network (2020)



Data from: York University Ecological Footprint Initiative & Global Footprint Network (2020)

Canada's Ecological Footprint in 2017 (in global hectares)



Data from: York University Ecological Footprint Initiative & Global Footprint Network (2020)

What should we aim to maximize or minimize?

maximize jobs

minimize GHGs

Per $M of sector's output in Canada in 2016

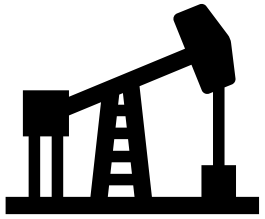
Megaproject construction

Repair construction

4.0	6.9	FTE Jobs in sector
7.9	9.7	FTE Jobs in Canada
390	230	T GHGs emitted in Canada
50	24	T GHG / FTE Job in Canada

Employment data from Statistics Canada Table 36-10-0594-01; Emissions data from Statistics Canada Table 38-10-0098-01
First sector: Transportation engineering construction [BS23C100]; Second sector: Repair construction [BS23D00]

Per $M of sector's output in Canada in 2016



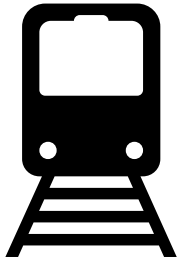
Oil and gas extraction

Nursing and residential care

0.9	14.9	FTE Jobs in sector
4.3	16.7	FTE Jobs in Canada
2070	80	T GHGs emitted in Canada
483	5	T GHG / FTE Job in Canada

Employment data from Statistics Canada Table 36-10-0594-01; Emissions data from Statistics Canada Table 38-10-0098-01
First sector: Oil and gas extraction [BS211100]; Second sector: Nursing and residential care facilities [GS62300]

Per $M of sector's output in Canada in 2016



Auto manufacturing	Urban transit services	
0.5	12.5	FTE Jobs in sector
2.3	16.9	FTE Jobs in Canada
320	360	T GHGs emitted in Canada
142	21	T GHG / FTE Job in Canada

Employment data from Statistics Canada Table 36-10-0594-01; Emissions data from Statistics Canada Table 38-10-0098-01
First sector: Automobile and light-duty motor vehicle manufacturing [BS336110]; Second sector: Urban transit systems [BS485100]

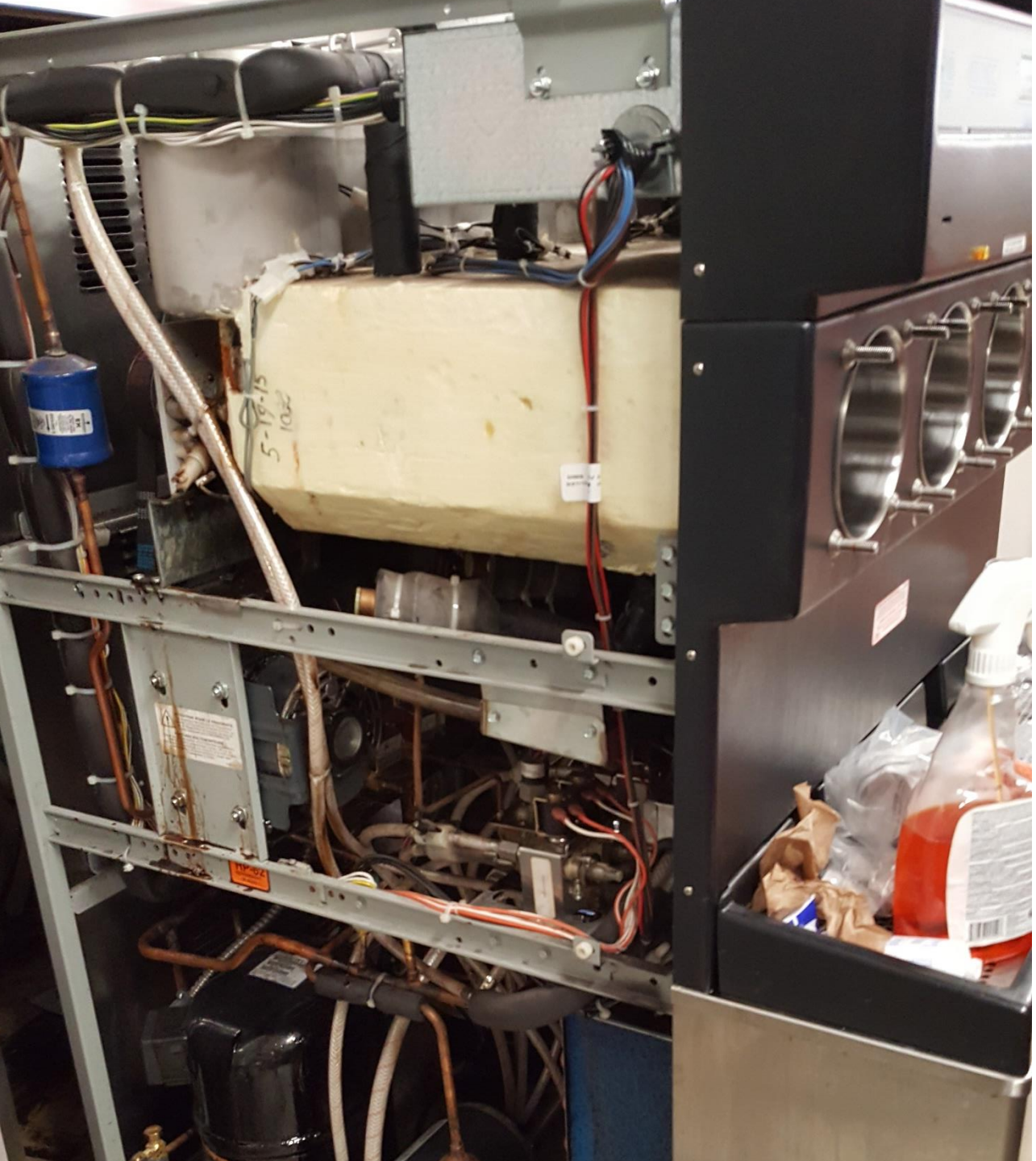
What should we aim to maximize or minimize?

$$\max\left(\frac{\text{long lives equitably lived with high life satisfaction}}{\text{ecological footprint}}\right)$$

subject to sustaining biocapacity

Conclusions

- Choose Ecological Economics for sustainability, efficiency and equity
- Social cost of carbon helps to understand the future burden of today's emissions
- Carbon pricing helps producers and consumers and investors to conserve
- Carbon pricing needs to be adequate, comprehensive, and lasting
- Ecological Footprint and Biocapacity accounting are useful for area-based evaluation of trade-offs especially with respect to nature-based solutions
- Economic policy should target better measures of performance than Gross Domestic Product
- Even small discussions and inquiries can generate change…




ARCTIC
GLACIER

CBC

Town of 84 people unplugs pop machine, saves $9K a year

Energy audit an eye opener for community of Jean Marie River in the N.W.T.

Katherine Barton · CBC News · Posted: May 30, 2016 6:30 AM CT | Last Updated: May 30, 2016

Resources I would encourage you to explore

- Ecological Footprint data: https://data.footprintnetwork.org
- Ecological Footprint work: https://footprint.info.yorku.ca

- Life satisfaction data and analysis: https://worldhappiness.report/ed/2021/
- Happy Planet Index: http://happyplanetindex.org/

- Ecological Economics: Online CANSEE conference May 27-29. https://cansee.ca/cansee2021/

If you want to connect with me

elge.ca/stratford

References cited

- Statistics Canada. 2021. Table 36-10-0594-01. Input-output multipliers, detail level. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610059401
- Statistics Canada. 2021. Table 38-10-0098-01 . Direct plus indirect energy and greenhouse gas emissions intensity, by industry. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3810009801
- York University Ecological Footprint Initiative & Global Footprint Network (2020). 2021 Edition of the National Ecological Footprint and Biocapacity Accounts. https://data.footprintnetwork.org
- World Bank (2021). Carbon Pricing Dashboard. https://carbonpricingdashboard.worldbank.org/