

# Facing environmental crisis: how to steer towards sustainability?

Zofia Prokop

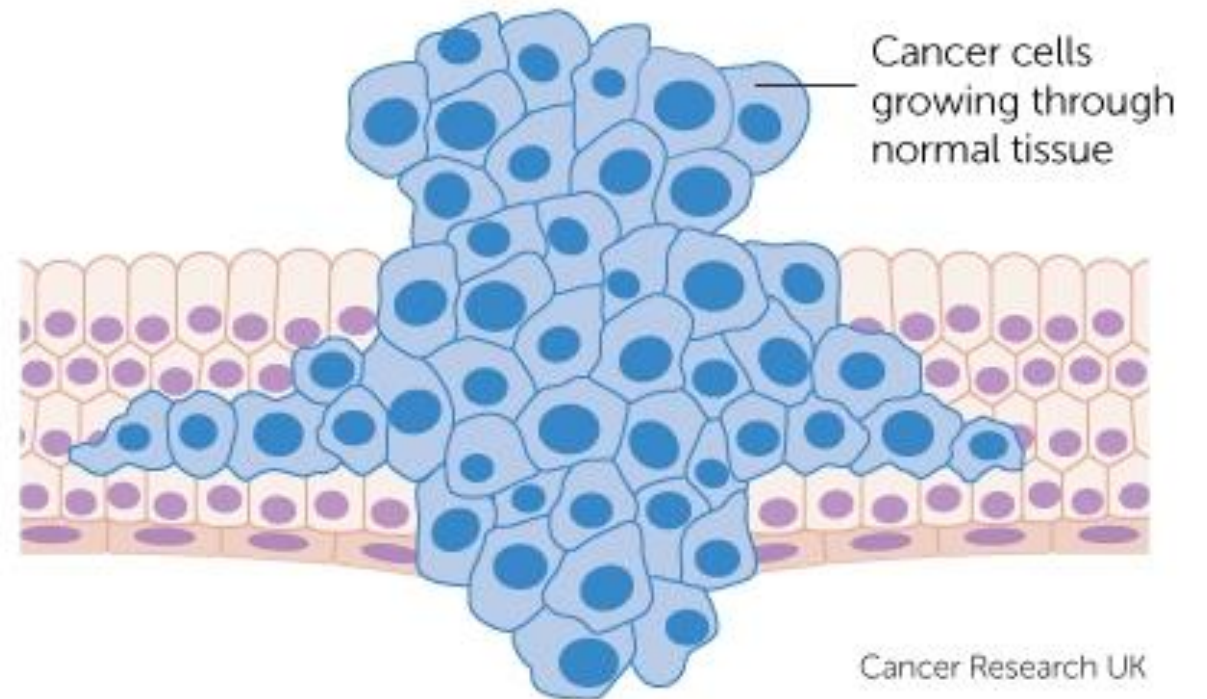
Faculty of Biology, Jagiellonian University in Krakow

(Dean's representative for addressing ecological and climate crisis)



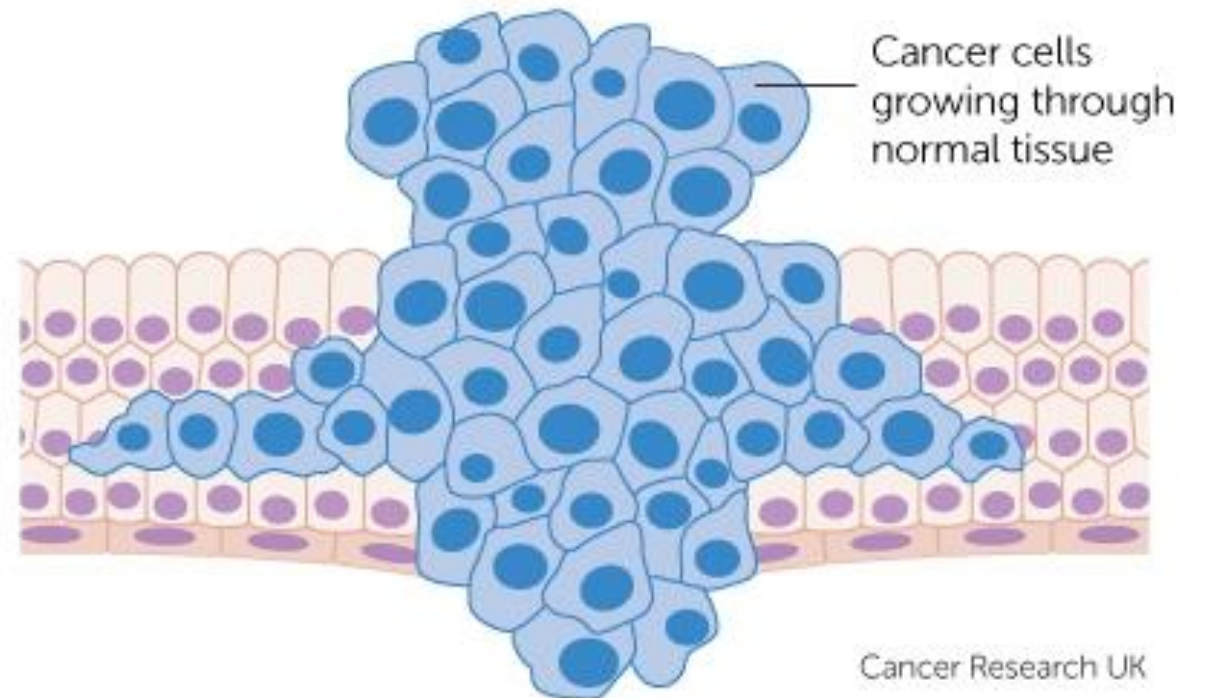
NAUKA DLA PRZYRODY

# Cancer



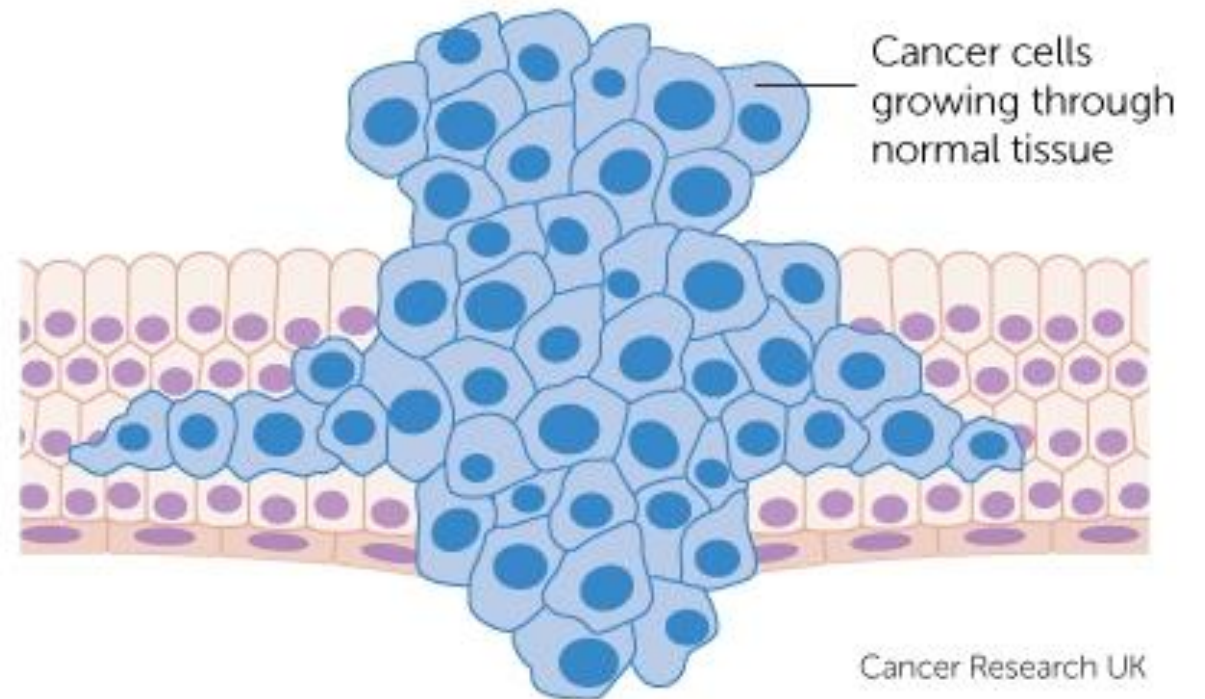
# Cancer is different from normal tissue because it:

- grows out of control
- grows into and damages other tissues and organs



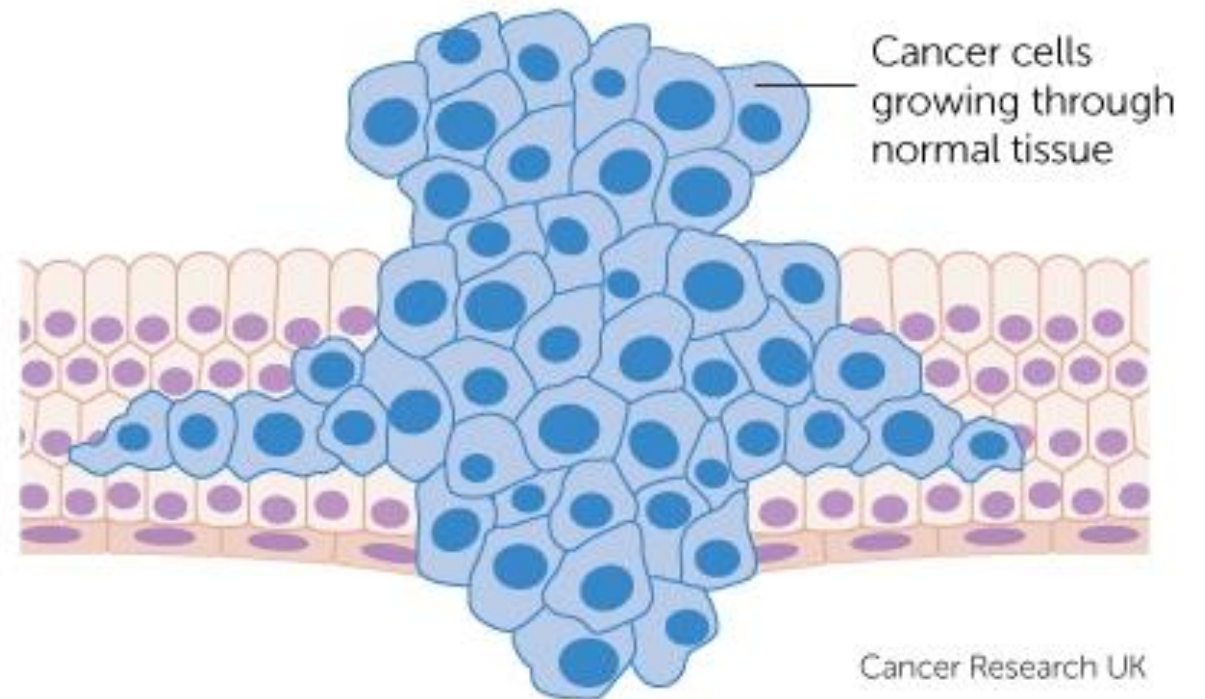
# Cancer cells:

- grow very successfully, but...



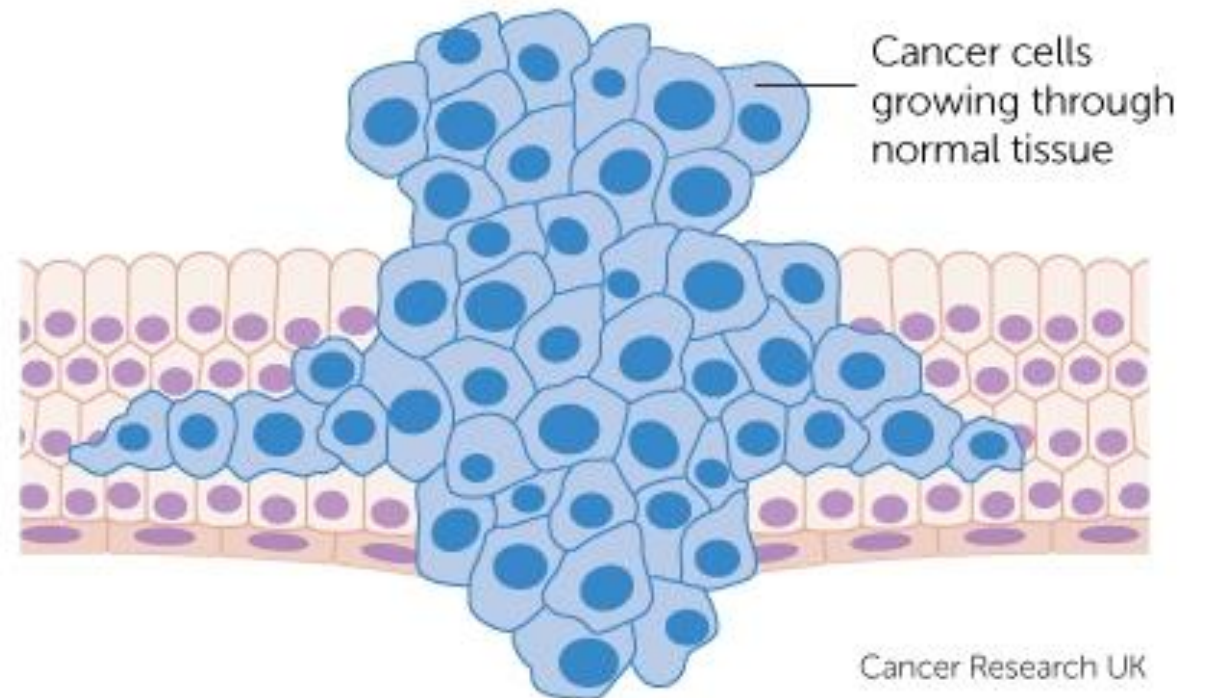
# Cancer cells:

- grow very successfully, but die alongside once they kill the organism



# Cancer cells:

- **...are body cells**
- grow very successfully, but die alongside once they kill the organism





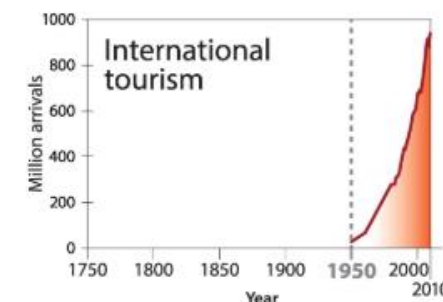
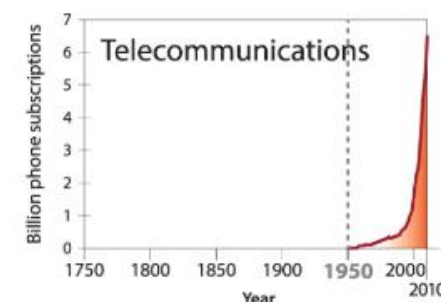
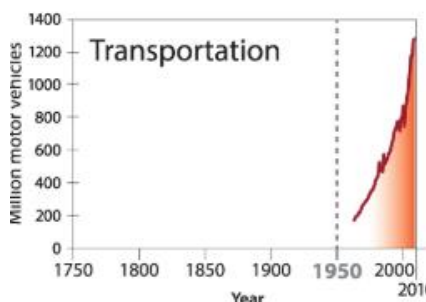
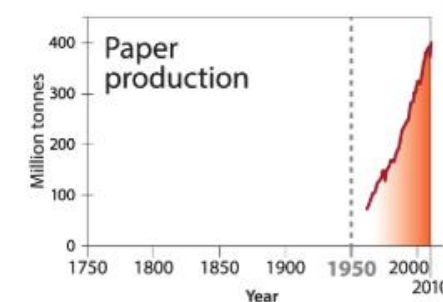
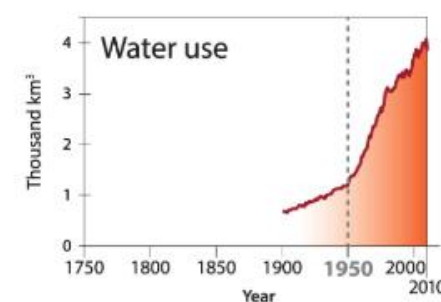
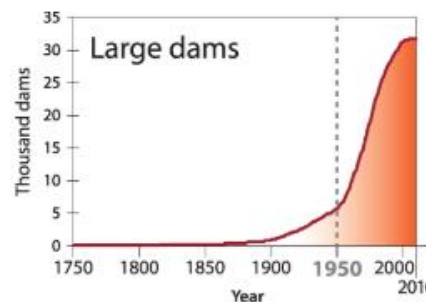
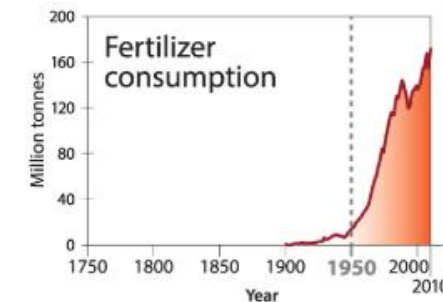
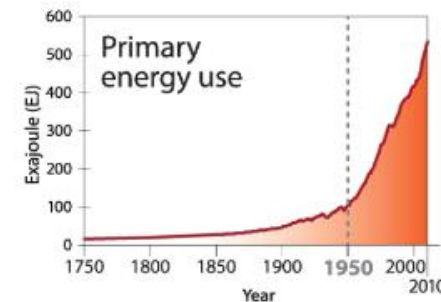
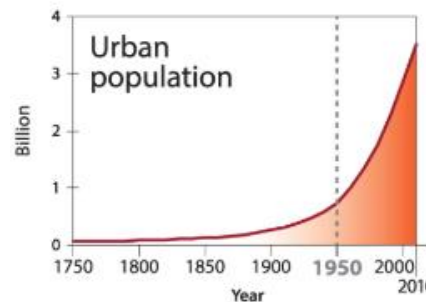
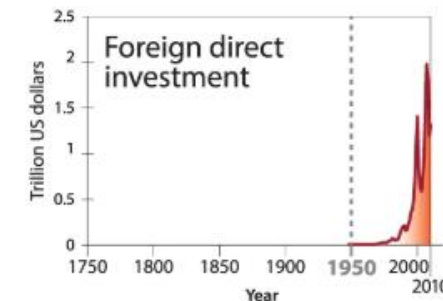
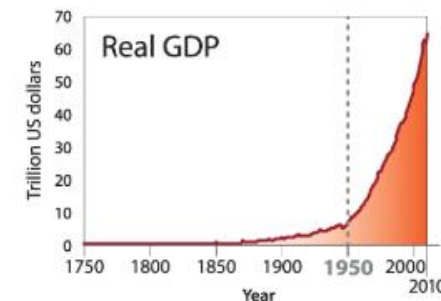
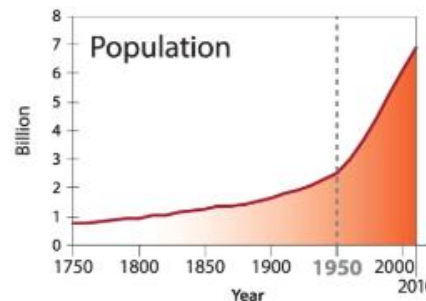
# Civilisation currently:

- grows rapidly



# Civilisation currently:

- grows rapidly (explosively, in fact)



The trajectory of the Anthropocene: The Great Acceleration

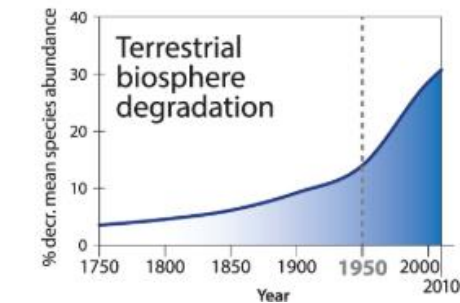
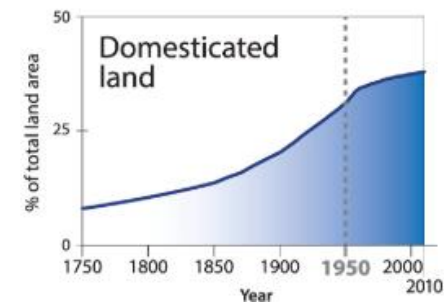
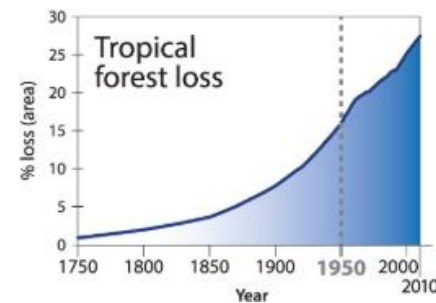
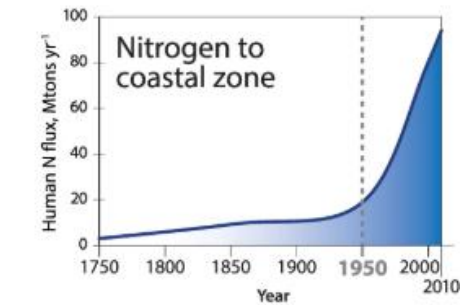
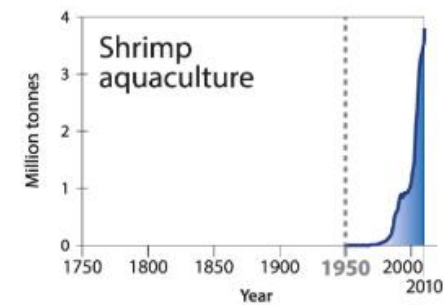
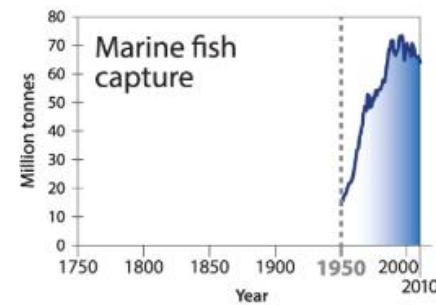
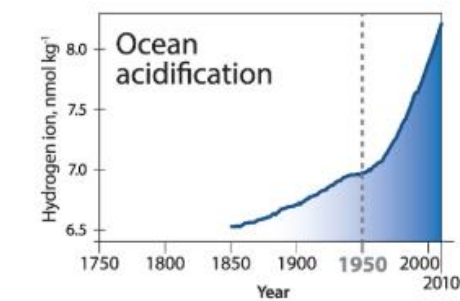
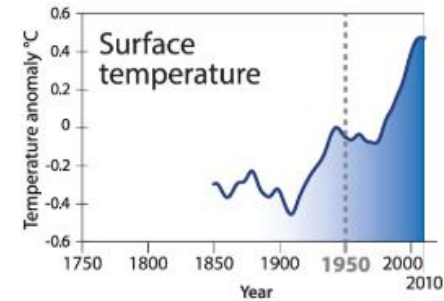
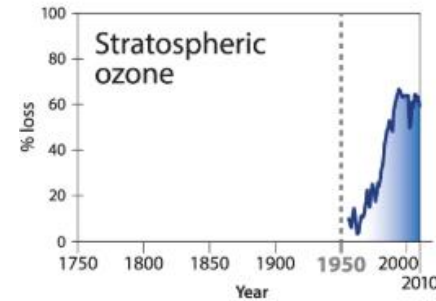
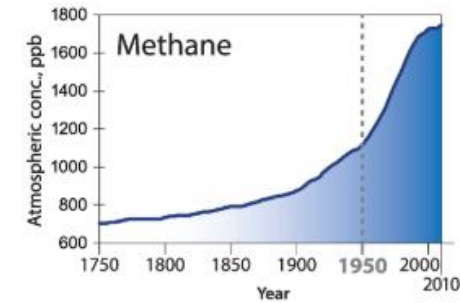
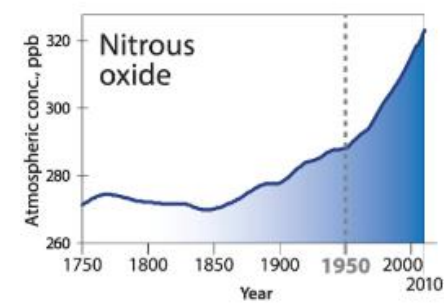
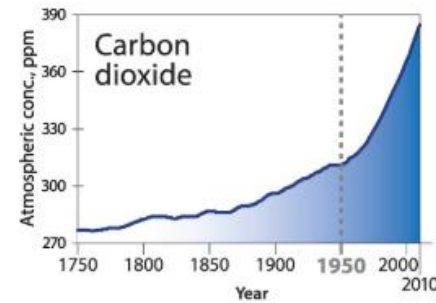
The Anthropocene Review  
2015, Vol. 2(1) 81–98  
© The Author(s) 2015  
Reprints and permissions:  
sagepub.co.uk/journalsPermissions.nav  
DOI: 10.1177/2053019614564785  
anr.sagepub.com  
SAGE

Will Steffen,<sup>1,2</sup> Wendy Broadgate,<sup>3</sup> Lisa Deutsch,<sup>1</sup>  
Owen Gaffney<sup>3</sup> and Cornelia Ludwig<sup>1</sup>



# Civilisation currently:

- grows rapidly
- reshapes the Earth system



## The trajectory of the Anthropocene: The Great Acceleration

The Anthropocene Review  
 2015, Vol. 2(1) 81–98  
 © The Author(s) 2015  
 Reprints and permissions:  
[sagepub.co.uk/journalsPermissions.nav](http://sagepub.co.uk/journalsPermissions.nav)  
 DOI: 10.1177/2053019614564785  
[anr.sagepub.com](http://anr.sagepub.com)

Will Steffen,<sup>1,2</sup> Wendy Broadgate,<sup>3</sup> Lisa Deutsch,<sup>1</sup>  
 Owen Gaffney<sup>3</sup> and Cornelia Ludwig<sup>1</sup>

The Anthropocene, Planetary Boundaries and the Biosphere:

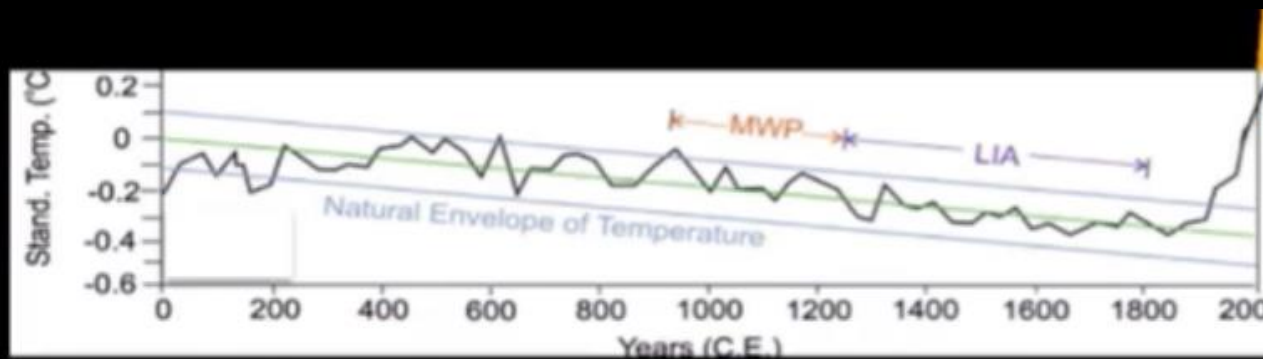
Challenges of the 21<sup>st</sup> Century



Will Steffen

Emeritus Professor, Australian National University  
Senior Fellow, Stockholm Resilience Centre

source: <https://moniviestin.jyu.fi/ohjelmat/science/bioenv/eccb-2018/recording-15-06-2018-18.32>



Summerhayes 2015

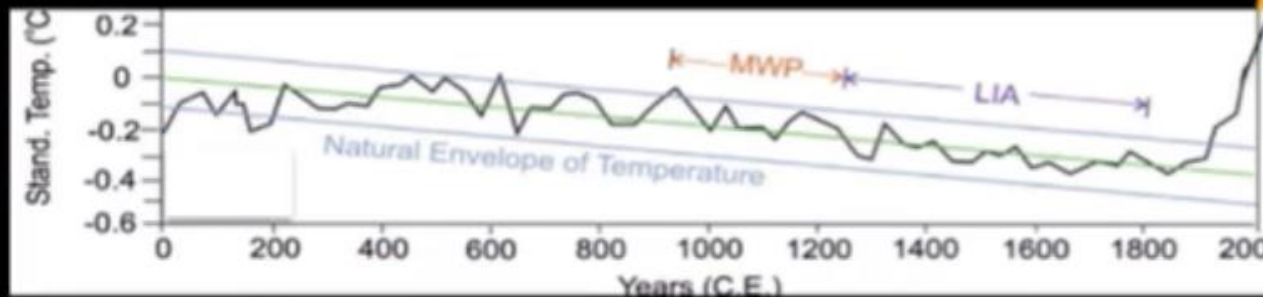
today

The Anthropocene, Planetary Boundaries and the Biosphere:

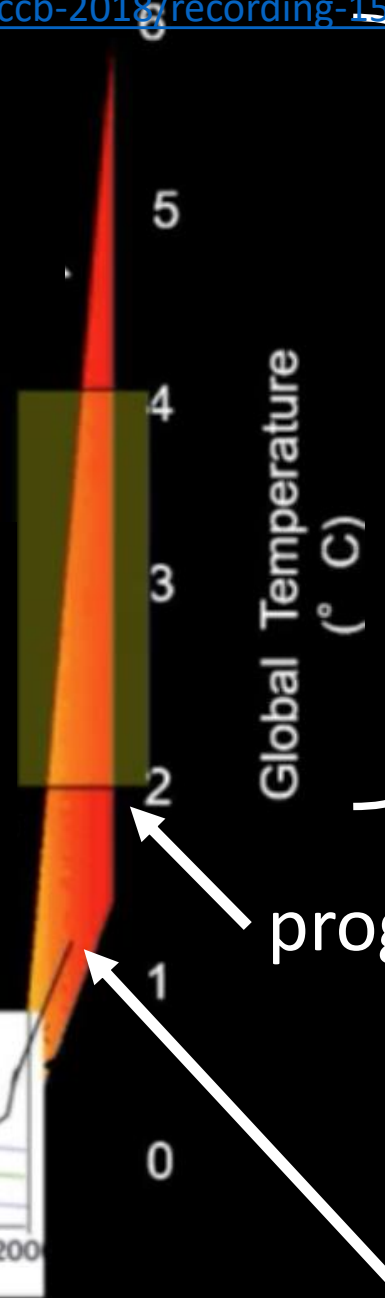
Challenges of the 21<sup>st</sup> Century



source: <https://moniviestin.jyu.fi/ohjelmat/science/bioenv/eccb-2018/recording-15-06-2018-18.32>



Summerhayes 2015



prognosis for further decades of XXI.

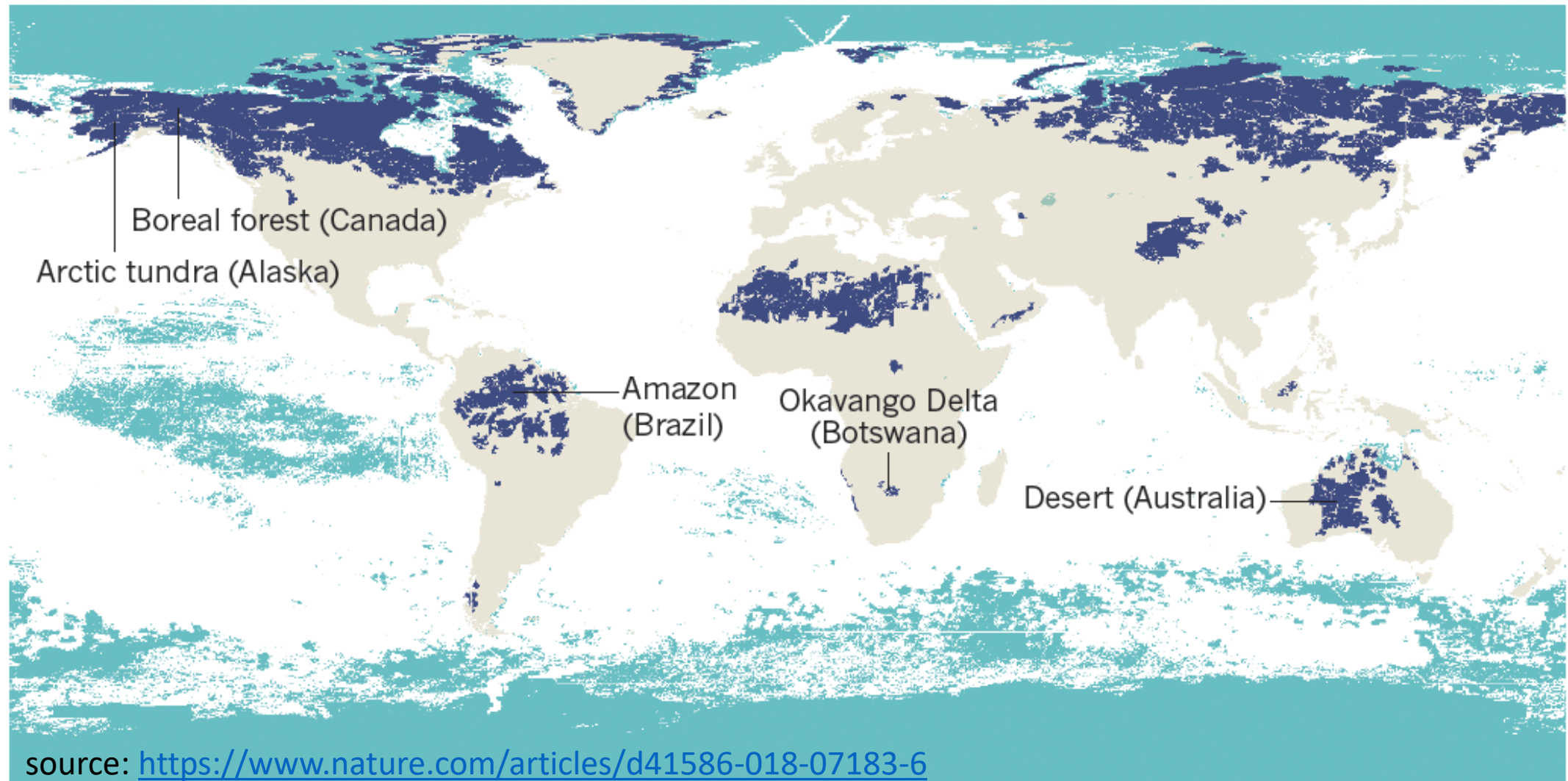
prognosis for 2050

today

# THE HUMAN FOOTPRINT

77% of land (excluding Antarctica) and 87% of the ocean has been modified by the direct effects of human activities.

**REMAINING WILDERNESS:** ■ Terrestrial ■ Marine



source: <https://www.nature.com/articles/d41586-018-07183-6>





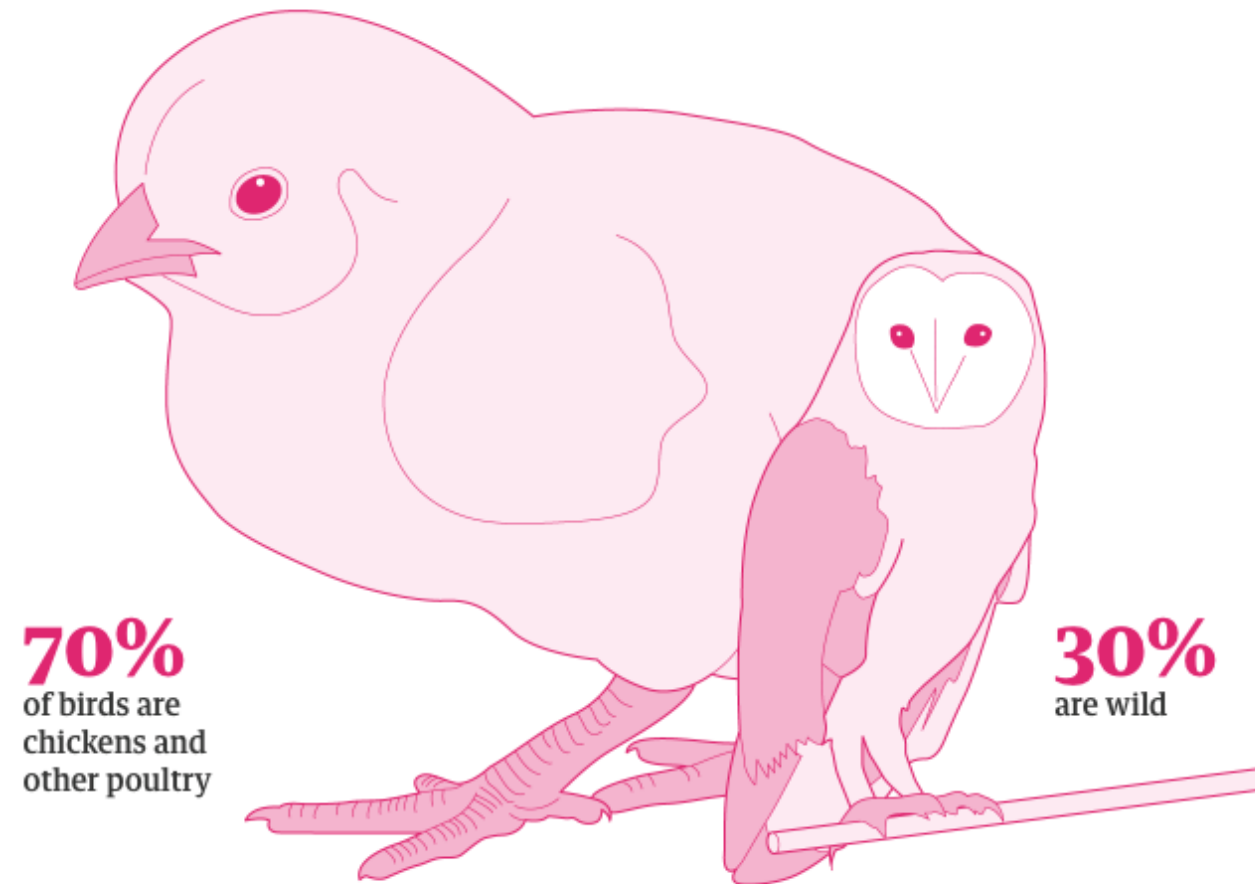
# The biomass distribution on Earth

Yinon M. Bar-On, Rob Phillips, and Ron Milo

PNAS June 19, 2018 115 (25) 6506-6511; published ahead of print May 21, 2018

<https://doi.org/10.1073/pnas.1711842115>

Edited by Paul G. Falkowski, Rutgers, The State University of New Jersey, New Brunswick, NJ, and approved April 13, 2018 (received for review July 3, 2017)



Guardian graphic.



wild mammals contribute...% of the total mammal  
biomass on Earth



# The biomass distribution on Earth

Yinon M. Bar-On, Rob Phillips, and Ron Milo

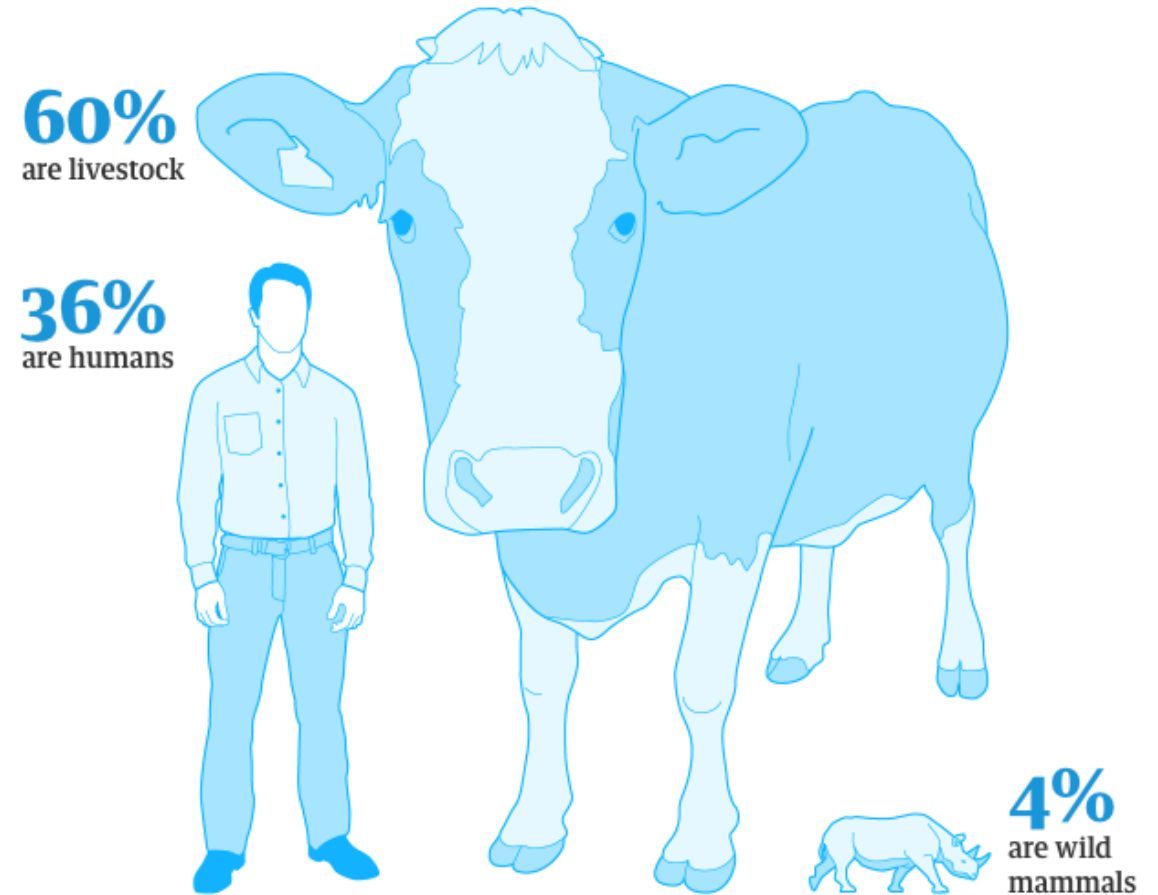
PNAS June 19, 2018 115 (25) 6506-6511; published ahead of print May 21, 2018

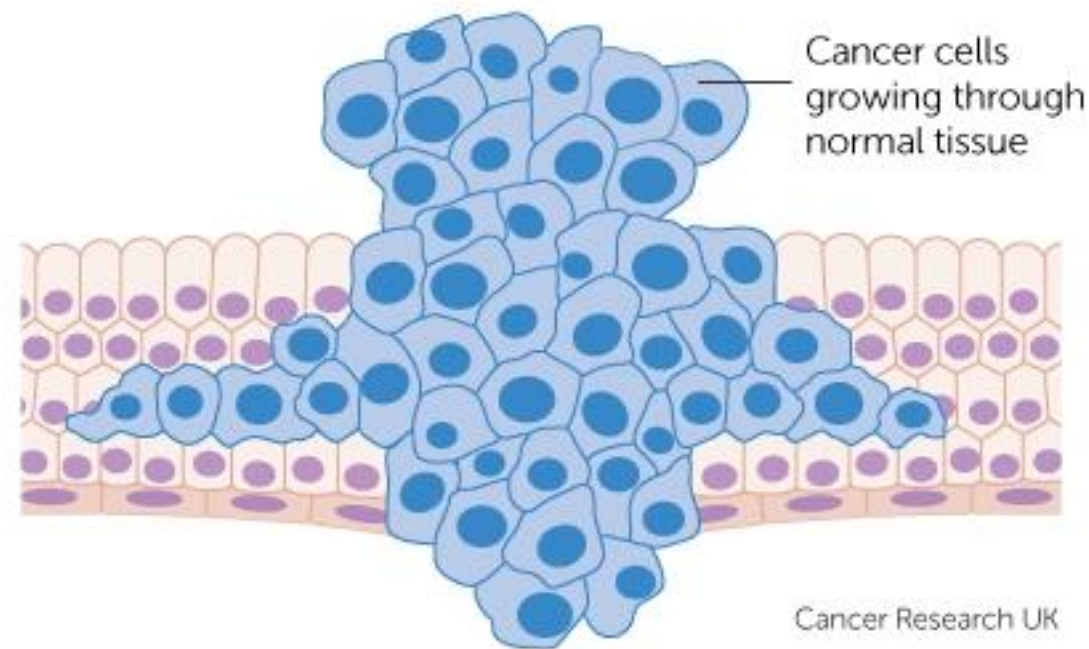
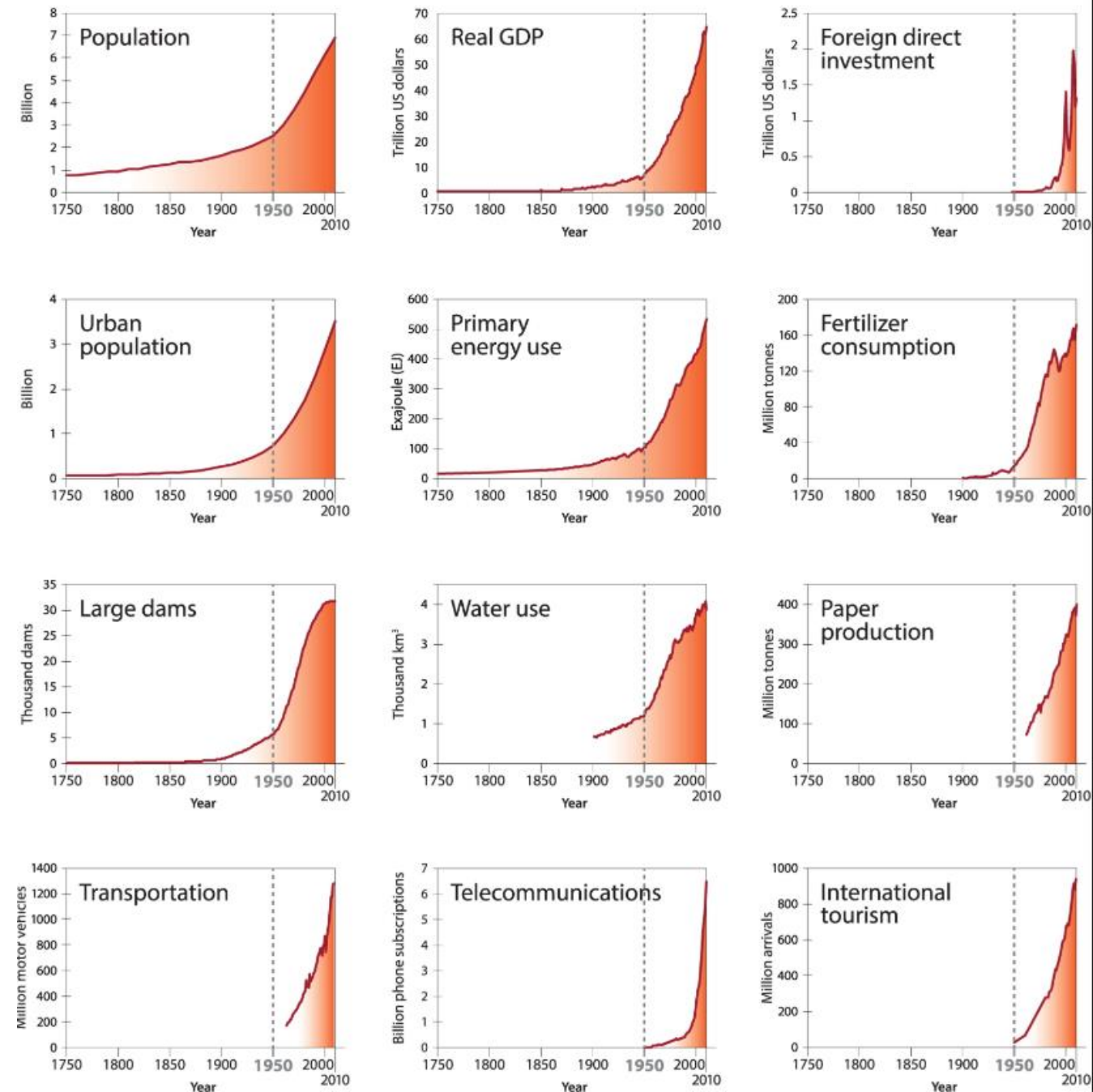
<https://doi.org/10.1073/pnas.1711842115>

Edited by Paul G. Falkowski, Rutgers, The State University of New Jersey, New Brunswick, NJ, and approved April 13, 2018 (received for review July 3, 2017)



▲ A cattle farm in Mato Grosso, Brazil. 60% of all mammals on Earth are livestock. Photograph: Daniel Beltra/Greenpeace





*„To prevent widespread misery (...) humanity must practice a more environmentally sustainable alternative to business as usual. Soon it will be too late to shift course away from our failing trajectory, and time is running out.*

*We must recognize, in our day-to-day lives and in our governing institutions, that Earth with all its life is our only home.”*

## **World Scientists' Warning to Humanity: A Second Notice**

WILLIAM J. RIPPLE, CHRISTOPHER WOLF, THOMAS M. NEWSOME, MAURO GALETTI, MOHAMMED ALAMGIR, EILEEN CRIST, MAHMOUD I. MAHMOUD, WILLIAM F. LAURANCE, and 15,364 scientist signatories from 184 countries

*„**Soon** it will be too late to shift course away from our failing trajectory, and time is running out.”*

## **World Scientists' Warning to Humanity: A Second Notice**

WILLIAM J. RIPPLE, CHRISTOPHER WOLF, THOMAS M. NEWSOME, MAURO GALETTI, MOHAMMED ALAMGIR, EILEEN CRIST, MAHMOUD I. MAHMOUD, WILLIAM F. LAURANCE, and 15,364 scientist signatories from 184 countries



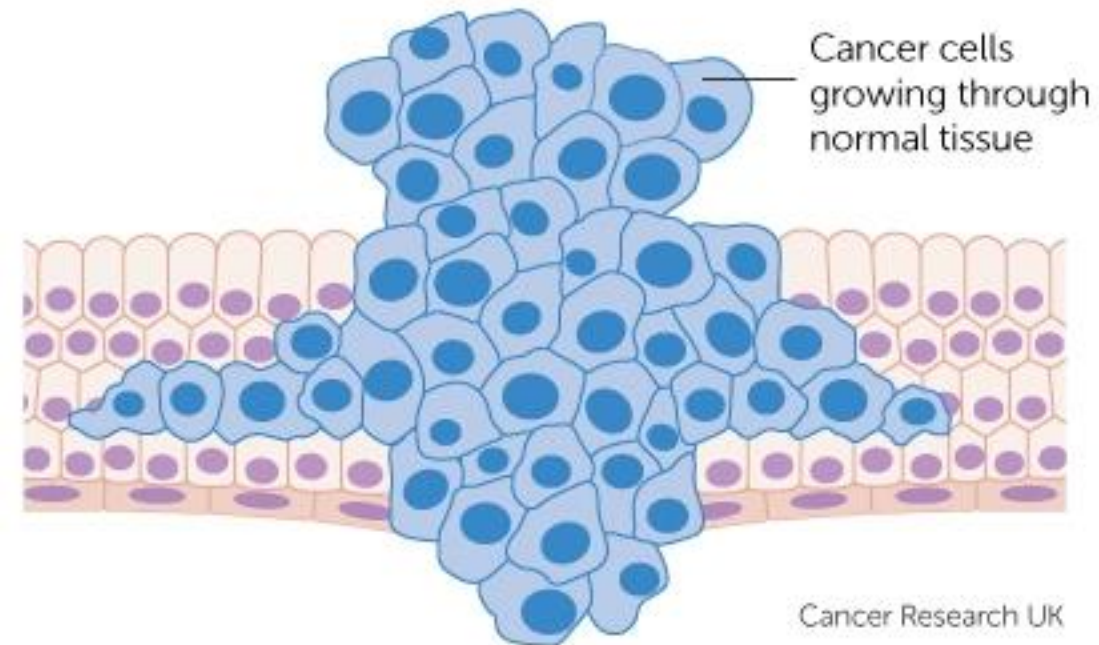
„**Soon** it will be too late to shift course away from our failing trajectory, and time is running out.”

**Soon means: we have several years to avoid a major global catastrophe coming likely within ~ 3 decades.**

So the way I think about it is: what we do within the next several years will decide how likely my young nephews are to live to be my age, versus: dying of war or famine before they're my age.

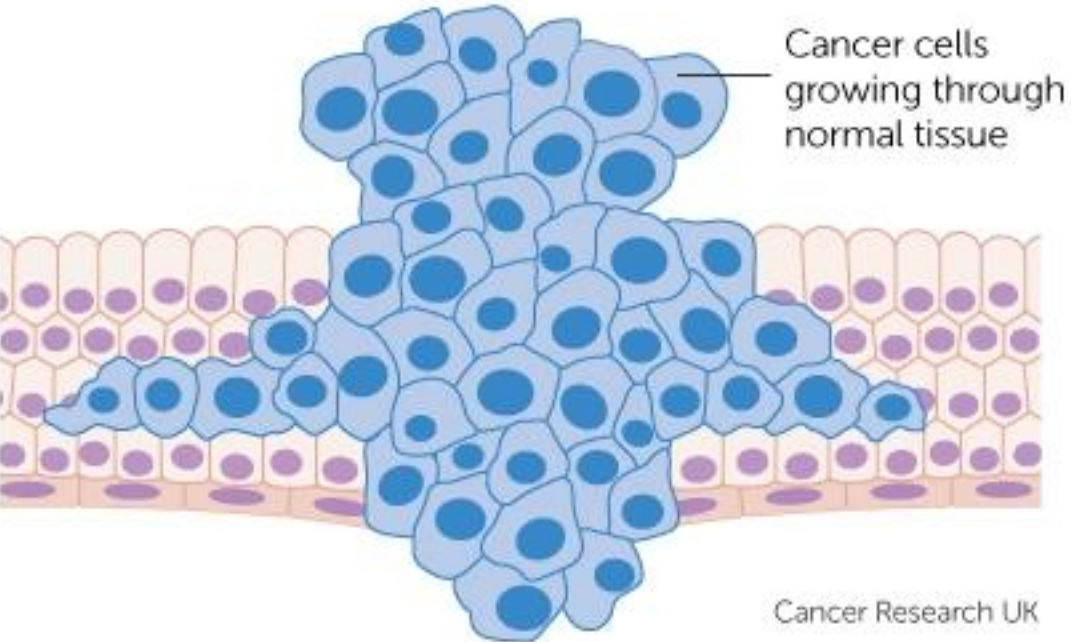
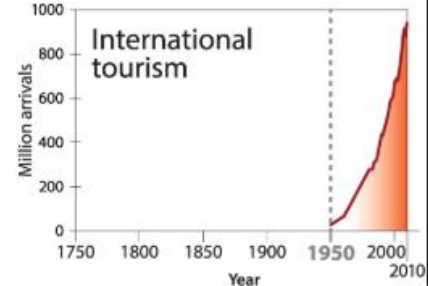
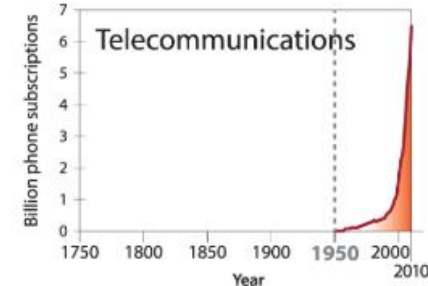
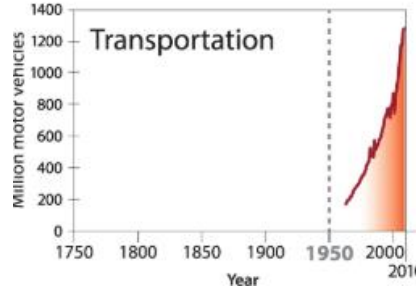
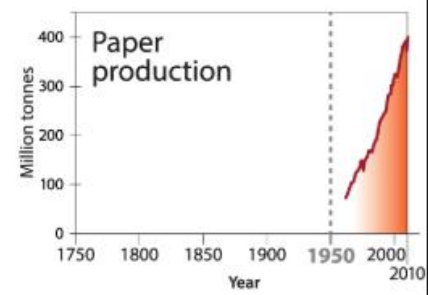
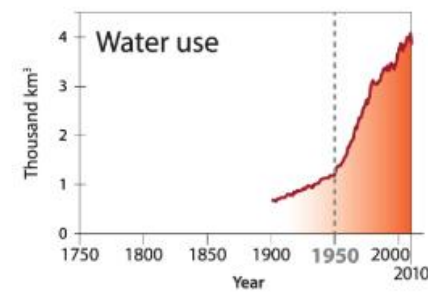
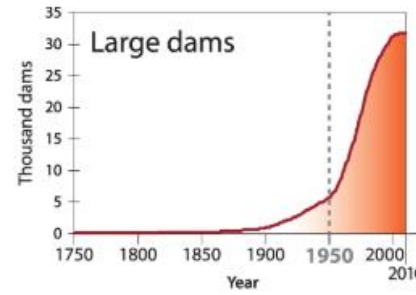
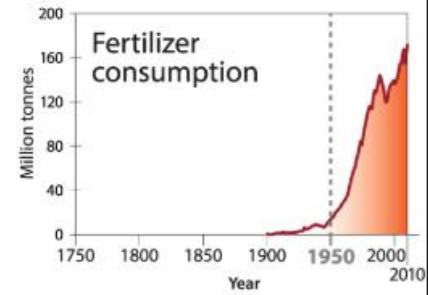
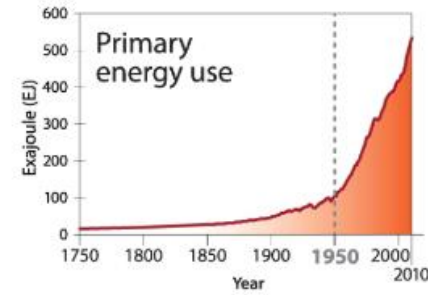
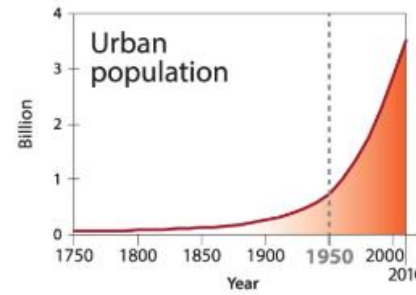
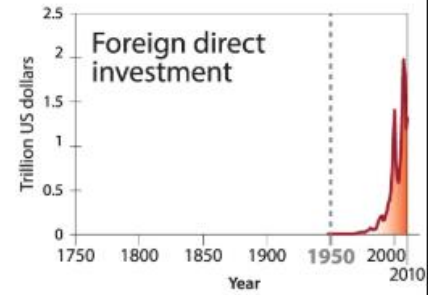
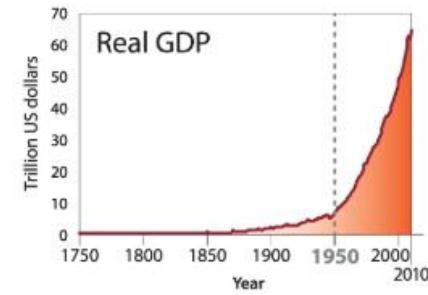
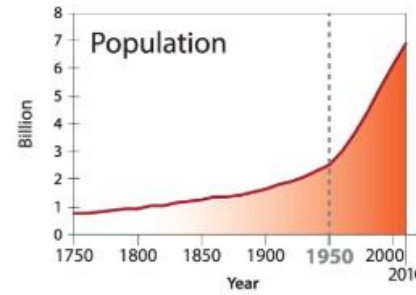
And the reason I'm sharing this is to emphasise that this is not an abstract academic issue – it's a red alert emergency.

Cancer doesn't have the mechanism to foresee where its growth is headed and adjust its behaviour. What it does instead is it just realizes the program built in its cells, which is simply: to grow. Unlike the cancer cells, we do have the ability to realize and foresee, and change the way our system works.



Cancer doesn't have the mechanism to foresee where its growth is headed and adjust its behaviour. What it does instead is it just realizes the program built in its cells, which is simply: to grow. Unlike the cancer cells, we do have the ability to realize and foresee, and change the way our system works.

Tragic thing is, we also have cancerous mechanisms built in very deeply in most of our institutions and businesses.



A bulk of our current social structures, local to global governing and management strategies etc. is build on the paradigm of economic growth.



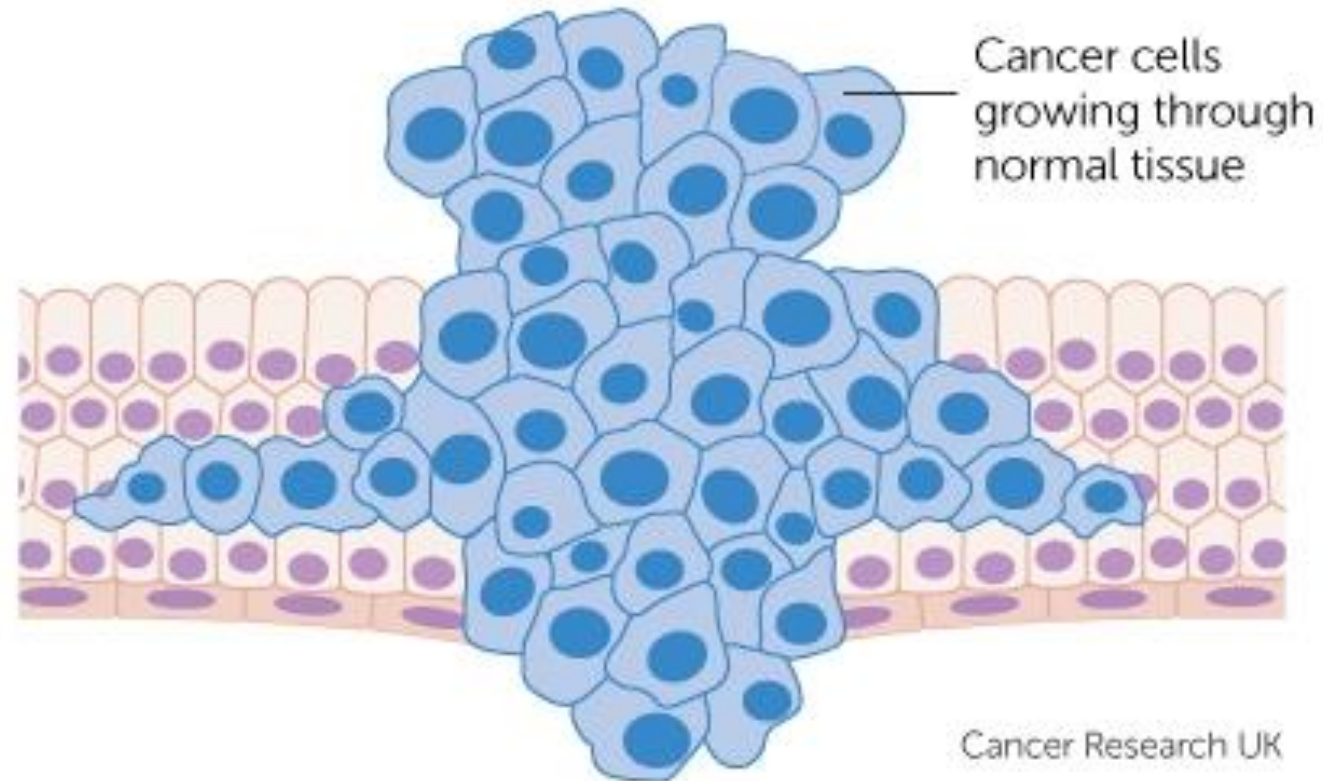
(from: <https://ec.europa.eu>)



...and centered around investing, producing, building more & more...



This is a cancerous paradigm – because you can't possibly have *more* investment, *more* building, continued growth without using more resources of which we (collectively) are already using far too much.





Much difficulty though lies in the fact that the growth paradigm is so built in our system already that it is still routinely treated as obvious & rarely questioned.



# What do we have to do?

restructure priorities

- **from:** growing economies
- **to:** preserving life



photo: Tomasz Prokop

# What do we have to do?

- **stop** burning fossil fuels
- **stop** destroying natural & semi-natural habitats
- **restore** native natural & semi-natural habitats at large scales



IPBES 2019 GLOBAL ASSESSMENT REPORT ON  
BIODIVERSITY AND ECOSYSTEM SERVICES

## World Scientists' Warning to Humanity: A Second Notice FREE

William J. Ripple, Christopher Wolf, Thomas M. Newsome, Mauro Galetti, Mohammed Alamgir, Eileen Crist, Mahmoud I. Mahmoud, William F. Laurance, 15,364 scientist signatories from 184 countries

*BioScience*, Volume 67, Issue 12, 1 December 2017, Pages 1026–1028,  
<https://doi.org/10.1093/biosci/bix125>

**Published:** 13 November 2017



# What do we have to do?

- **stop** burning fossil fuels
- **stop** destroying natural & semi-natural habitats
- **restore** native natural & semi-natural habitats at large scales

## sources:



IPBES 2019 GLOBAL ASSESSMENT REPORT ON  
BIODIVERSITY AND ECOSYSTEM SERVICES

### World Scientists' Warning to Humanity: A Second Notice FREE

William J. Ripple, Christopher Wolf, Thomas M. Newsome, Mauro Galetti, Mohammed Alamgir, Eileen Crist, Mahmoud I. Mahmoud, William F. Laurance, 15,364 scientist signatories from 184 countries

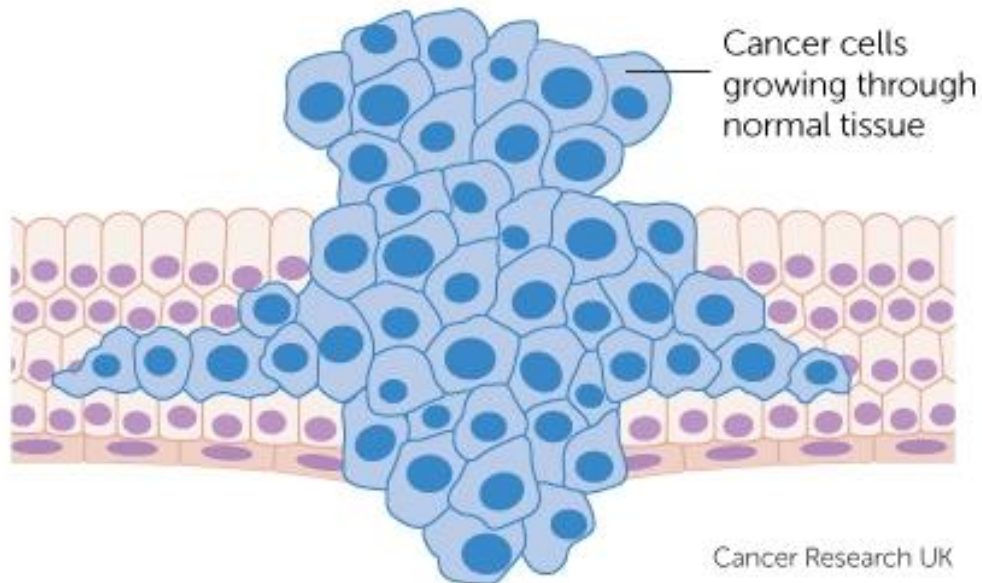
*BioScience*, Volume 67, Issue 12, 1 December 2017, Pages 1026–1028,  
<https://doi.org/10.1093/biosci/bix125>

**Published:** 13 November 2017

# What do we have to do?

- **stop** burning fossil fuels
- **stop** destroying natural & semi-natural habitats
- **restore** native natural & semi-natural habitats at large scales

**In other words: stop growing the cancer and start rebuilding the damaged tissues.**



sources:



IPBES 2019 GLOBAL ASSESSMENT REPORT ON BIODIVERSITY AND ECOSYSTEM SERVICES

## World Scientists' Warning to Humanity: A Second Notice FREE

William J. Ripple, Christopher Wolf, Thomas M. Newsome, Mauro Galetti, Mohammed Almgir, Eileen Crist, Mahmoud I. Mahmoud, William F. Laurance, 15,364 scientist signatories from 184 countries

*BioScience*, Volume 67, Issue 12, 1 December 2017, Pages 1026–1028,

<https://doi.org/10.1093/biosci/bix125>

Published: 13 November 2017

# What do we have to do?

- **stop** burning fossil fuels
- **stop** converting (destroying) native nature habitats worldwide
- **restore** native nature habitats (especially: forests & wetlands) at large scales
  
- **foster** social bonds & cooperation

sources:



IPBES 2019 GLOBAL ASSESSMENT REPORT ON  
BIODIVERSITY AND ECOSYSTEM SERVICES

## World Scientists' Warning to Humanity: A Second Notice FREE

William J. Ripple, Christopher Wolf, Thomas M. Newsome, Mauro Galetti, Mohammed Alamgir, Eileen Crist, Mahmoud I. Mahmoud, William F. Laurance, 15,364 scientist signatories from 184 countries

*BioScience*, Volume 67, Issue 12, 1 December 2017, Pages 1026–1028,  
<https://doi.org/10.1093/biosci/bix125>

**Published:** 13 November 2017

# What do we have to do?

- How?

- **stop** burning fossil fuels
- **stop** destroying nature
- **restore** nature at large scales
  - **foster** social bonds & cooperation

# What do we have to do?

- How?

- prioritise local production on small-to-medium farms, reduce food waste, reduce consumption of animal products

How, more specifically, @ municipality level?

1. Develop farmers markets (rather than supermarkets) – and other solutions to increase the local farmers share in your food supply system
2. Choose locally produced and mostly plant-based foods for any catering organised by the municipality
3. Develop local urban farms

- **stop** burning fossil fuels
- **stop** destroying nature
- **restore** nature at large scales
- **foster** social bonds & cooperation



# What do we have to do?

- How?
  - preserve & restore green areas with native vegetation (and minimizing unnecessary interventions)

- **stop** burning fossil fuels
- **stop** destroying nature
- **restore** nature at large scales
  - **foster** social bonds & cooperation



Zakrzówek, Kraków (photo: Cecylia Malik)



**Cheonggyecheon River, Seoul**

source: <https://goodanthropocenes.net/restoration-of-cheonggyecheon-river/>

# What do we have to do?

- How?
  - energy production – shifting to renewables

- **stop** burning fossil fuels
- **stop** destroying nature
- **restore** nature at large scales
  - **foster** social bonds & cooperation

# What do we have to do?

- How?

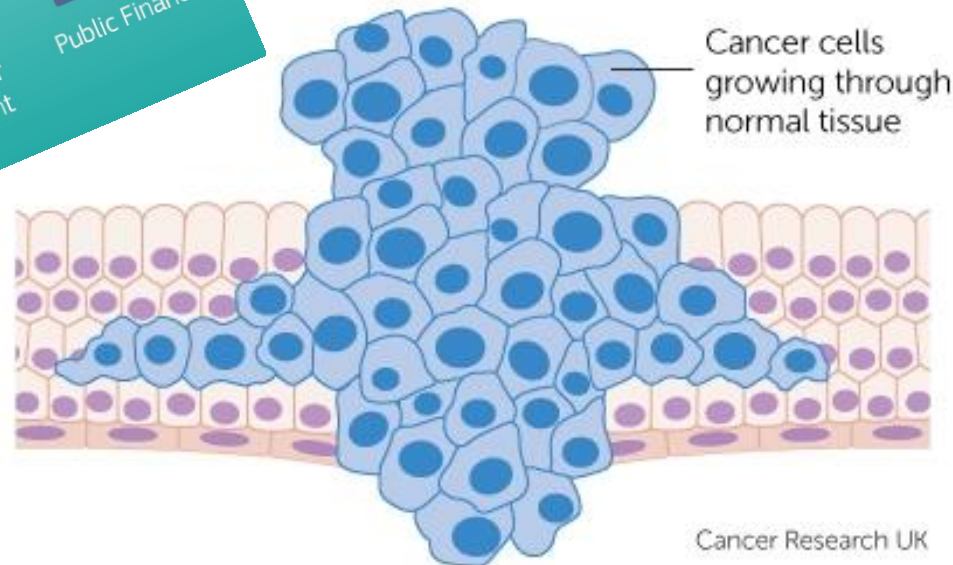
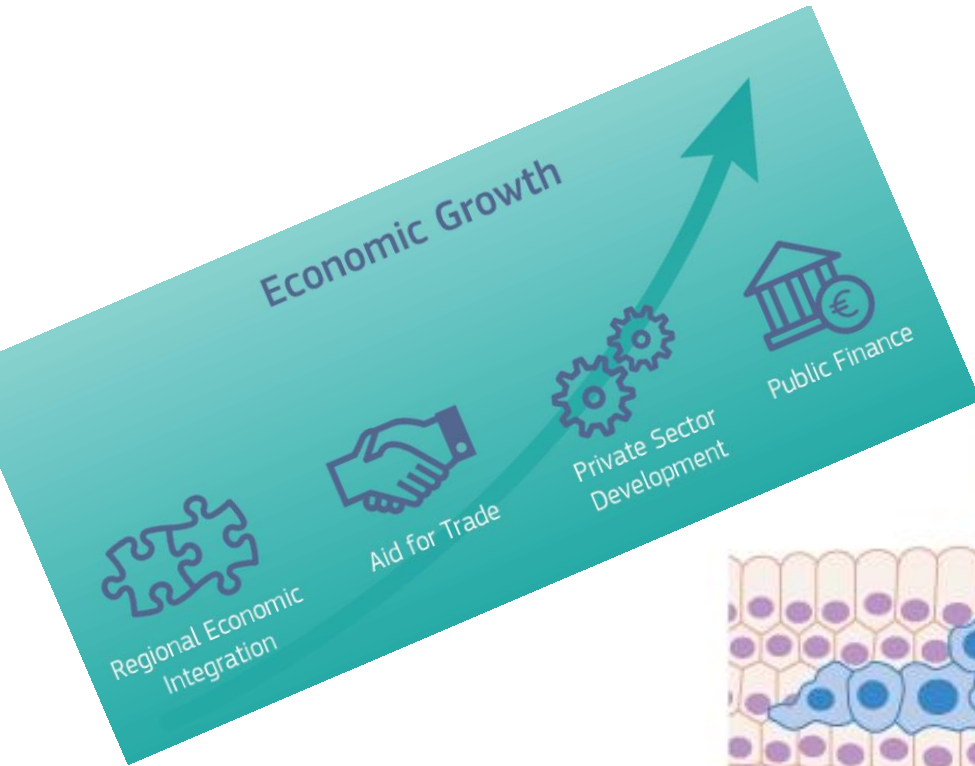
- **radically decrease** production, consumption & building

- **stop** burning fossil fuels
- **stop** destroying nature
- **restore** nature at large scales
  - **foster** social bonds & cooperation

# What do we have to do?

- How?
  - **radically decrease** production, consumption & building

- **stop** burning fossil fuels
- **stop** destroying nature
- **restore** nature at large scales
- **foster** social bonds & cooperation



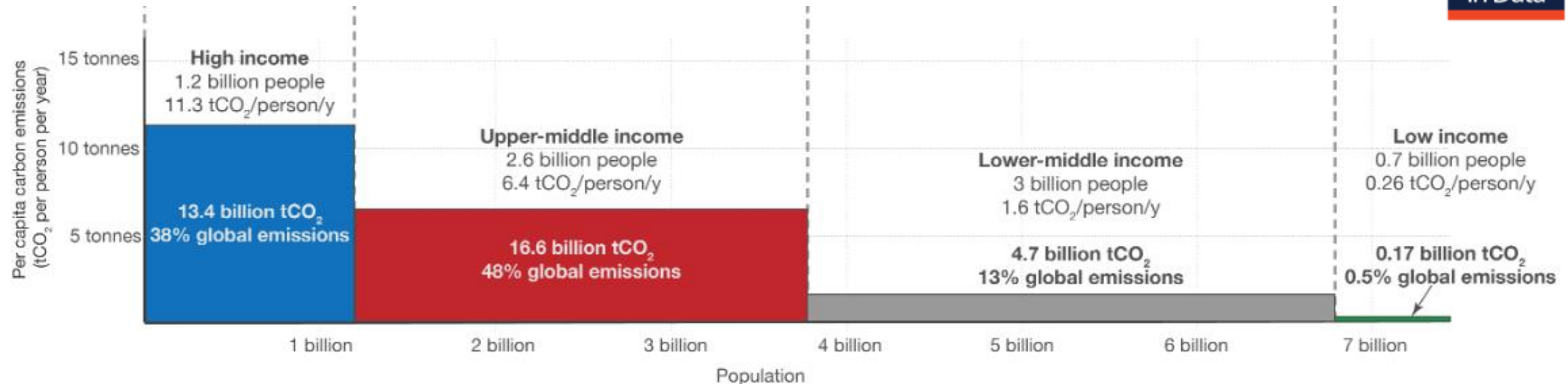


# What do we have to do?

- How?
  - **radically decrease** production, consumption & building [here in **our** wealthy parts of the world]

- **stop** burning fossil fuels
- **stop** destroying nature
- **restore** nature at large scales
- **foster** social bonds & cooperation

source:





# What do we have to do?

- How?
  - **radically decrease** production, consumption & building

- **stop** burning fossil fuels
- **stop** destroying nature
- **restore** nature at large scales
- **foster** social bonds & cooperation

**don't** build new roads & car parks – **do** invest in public transport



# What do we have to *not* do?

[*counter*example @municipal level]

Kraków – currently building *Trasa Łagiewnicka* (within-city ringroad)



- 80 mln € / km
- 3.5 km road @ the price that could build 28 km tram tracks

# Resources



## Bayou Greenways

Houston's Bayou Greenways - using swamps for recreation, transportation, social connections, & water regulation

community, Conservation, infrastructure, United States, Urban, urban ecology | Comments Off

[Read More >](#)



## Restoration of Cheonggyecheon River

How can urban cities be renovated to provide opportunities for their residents to reconnect to nature? Cheonggyecheon river restoration project in Seoul replaced a highway with urban green spaces and a highly engineered river. The project opened in 2005 and has become popular place for people to visit in Seoul. The restoration of

### RECENT POSTS

> [La Platjeta – the future of fishing may lie in its past.](#)

> [Contribute A Seed](#)

> [Predator Free New Zealand](#)

> [Expeditions connect Innu youth to their traditional territory / Les expéditions rapprochent les jeunes Innus de leur territoire traditionnel](#)

> [Melbourne, Australia: A model for how cities can](#)





The recipe for a good Anthropocene | Elena Bennett | TEDxCERN



Select Language ▾

Search...

Login / Register

Donate  
Get involved

About the Movement

Transition Near me

Stories

Do Transition

News and blog

# 7 Essential Ingredients

These seven essential ingredients will enable you to develop and embed Transition within your community.





# The Essential Guide to Doing Transition

Getting Transition started in your street, community,  
town or organisation.

By the Transition Network team





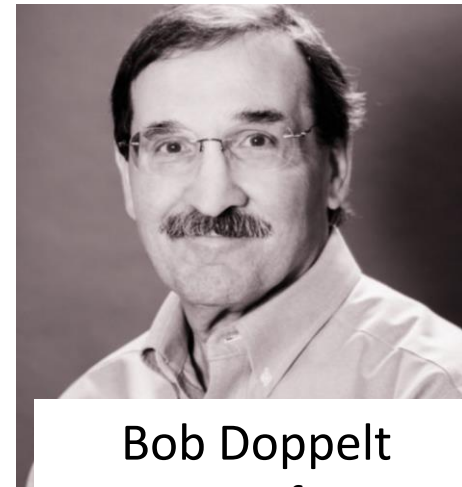
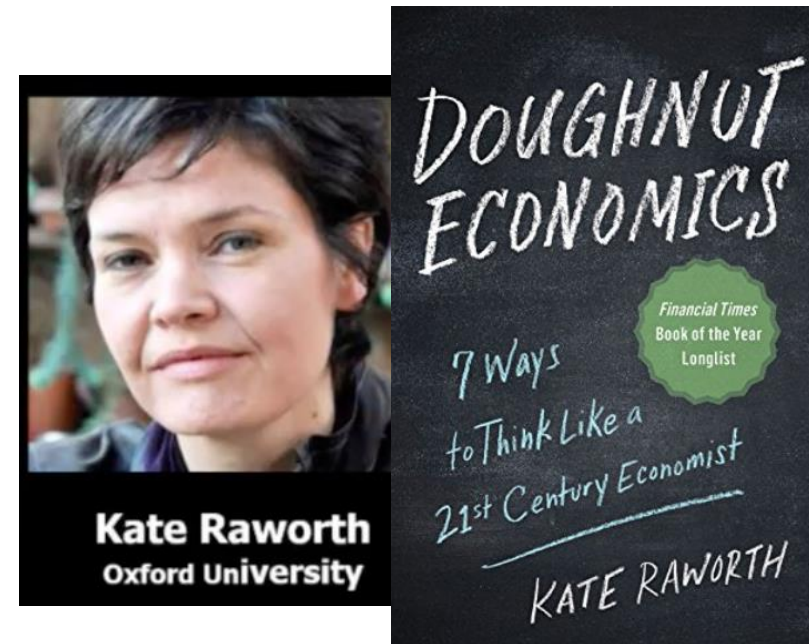
## Cities for People



## *Systems thinking*

**See the ecological and social systems you are part of**

**Account for all of the consequences of your actions on those systems**



**Bob Doppelt**  
University of Oregon

