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# Climate Change and Transition Studies

An Interactive Online Learning Initiative

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Young Scholars' Online Learning Initiative

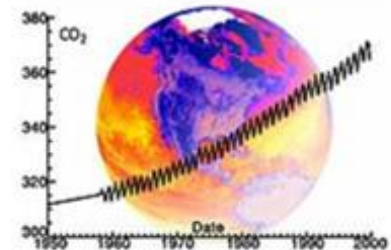
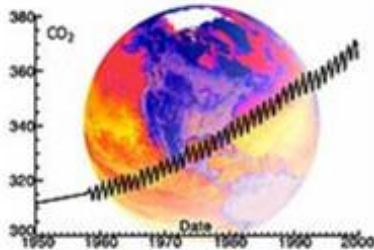
created by

Timothy C. Weiskel

Research Director, *Cambridge Climate Research Associates*

**Climate Science for Human Survival**

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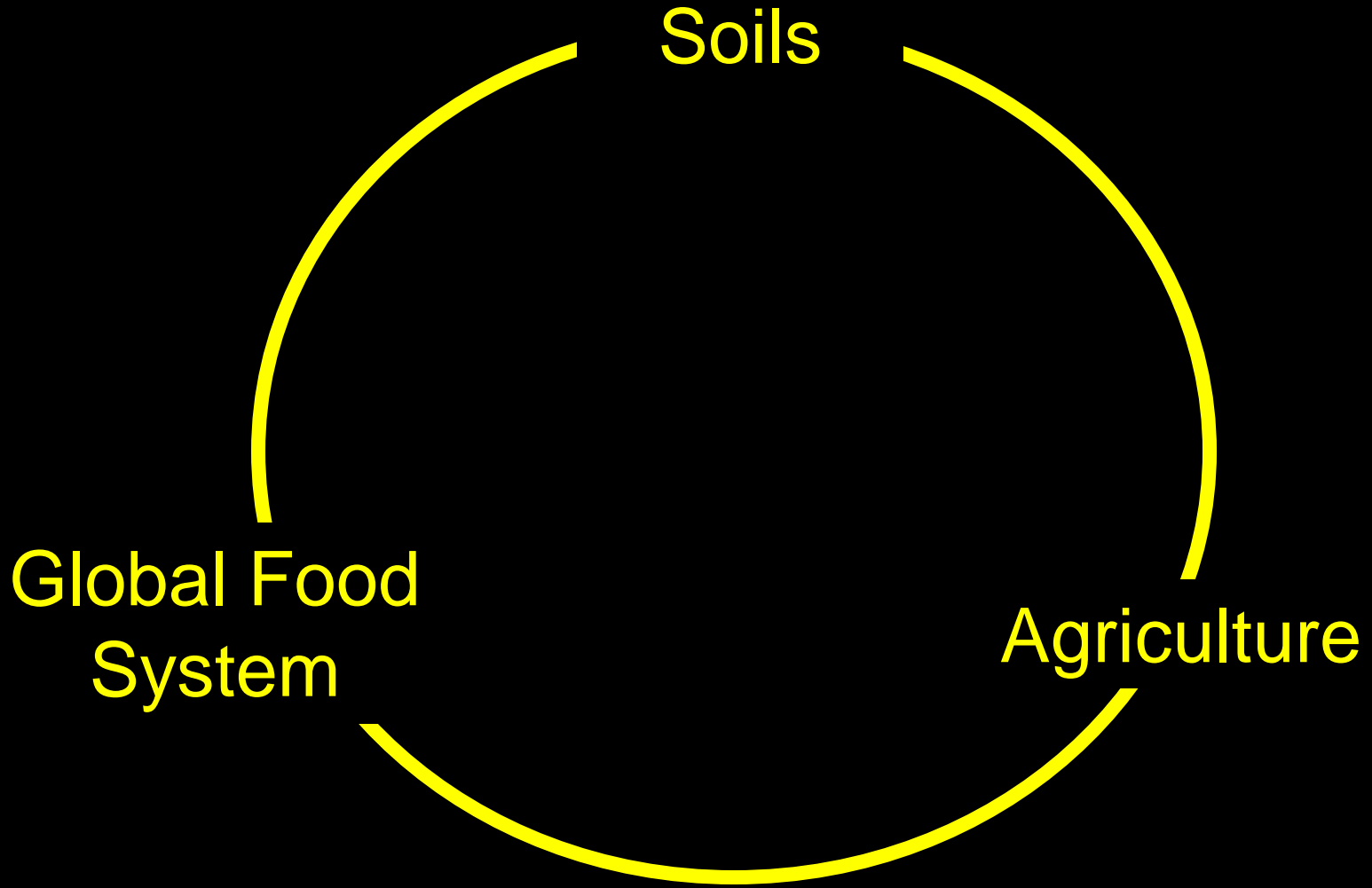
## Session 4

# Climate Change, Soils, Agriculture and the Global Food System

2 August 2018

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# Climate Change



# Extreme weather shows vulnerability of soils, agriculture and global food system



AND FLOODWATERS HAVE DESTROYED TOWNS, FARMLAND AND ROADS.



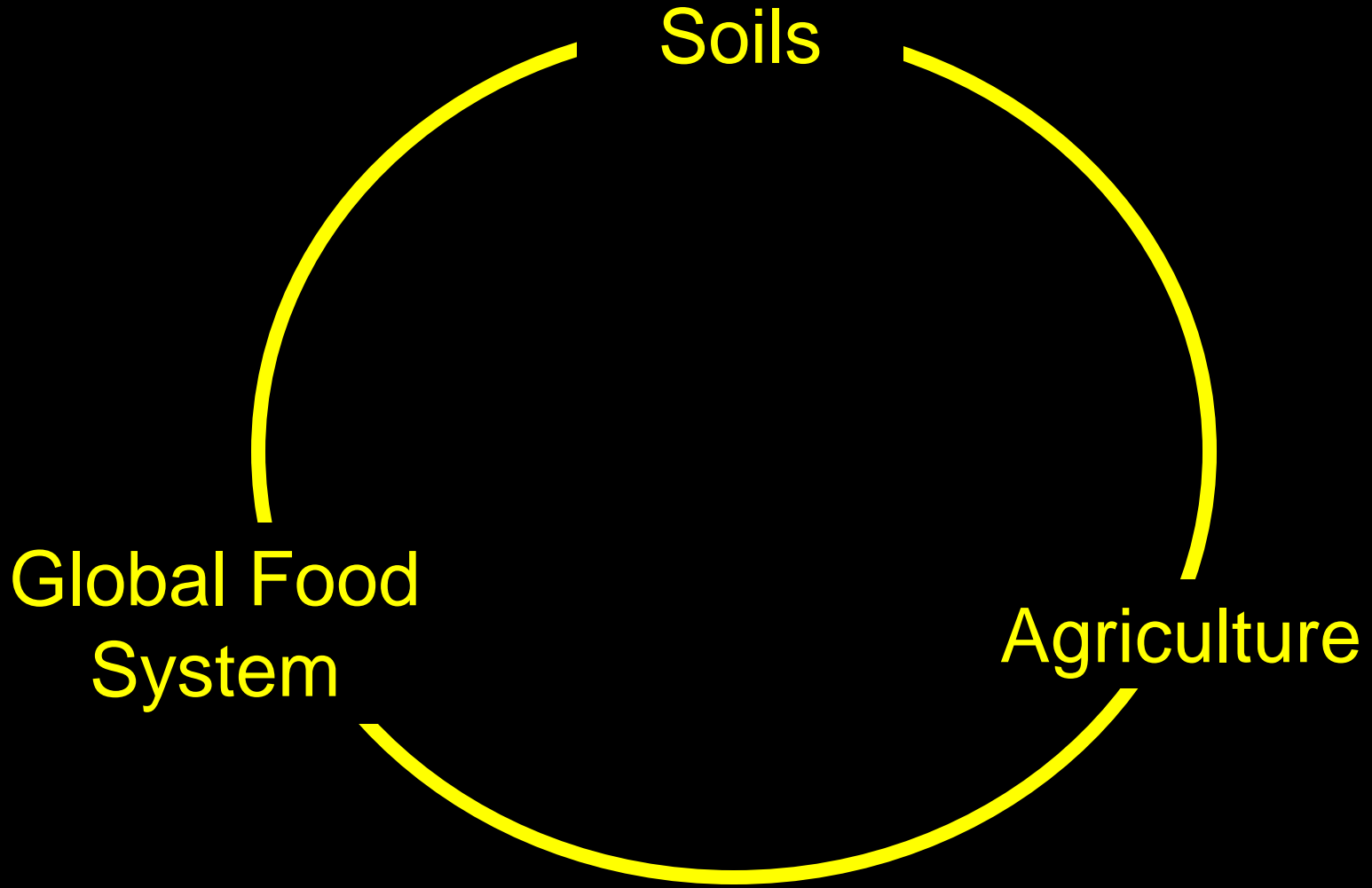
# Extreme weather shows vulnerability of soils, agriculture and global food system



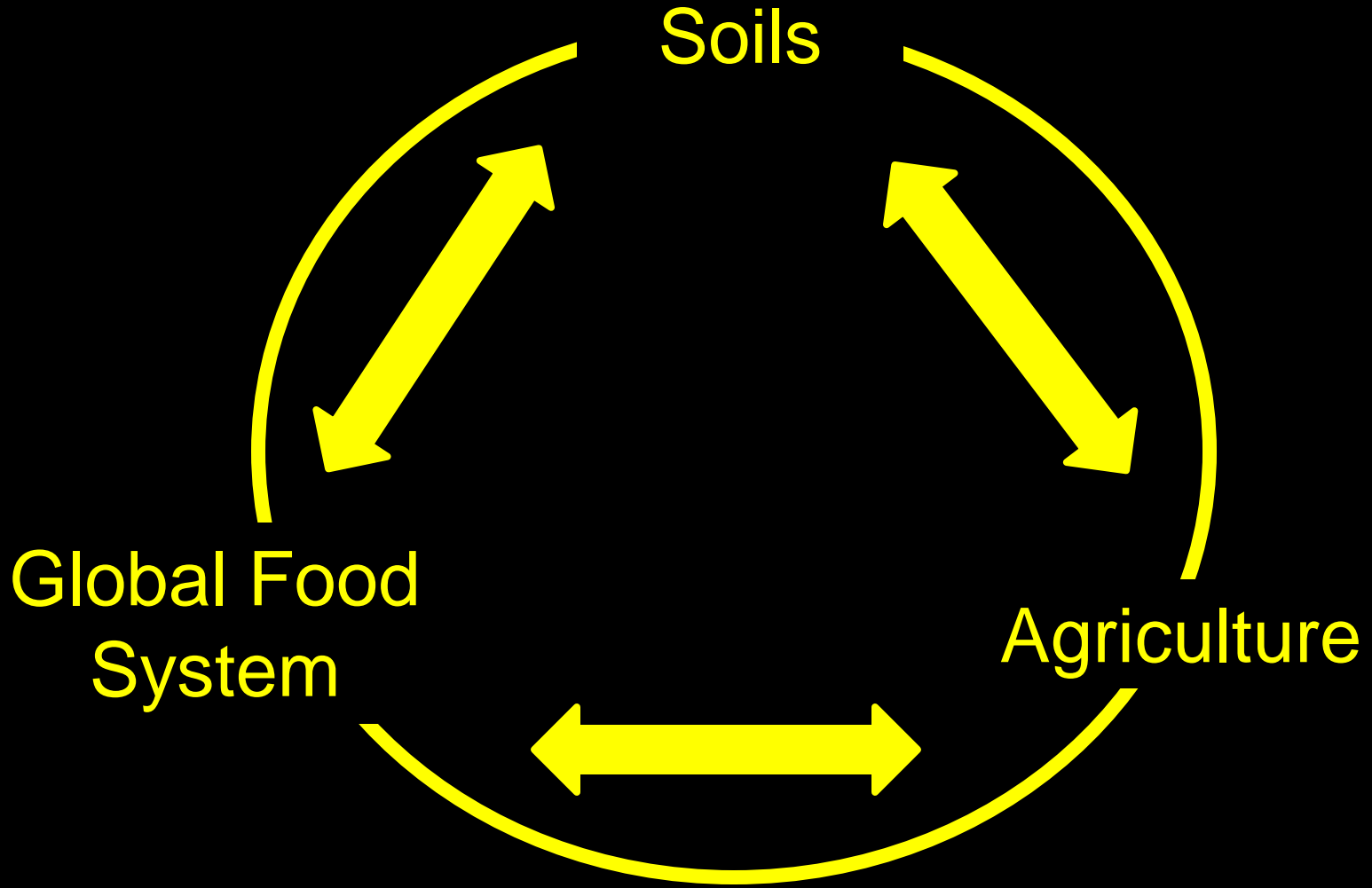
# Sea-level rise shows further vulnerability of soils, agriculture and global food system



# Climate Change



# Climate Change



Both extreme weather  
and patterns of sea-level rise, droughts  
and floods can transform whole groups of  
people from net  
“food producing” into net “food consuming”  
populations.

This can cause local (and perhaps) global  
crises.



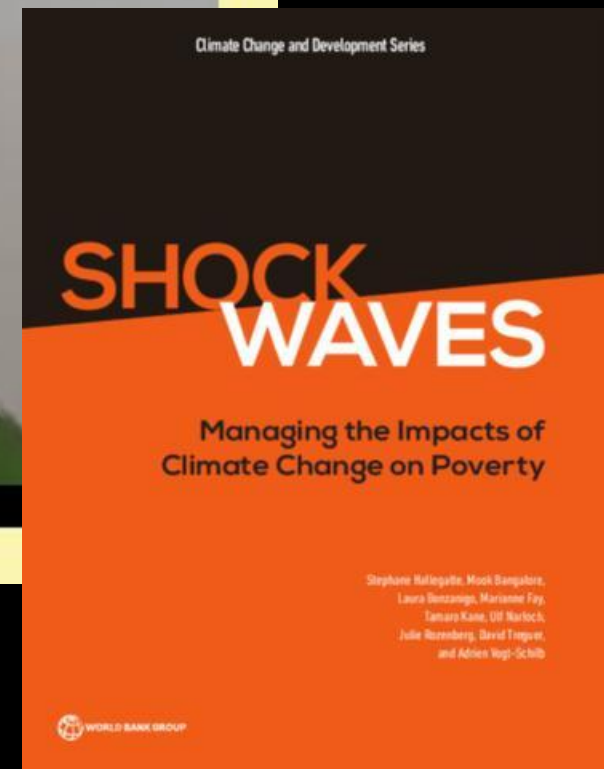
# World's poorest will feel brunt of climate change, warns World Bank

Droughts, floods, sea-level rises and fiercer storms likely to undermine progress in developing world and hit food supply

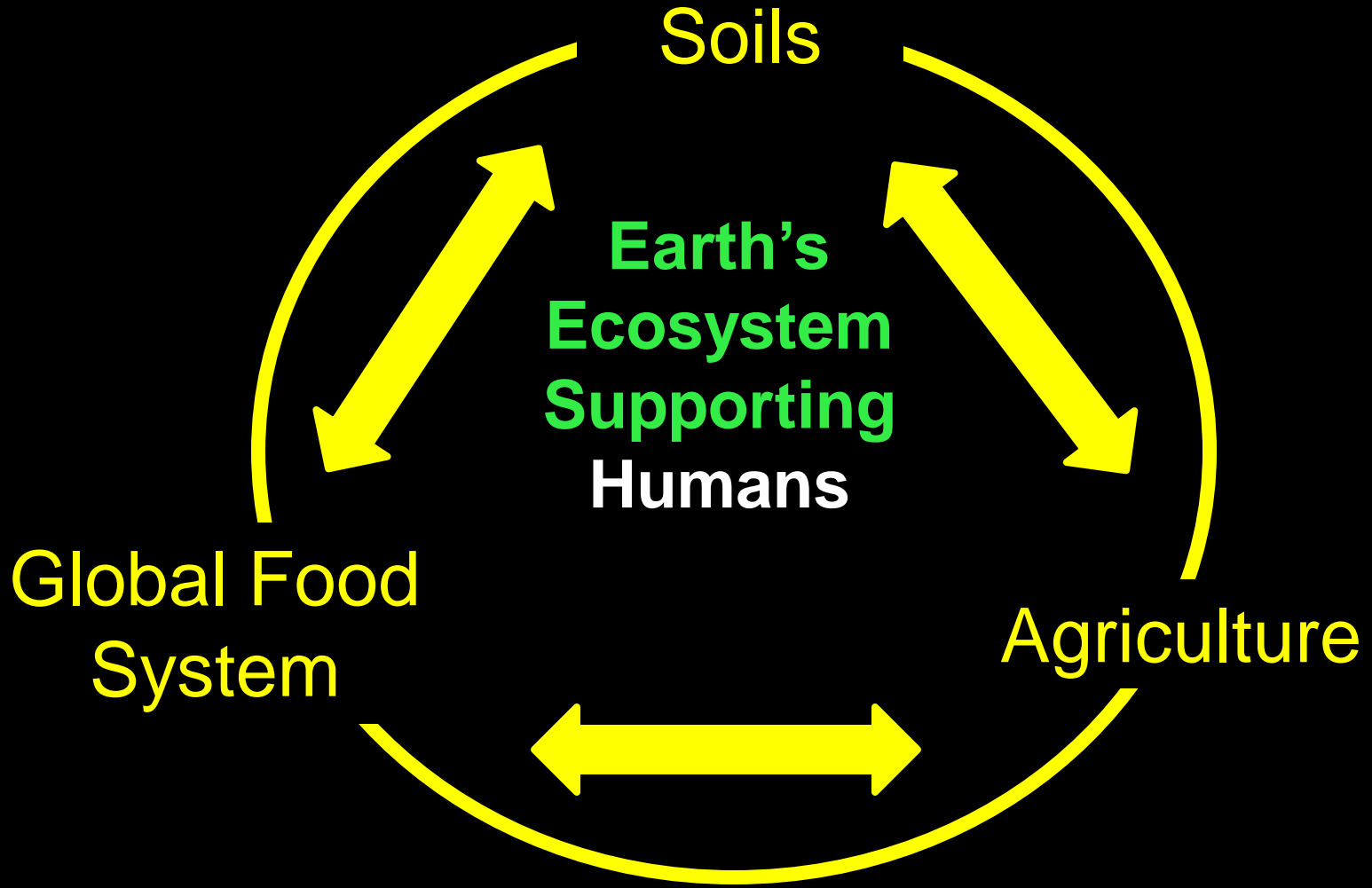


# Climate Change Impact Highest in Poor Areas!

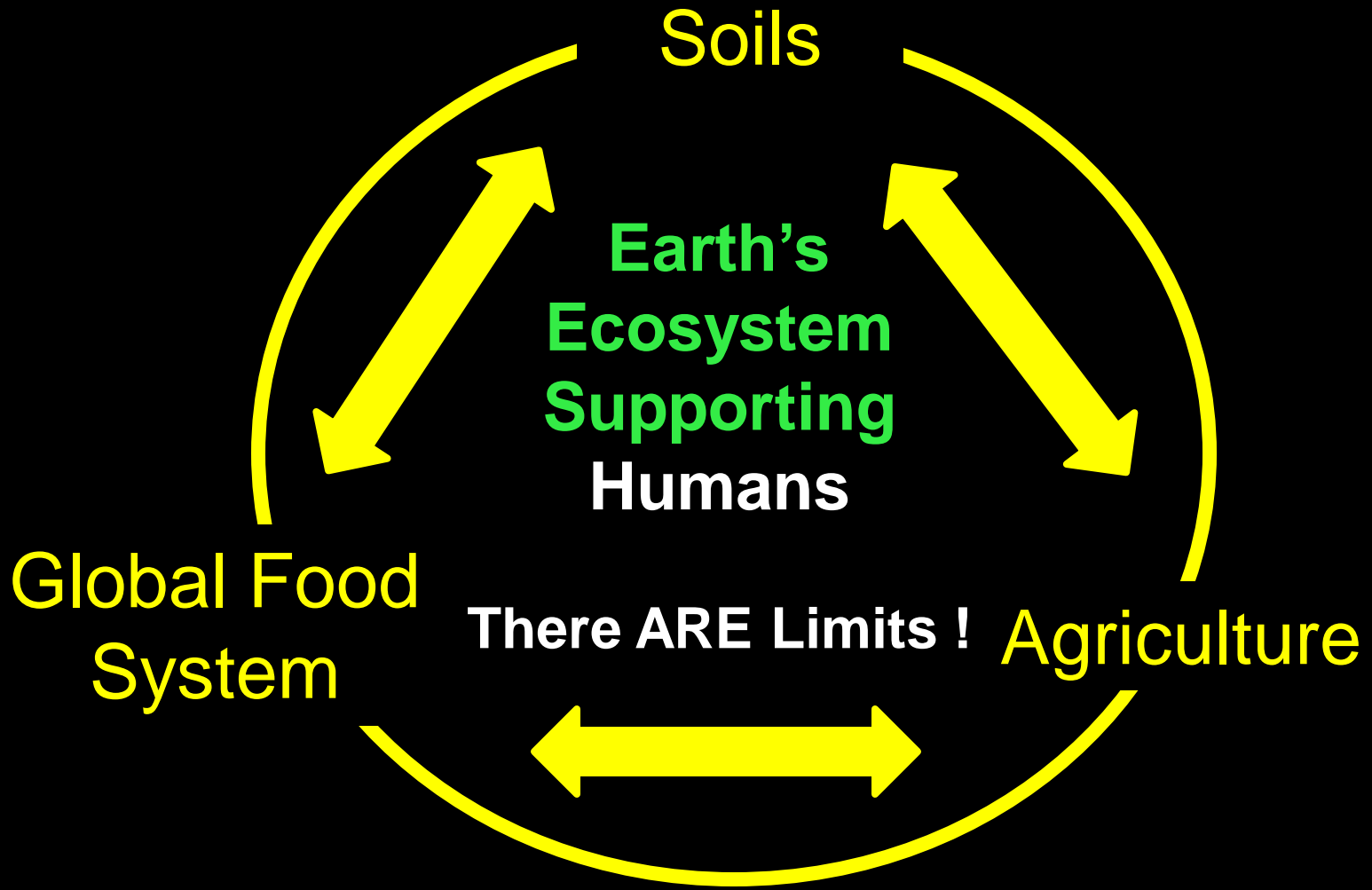
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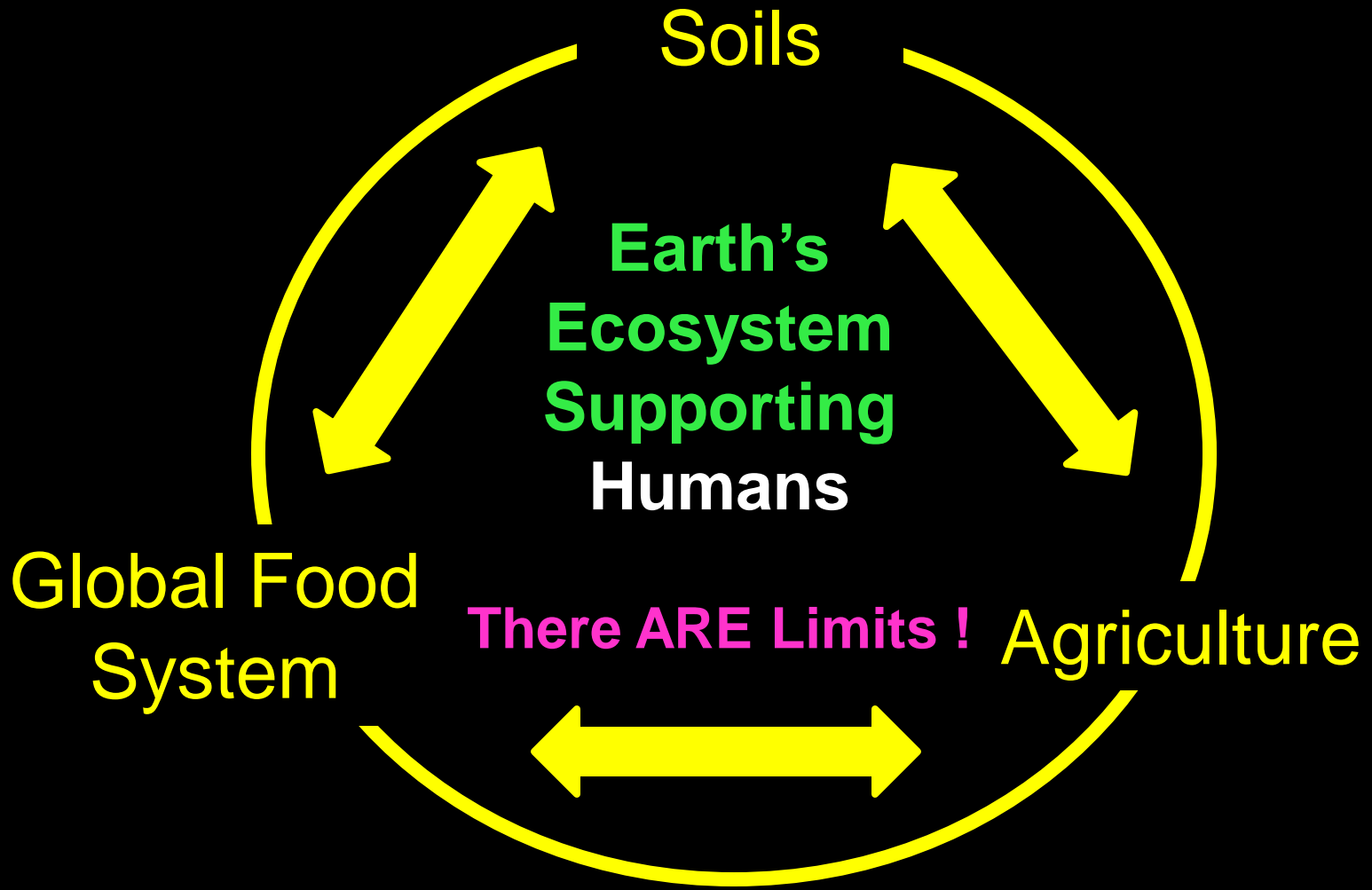
# Climate Change



# Climate Change

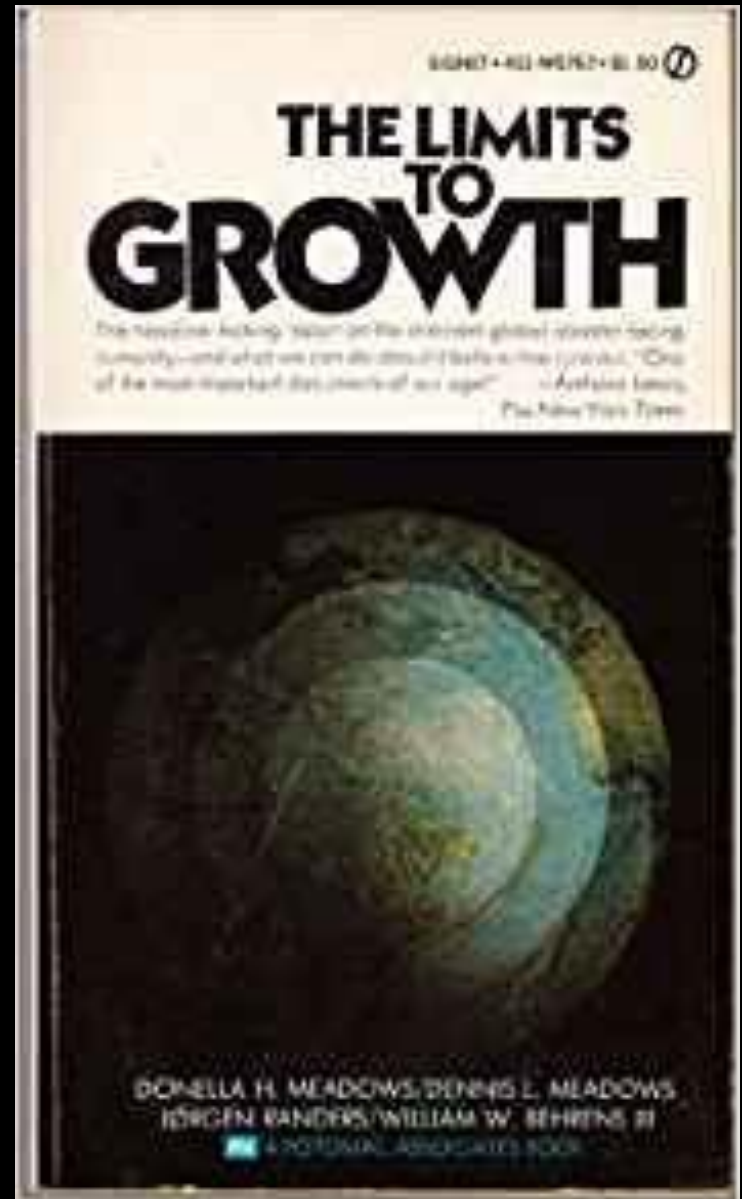


# Climate Change



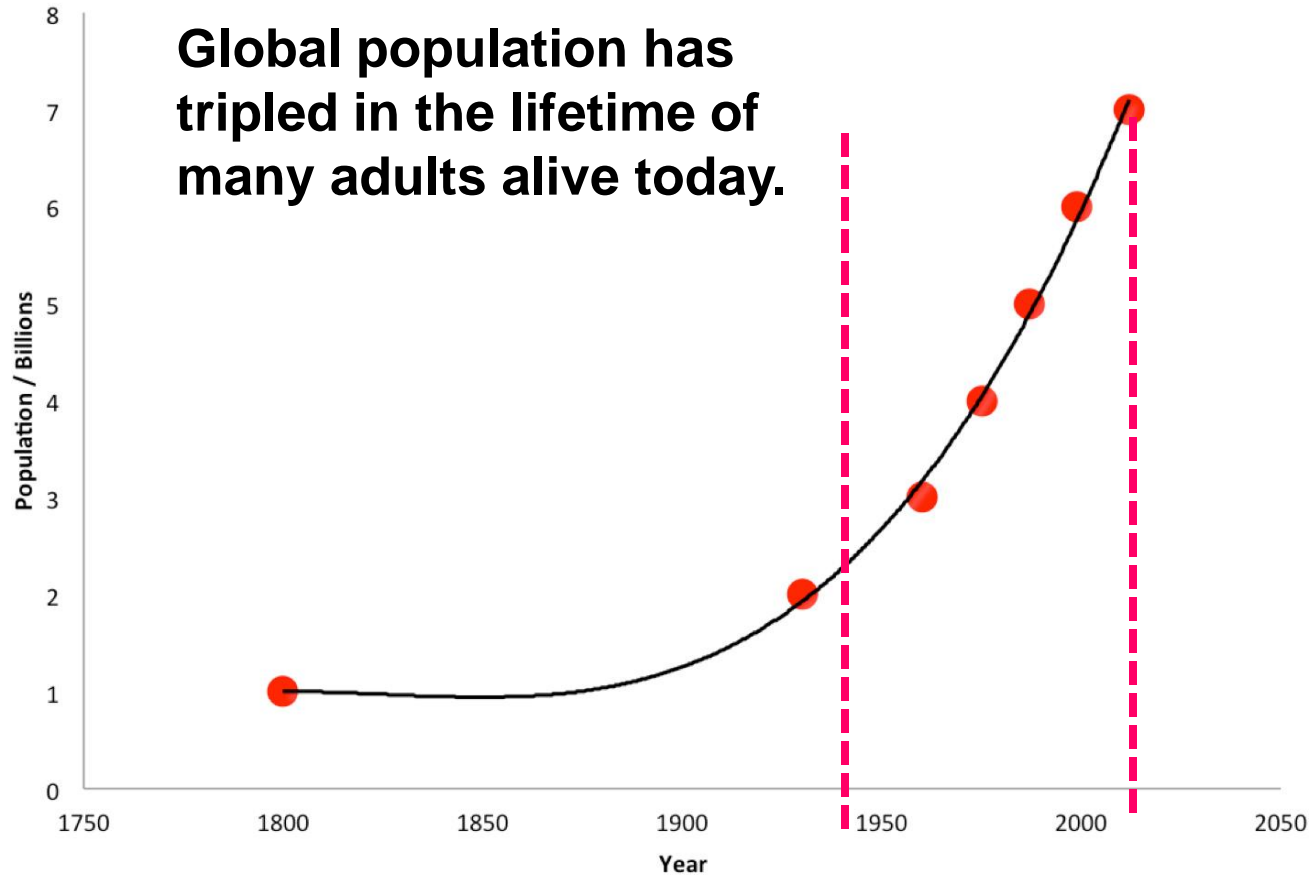
This was clearly demonstrated to the modern world by a group of MIT scientists who issued a Report to the Club of Rome in 1972 entitled,

“The Limits to Growth”

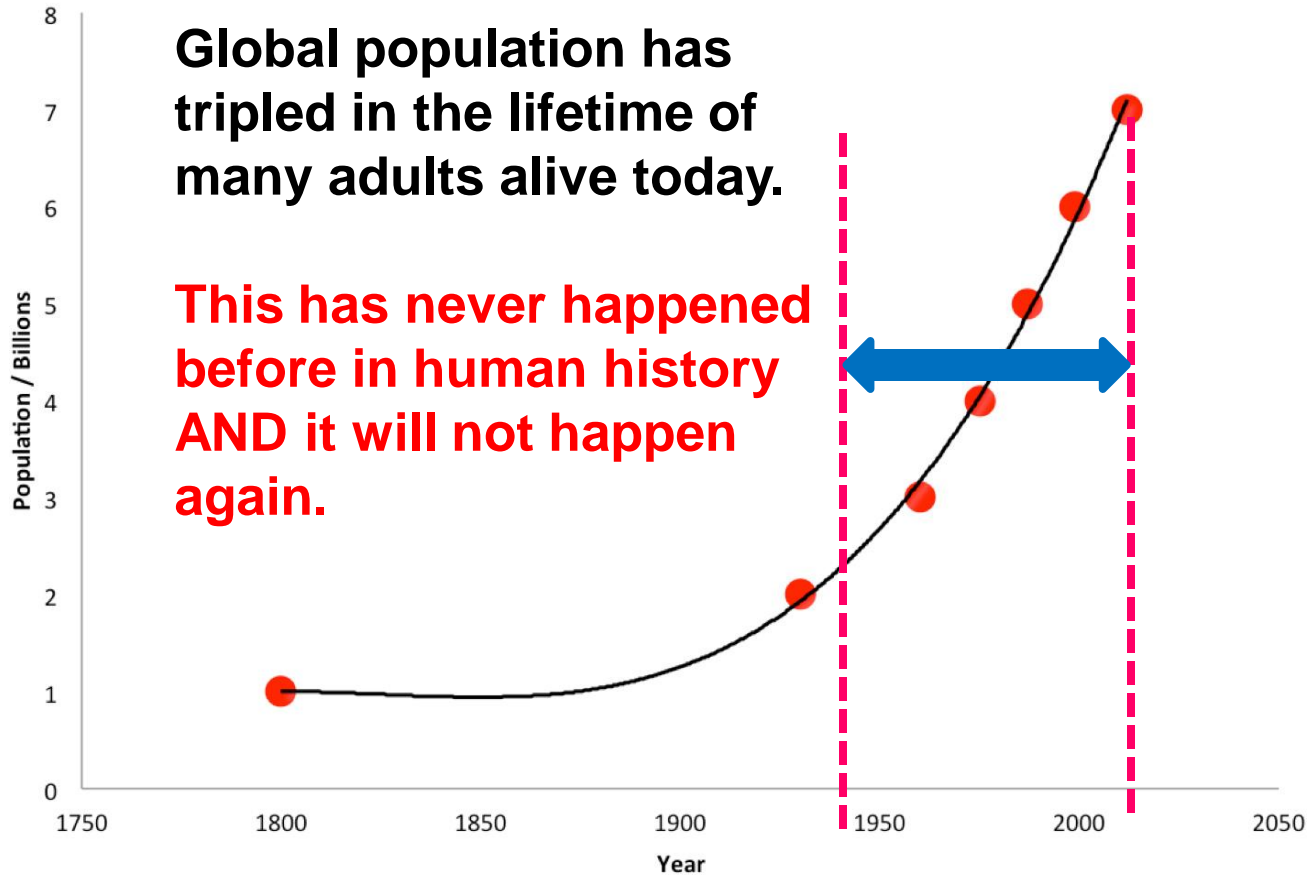


## Human Population Growth

**Global population has tripled in the lifetime of many adults alive today.**



## Human Population Growth



**Never before AND never again...**



**Sir David Attenborough reminds us this warning  
has been made for hundreds of years...**

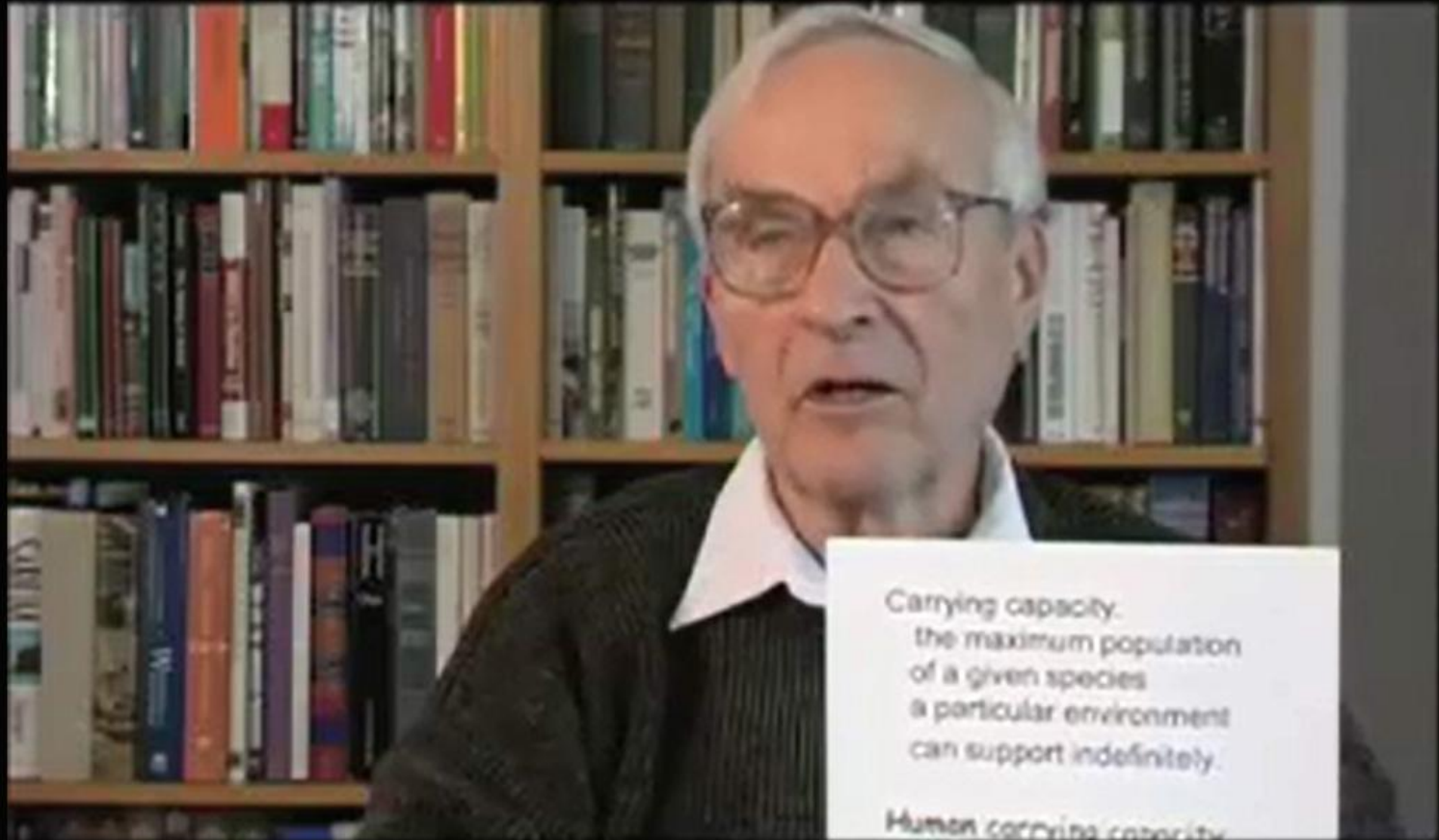


[https://environmentaljusticetv.wordpress.com/2012/08/  
16/people-and-planet-speech-only/](https://environmentaljusticetv.wordpress.com/2012/08/16/people-and-planet-speech-only/)

**Sir David Attenborough reminds us this warning  
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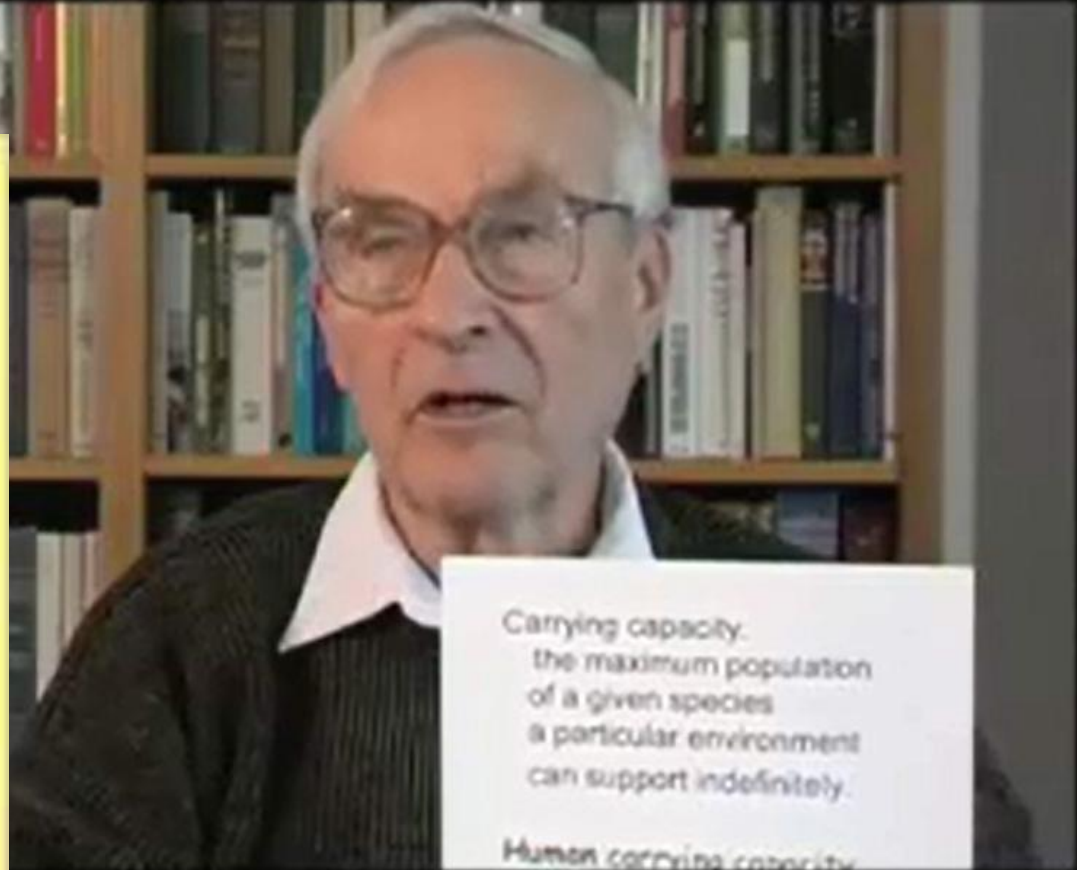
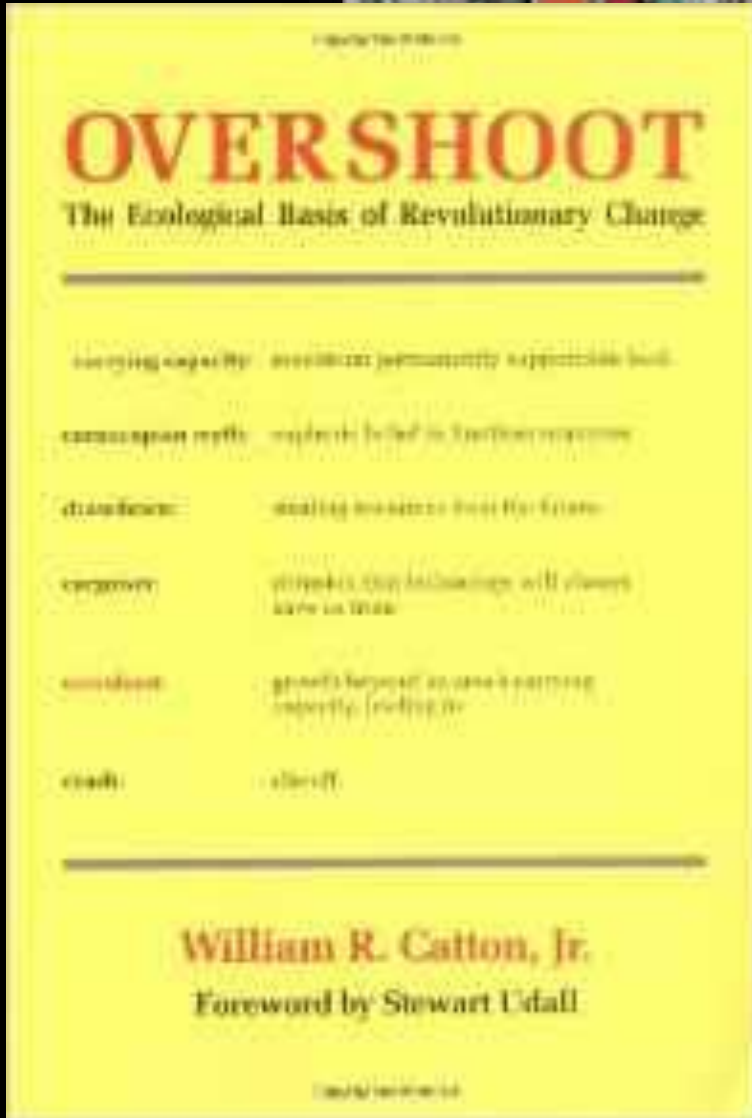
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Carrying capacity.  
the maximum population  
of a given species  
a particular environment  
can support indefinitely.

Human carrying capacity:

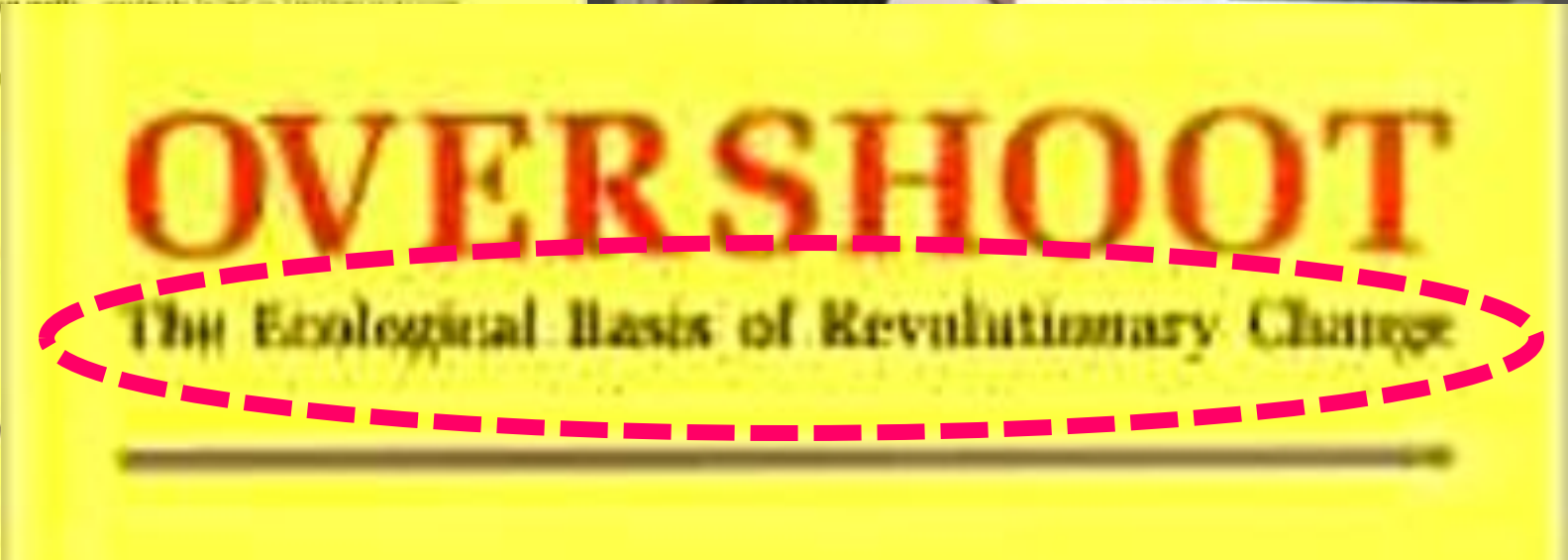
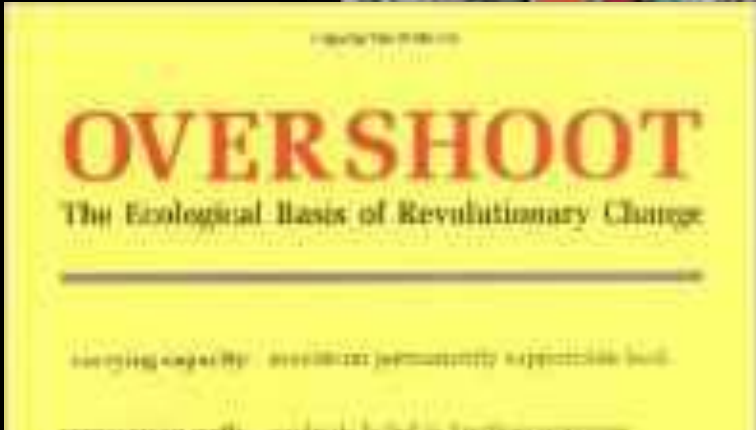
**Ecologist, William R.  
Catton, Jr., has made this  
clear as well...**



Carrying capacity.  
the maximum population  
of a given species  
a particular environment  
can support indefinitely.  
Human carrying capacity

**William R. Catton, Jr.  
....important book on  
“overshoot”**





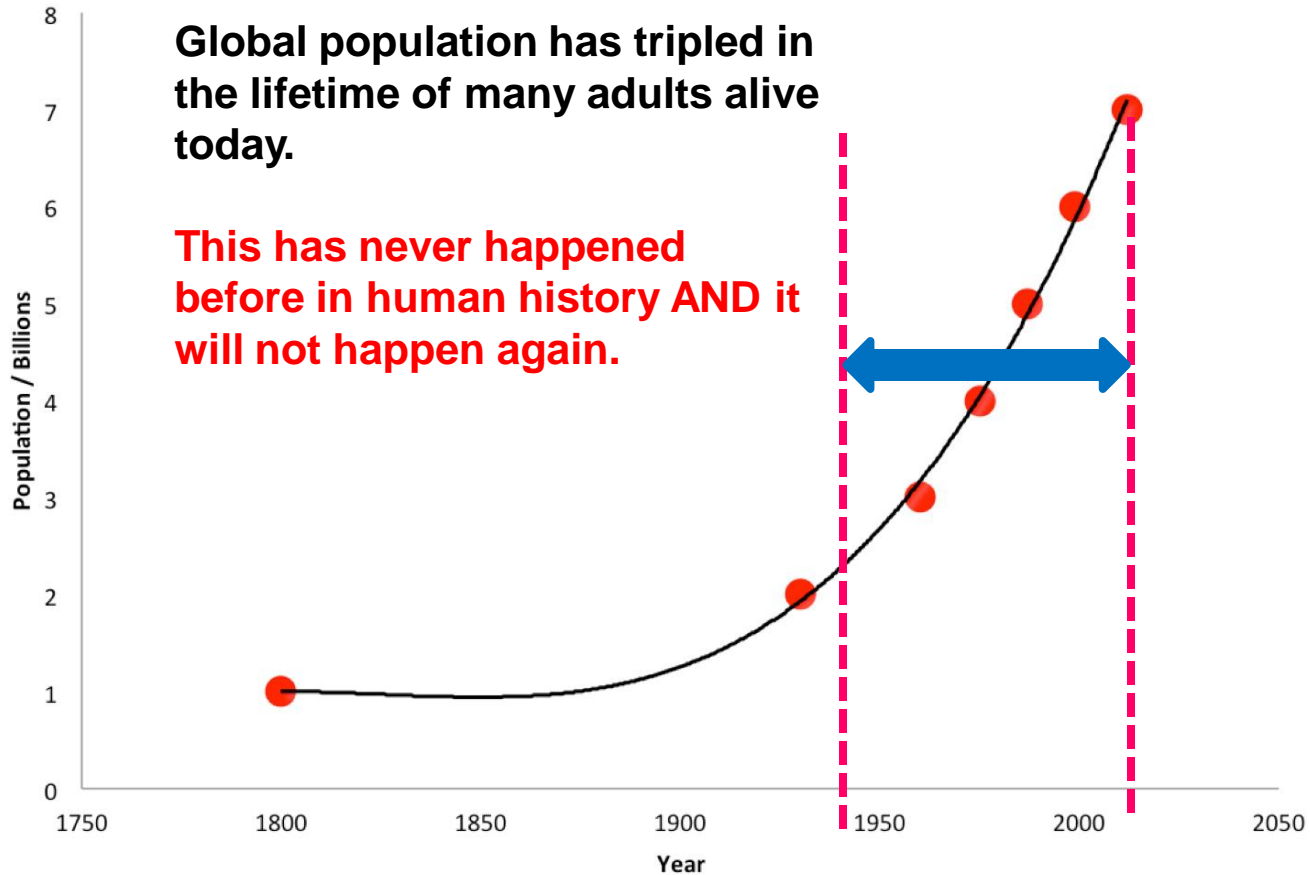
Foreword by Stewart Untall

<https://environmentaljusticetv.wordpress.com/2017/05/26/william-catton-from-what-a-way-to-go-life-at-the-end-of-empire-3/>

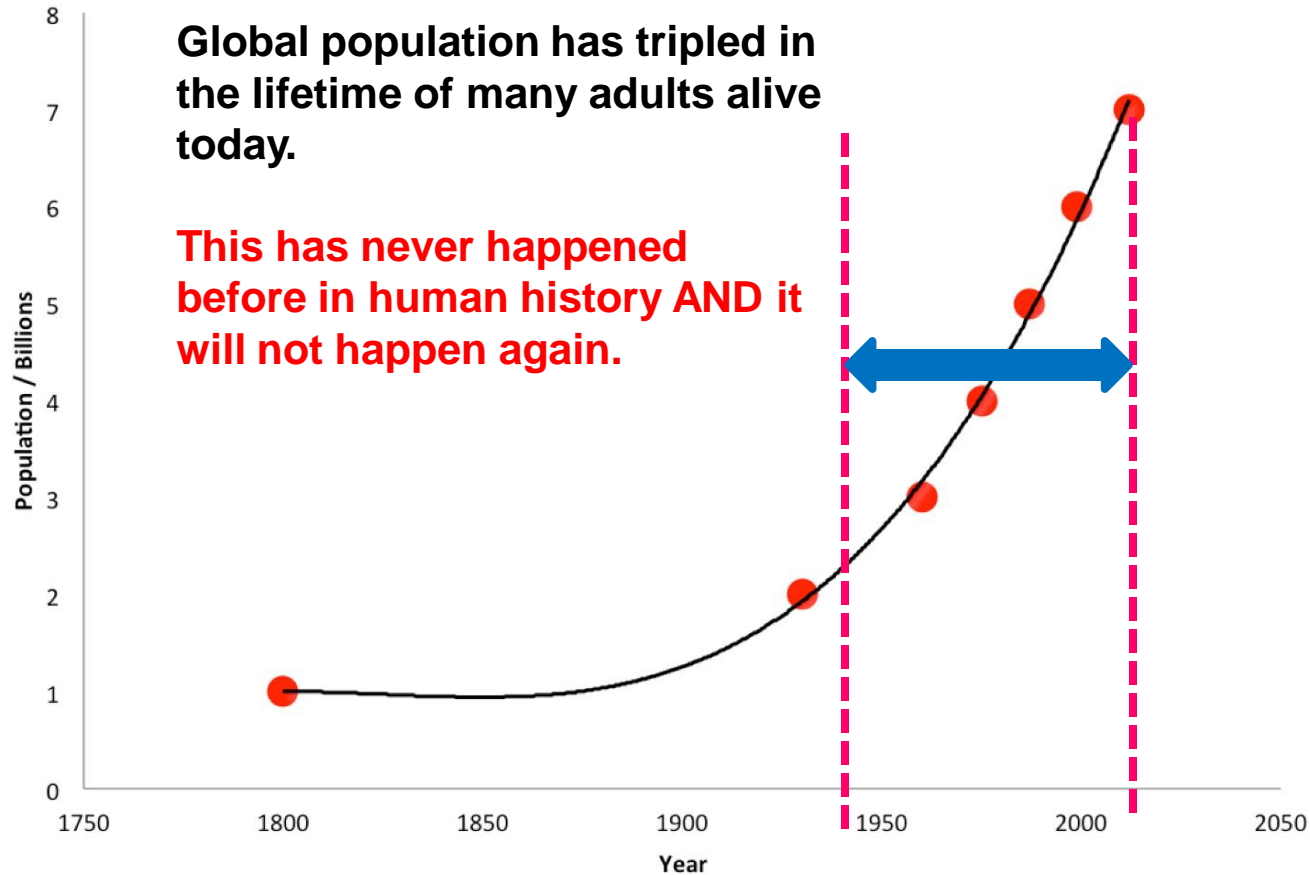
## Human Population Growth

Global population has tripled in the lifetime of many adults alive today.

This has never happened before in human history AND it will not happen again.

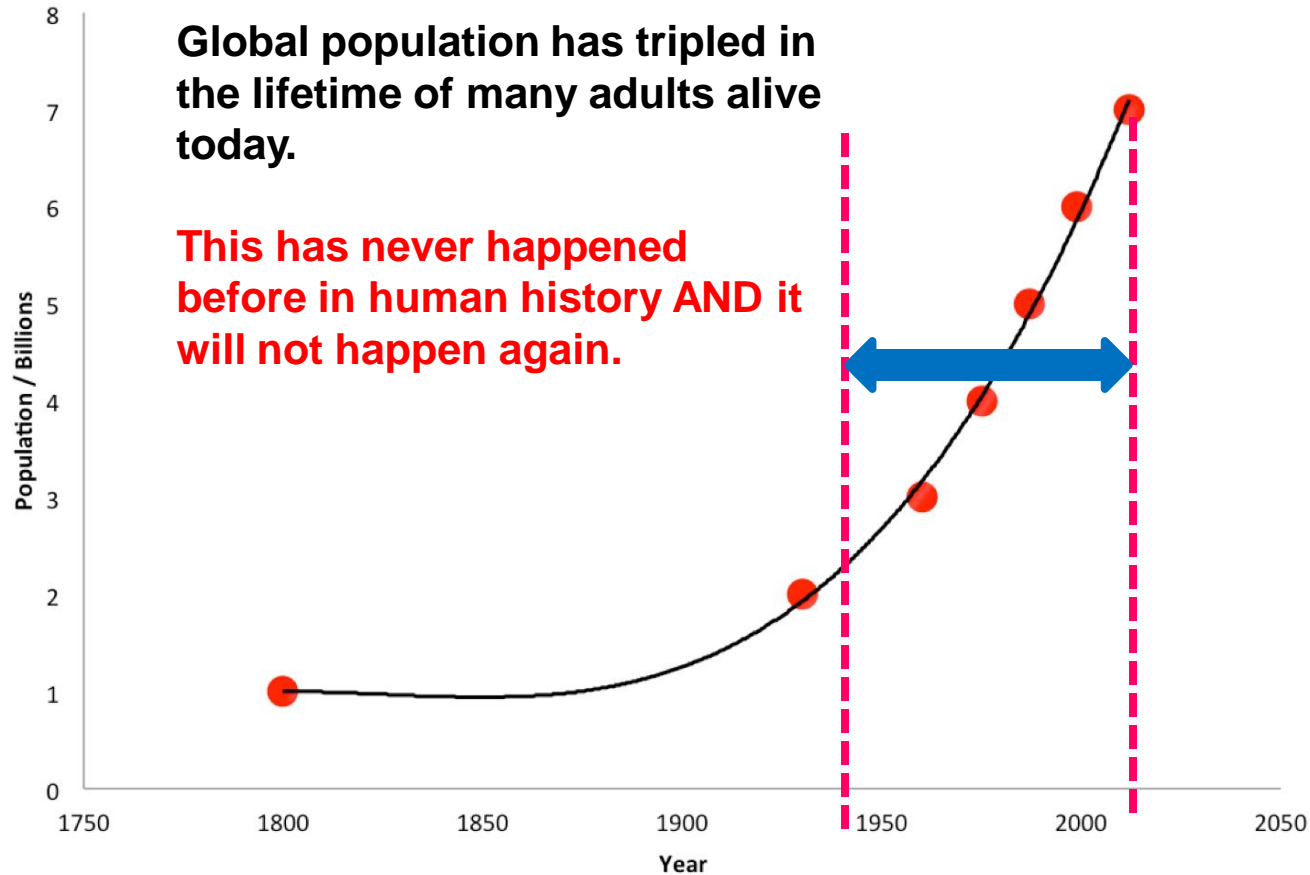


## Human Population Growth



**Never before ....**

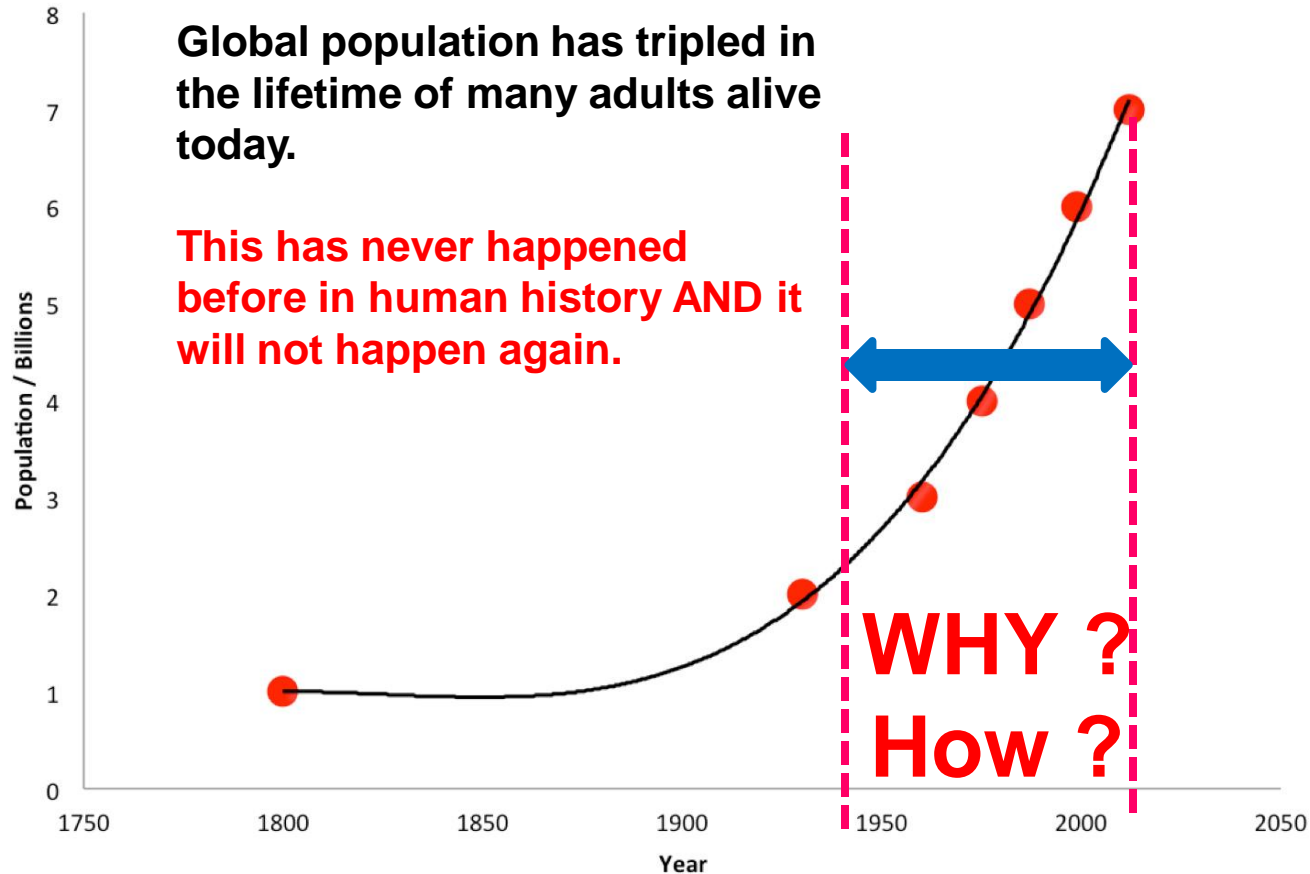
## Human Population Growth



**Never before ....AND never again...**



## Human Population Growth



**Never before ....AND never again...**

Why “now” in human history? How was this possible?

Briefly put... because of the so called  
“miracle crops” (HYVs - high yield  
varieties) of the “green revolution”



Actually the “HYVs” (high yielding varieties) were really “HRVs” (high responding varieties). They required a large and continuous subsidy from fossil fuels to grow at all.





But, *what* was the so called  
“green revolution?”



<https://environmentaljusticetv.wordpress.com/2017/05/26/richard-manning-from-what-a-way-to-go-life-at-the-end-of-empire-2/>

**Modern  
civilization's  
“blind spot”  
[ fossil fuels ]**

**We don't see what  
should be obvious...**



**Modern  
civilization's  
“blind spot”  
[ fossil fuels ]**

**We don't see** what  
should be obvious...

**Modern civilization  
is dependent on  
non-renewables and  
therefore will not be  
renewed in the  
long run.**





# The END of SUBURBIA

Oil Depletion and The Collapse  
of The American Dream

<https://environmentaljusticetv.wordpress.com/2016/02/13/the-end-of-suburbia-52-minute-documentary-on-peak-oil-3/>

\*

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\*\*

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**And because of its “car culture,” America is “addicted” to oil. Our leadership knows this...**

**<http://www.climate-talks.net/2008-ENVRE130/Video/20080422-YouTube-Klare-Oil-Dep.htm>**





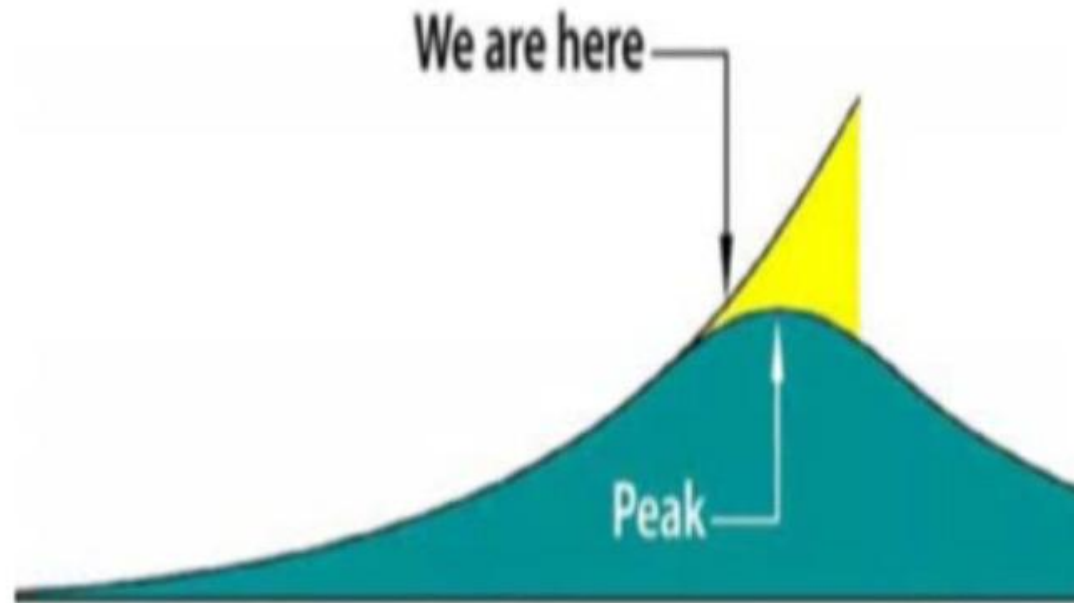
YouTube



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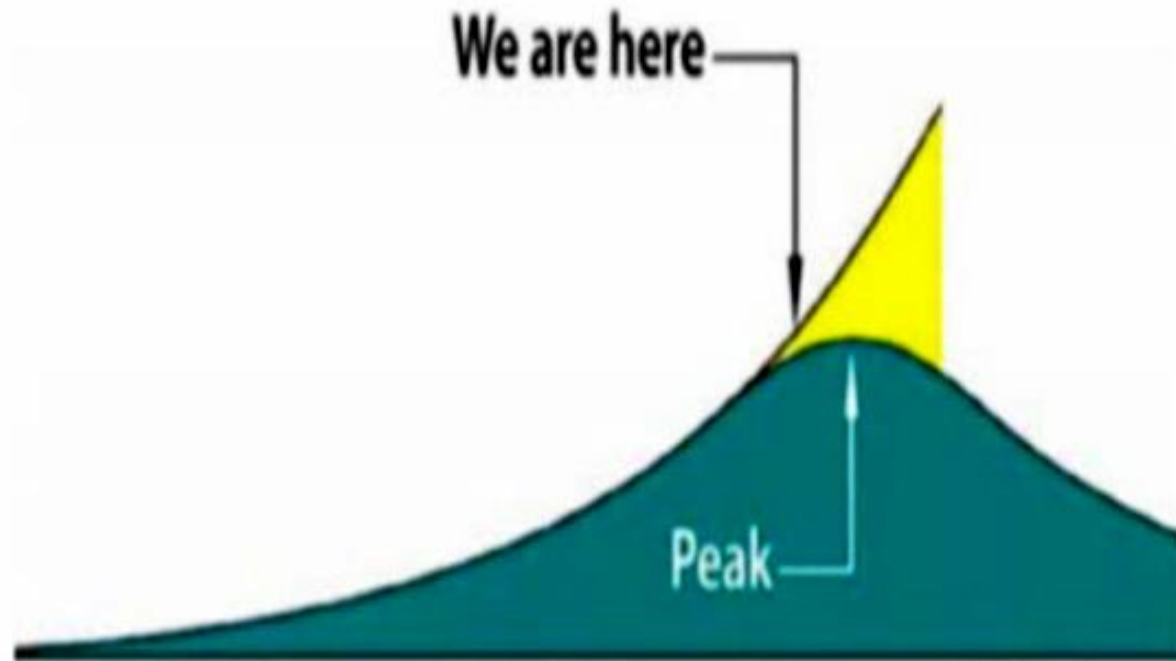


Peak Oil is causing  
price increases.



[https://environmentaljusticetv.wordpress.com/2017/07/20/  
when-the-oil-runs-out-4/](https://environmentaljusticetv.wordpress.com/2017/07/20/when-the-oil-runs-out-4/)

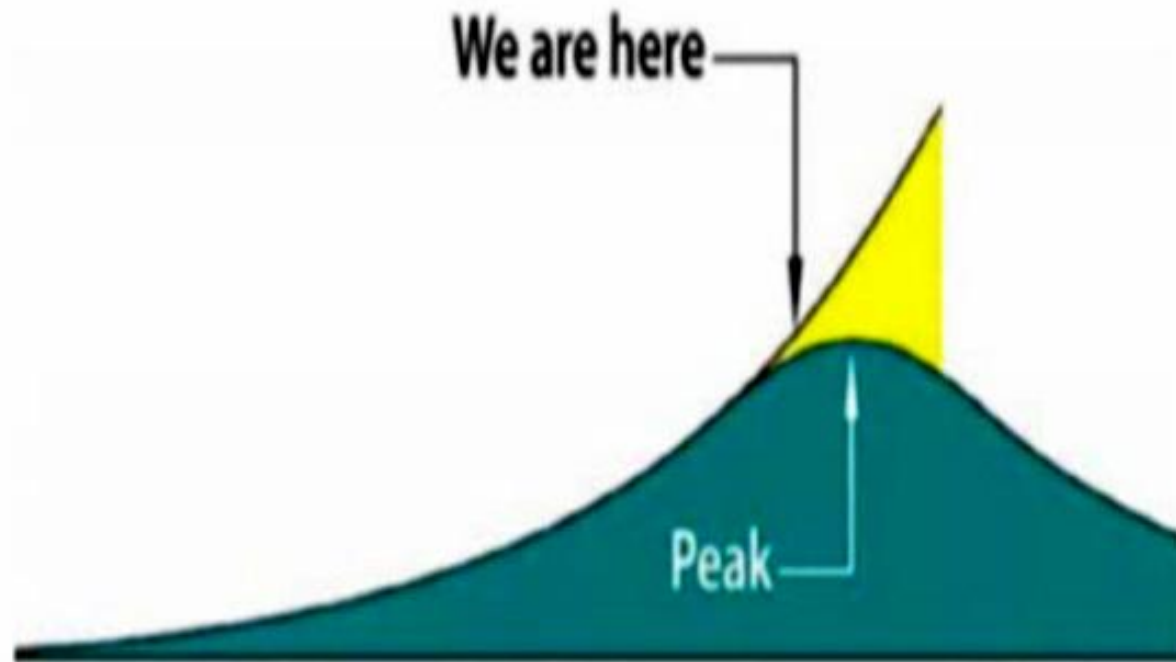
**What will happen to petro-dependent agriculture after the peak of global oil extraction is reached?**



<https://environmentaljusticetv.wordpress.com/2017/07/20/when-the-oil-runs-out-4/>

**What will happen to petro-dependent agriculture  
after the peak of global oil  
extraction is reached?**

**Can it continue to expand global food supplies?**



[https://environmentaljusticetv.wordpress.com/2017/07/20/  
when-the-oil-runs-out-4/](https://environmentaljusticetv.wordpress.com/2017/07/20/when-the-oil-runs-out-4/)

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## Agriculture pioneer Borlaug dies

Norman Borlaug, the man known as the father of the Green Revolution in agriculture, has died in the US state of Texas aged 95.

Prof Borlaug won the Nobel Peace Prize in 1970 for agricultural innovation and the development of high-yield crops.

The Green Revolution helped world food production more than double between 1960 and 1990 with Asia, Africa and Latin America in particular benefiting.

The Nobel Institute said he had helped save hundreds of millions of lives.

Prof Borlaug died late on Saturday evening at his home in Dallas from complications with cancer, said a spokesperson for Texas A&M University, where he had worked.

### 'A better place'

In the early 1960s Prof Borlaug realised that creating short-stemmed varieties would leave food plants more energy for growing larger heads of grain.



Borlaug won the Nobel Peace Prize and US Congressional Gold Medal

**Q: Why has the human community side-stepped or ignored the “population” problem?**

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**A: Because of our misguided understanding of the ecosystem.**

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**Q: Why has the human community side-stepped or ignored the “population” problem?**

**A: ... we have come to think of agriculture as an “industry” that can be run on fossil fuels.**



# One man, Norman Borlaug, had a powerful influence on organizing global agriculture on this mistaken metaphor after World War II



Borlaug won the Nobel Peace Prize and US Congressional Gold Medal

BBC

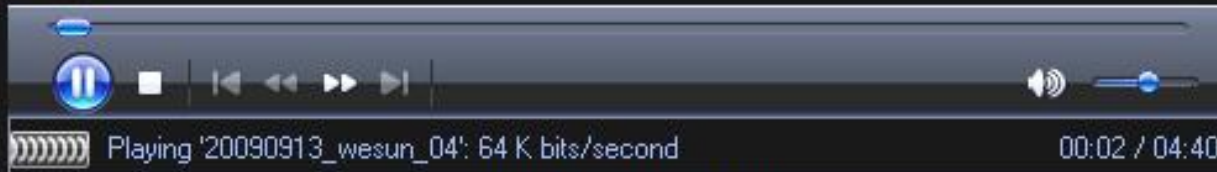
"Green Revolutionary Norman Borlaug Dies."

NPR News

Weekend Edition, Sunday

13 September 2009

"Agriculture pioneer Borlaug dies." BBC News Online, (13 September 2009 07:37 UK 06:37 GMT, Sunday).



Click to Play, Pause, Stop

<http://www.climate-talks.net/2008-ENVRE130/Audio/20090913-NPR-Borlaug-dies.htm>

**One man, Norman Borlaug, had a powerful influence  
on organizing global agriculture on this mistaken  
metaphor after World War II**



**Compare the BBC obituary  
with that from NPR in the  
United States.**

**[BBC, Newshour, 13  
September 2009](#)**

**Norman Borlaug  
(1914 – 2009)**

**[http://www.climate-talks.net/2008-  
ENVRE130/Audio/20090913-BBC-  
Borlaug-Newshour-obit.mp3](http://www.climate-talks.net/2008-ENVRE130/Audio/20090913-BBC-Borlaug-Newshour-obit.mp3)**

# Green Revolution → Gene Revolution

## Population Growth Requires Second Green Revolution

Norman Borlaug Interview



Norman Borlaug accepting Congressional Gold Medal from President George W. Bush (July 17, 2007)

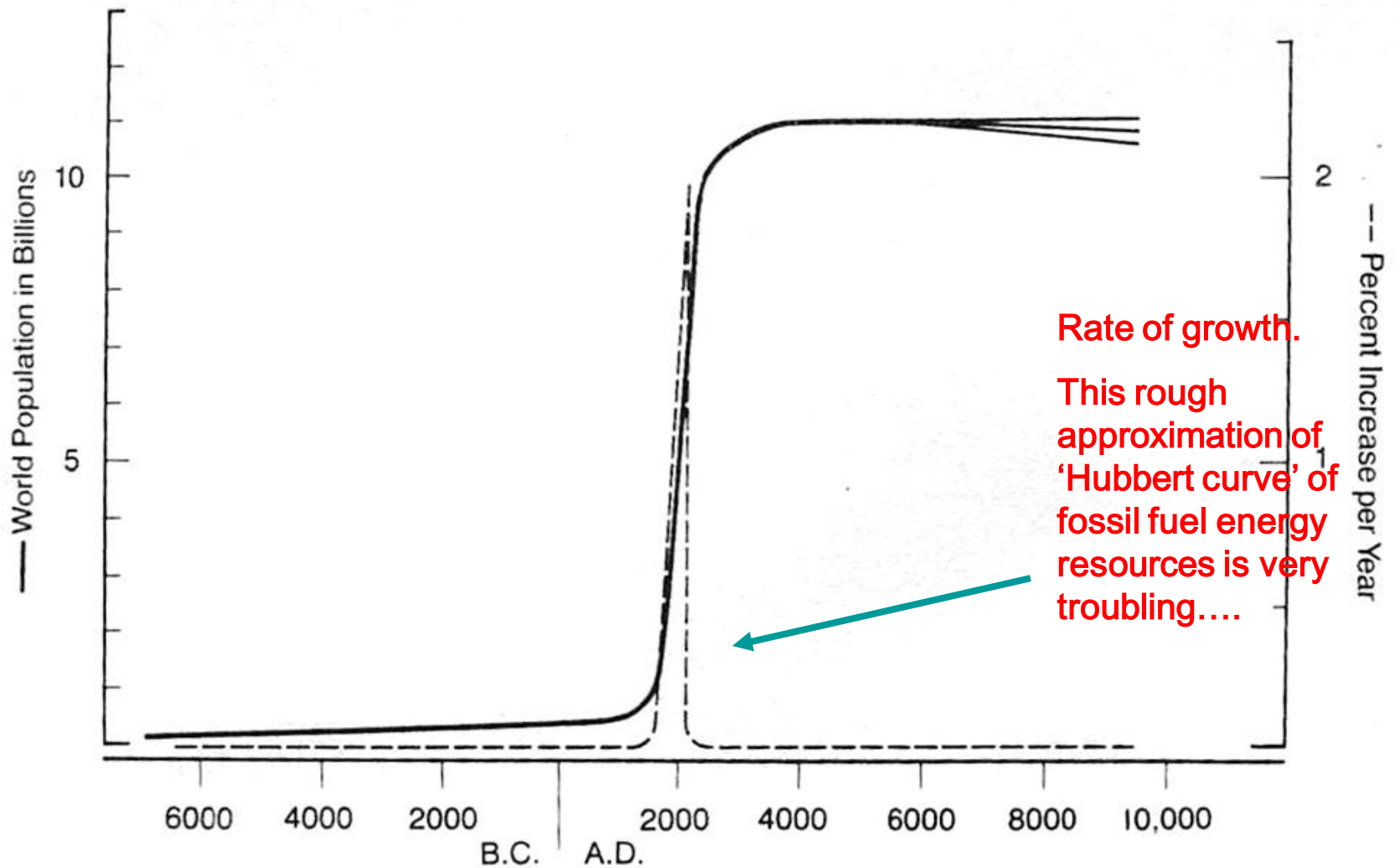


Norman Borlaug (March 25, 1914 - September 12, 2009) is known as the father of the Green Revolution.

His work with high-yield, disease-resistant wheat varieties is credited with saving as many as a billion people from starvation worldwide.

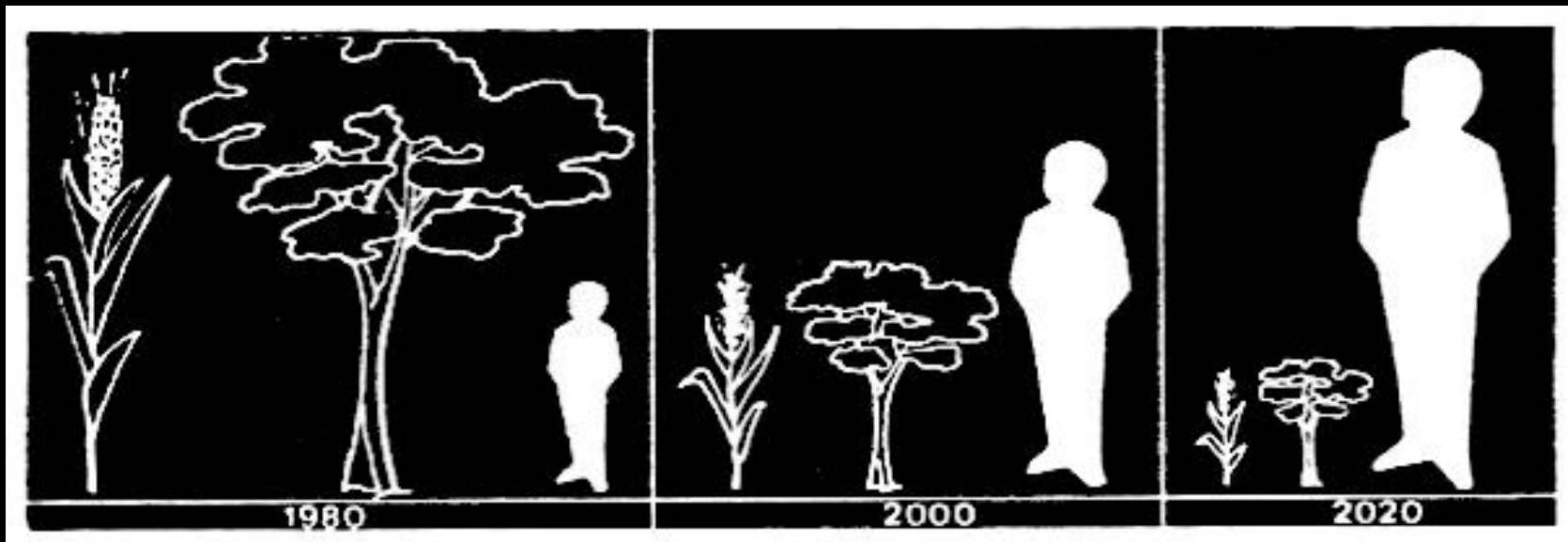
Borlaug was awarded the Nobel Peace Prize in 1970 in recognition of

his contributions to world peace through increasing food supply.



**Scientists have pointed out that the human growth rates correlate closely with energy availability...What happens to population when that energy [food] is not available**

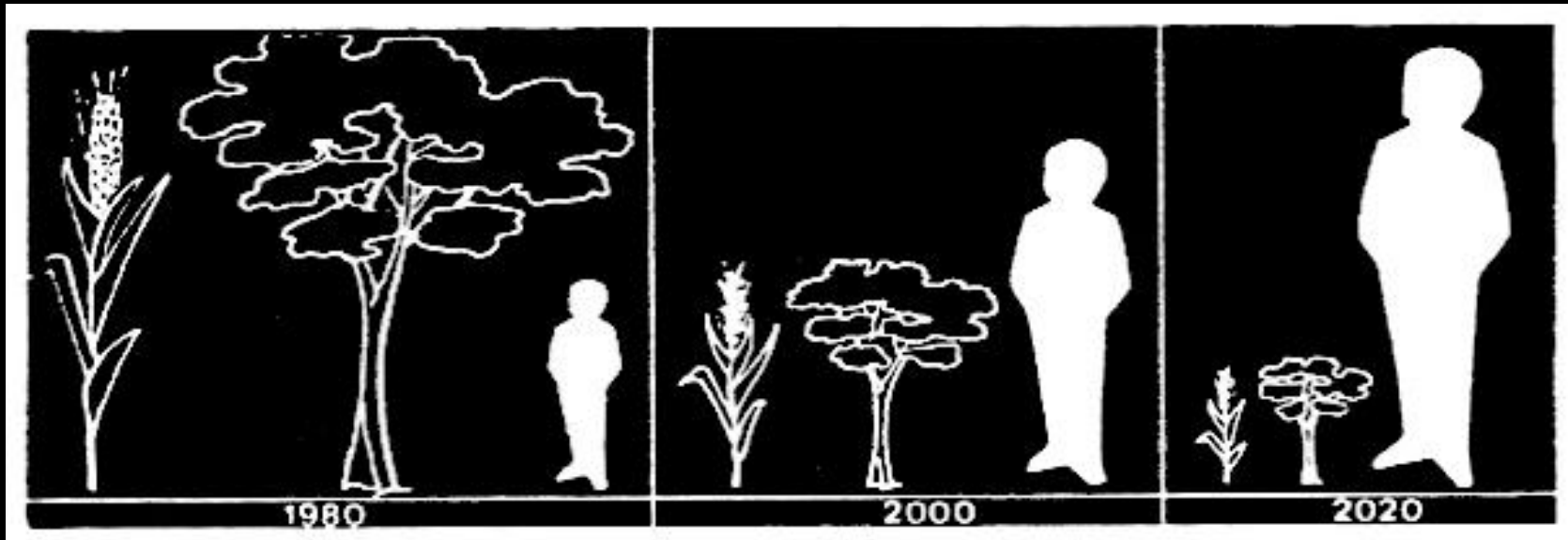
The international scientific community has been convened to address this question. And they have issued the *Millennium Ecosystem Assessment Report* (March 2005).



**David Malakoff, "Report Urges Action Against Ecosystem Damage," *NPR - Morning Edition*, (30 March 2005).**

**<http://www.npr.org/dmg/dmg.php?prgCode=ME&showDate=30-Mar-2005&segNum=5&mediaPref=RM>**





**Part of the problem comes from transforming the ratios between the “wild” species (forest tree), the “cultivated species” (stalk of wheat) and ourselves.**

**This 1995 UN Ecosystem Assessment Report is the largest and loudest warning signal from the environmental scientists ever.**





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[- The Environmental Information Center](#)

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## ENVR - E-120 - Fall Semester 2006 Environmental Ethics and Land Management

[Harvard Extension School](#)

<http://courses.dce.harvard.edu/~envre120>

[Timothy C. Weiskel](#)

[TWeiskel@FAS.Harvard.Edu](mailto:TWeiskel@FAS.Harvard.Edu)

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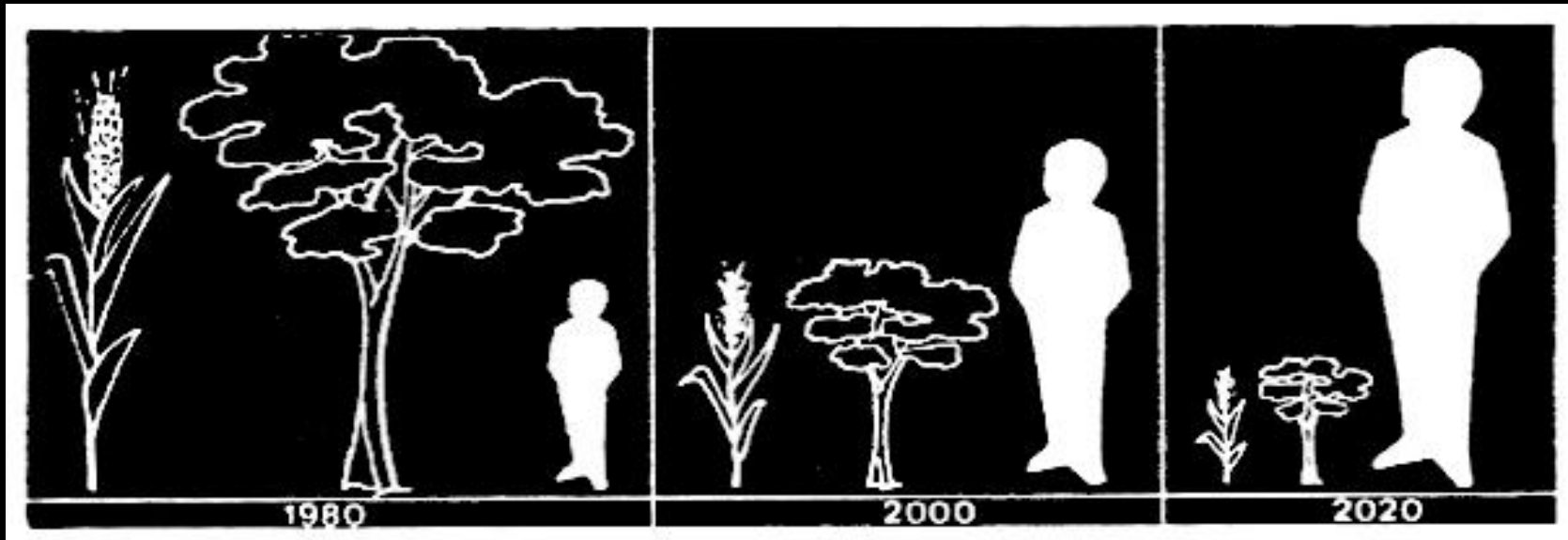
**No amount of genetic engineering will address the ethical problem of limit posed by the most recent scientific studies.**

Norman Borlaug's main achievement was to transform solar-based agricultural systems to petro-dependent ones, transforming agricultural to an industrial model across the world.

We should now ask: Is this sustainable?



"Greatest Man to Ever Live: Norman Borlaug."  
YouTube - CommonReason, (13 September 2009).



**Clearly the most basic problem of environmental ethics in Western civilization is that**

**We have largely ‘forgotten’ (and it may be that many of our leaders never knew) the basic ecological insight about our collective “niche” as a species in the global ecosystem.**

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## The Nobel Peace Prize 1970 Norman Borlaug

[The Nobel Peace Prize 1970](#)[Norman Borlaug](#)

## Biography



A central figure in the "green revolution", **Norman Ernest Borlaug** (March 25, 1914- ) was born on a farm near Cresco, Iowa, to Henry and Clara Borlaug. For the past twenty-seven years he has collaborated with Mexican scientists on problems of wheat improvement; for the last ten or so of those years he has also collaborated with scientists from other parts of the world, especially from India and Pakistan, in adapting the new wheats to new lands and in gaining acceptance for their production. An eclectic, pragmatic, goal-oriented scientist, he accepts and discards methods or results in a constant search for more fruitful and effective ones, while at the same time avoiding the pursuit of what he calls "academic butterflies". A vigorous man who can perform prodigies of manual labor in the fields, he brings to his work the body and competitive spirit of the trained athlete, which indeed he was in his high school and college days.

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#### The Nobel Peace Prize

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NOBEL PRIZES

#### Who Are the 2010 Nobel Laureates?

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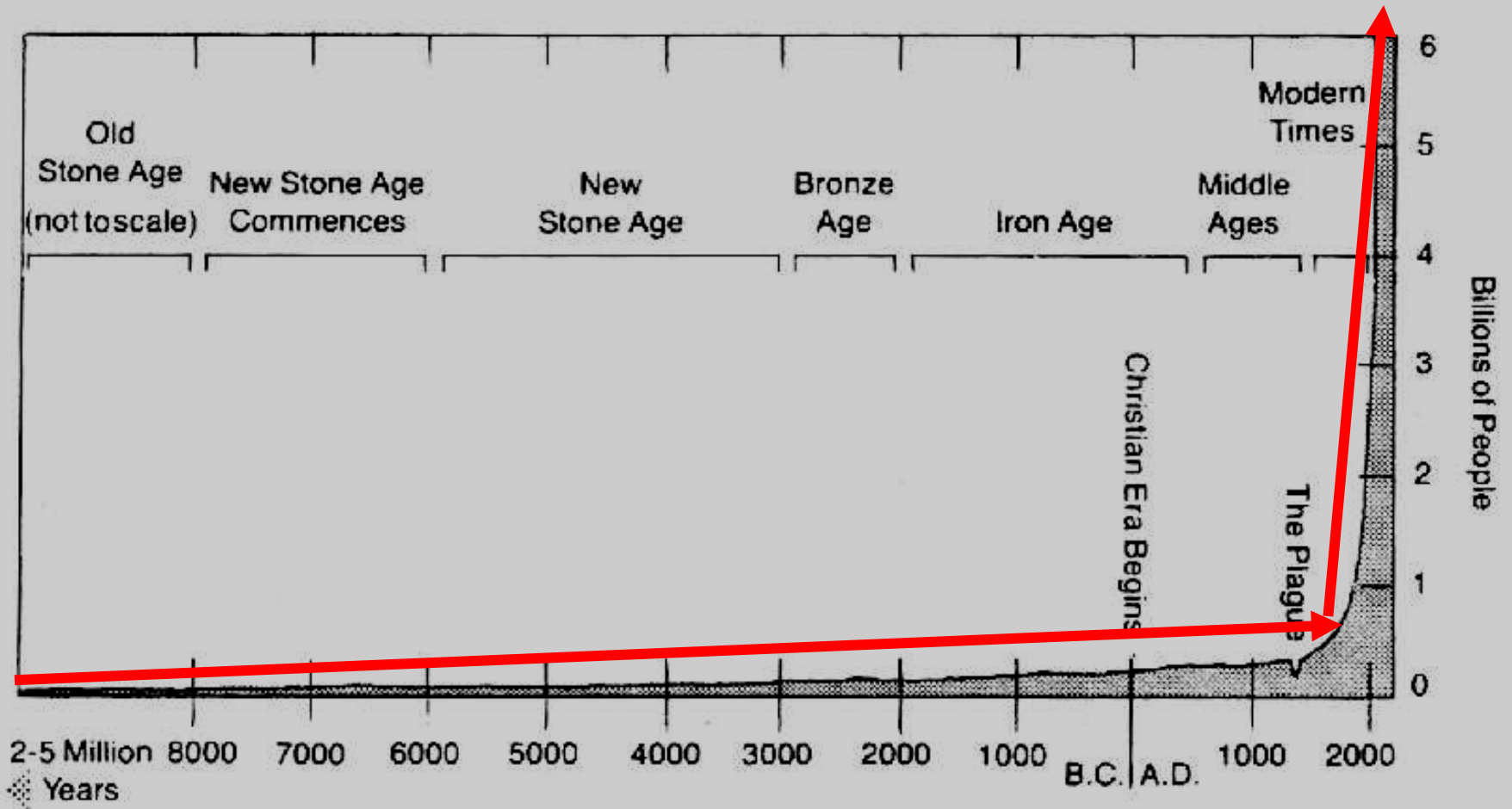
### HAVE YOUR SAY!



What do you hope to achieve in the future?



# World Population Growth Through History

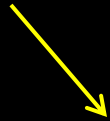






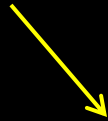
**Norman Borlaug**  
**addressed the**  
**The “Food” Problem**

# Norman Borlaug addressed the The “Food” Problem



... but we have come to understand  
that this is only part of:

**Norman Borlaug**  
addressed the  
**The “Food” Problem**



... but we have come to understand  
that this is only part of:

**The Food/Population Problem**

# Norman Borlaug addressed the The “Food” Problem

... but we have come to understand  
that this is only part of:

## The Food/Population Problem

... and that, in turn, is  
only part of:

**Norman Borlaug**  
addressed the  
**The “Food” Problem**

... but we have come to understand  
that this is only part of:

**The Food/Population Problem**

... and that, in turn, is  
only part of:

**The Food/Population/Environment Problem**

**Norman Borlaug**  
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[ This Requires a Paradigm Shift ]

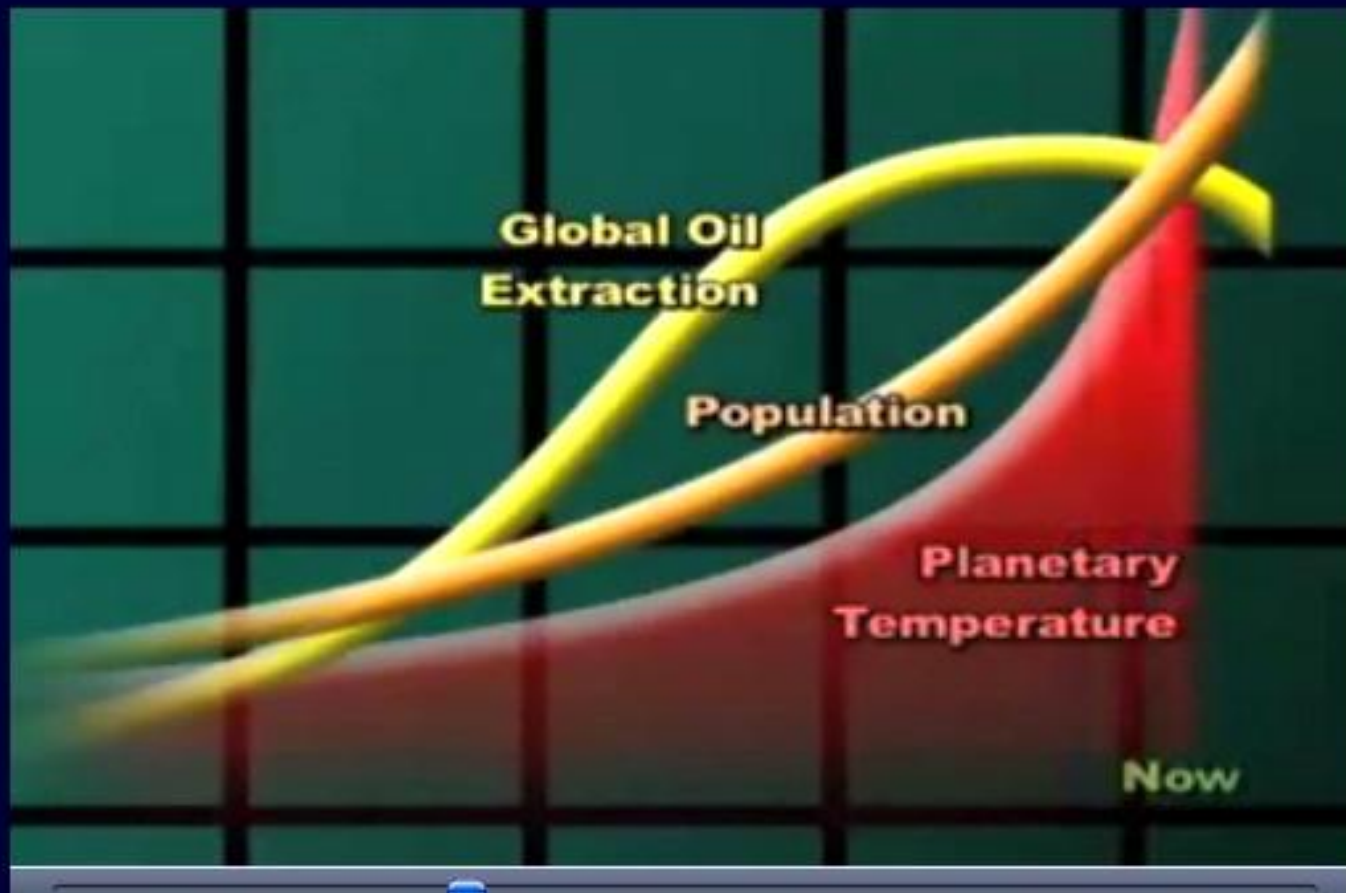




## Norman Borlaug (1914 – 2009)

The Crucial Question Is:

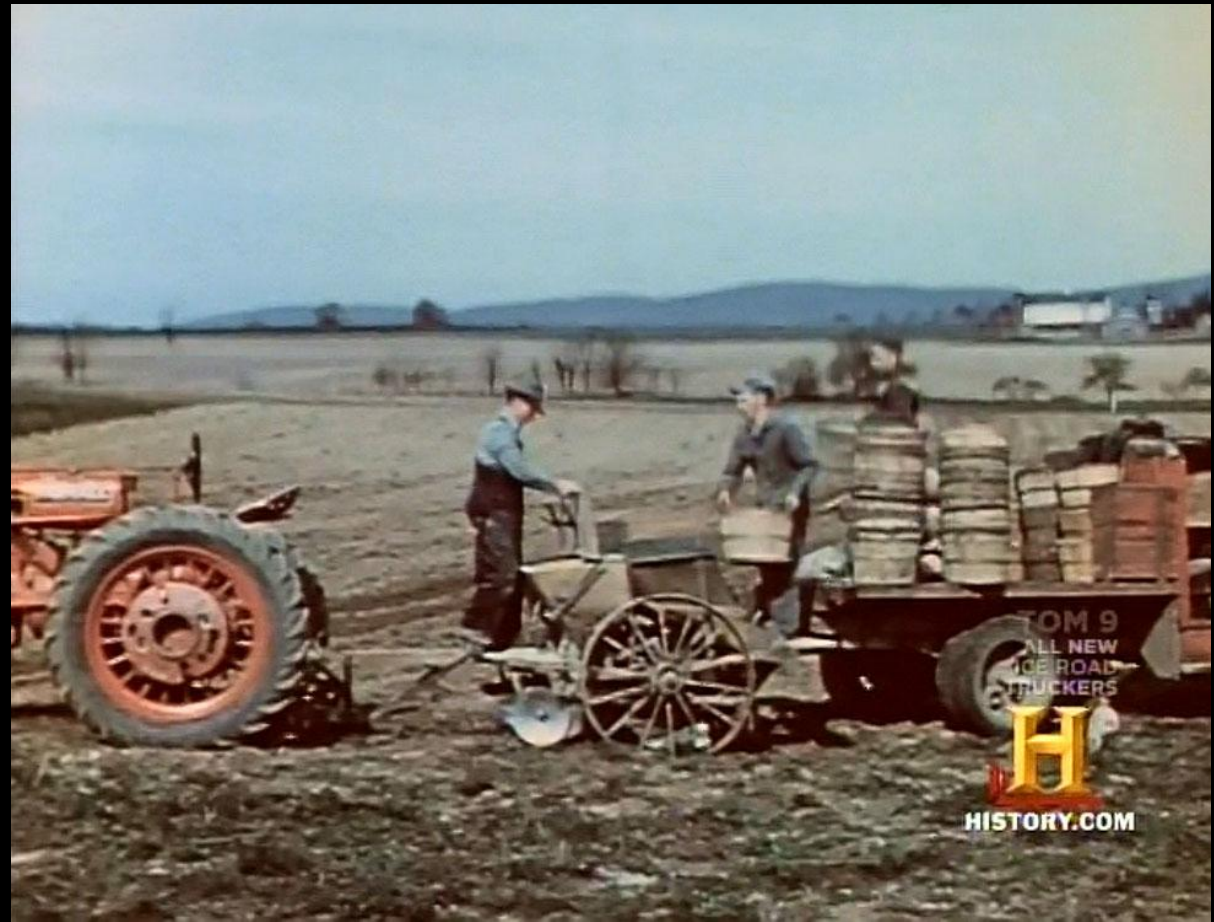
Will the students and followers of Norman Borlaug be able to make the paradigm shift **to** sustainable agriculture that is now required for our collective human survival?



If they cannot make this needed paradigm shift – if we cannot collectively make that shift – then, we can expect some very rude and costly disruptions in the global food system in the relatively near future.

# Paradigms – or worldviews – have enormous implications for ethics and for policy...

In the middle of the 20<sup>th</sup> century – largely following the growth paradigm championed by Norman Borlaug –



# Paradigms – or worldviews – have enormous implications for ethics and for policy...

In the middle of the 20<sup>th</sup> century – largely following the growth paradigm championed by Norman Borlaug – humanity transformed agriculture from solar based systems to a global petro-dependent one.



If we are ethically responsible for the foreseeable consequences of our own behavior what will this mean for the ethics of agriculture?

Where do you stand in the midst of these  
paradigm shifts?

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You need to pay attention to how your mind and heart are being “furnished.”

If you don't someone else will furnish them for you. (Billions are spent each year in this effort).



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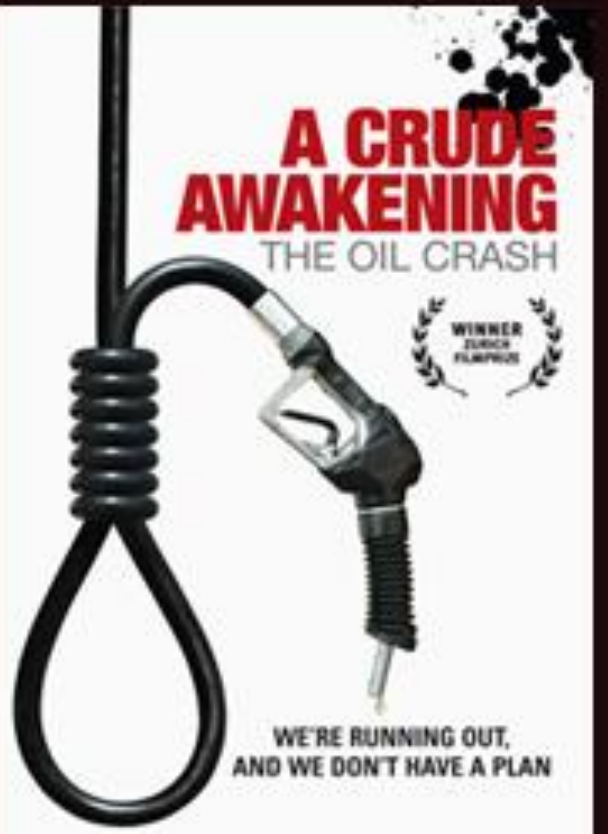
Higher education and research are your last best chances to prepare yourselves....That's what education is for. It can *prepare you for the paradigm shifts* that you will have to undertake in your own life...

Scientists have predicted the twilight  
of the petroleum era... Are we  
prepared for the coming energy  
transition in agriculture?



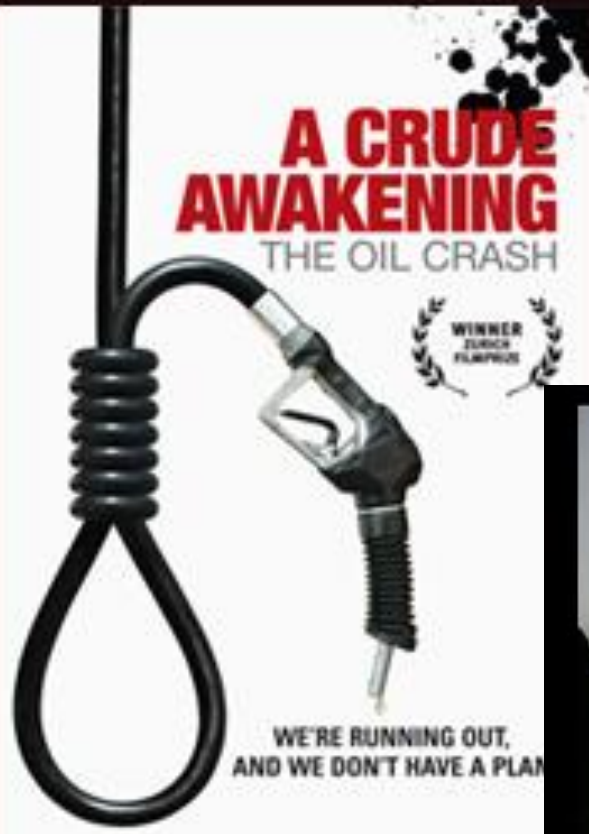
<http://youtu.be/CxK8RDyWHsM?t=10s>

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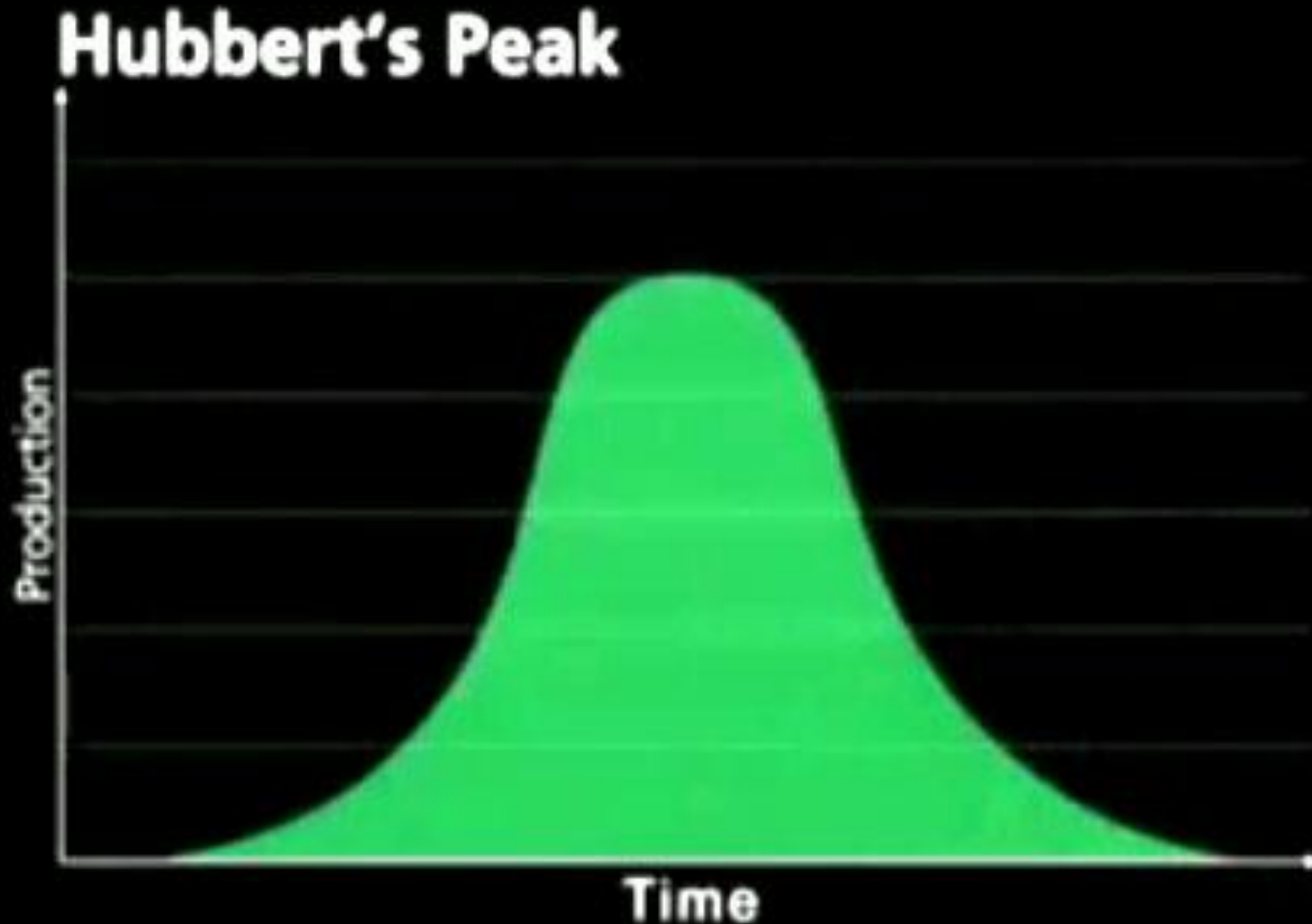
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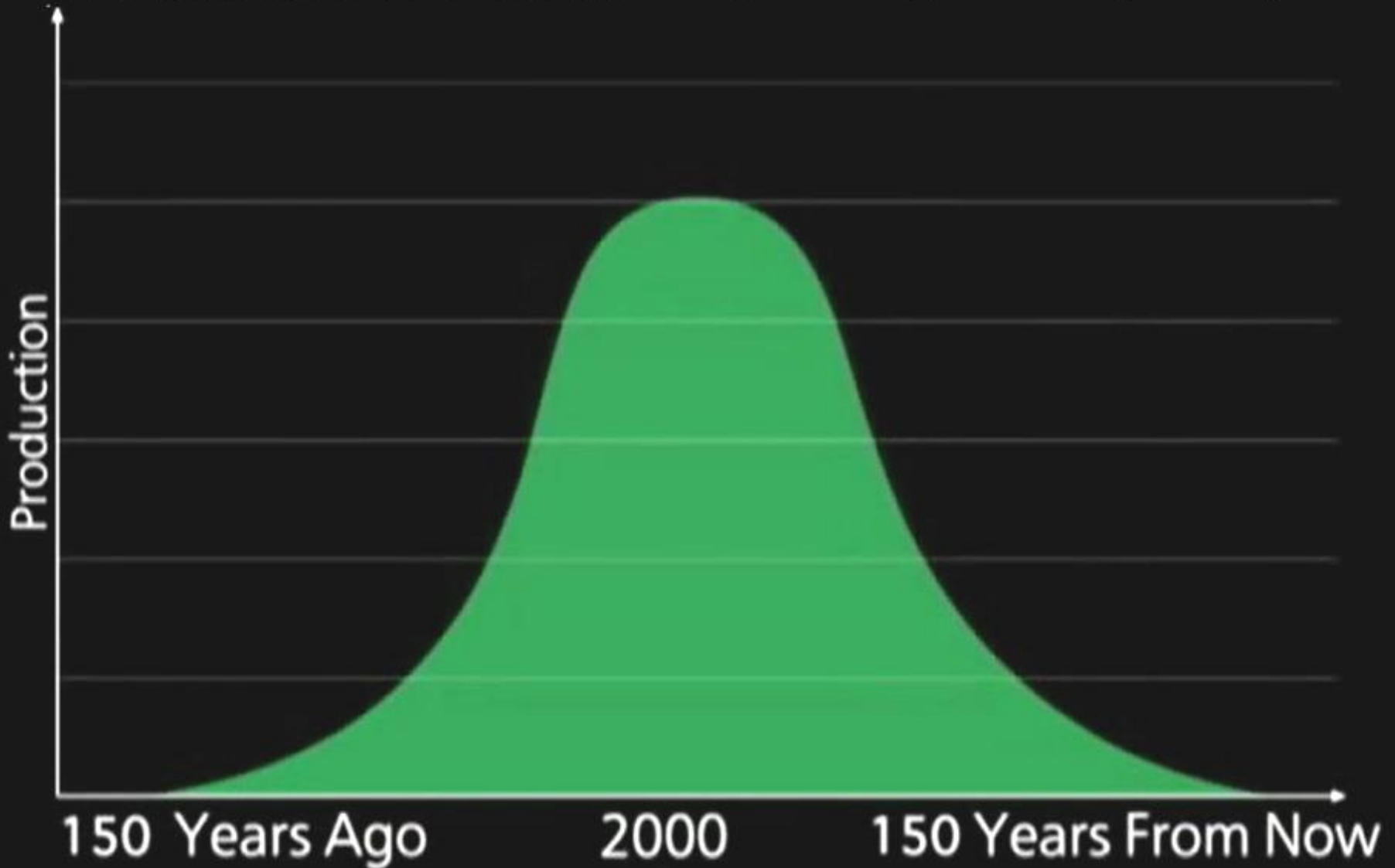
<http://youtu.be/CxK8RDyWHsM?t=10s>

**Remember the theory of “Peak Oil”?**  
**How will this affect agriculture?**  
**What happens “after the peak?”**



# Hubbert's Peak

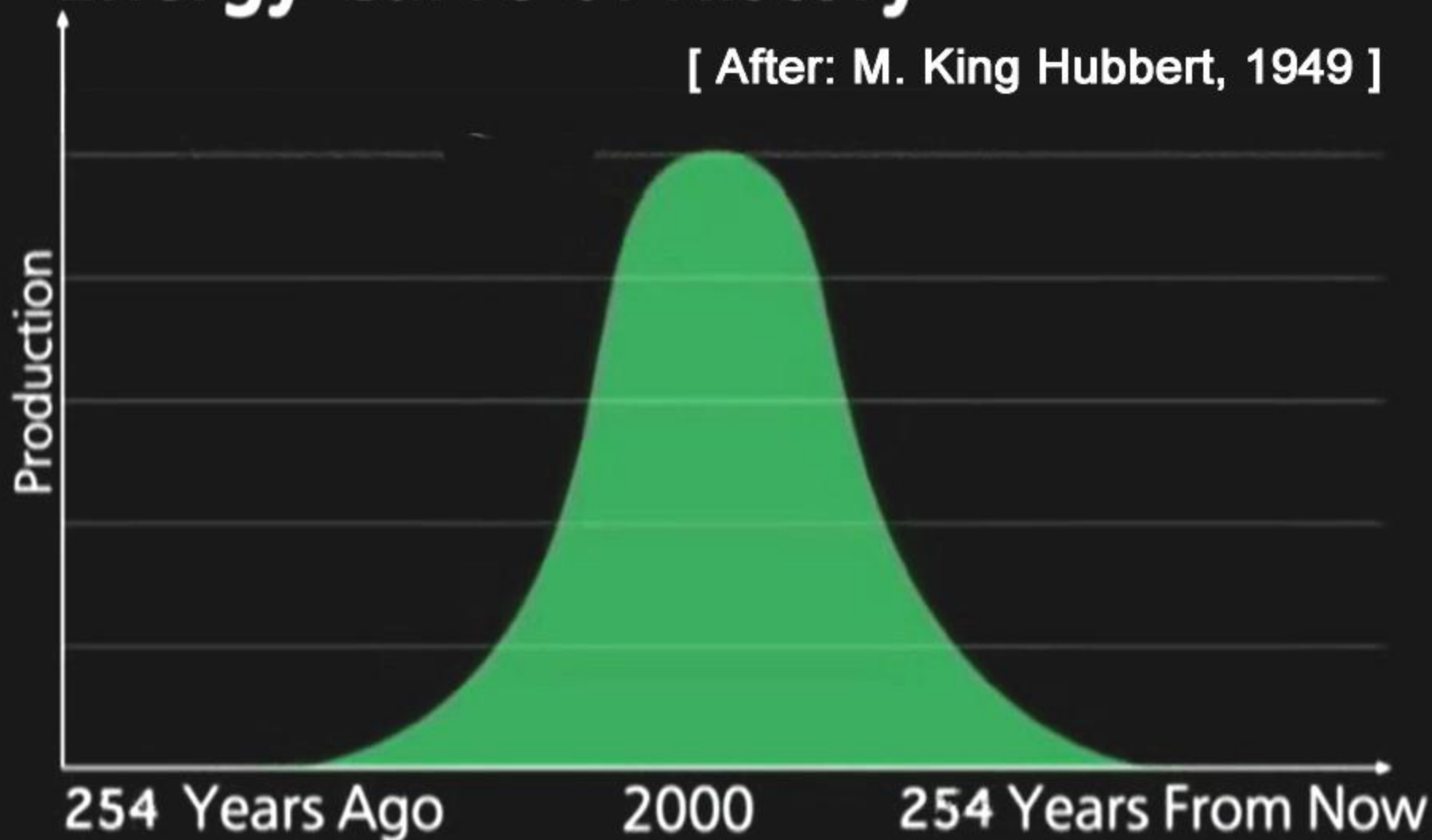
[ M. King Hubbert, 1949 ]





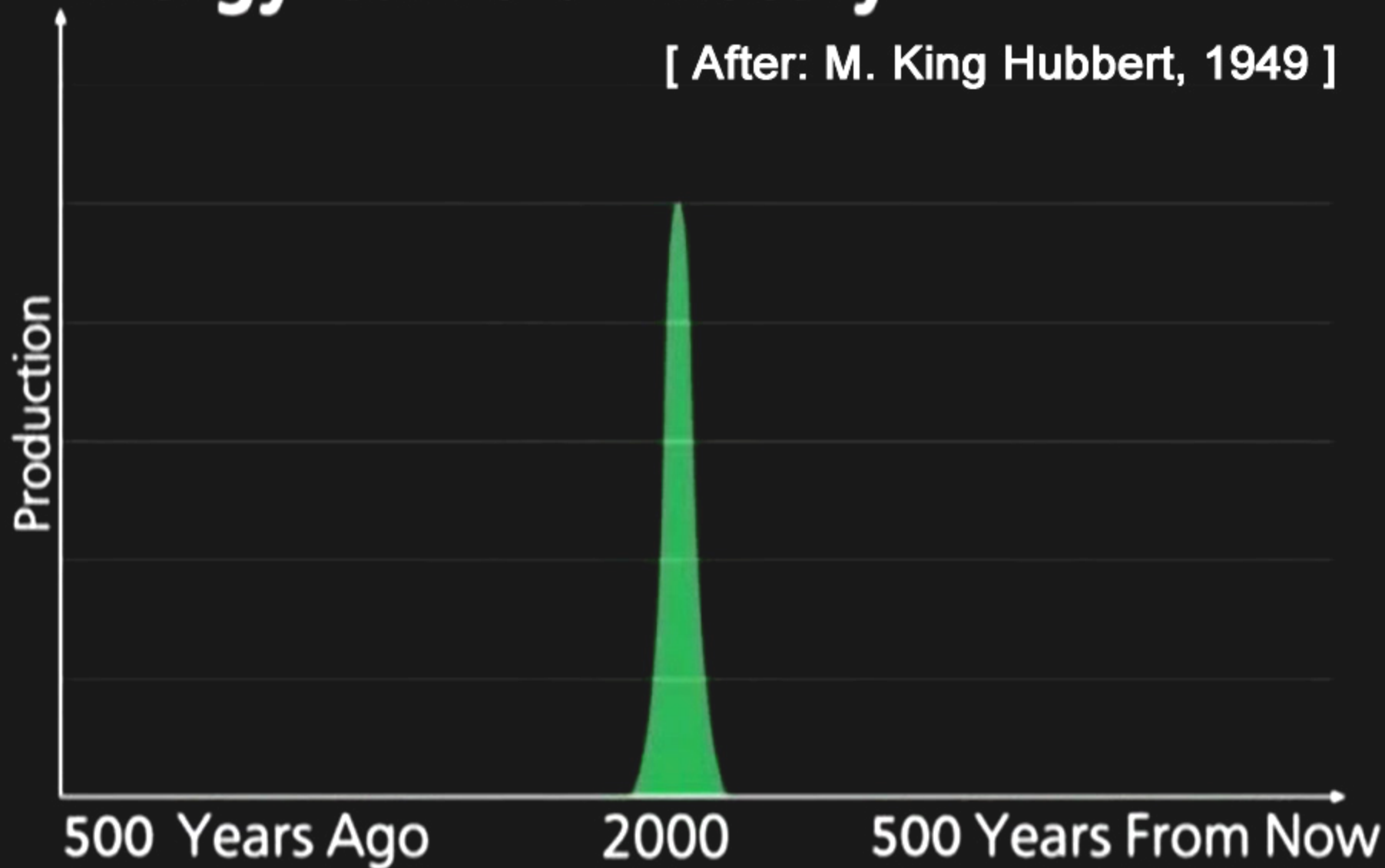
# Energy Curve of History

[ After: M. King Hubbert, 1949 ]



# Energy Curve of History

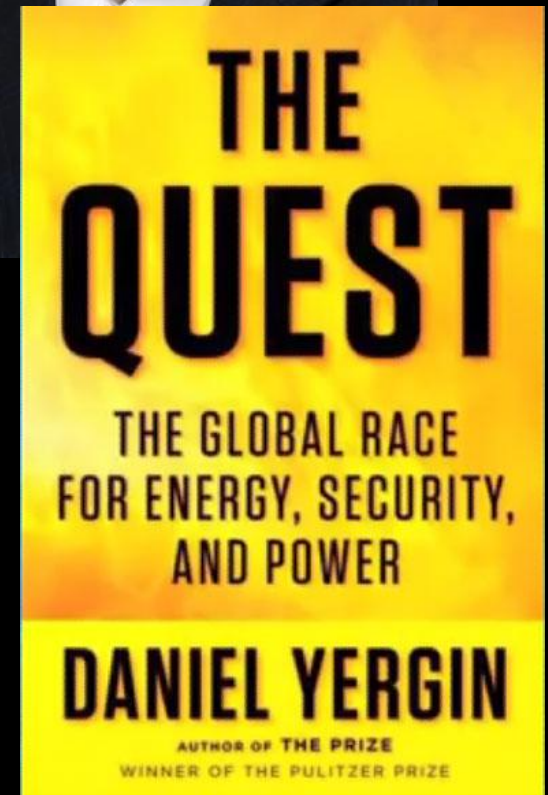
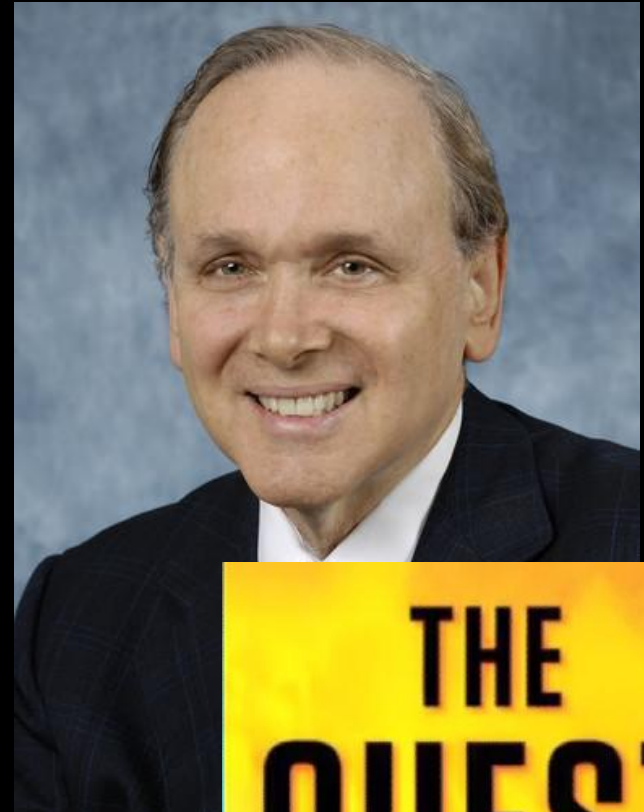
[ After: M. King Hubbert, 1949 ]



# Daniel Yergin

Is an “energy expert” who is often consulted in America on these issues.

*What does he have to say?*



## VIDEO: VIDEO GALLERY



NEW YORK



WASHINGTON

<https://environmentaljusticetv.wordpress.com/2012/11/01/quest-author-yergin-world-not-running-out-of-oil/>

Because of sources like the Canadian tar sands...

VIDEO: VIDEO GALLERY





Because of sources like the Canadian tar sands...

VIDEO: VIDEO GALLERY





WASHINGTON

YERGIN: SHALE GAS, FRACKING BIGGEST ENERGY  
INNOVATION SO FAR THIS CENTURY

REUTERS

<https://environmentaljusticetv.wordpress.com/2012/11/01/question-author-yergin-world-not-running-out-of-oil/>

## VIDEO: VIDEO GALLERY



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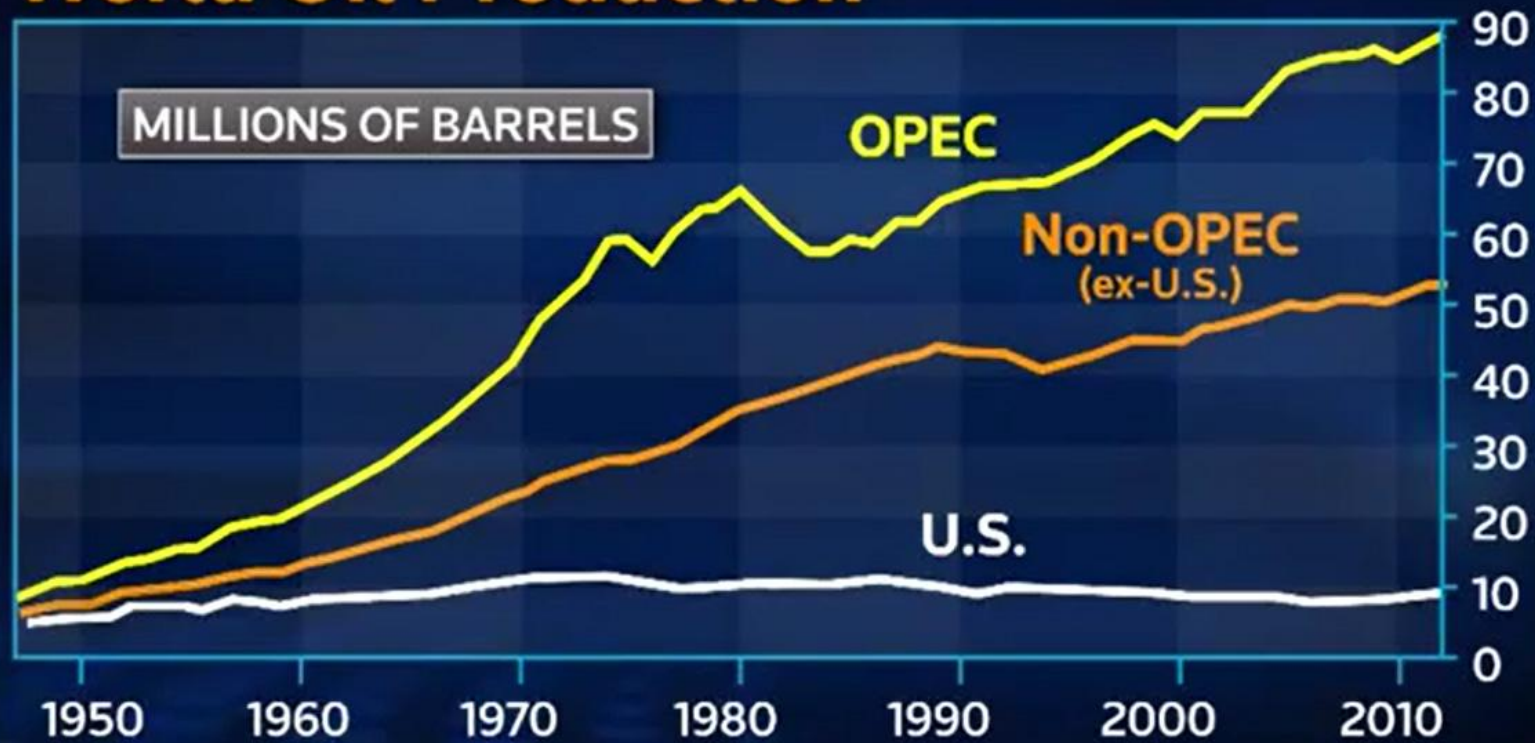


WASHINGTON

YERGIN: WE ENVISION AN OIL  
PLATEAU, NOT A PEAK

REUTERS

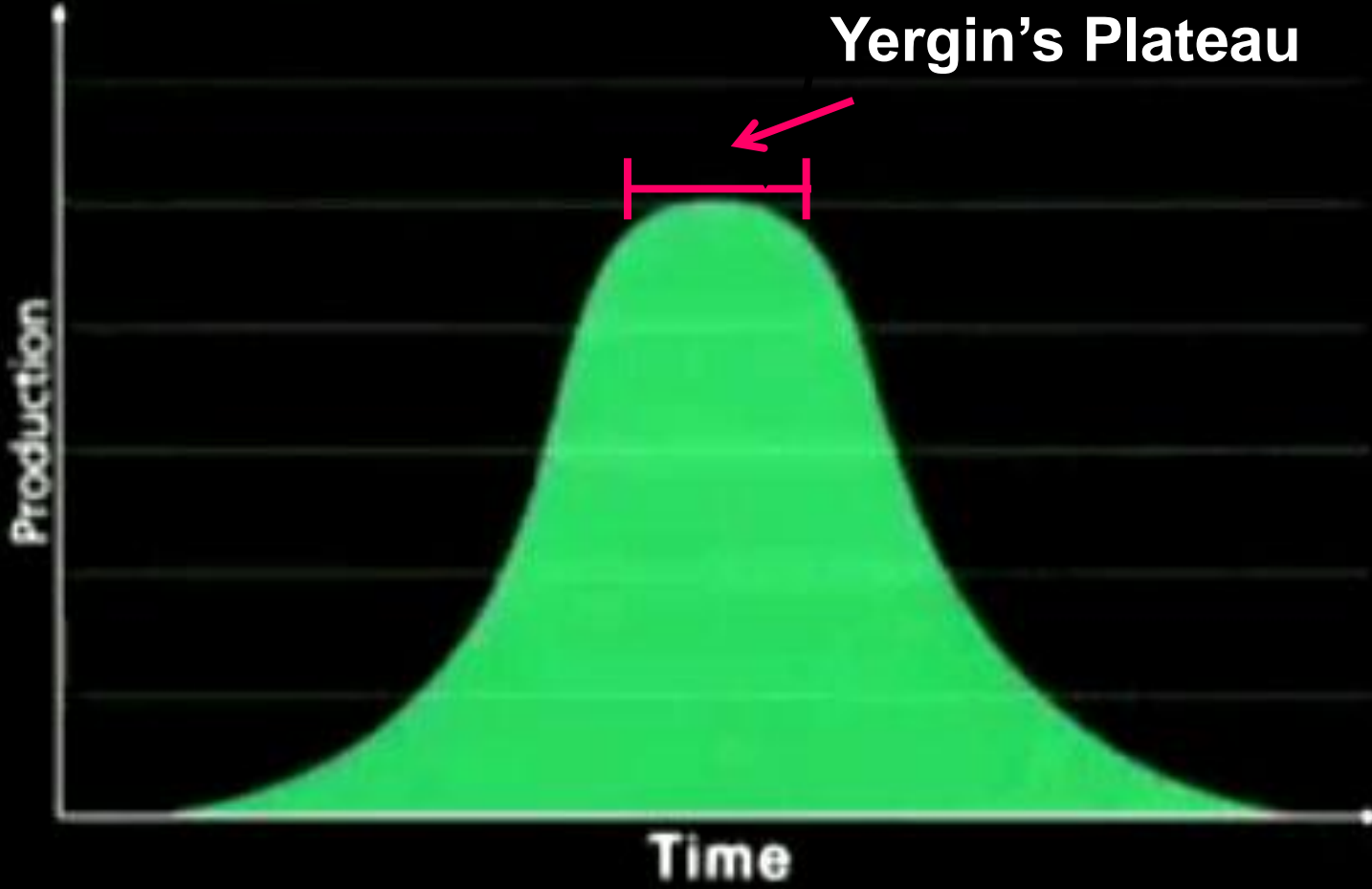
# World Oil Production



Source: IHS Cambridge Energy Research



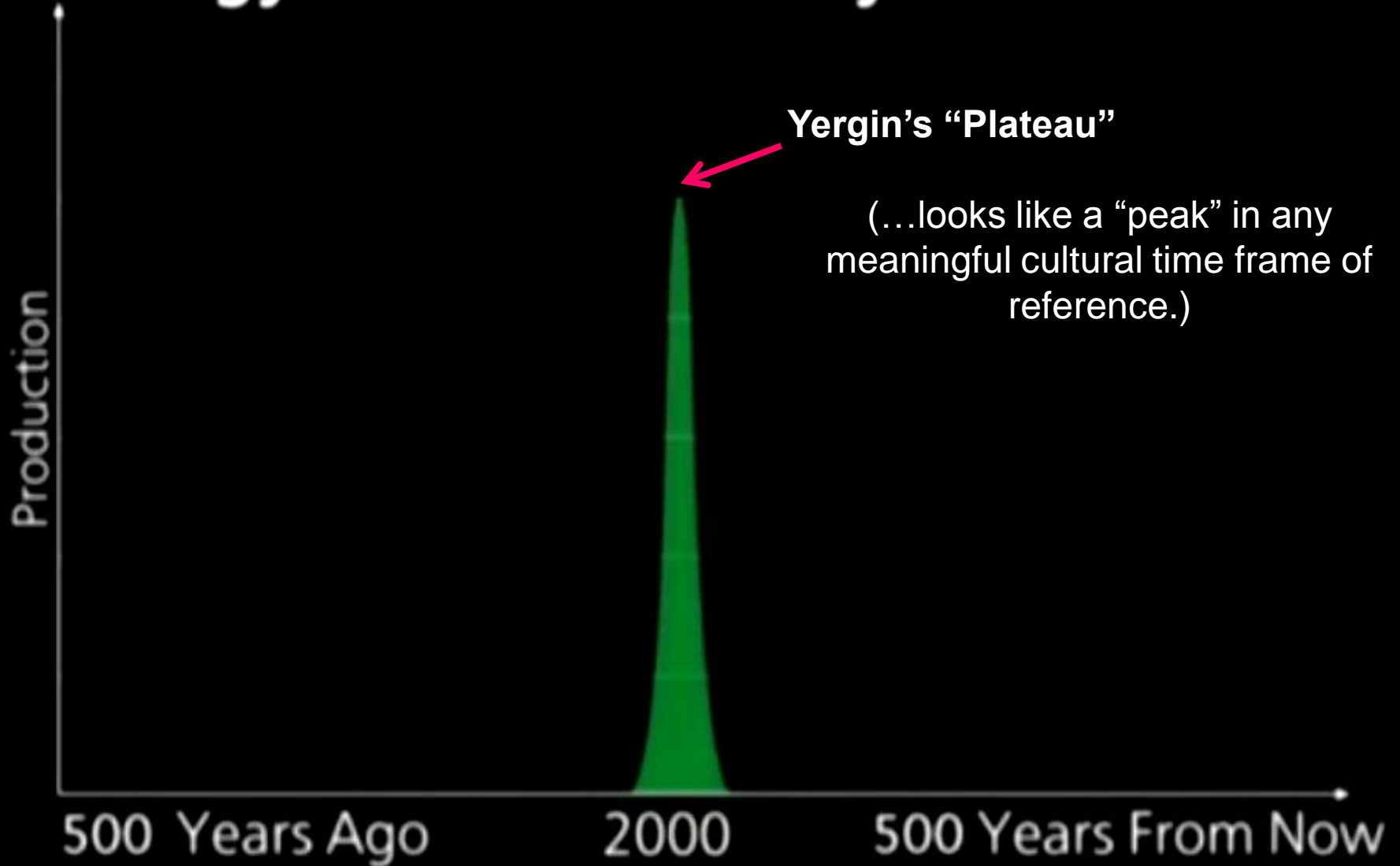
# Hubbert's Peak



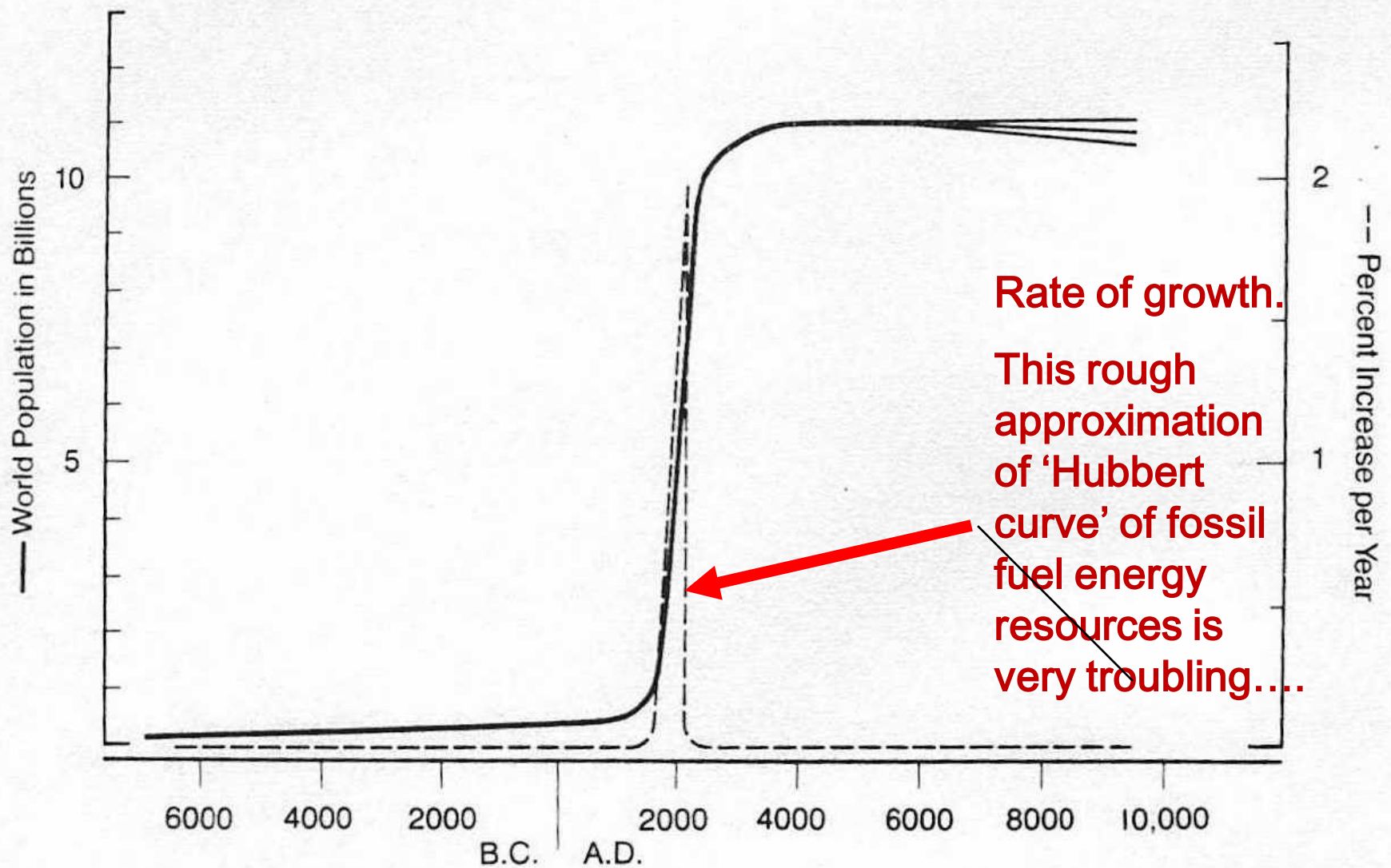
Yergin's Plateau

Time

# Energy Curve of History



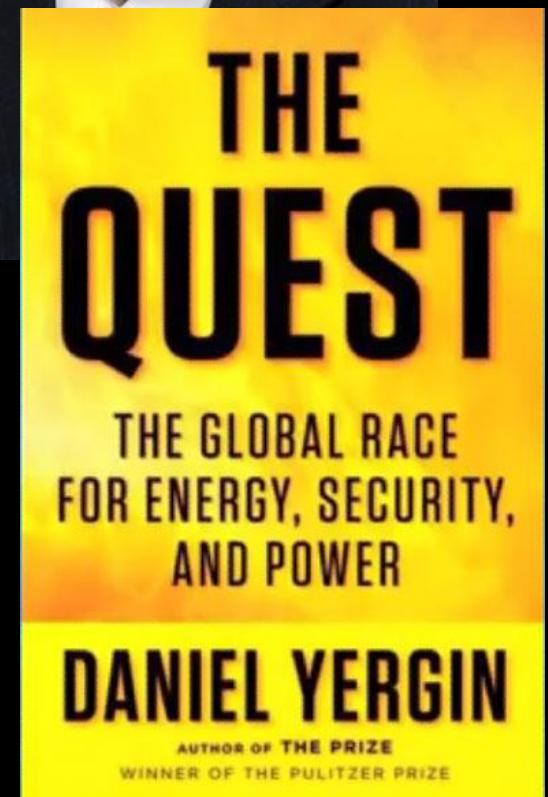
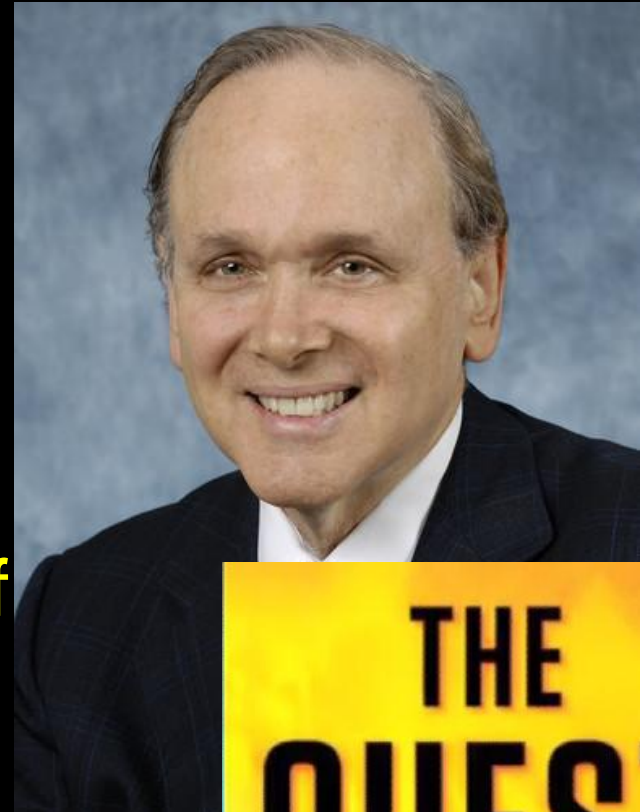


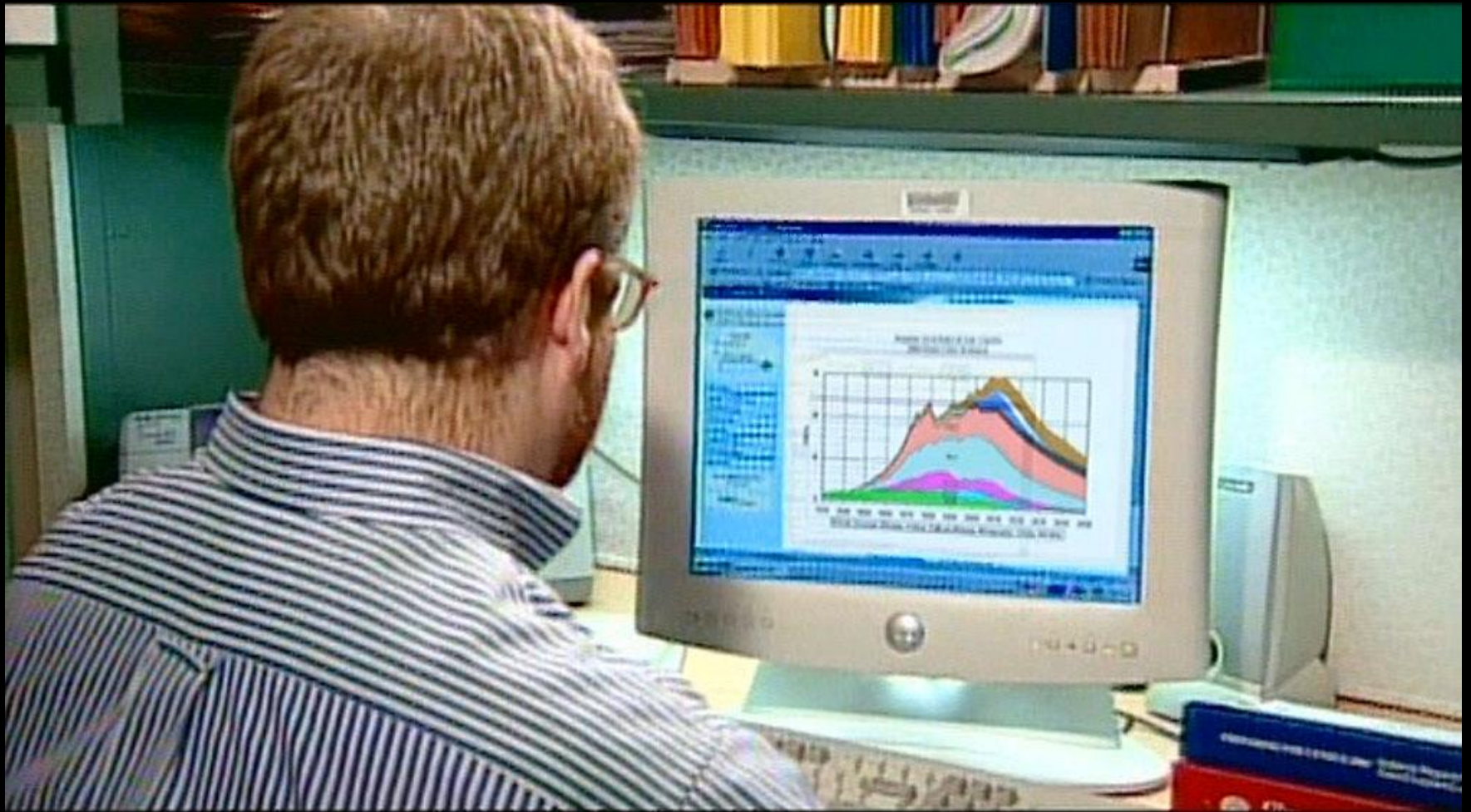


**Scientists have pointed out that the human growth rates correlate closely with energy availability...**

# Daniel Yergin

...argues that “peak oil” is not a problem; fracking in U.S. and tar sands from Canada will assure needed supplies of fossil fuels; technology is available to save us from any problems...*if* governments pass the enabling tax legislation and give the “right” signals AND finance is made available...



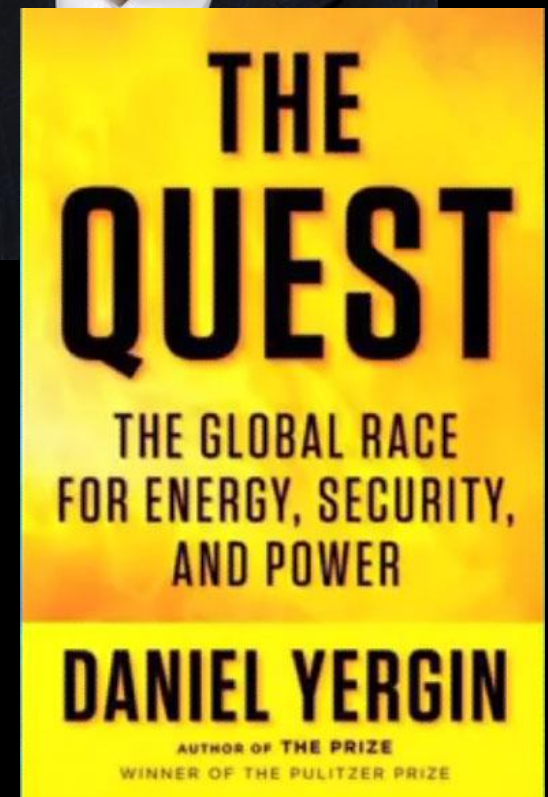
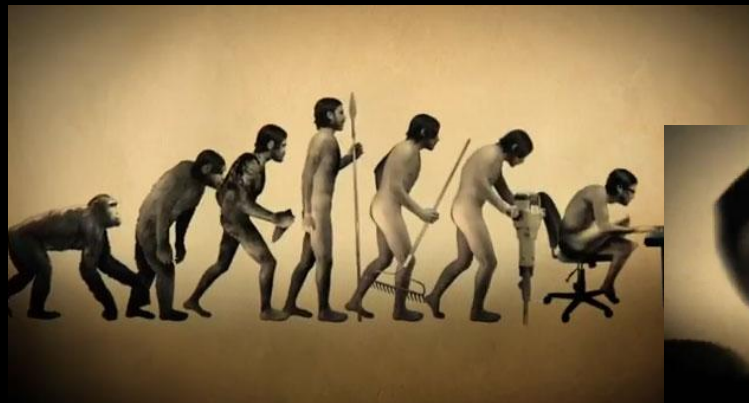
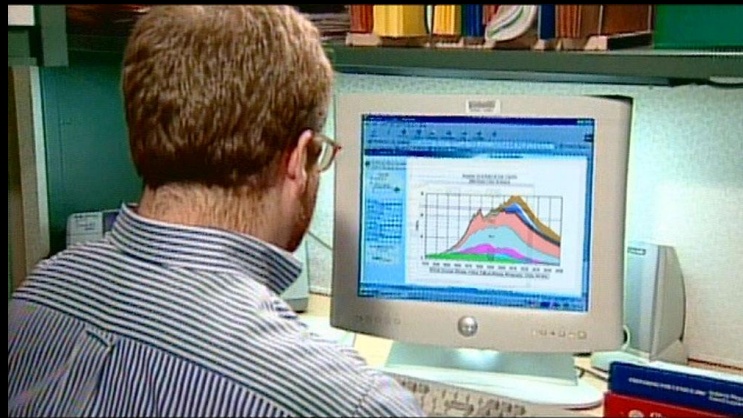
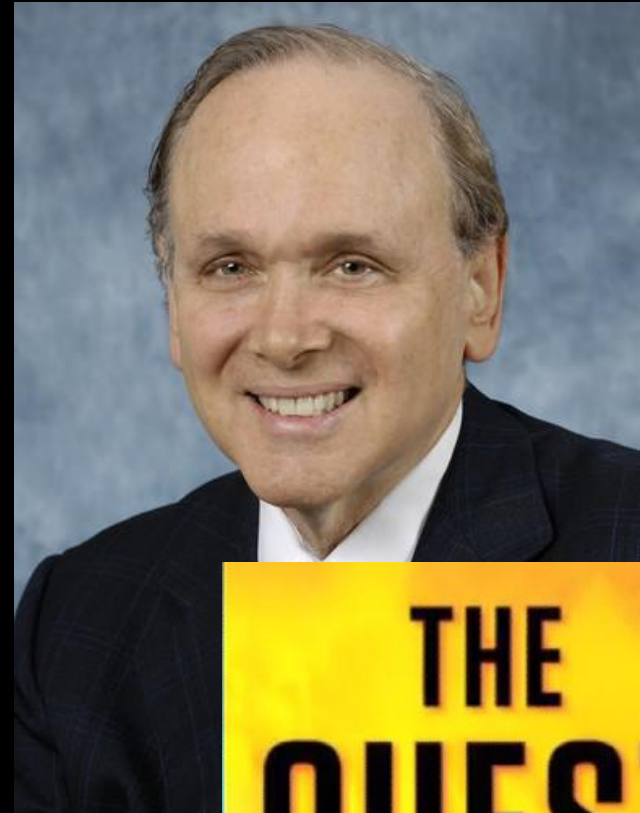


**“We’ve created a generation and a half of  
“nintendo” geologists....”**

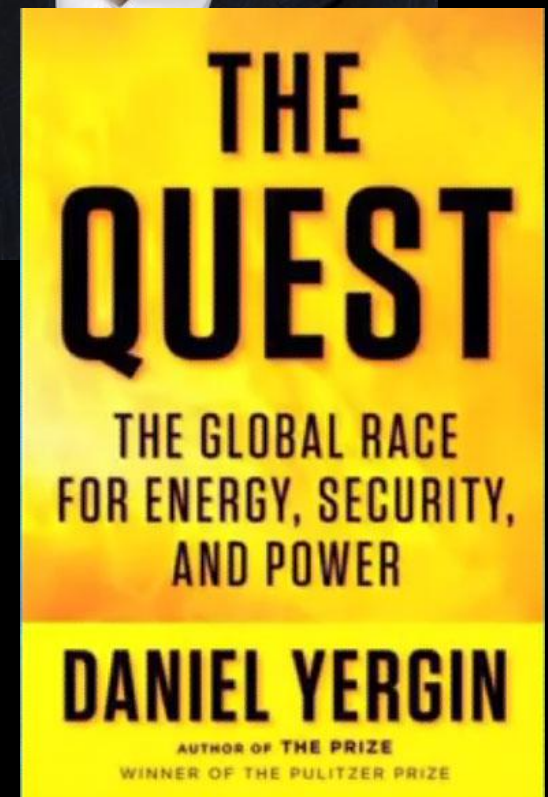
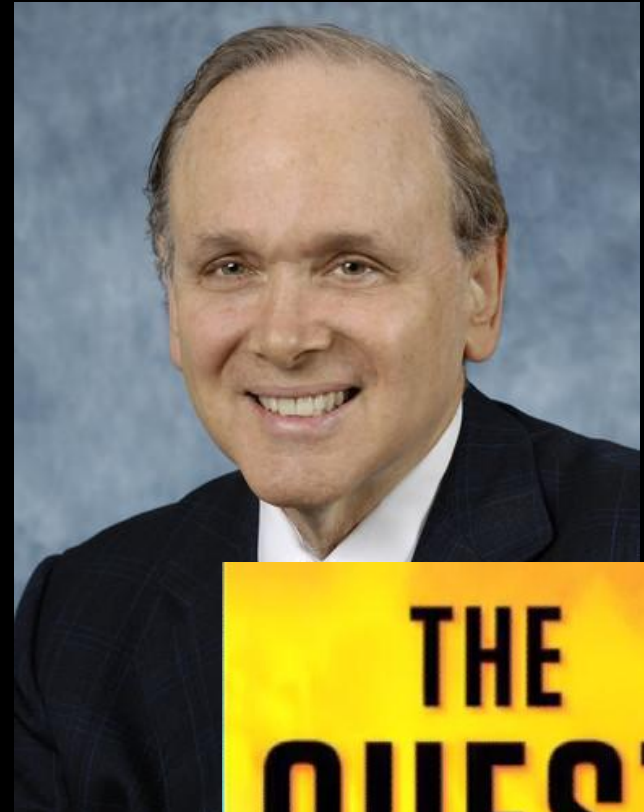
**Matt Simmons interviewed in  
“*The End of Suburbia*”**



**Yergin= A Case Study in  
the “financialization” of the  
globe  
...a “nintendo geologist”  
(finance focused & myopic)**

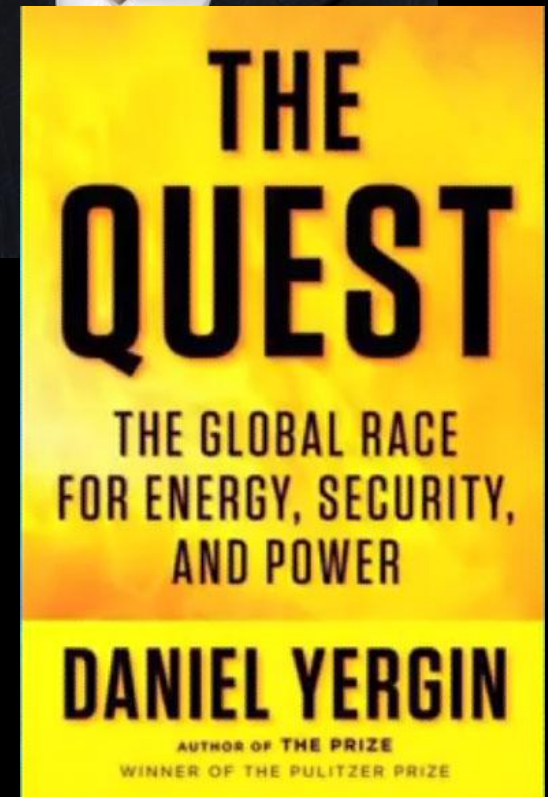
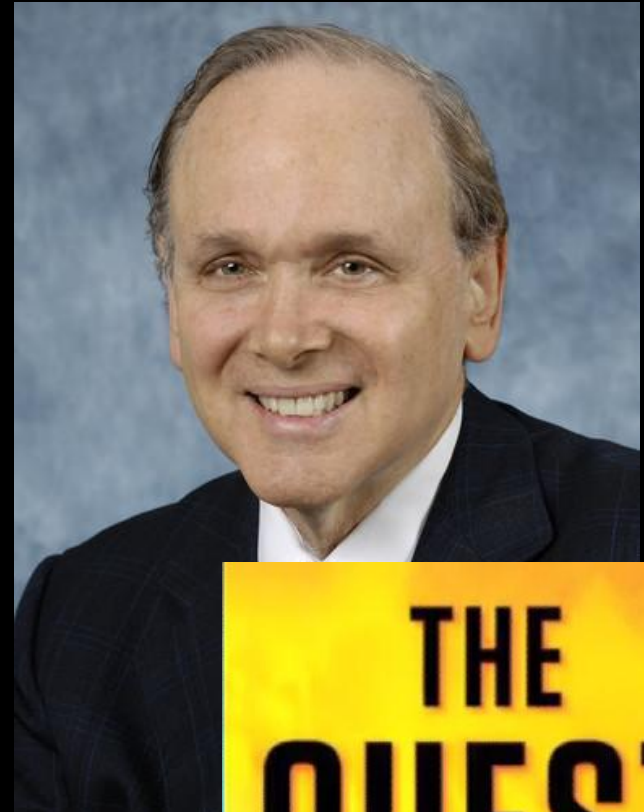


Because of his focus on fossil fuels as an “investment opportunity” that remains profitable...



Because of his focus on fossil fuels as an “investment opportunity” that remains profitable...

Daniel Yergin has lost sight of the enormous transition problem that is facing the whole world as it tries to move beyond its dependence on fossil-fuel-based agriculture.



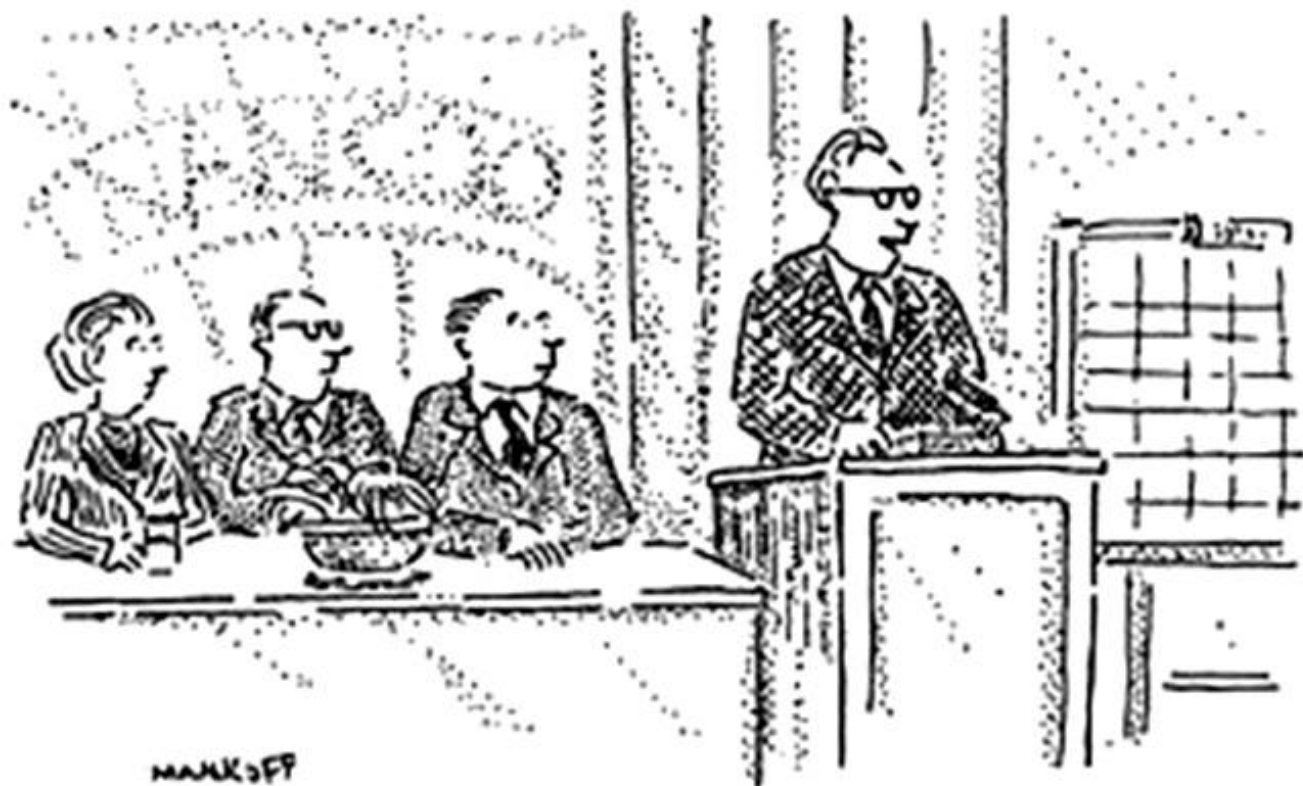


**We should ask ourselves:**

Why the 1% Doesn't See What's Coming:  
The "Institutional Contradiction" of Finance Capital

**We should ask ourselves:**

Why the 1% ~~Doesn't~~ <sup>Can't</sup> See What's Coming:  
The "Institutional Contradiction" of Finance Capital



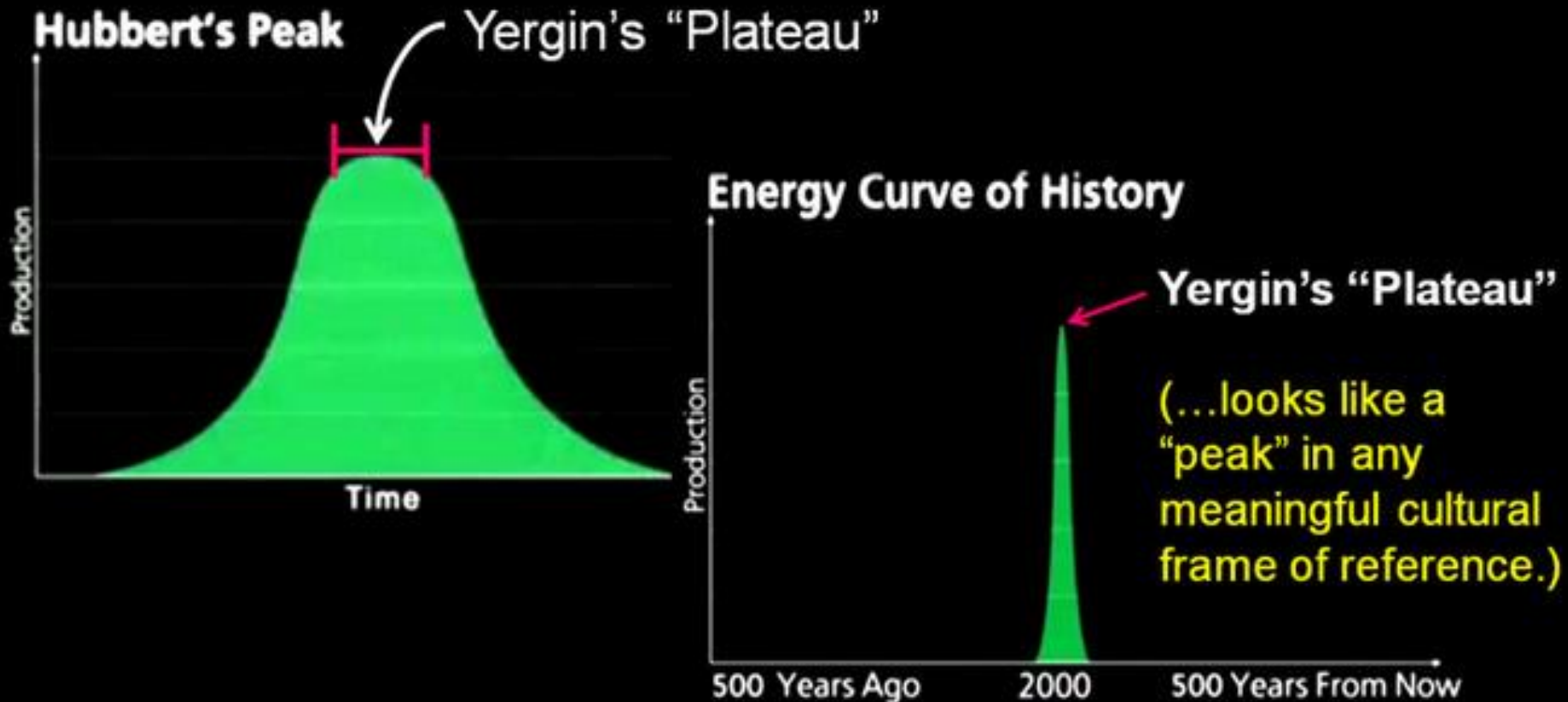
*“And so, while the end-of-the-world scenario will be rife with unimaginable horrors, we believe that the pre-end period will be filled with unprecedented opportunities for profit.”*

**We should ask ourselves:**

**Won't Let You  
~~Can't~~**

Why the 1% ~~Doesn't~~ See What's Coming:  
The "Institutional Contradiction" of Finance Capital

# Why the 1% ~~Doesn't~~ <sup>Can't</sup> See What's Coming: The "Institutional Contradiction" of Finance Capital



What are the policy consequences of Mr. Yergin's myopia?

If you don't learn to see and respond to what is coming *after* petroleum you will be left like this....





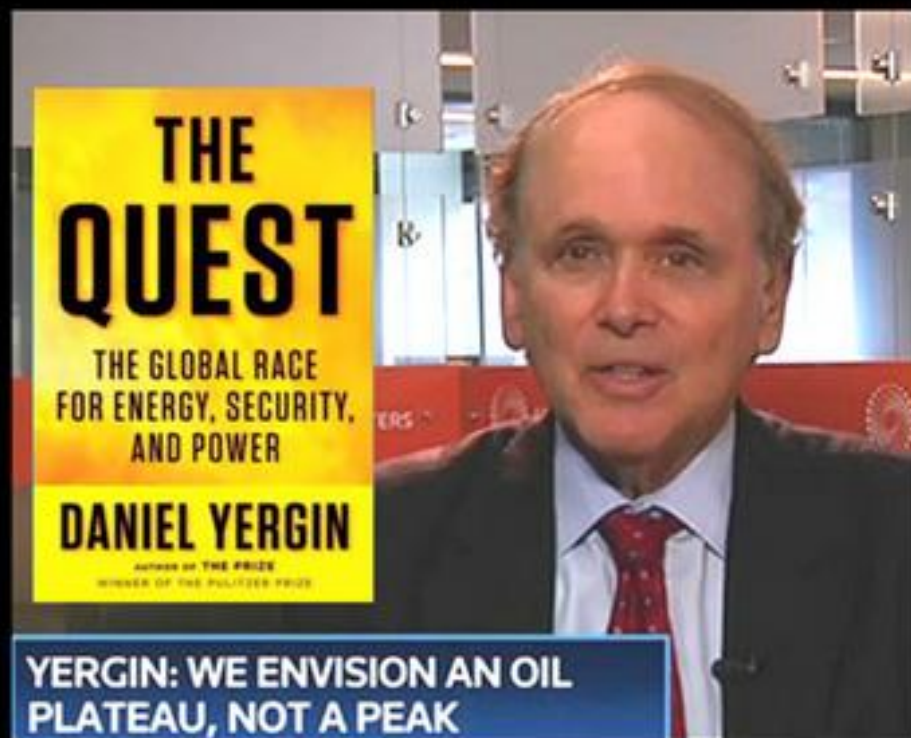
In the U.S. the corporate anxiety about peak oil has stimulated a new “extractivism” on the part of the current administration. This has, in turn, stimulated a new citizen-based climate activism.

## Extractivism and the New Activism: Will the U.S. Become a “Pariah State?”



# What if Big Oil (and their Consultants) Hadn't Deceived Us for Decades?

Where Could We Be Now in the Addressing  
the Global Energy/Climate Crisis?





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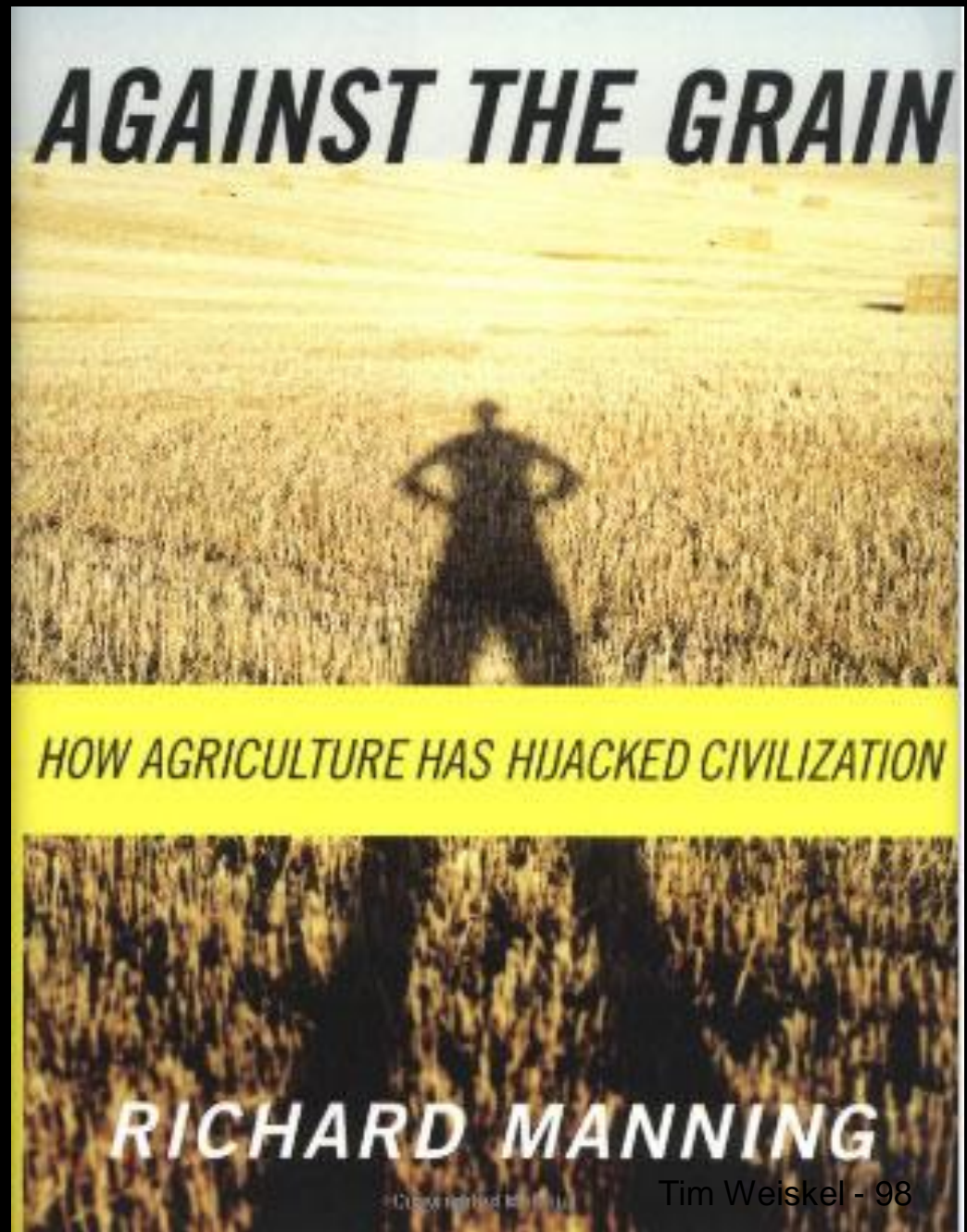
Where Could We Be Now in the Addressing  
the Global Energy/Climate Crisis?

+ Looming Food



**Richard Manning  
points out that  
agriculture has  
hijacked  
civilization....**

**One of the most  
serious  
dimensions of this  
is that the fossil  
fuel industries  
have totally  
captured  
agriculture.**



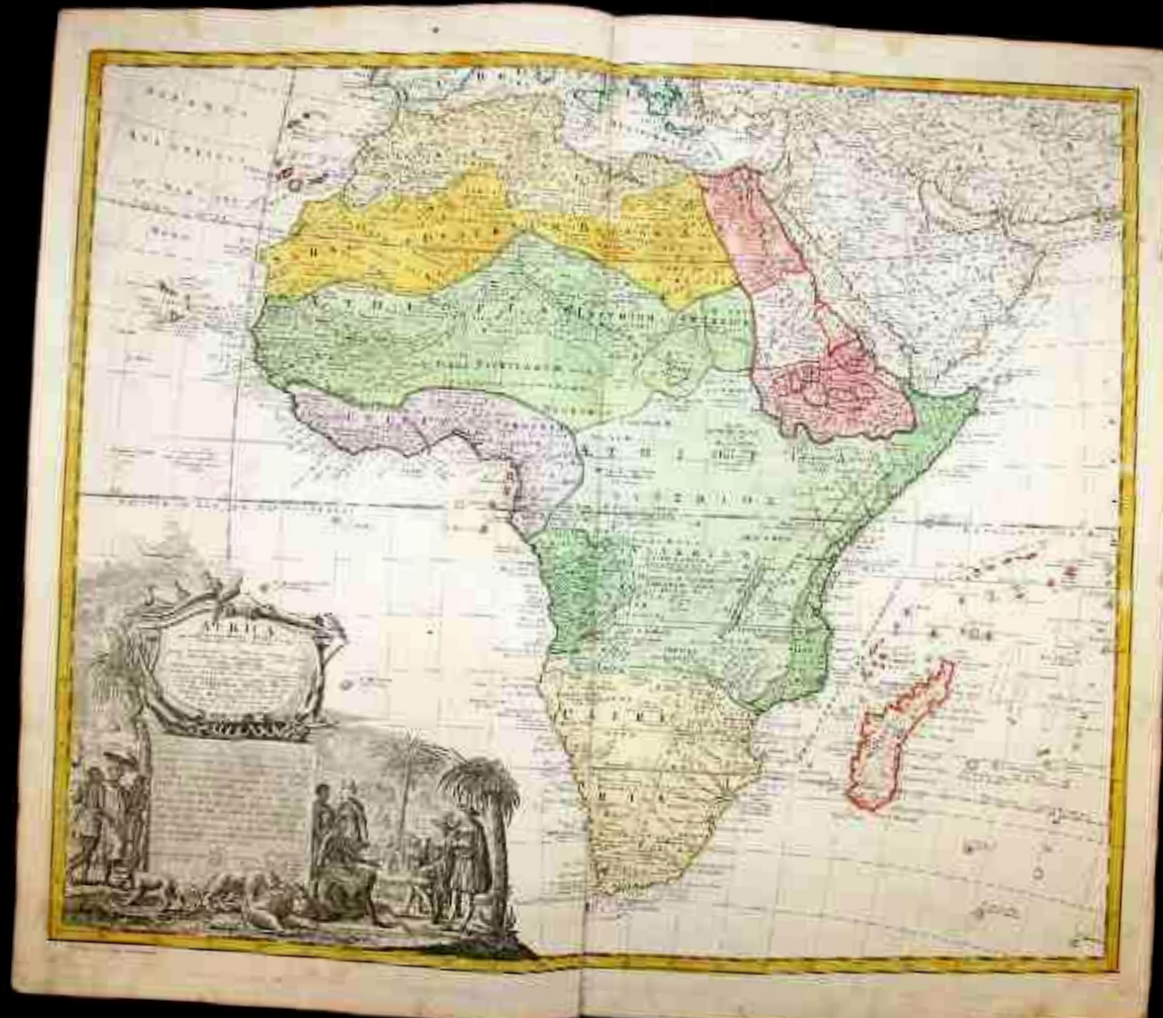


# Remember Richard Manning?



<https://environmentaljusticetv.wordpress.com/2017/05/26/richard-manning-from-what-a-way-to-go-life-at-the-end-of-empire-2/>

While the “petro-intensive” agriculture of the “developed” world is facing a crisis, what is happening in places like Africa?  
A new kind of “imperial land grab”





Briefly, there are very troublesome signs in Africa's recent evolution.

'Land-grab' for food security - 18 Nov 09

AlJazeeraEnglish 24,920 videos   Subscribed 



 **DUNCAN GREEN**  
OXFAM

0:15 / 5:33 360p   

<https://environmentaljusticetv.wordpress.com/2014/08/04/land-grab-for-food-security-18-nov-09-2/>

Briefly, there are very troublesome signs in its recent evolution.



<https://environmentaljusticetv.wordpress.com/2012/12/11/ethiopias-land-rush-feeding-the-world-john-vidal/>

Drought & floods will ruin this large-scale mono-crop agriculture, leaving Africa with impoverished topsoils that have been “mined” for profits that have been exported outside the continent....

Drought & floods will ruin this large-scale mono-crop agriculture, leaving Africa with impoverished topsoils that have been “mined” for profits that have been exported outside the continent....

The whole process will generate countless migrants, refugees and “militants” – that is, anyone who objects to or resists these “land-grabs.”

But the power of the  
*“fossil-fuel industrial complex”*  
is immense...and it is currently driving  
international agriculture and food policy

## World According to Monsanto

Posted on September 11, 2012 | [Leave a comment](#) | [Edit](#)



[https://environmentaljusticetv.wordpress.com/2012/09/11/  
world-according-to-monsanto/](https://environmentaljusticetv.wordpress.com/2012/09/11/world-according-to-monsanto/)



# Climate Change

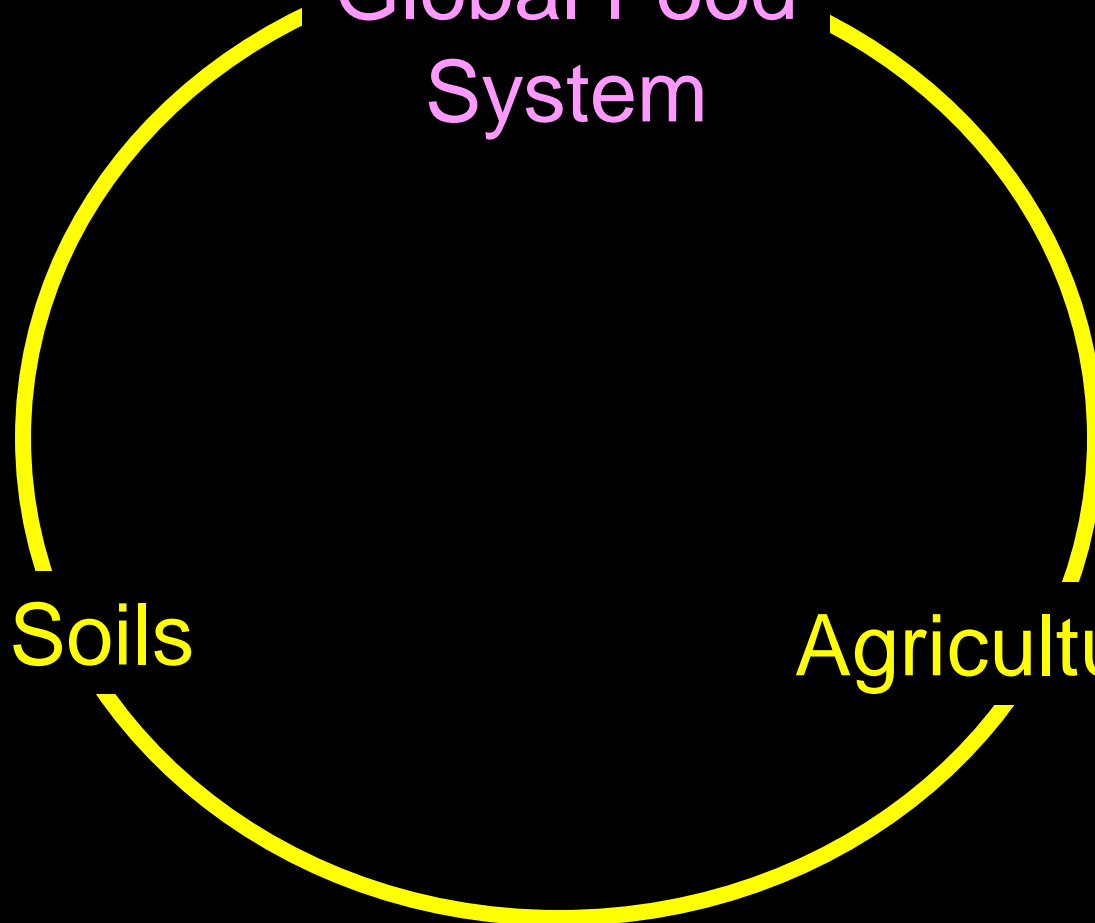
*Customary policy perspective – anthropocentric, unsustainable*

Focus on the global food system as a “profitable sector” is dangerous. It can lead to over exploitation of the soils and non-sustainable agricultural practices in pursuit of immediate profits.

Global Food System

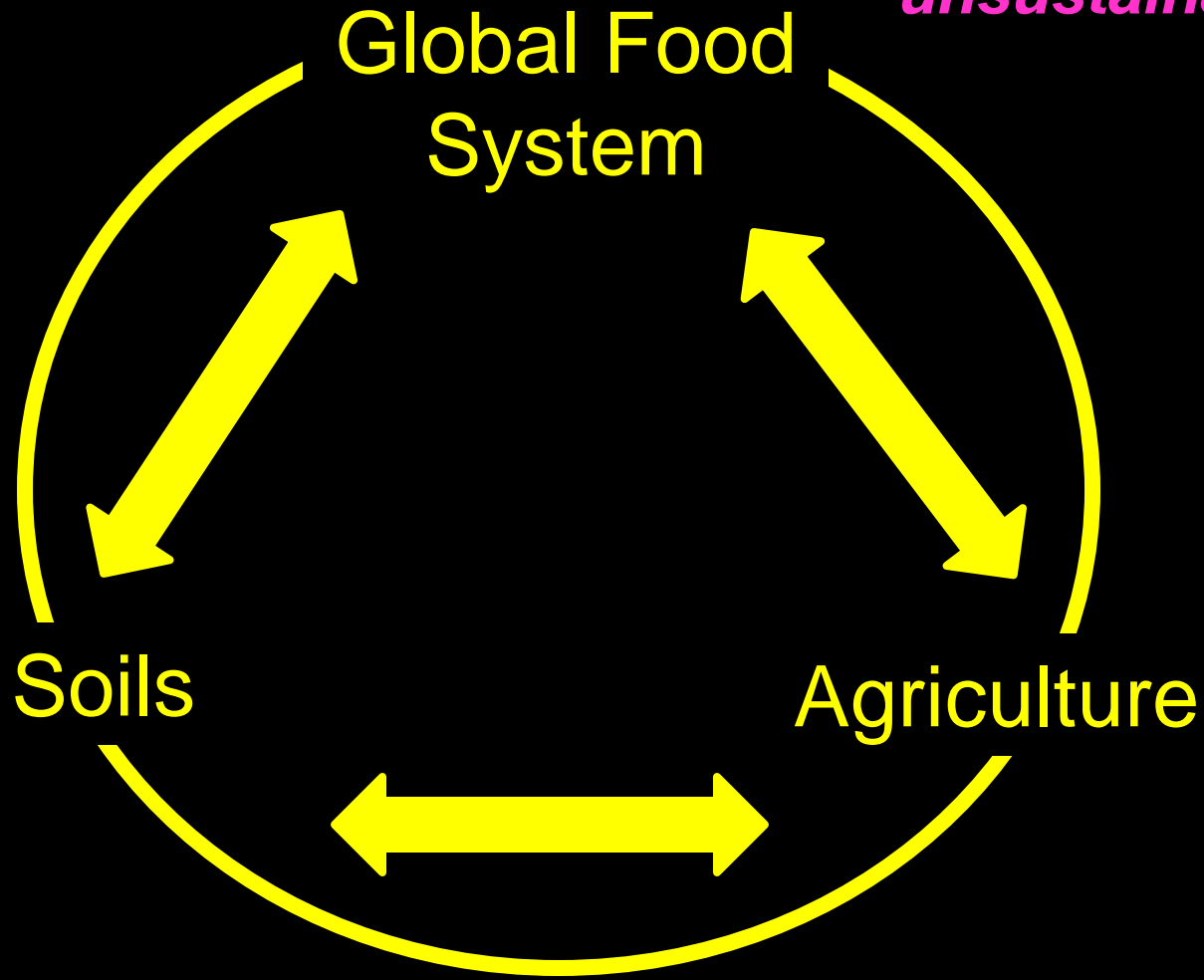
Soils

Agriculture



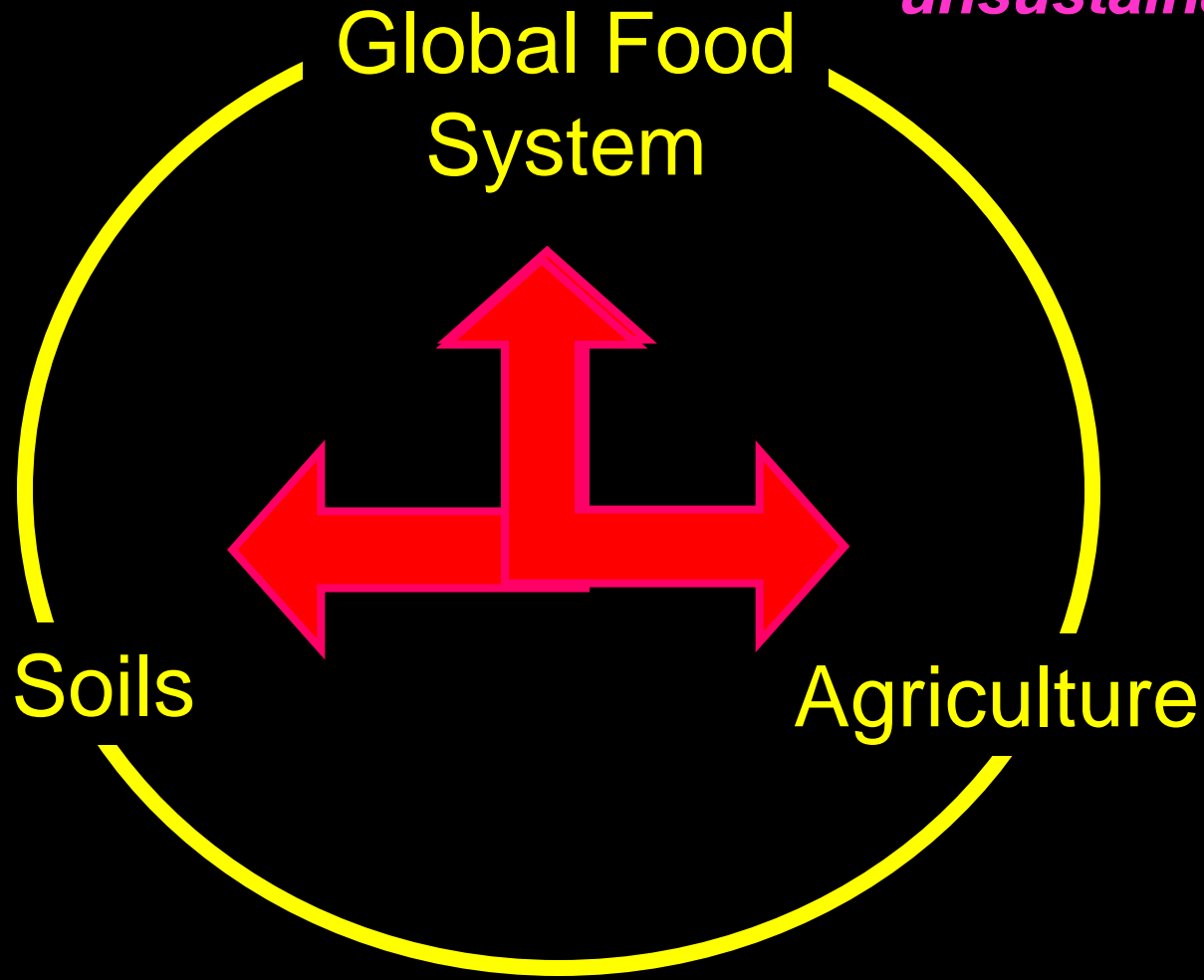
# Climate Change

*Customary policy perspective – anthropocentric, unsustainable*

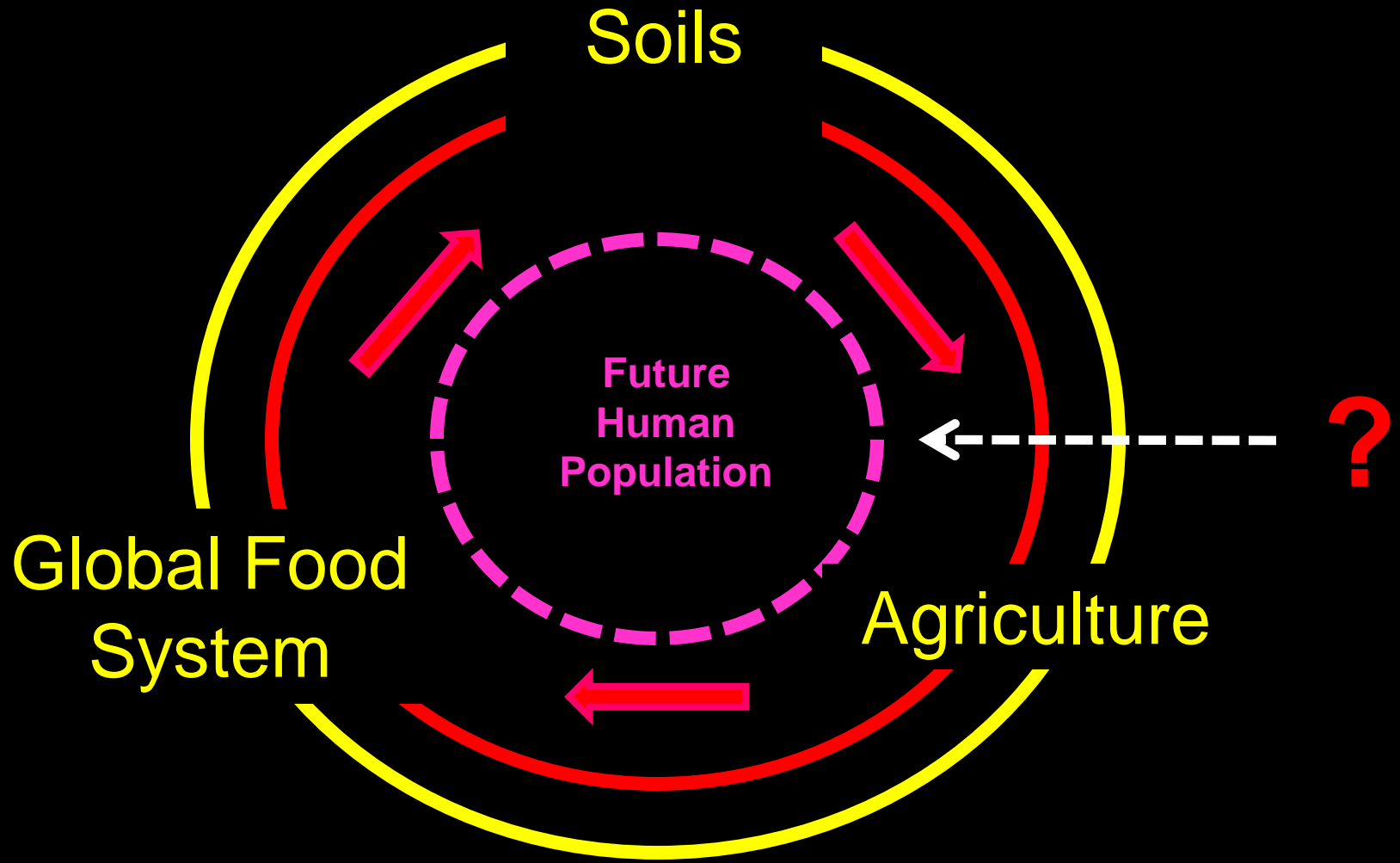


# Climate Change

*Customary policy perspective – anthropocentric, unsustainable*



# Climate Change



There are alternatives to this  
corporate-driven, fossil-fuel  
dependent agriculture

**BUT** the urgency of extreme weather  
catastrophes and climate-driven failures  
makes these alternative hard to see and  
act upon.



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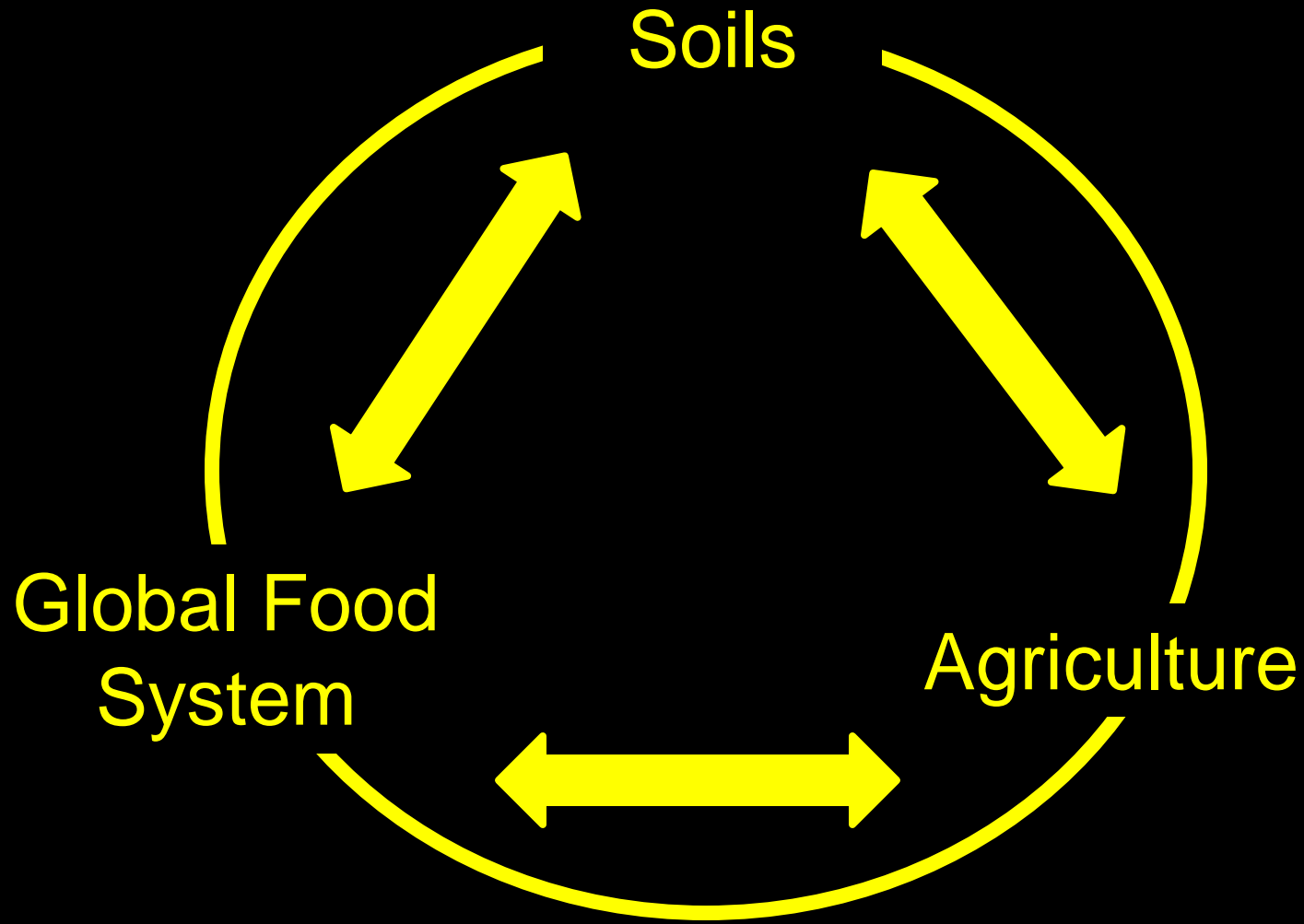
We need to develop the insight and courage  
to explore and develop “restorative” and  
“regenerative” agriculture around the globe.

Fortunately,  
there are challengers of the  
fossil-fuel industrial complex in agriculture.

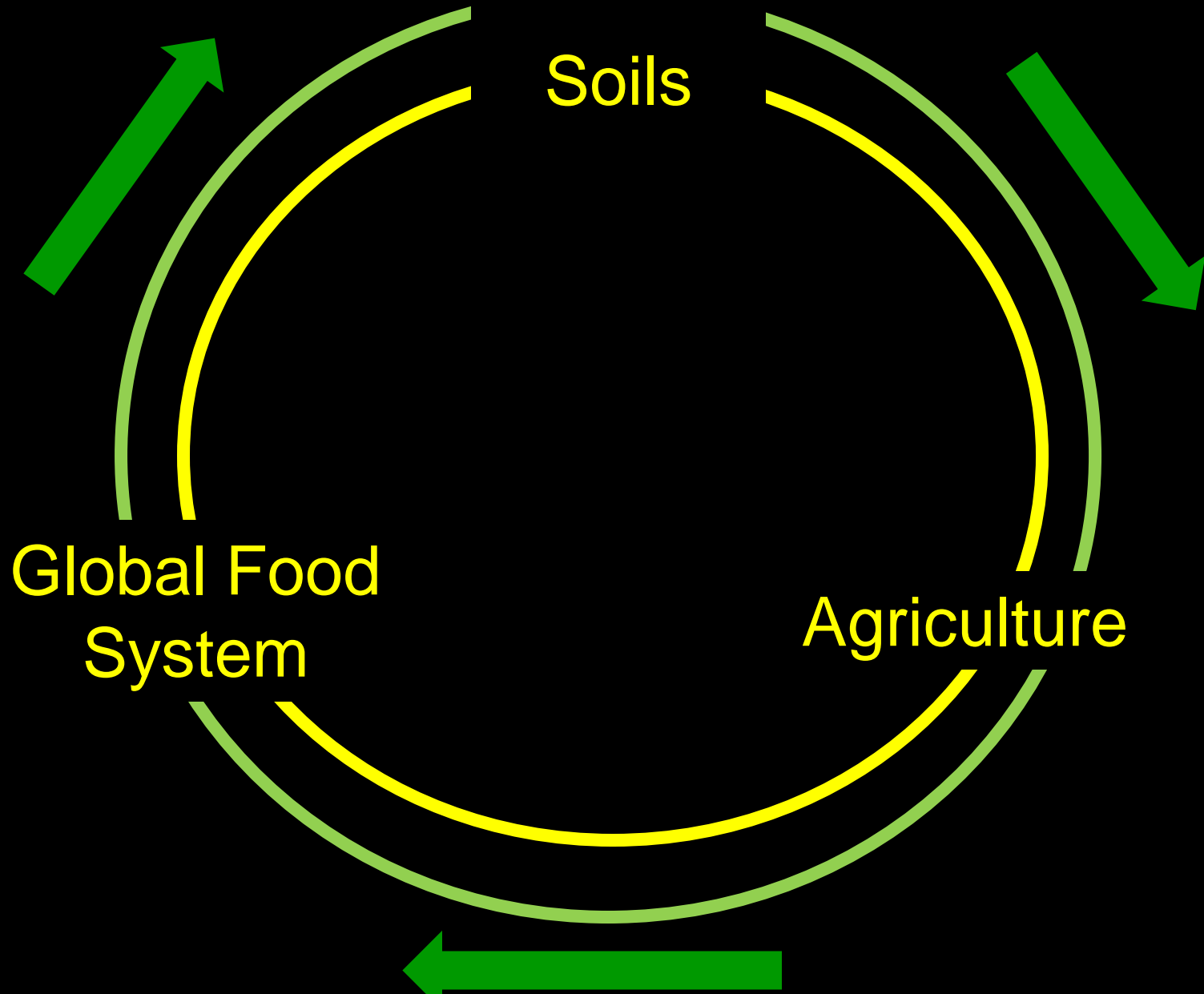


<https://environmentaljusticetv.wordpress.com/2012/11/17/food-mythbusters-do-we-really-need-industrial-agriculture-to-feed-the-world-2/>

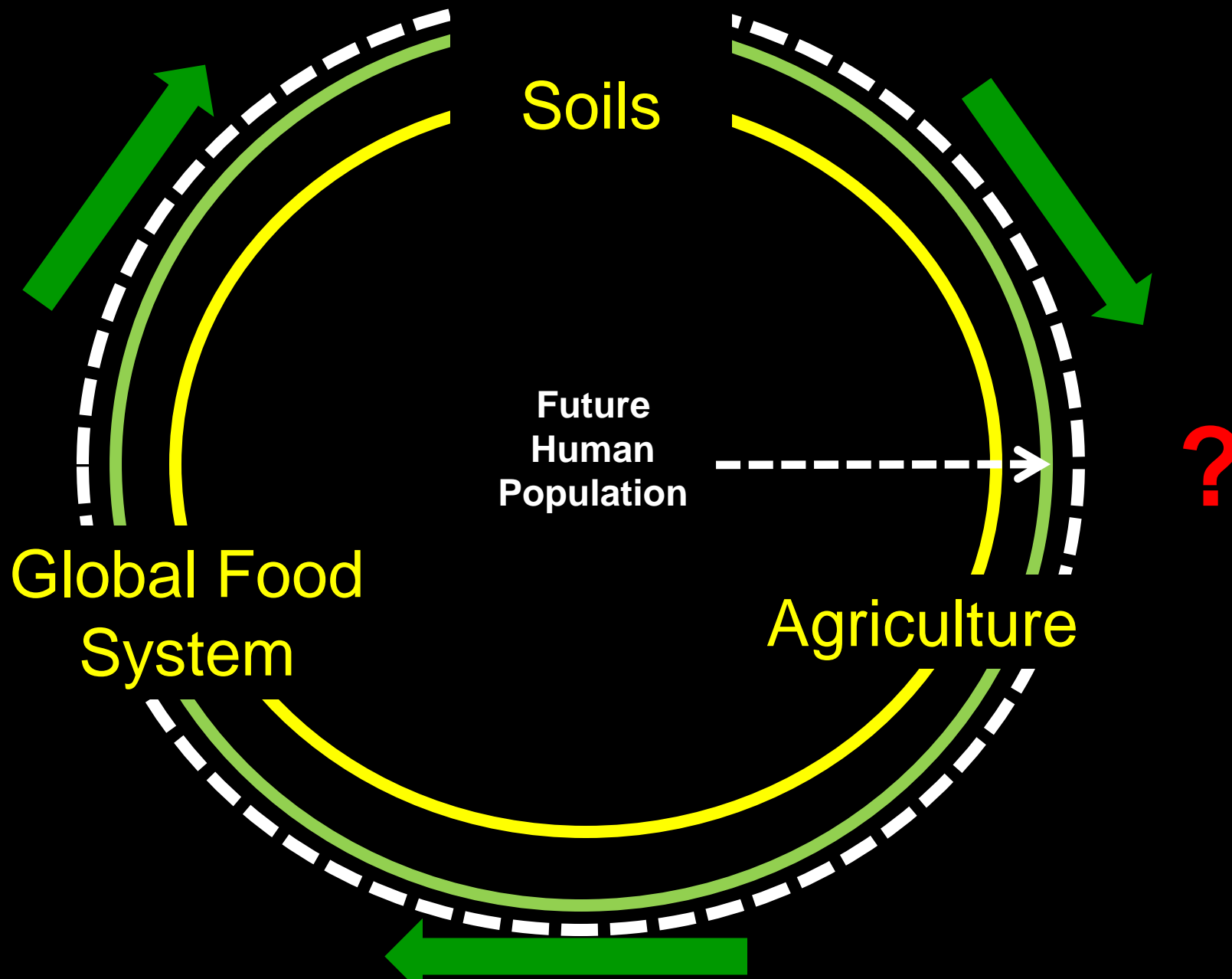
# Climate Change



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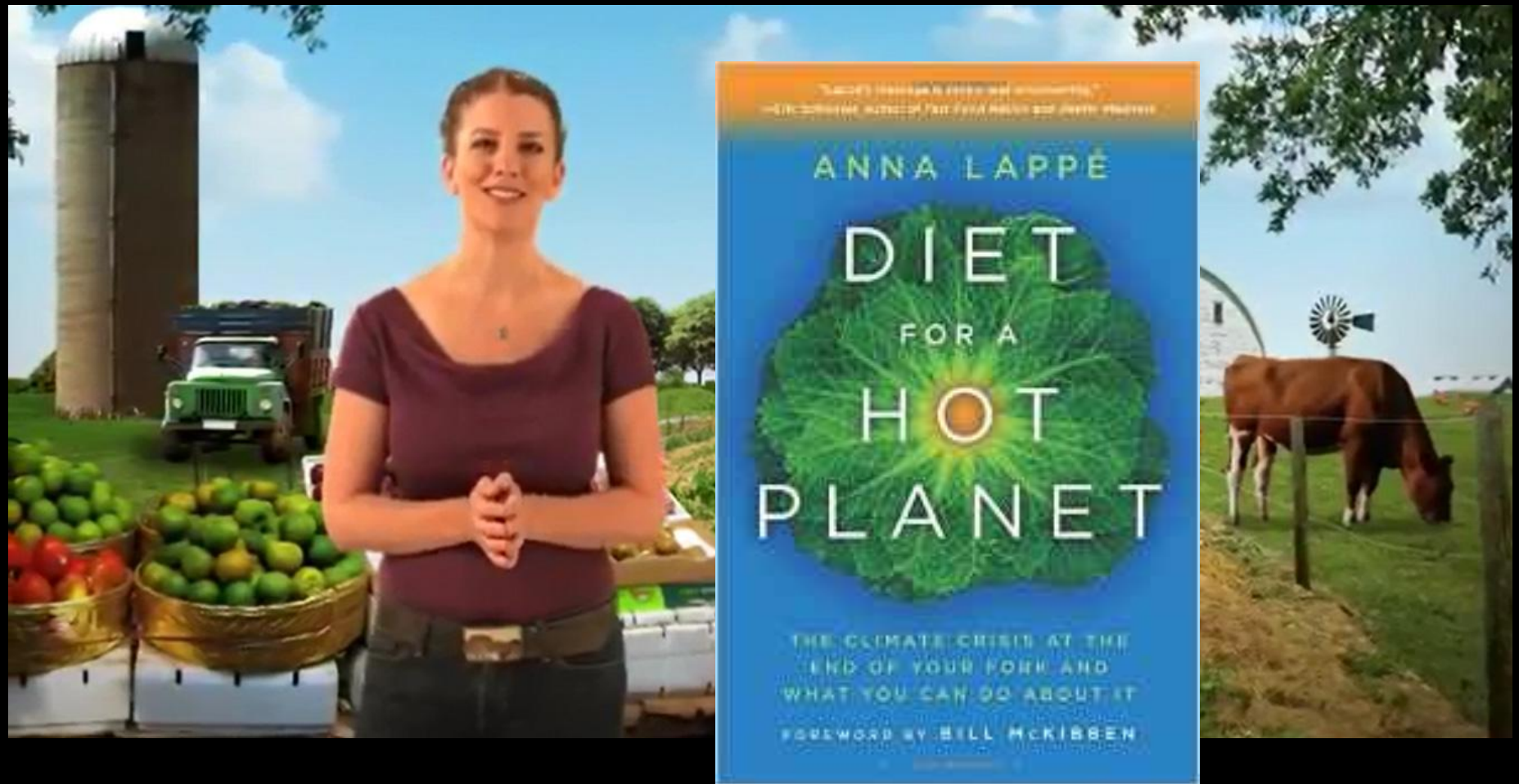


# Climate Change





Anna Lappé has taken this message globally, addressing the food crisis on the horizon from climate change.





DOUBL  
FOOD PROD TION  
2050

<https://environmentaljusticetv.wordpress.com/2012/11/17/food-mythbusters-do-we-really-need-industrial-agriculture-to-feed-the-world-2/>



**Soils grow food.... Humankind must now learn to *grow soil* with sustainable permaculture practices**



<https://environmentaljusticetv.wordpress.com/2012/11/17/food-mythbusters-do-we-really-need-industrial-agriculture-to-feed-the-world-2/>

Soils hold massive amounts of carbon. They can sequester atmospheric carbon OR release their stored carbon, depending on how we treat them.

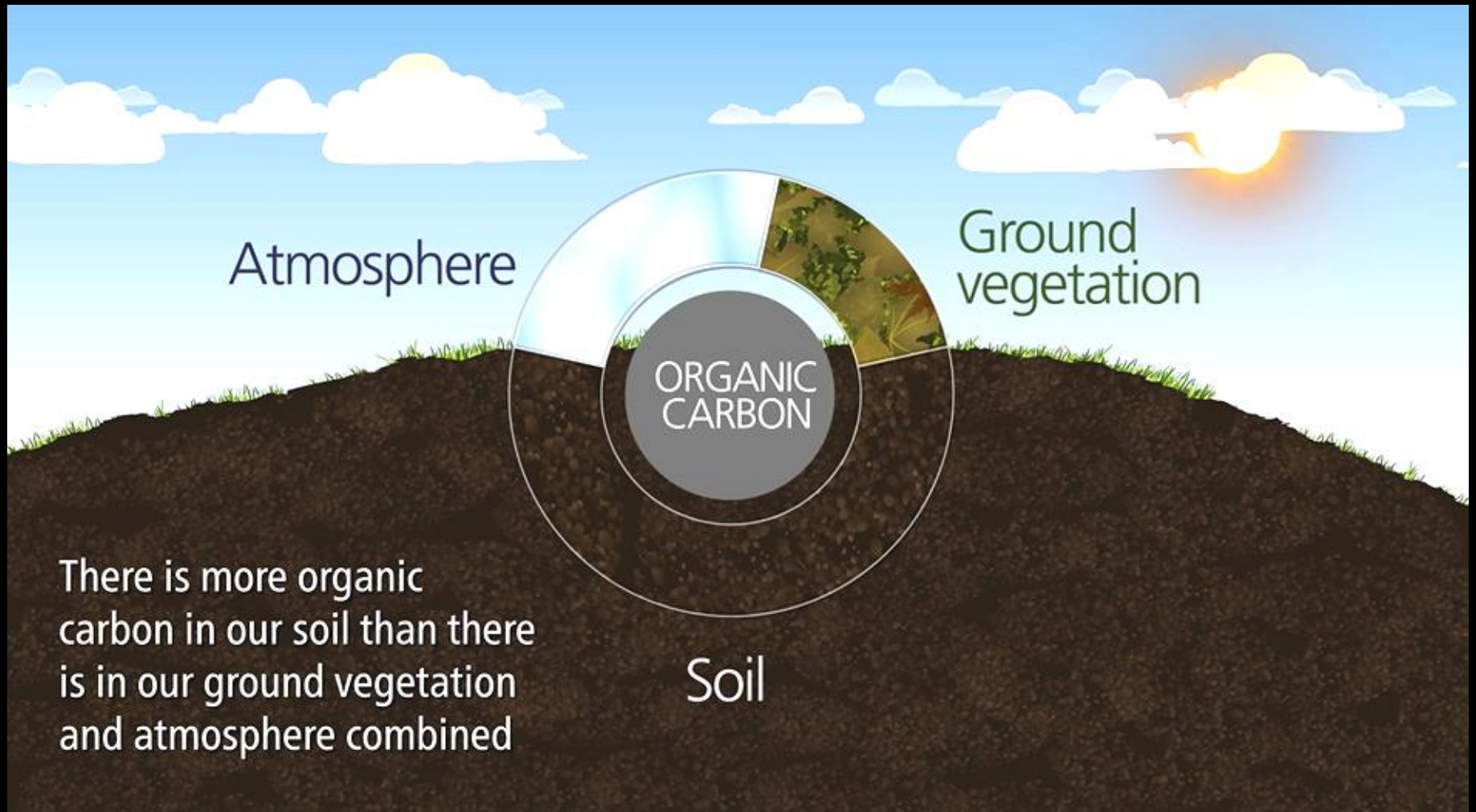
2 400 BILLION  
TONS OF CARBON



9 BILLION TONS  
OF CARBON



<https://environmentaljusticetv.wordpress.com/2017/05/13/soils-climate/>



<https://environmentaljusticetv.wordpress.com/2015/07/01/soils-our-ally-against-climate-change/>

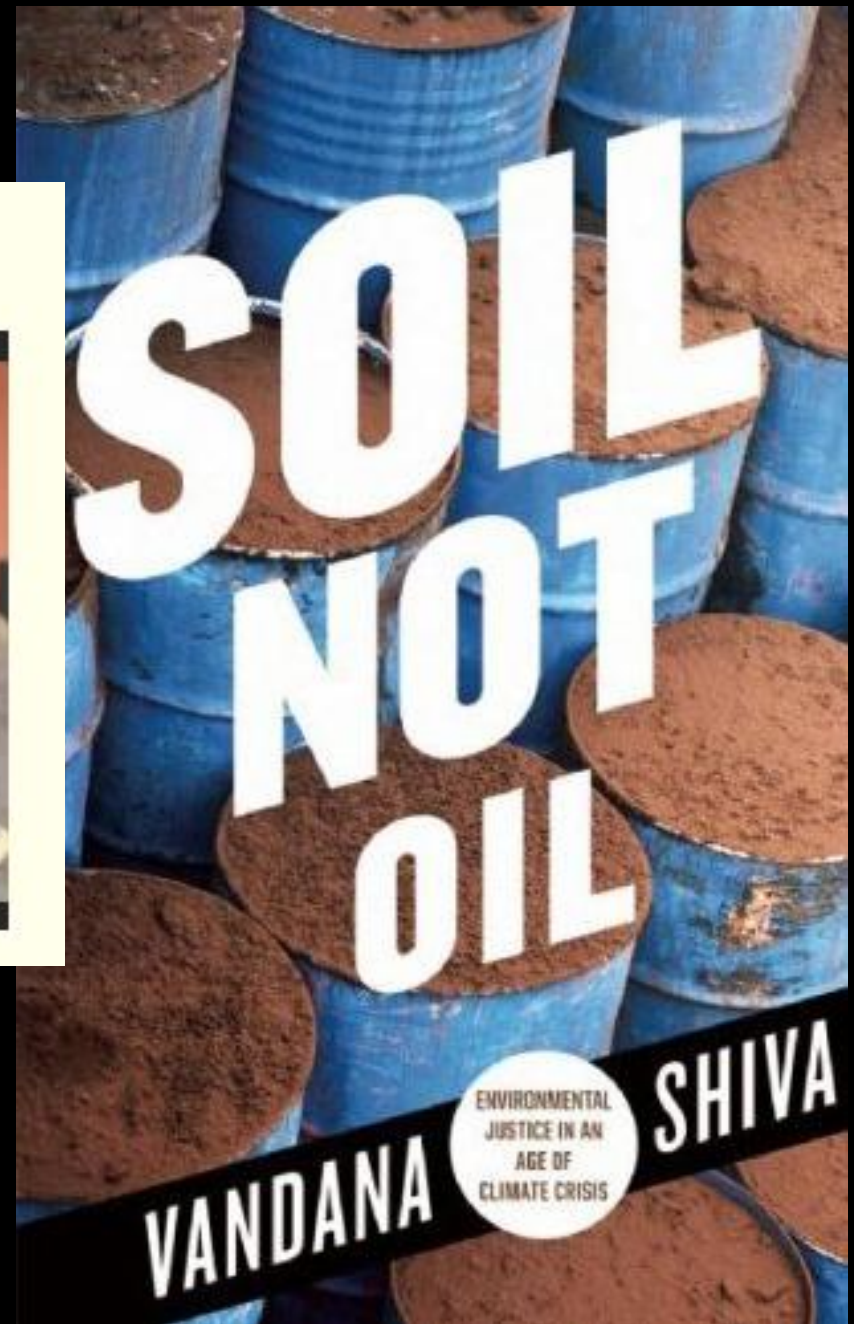


## It's in the Soil

Posted on February 20, 2013 | [Leave a comment](#) | [Edit](#)



**Vandana Shiva**  
Dehradun  
Environmentalist and Author



<https://environmentaljusticetv.wordpress.com/2013/02/20/its-in-the-soil-3/>



# Soil NOT Oil

International Environmental Conference

August 5th – 6th, 2016 Richmond, California

Soil Not Oil Conference ~ Dr. Vandana Shiva Key...





International Environmental Conference

August 5th – 6th, 2016 Richmond, California

<https://environmentaljusticetv.wordpress.com/2016/11/16/soil-not-oil-conference-dr-vandana-shiva-keynote-speaker-2/>

Our soils are a global treasure!  
That took millions of years to create

**Symphony of the Soil – UN International Year of the Soils**

Posted on December 3, 2015 at 11:52 AM

**Symphony of the Soil - UN International Year of the Soils**

from Lily Films

*Symphony of  
the Soil*

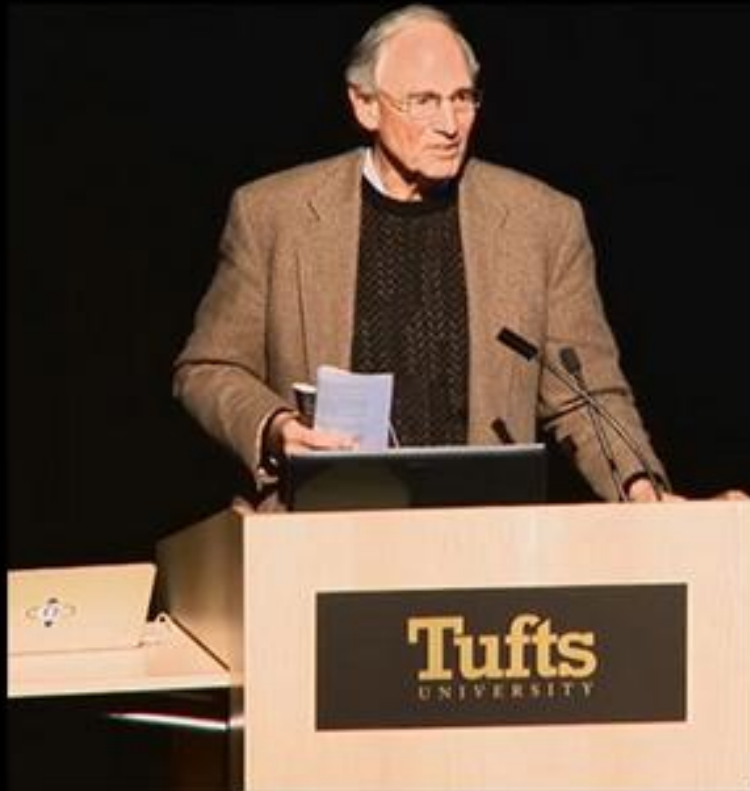


<https://vimeo.com/112879294>

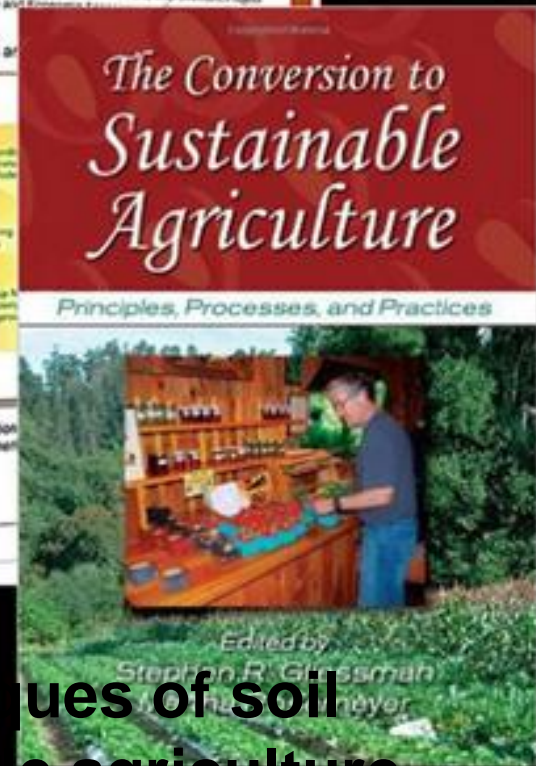
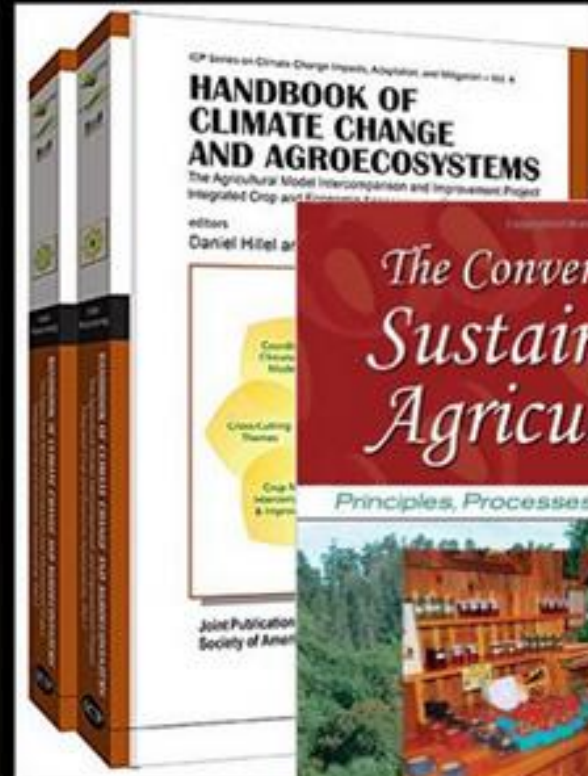
<https://environmentaljusticetv.wordpress.com/2015/07/07/symphony-of-the-soil/>

# Restorative Development:

## Sustainable Agriculture and the Climate Crisis



Professor William Moomaw



...ues of soil  
...e agriculture

# William Moomaw – Climate Advocacy: From Grassroots Activism to International Policy

Posted on [March 16, 2015](#) | [Leave a comment](#) | [Edit](#)





# Climate Change and the Structure of the Global Food System



The Transition Toward a Sustainable Agriculture

<https://environmentaljusticetv.wordpress.com/2016/10/23/climate-change-and-the-structure-of-the-global-food-system-the-transition-toward-a-sustainable-agriculture-cambridge-community-television-ev-n-227-cctv/>

# Soil Solutions to Climate Problems – Narrated by Michael Pollan

Posted on [December 8, 2015](#) | [Leave a comment](#) | [Edit](#)



<https://environmentaljusticetv.wordpress.com/2017/04/01/soil-solutions-to-climate-problems-narrated-by-michael-pollan-3/>

# But, what if we change the paradigm?

## #1 What if we change – Hope in a Changing Climate by John D. Liu

Posted on [July 15, 2015](#) | [Leave a comment](#) | [Edit](#)



<https://environmentaljusticetv.wordpress.com/2015/07/15/1-what-if-we-change-hope-in-a-changing-climate-by-john-d-liu/>

# Restoration Writ Large: Unleashing the Potential of Nature and People for Large-Scale Ecosystem Restoration : John Liu

Posted on [November 17, 2014](#) | [Leave a comment](#) | [Edit](#)



<https://environmentaljusticetv.wordpress.com/2014/11/17/restoration-writ-large-unleashing-the-potential-of-nature-and-people-for-large-scale-ecosystem-restoration-john-liu/>





Human beings are a keystone species that  
can steward the regeneration of our planet.

Join us.



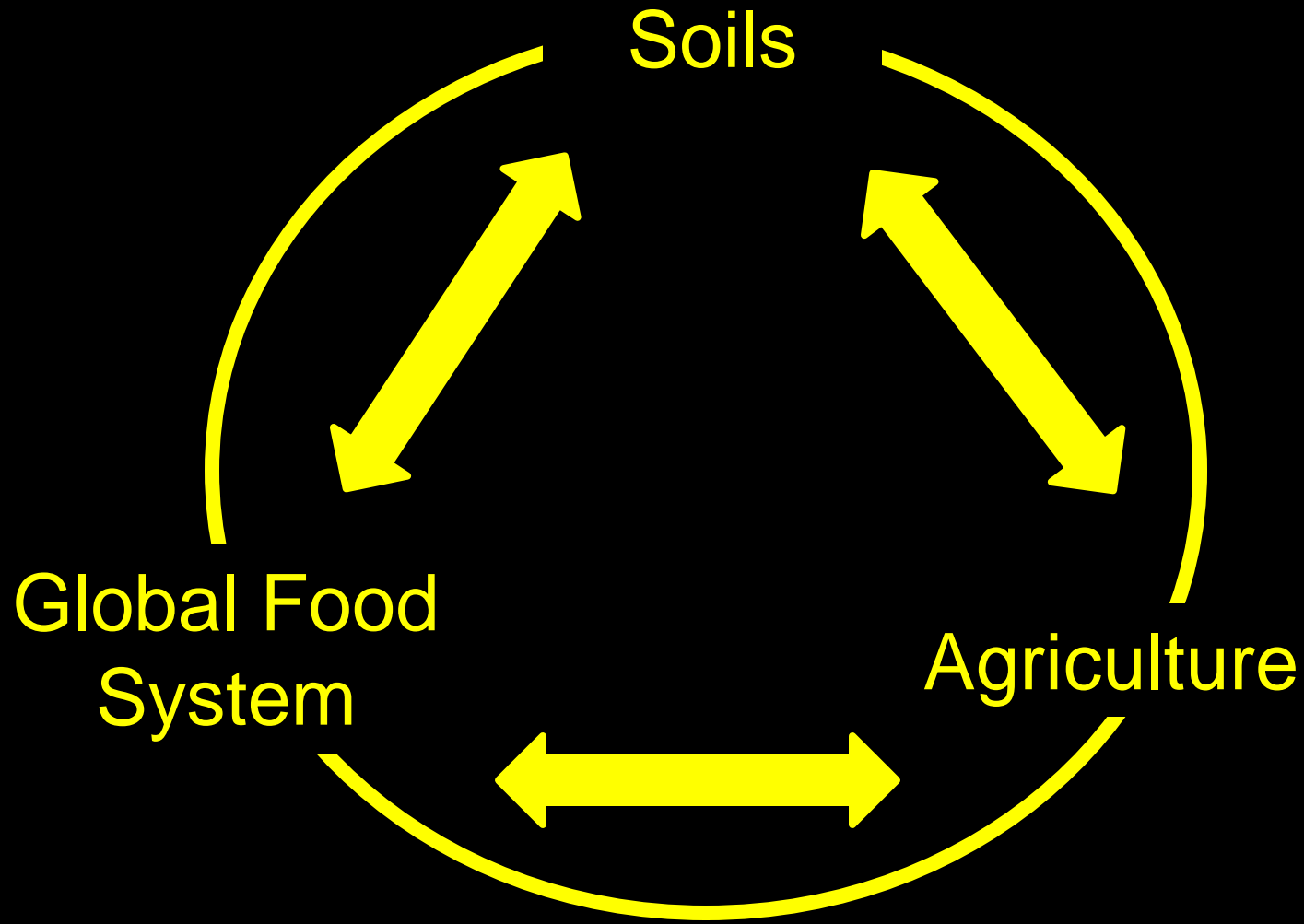


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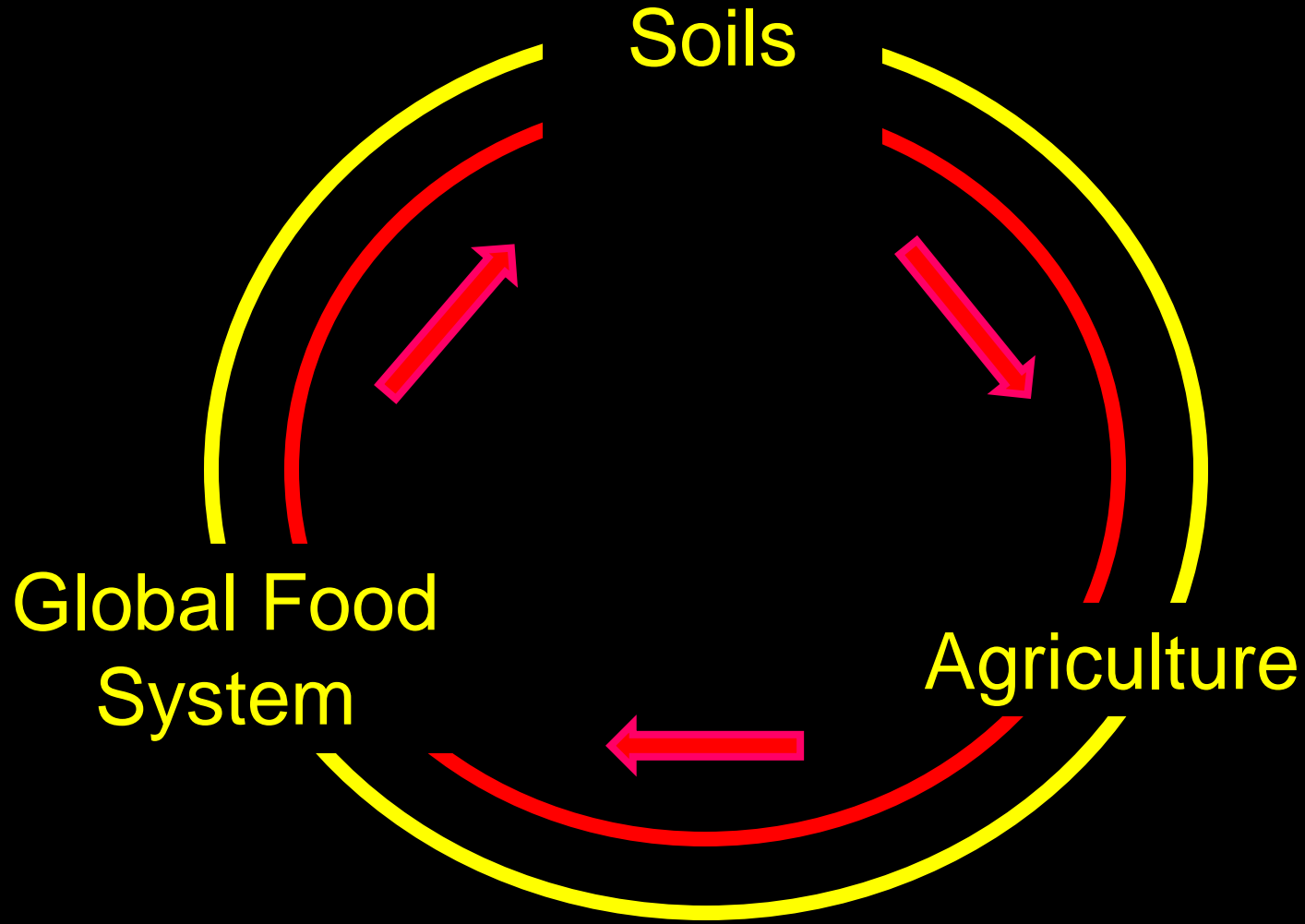
Join us.

*“We don’t grow plants. We grow soil, and  
soil grows plants.”*

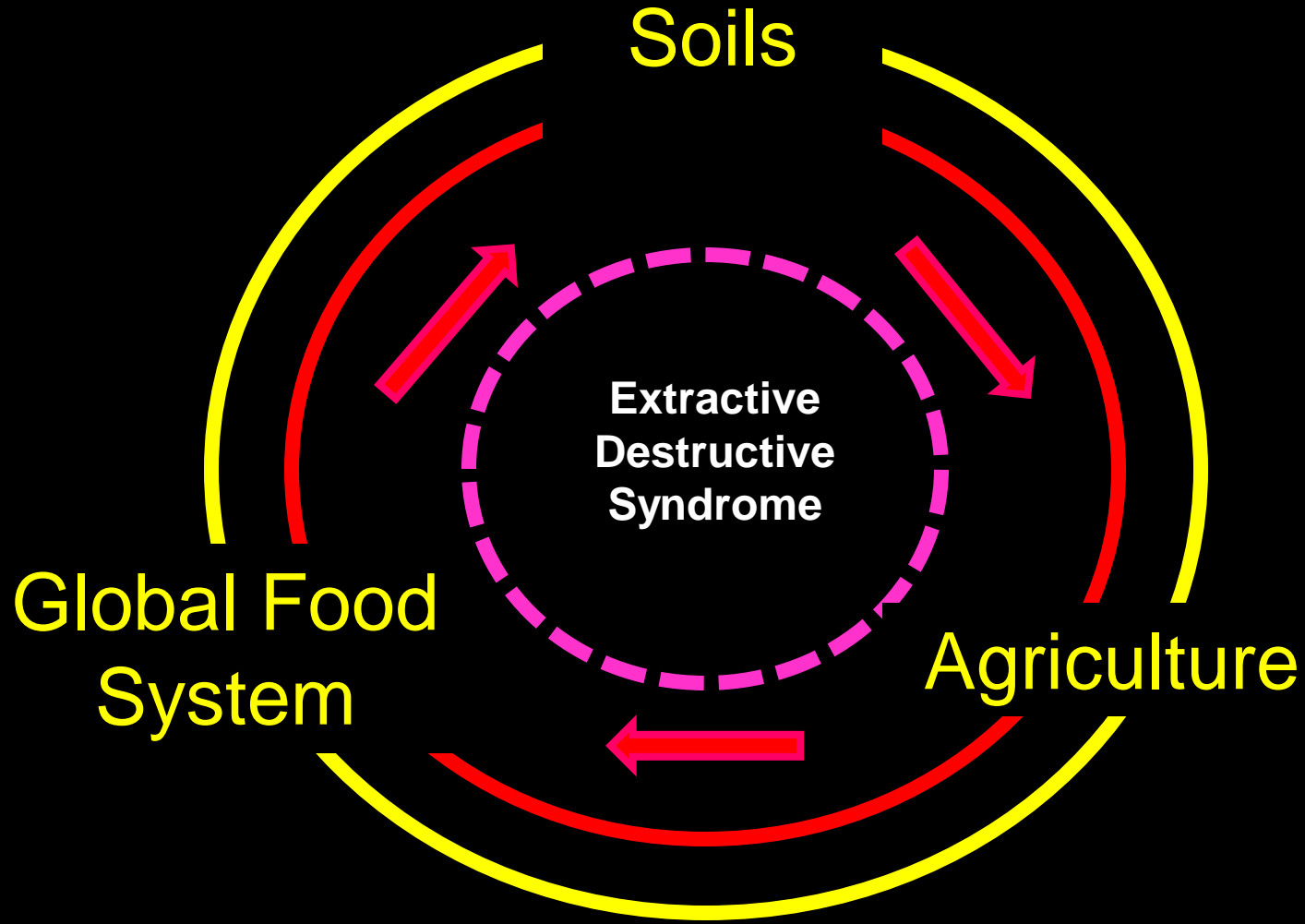
# Climate Change



# Climate Change

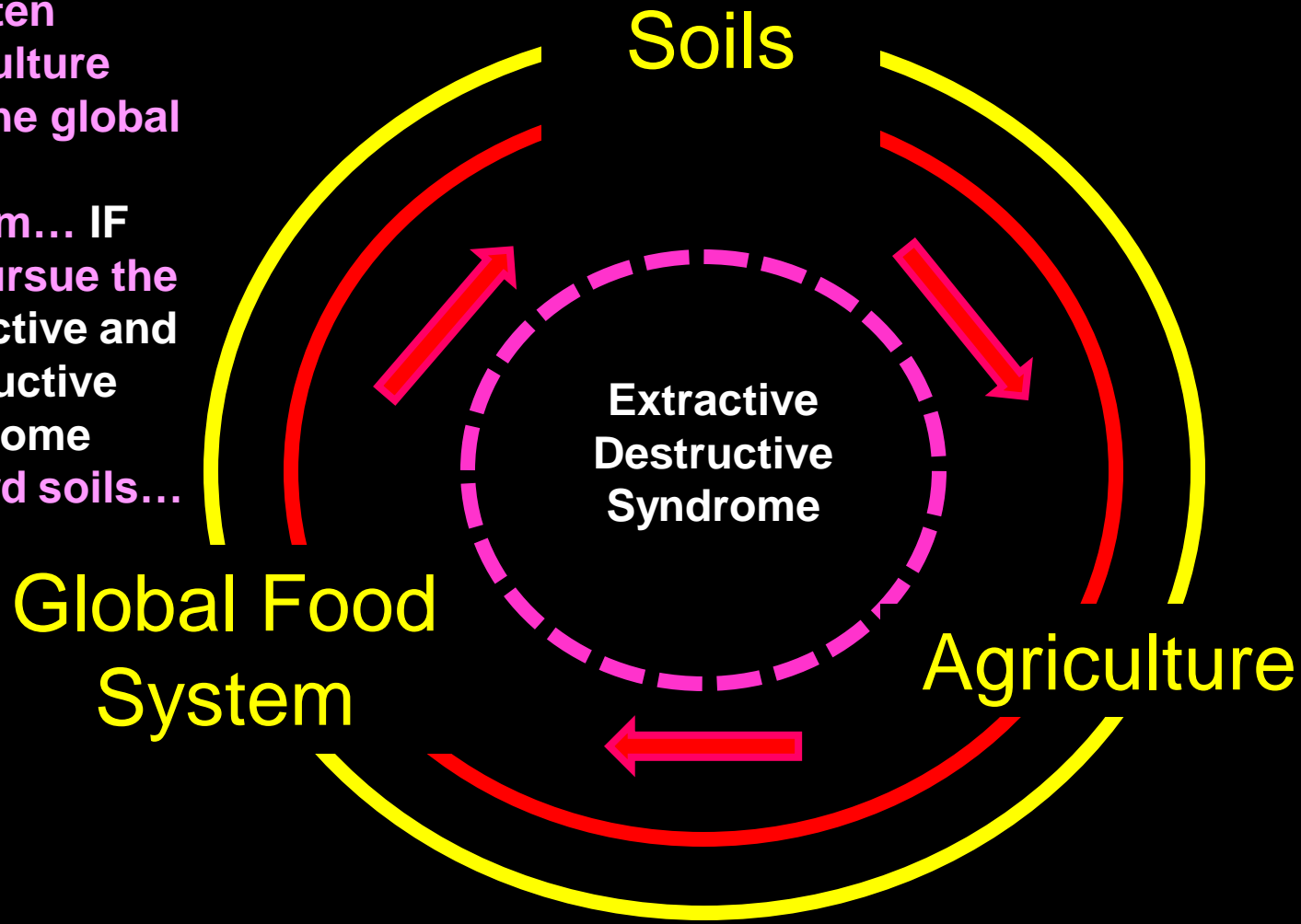


# Climate Change



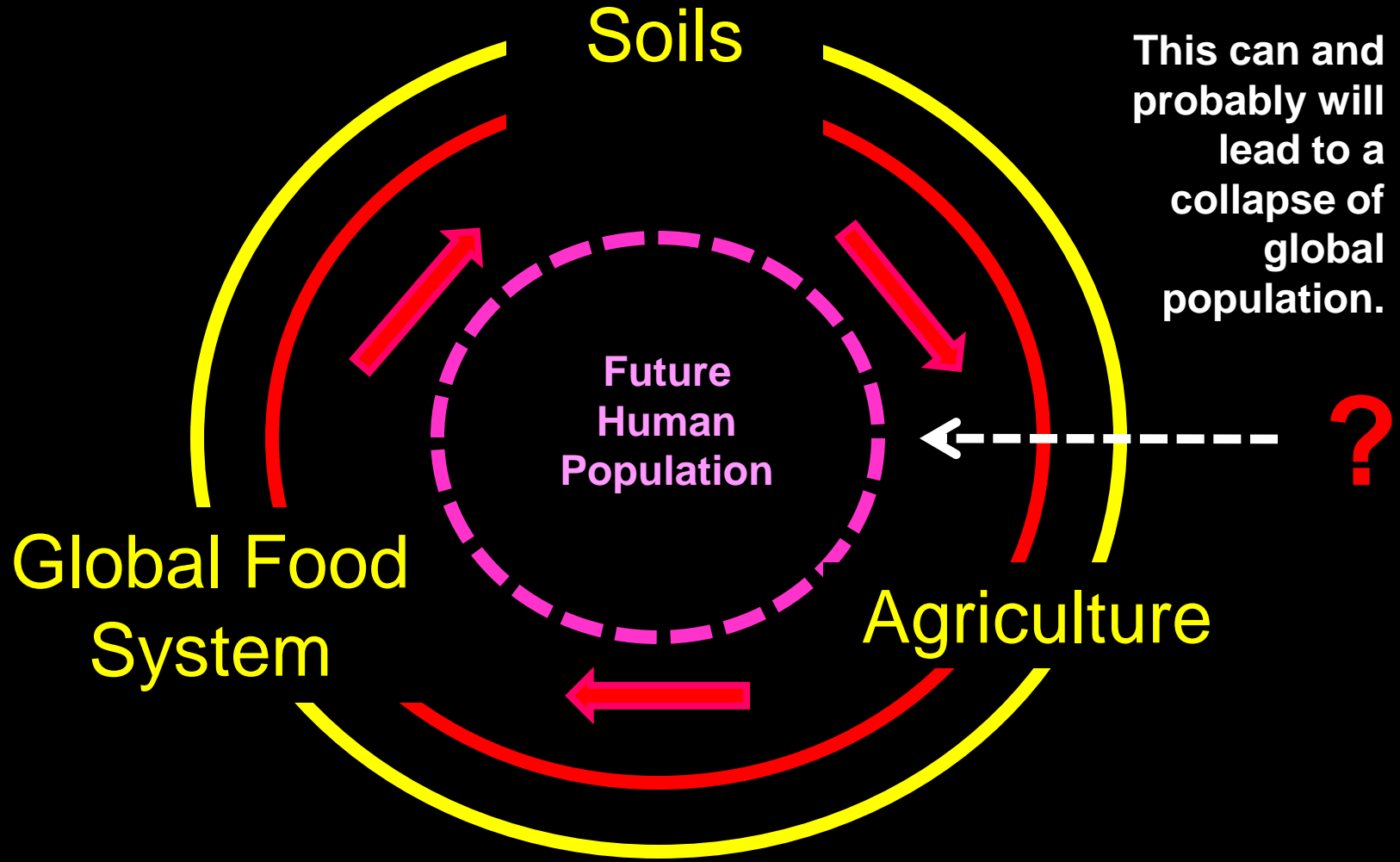
# Climate Change

Climate change will threaten agriculture and the global food system... IF we pursue the extractive and destructive syndrome toward soils...

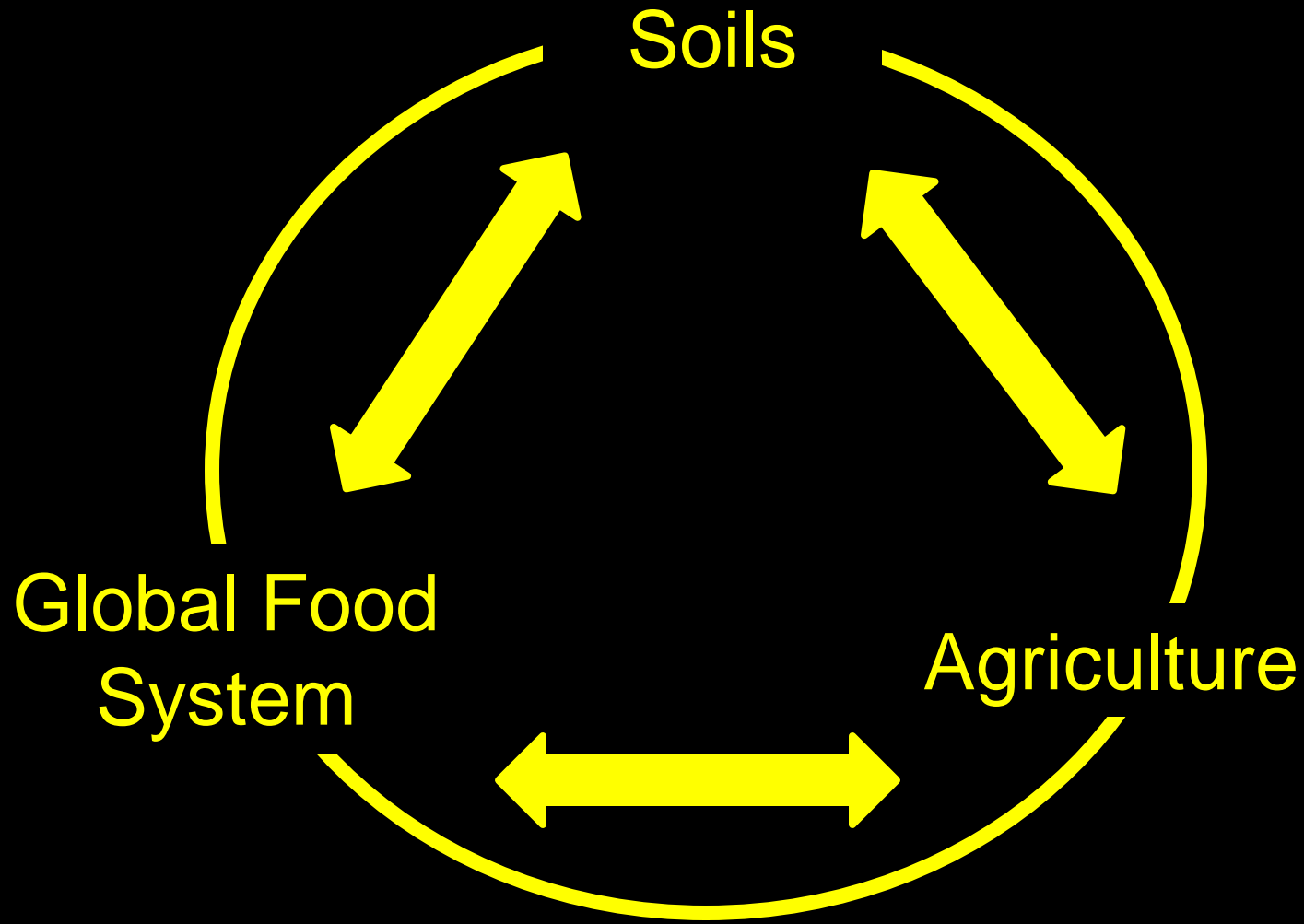




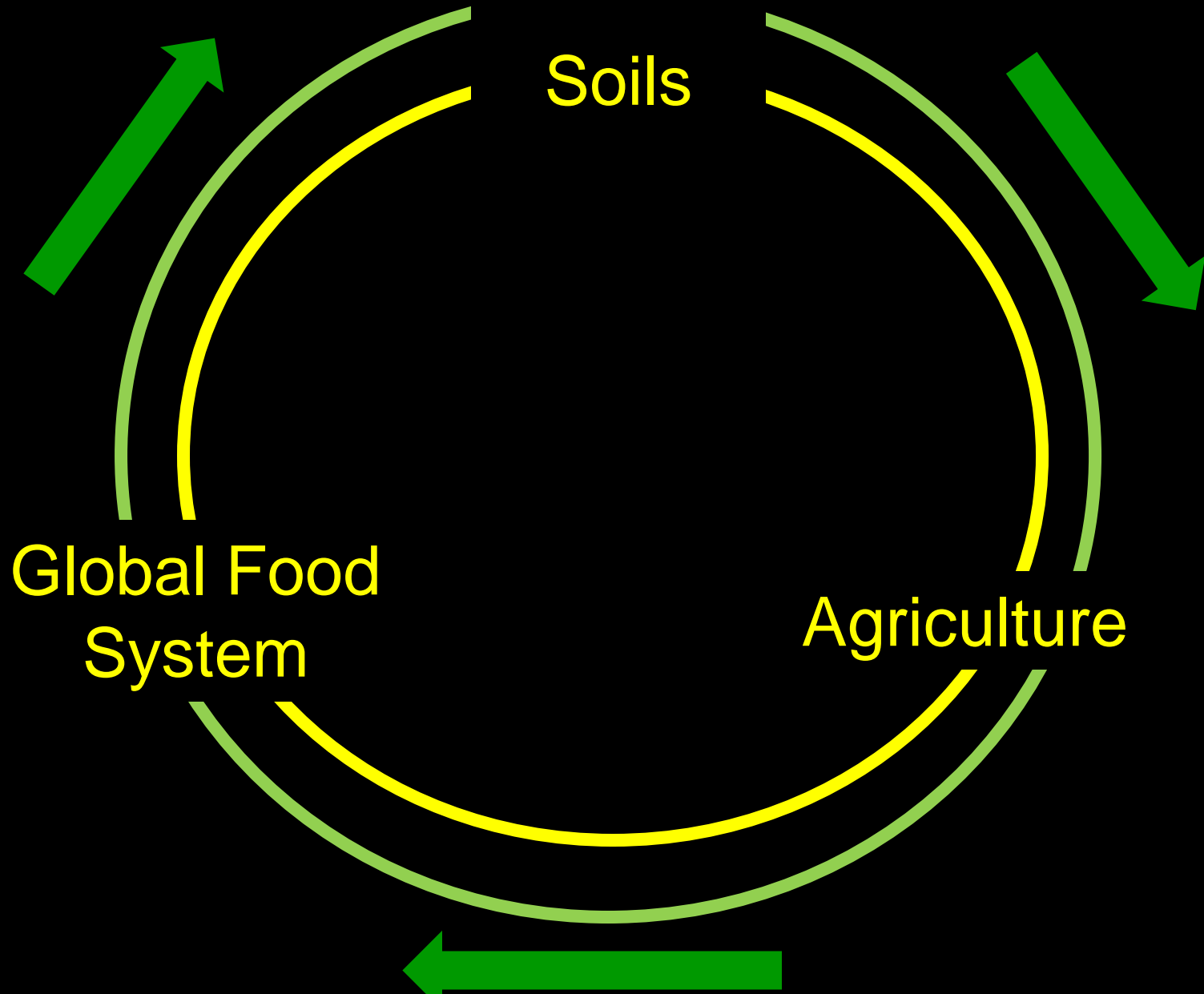
# Climate Change



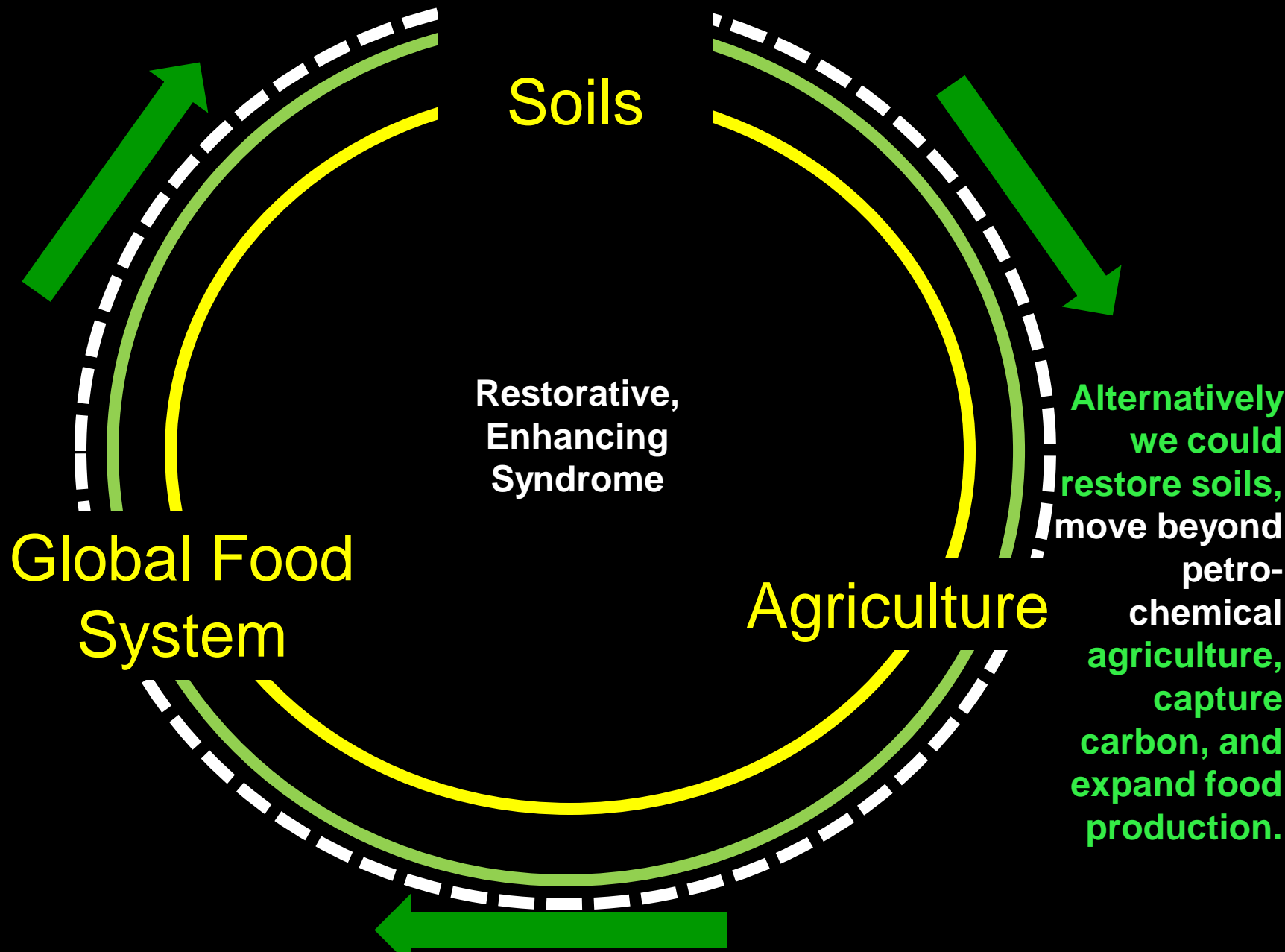
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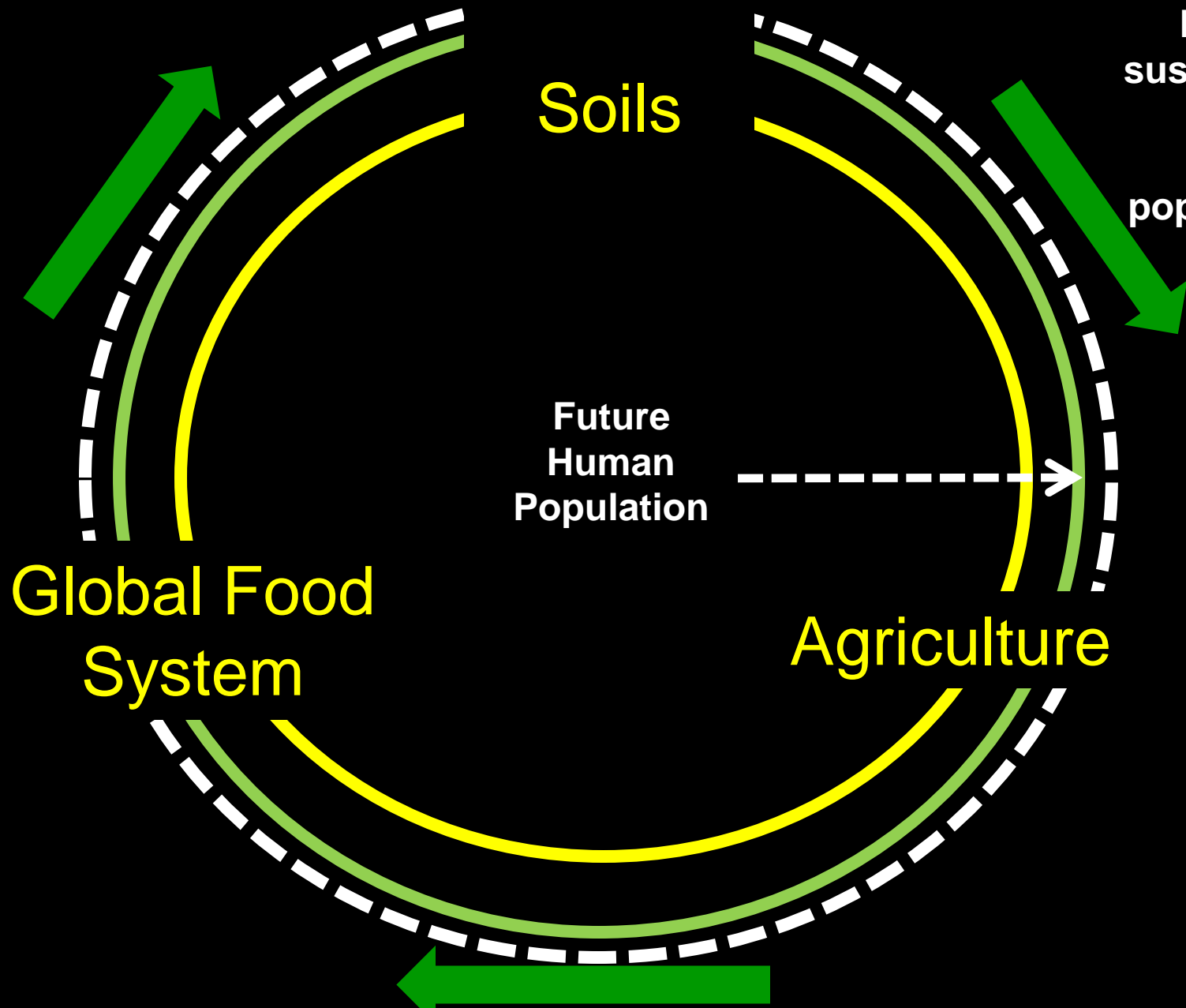
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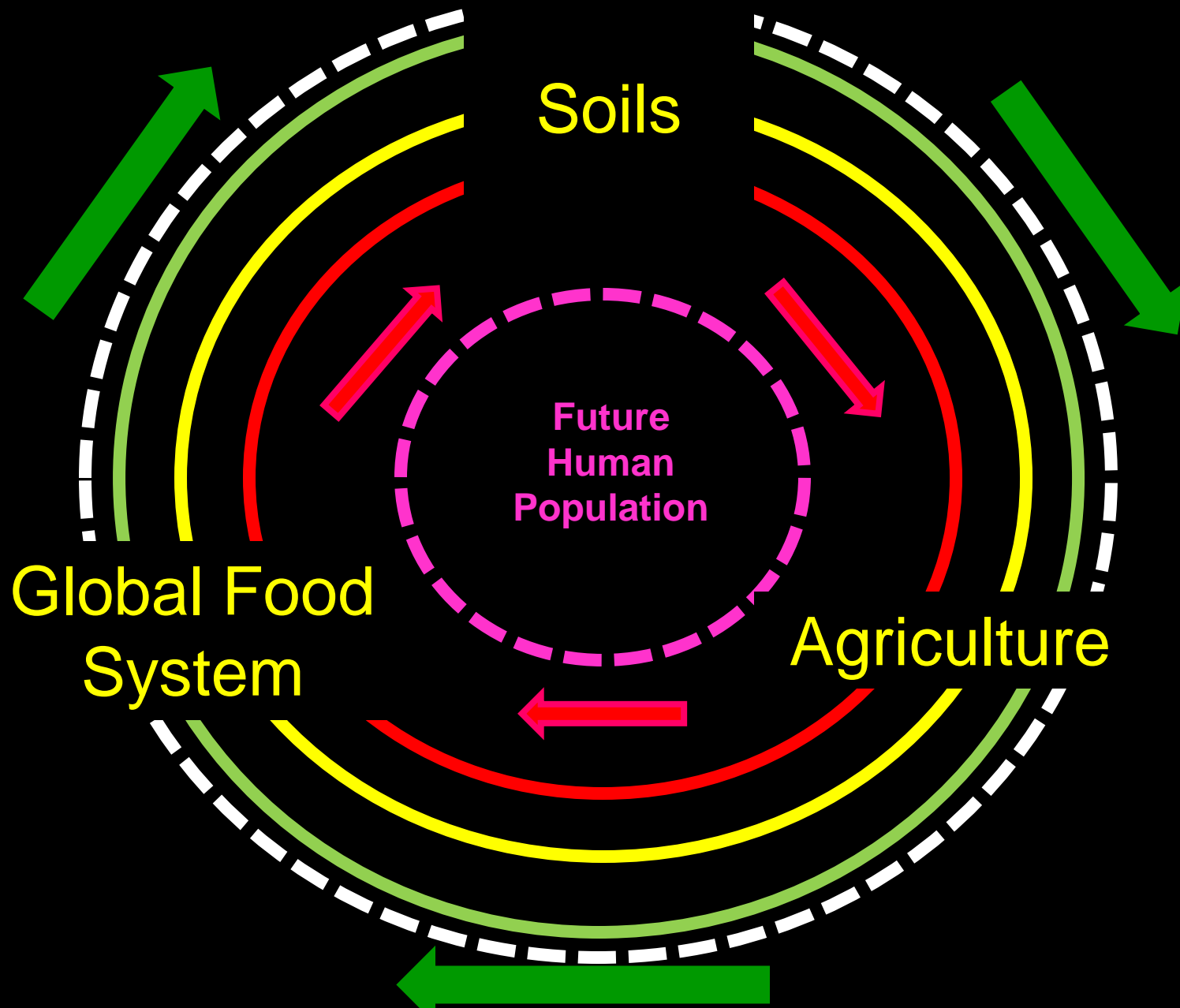


This could lead to a sustainable level of human population.

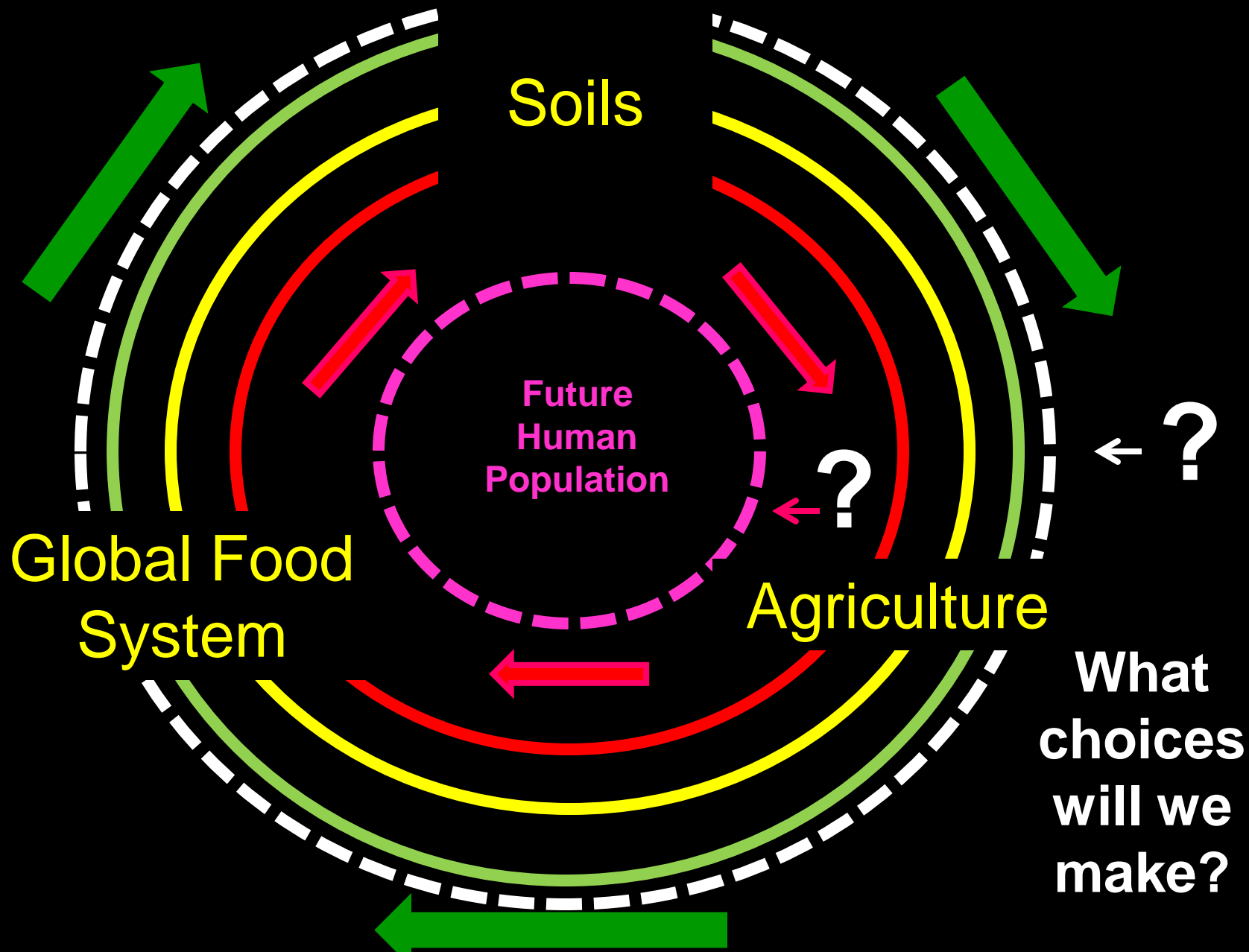




# Climate Change



# Climate Change



# This may sound good... but is it “sustainable” or suicidal?

## Sustainable Agriculture – According to Monsanto

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<https://environmentaljusticetv.wordpress.com/2018/07/31/sustainable-agriculture-according-to-monsanto/>

# Secret Documents Expose Monsanto's War on Cancer Scientists

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## Secret Documents Expose Monsanto's War on Cancer Scientists



July 17, 2018

U.S. Right to Know

by Stacy Malkan

[All About Organics](#), [Health Issues](#)

DeWayne Johnson, a 46-year-old father dying of non-Hodgkin lymphoma, became the first person to face [Monsanto in trial last week](#) over allegations the company hid evidence about the cancer-causing dangers of its Roundup weedkiller. Johnson is the first of some 4,000 people suing [Monsanto in state and federal courts](#) claiming their cancers were caused by [glyphosate-based Roundup](#). The litigation, and documents coming to light because of it, are shining light on the heavy-handed tactics

**Bloomberg Businessweek**

Monsanto Was Its Own  
Ghostwriter for Some Safety  
Reviews

Markets

**EPA Official Accused of Helping  
Monsanto 'Kill' Cancer Study**

Chairman of UN's joint meeting on pesticide residues co-runs  
scientific institute which received donation from Monsanto,  
which uses glyphosate

**The  
Guardian**

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## Monsanto Manipulates Science to Make Roundup Appear Safe

Unsealed court documents demonstrate Monsanto's strategy for twisting the science surrounding Roundup.



# Why 'Monsanto' is no more



People hold signs during a demonstration against agribusiness giant Monsanto in 2015. (Nicholas Kamen, AP//Getty Images)

By Caitlin Dewey June 4 [✉](#) Email the author

# Bayer-Monsanto merger plan protests

Posted on [March 3, 2018](#) | [Leave a comment](#) | [Edit](#)



<https://environmentaljusticetv.wordpress.com/2018/03/03/bayer-monsanto-merger-plan-protests/>

\$15 Billion

MONSANTO



<https://environmentaljusticetv.wordpress.com/2018/08/01/monsanto-the-company-that-owns-the-worlds-food-supply-youtube/>



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<https://environmentaljusticetv.wordpress.com/2018/07/31/sustainable-agriculture-according-to-monsanto/>

In a time of climate change, the concentrated ownership of the world's agricultural resources in the hands of a small number of large corporations is ecologically and economically dangerous.

**Monsanto and Bayer merge, drop the Monsanto name – Business Insider**

Posted on [August 7, 2018](#) | [Leave a comment](#)

**After a \$66 billion merger, Monsanto is disappearing — sort of**



Jim Young/Reuters



WORLD NEWS AUGUST 2, 2018 / 7:25 AM / UPDATED 11 HOURS AGO

# Sanctions-hit North Korea warns of natural disaster brought by heat wave

Hyonhee Shin

5 MIN READ



SEOUL (Reuters) - North Korea on Thursday called for an “all-out battle” against record temperatures that threaten crops in a country already grappling with tough international sanctions over its nuclear weapons program.

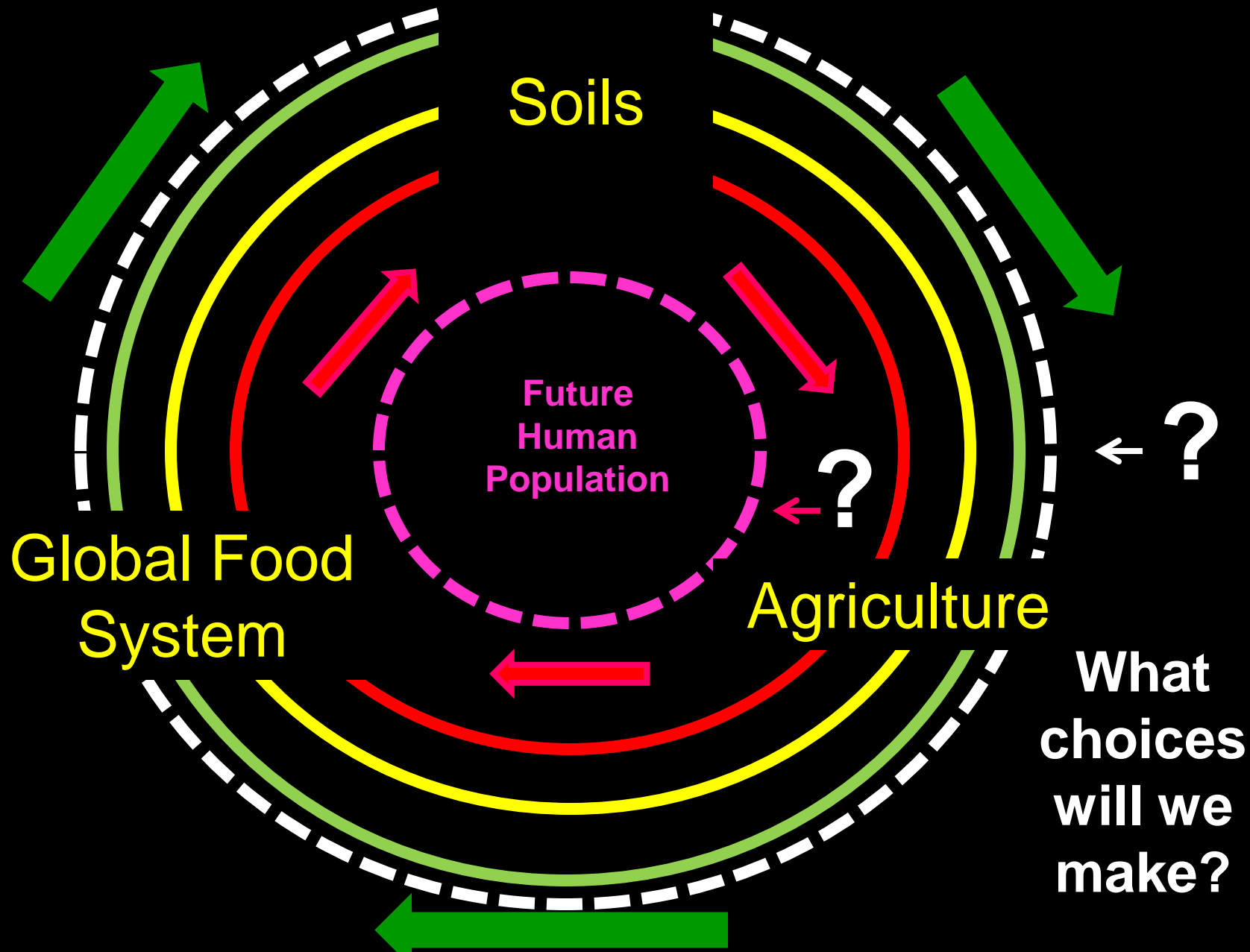


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# Climate Change



# Additional Resources...

... for further information and research links  
on the topic of:

Climate Change, Soils, Agriculture and the  
Global Food System

See:

[Additional Resources for](#)

[Session 4 Lecture - 2 August 2018](#)

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# Climate Change and Transition Studies

An Interactive Online Learning Initiative

Designed for IvyMind Consulting, LLC  
as a project of the

Young Scholars' Online Learning Initiative

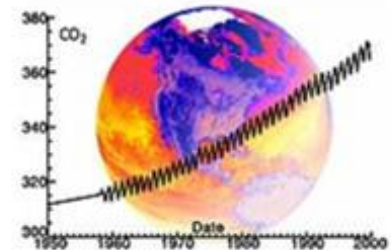
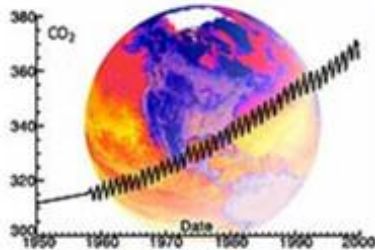
created by

Timothy C. Weiskel

Research Director, *Cambridge Climate Research Associates*

**Climate Science for Human Survival**

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## Session 4

# Climate Change, Soils, Agriculture and the Global Food System

2 August 2018

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