"How Can Building Upon Circular Economies Help Us To Accelerate The Transition To Equitable, Sustainable, Livable, Post-Fossil Carbon Societies?"

Sustainable Circularity Symposium

April 4, 2019

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Impact Factor 2017 5.715

Overview of this Presentation

- **What are the Roles of Crises as Motivators for People to Change to*, Equitable, Sustainable, Livable, Post-Fossil Carbon Societies?***

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- What are the Roles of **Crises** as Motivators for People to Change to, ***Equitable, Sustainable, Livable, Post-Fossil Carbon Societies?***
- What are the Roles of **Good Examples** to Motivate People to change to ***Equitable, Sustainable, Livable, Post-Fossil Carbon Societies?***

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- What are the Roles of **Good Examples** to Motivate People to make ***Changes to Equitable, Sustainable, Livable, Post-Fossil Carbon Societies?***
- What are the Roles of **Alternative Paradigms** and Indicators as Motivators for People to make ***Changes to Equitable, Livable, Sustainable, Post-Fossil Carbon Societies?***

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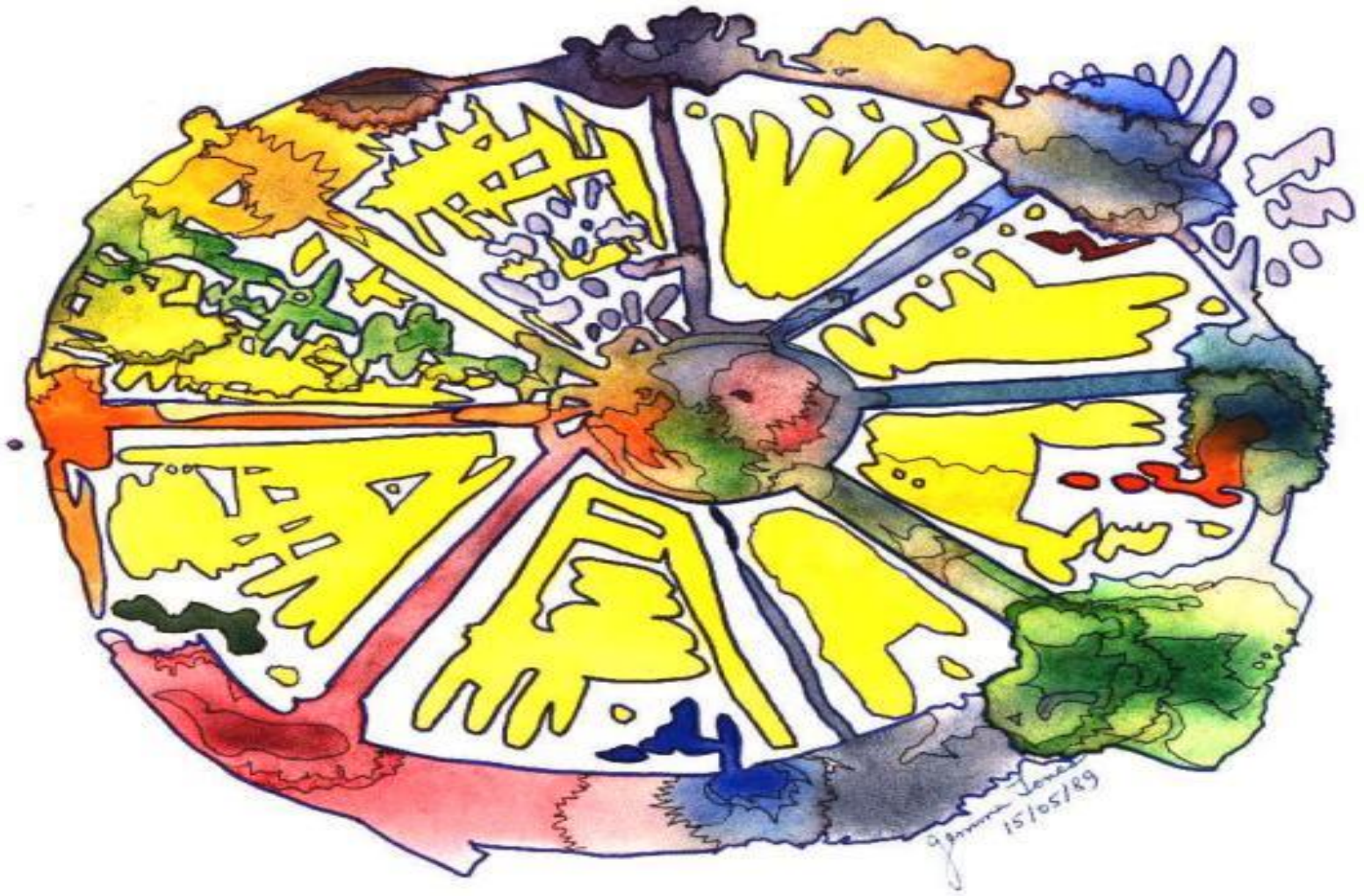
- What are the Roles of CHANGE AGENTS as Motivators for People to make ***Changes to Equitable, Livable, Sustainable, Post-Fossil Carbon Societies?***

Where Are We and Where Are We Going?



What is Ahead on our Road to the Future?

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- ***What do we envision for a sustainable future society?***

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  - ***How will we know if we achieve such societies?***
  - ***How will we know if we don't achieve such societies?***


Nichols Cyn Rd
2015

What is Ahead on our Road to the Future?

- ***What do we envision for a sustainable future society?***

Do we have the vision, wisdom and commitment to catalyze the needed societal transformations from dangers to opportunities????

What is Ahead on our Road to the Future?

- ***What do we envision for a sustainable future society?***

Do we have the vision, wisdom and commitment to catalyze the needed societal transitions?

What indicators, governance, education, values, technologies and economics will be needed to support and monitor the needed transitions?

What can we learn from history?

What can we learn from history?

What can we learn?

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What can we learn?

Can we learn?

According to Meadows what are common elements of all systems?

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- They interact with other systems in complex and often surprising ways;
- ***They have information.***

Where is the Information Hidden in Eco-systems??

Where is the Information

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It is hidden within the genes of each species.

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Why is That Essential for Human Survival?

We are now in a period of mass species extinction.

104 species become extinct every day!

We must find solutions for these problems?

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Why and How should Eco-System Information be Integrated into Circular Economies?

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- **What are the Roles of Crises as Motivators for People to Change to, *Equitable, Sustainable, Liveable,Post-Fossil Carbon Societies?***

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Crisis

危

Danger

wei

机

Opportunity

Ji

危机

Crisis

weiji

What are the Roles of Crises as Motivators for People to Change to a Post-Fossil Carbon Society?

- Carson's "Silent Spring" – pesticides-(1962)
- Ozone layer thinning- halogenated substances-(1974 -1985)
- Bhopol – (1984)
- Colburn's "Our Stolen Future"- endocrine disrupters-(1995)
- Three Mile Island (1979) Chernobyl (1986) Fukishima (2011) Nuclear reactor meltdowns-
- Smogs and Climate Change (1930 – Present)
- http://www.worldwatch.org/brain/features/timeline/timeline.htm

Unintended Consequences of Some Technological Advances

- **Paul Muller was awarded the Nobel Prize in 1948 for his developmet of DDT.**
- **Thomas Midgley an American inventor.**
- **His two most famous inventions are both now banned because they are dangerous for the world's environment, namely the use of Tetra-ethal lead in petrol (gasoline) and the use of chlorofluorocarbons (CFCs) in refrigerators.**

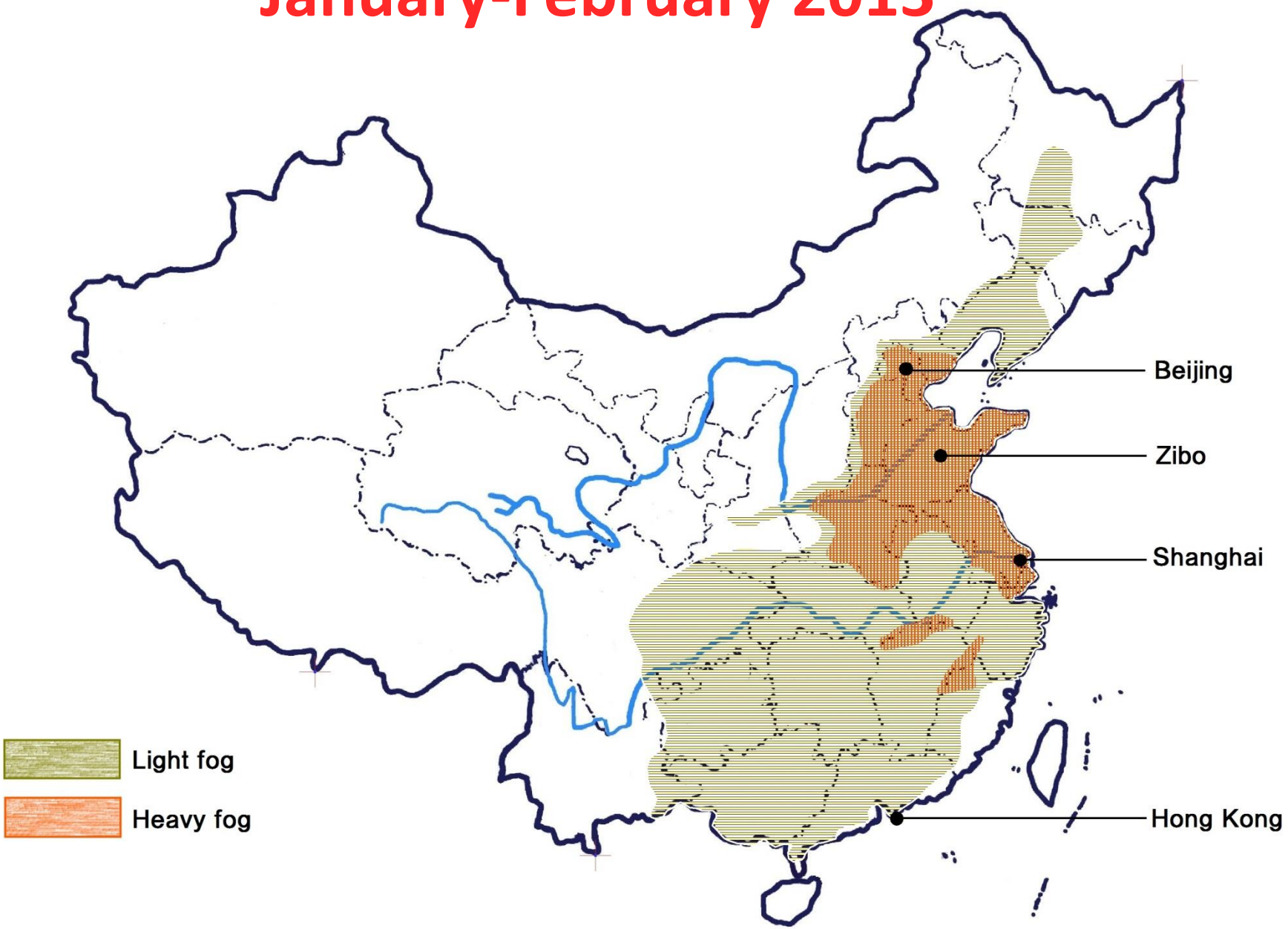
Air Pollution Episodes

- Many of the air pollution challenges that have been addressed were chronic, long-term problems;
- Sometimes we also had short-term smog episodes (Crises!!??)
- Did they motivate us to change?

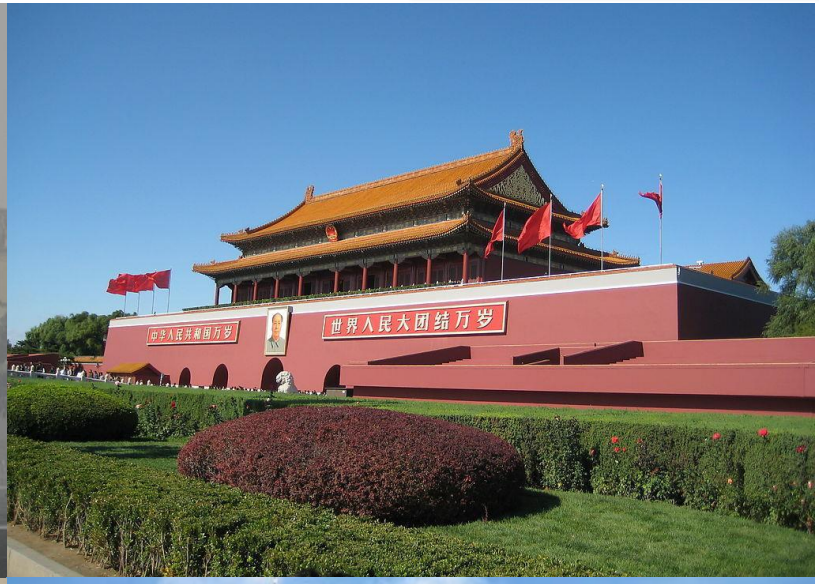
1943	Los Angeles, USA	Photochemical smog
Causes	Emissions of CH, NOx, CO from vehicles, emissions from oil refineries	
Consequences	75% of the citizens were seriously affected by respiratory and eye infections, millions of trees died in the high mountains; $1.5 billion loss due to air pollution	

1952.12.5-9	London, UK	Great Smog
Causes	**CO_2, CO, SO_2, TSP emissions from coal burning; vehicle exhaust—particularly from diesel-fuelled buses; & heavily polluted air from continental Europe**	
Consequences	***Four thousand human deaths* in four days; symptoms: bronchitis, acute respiratory failure, heart failure. *(The Killer SMOG!!)***	

Great Smog of China
January-February 2013



Tian ‘an Men Square

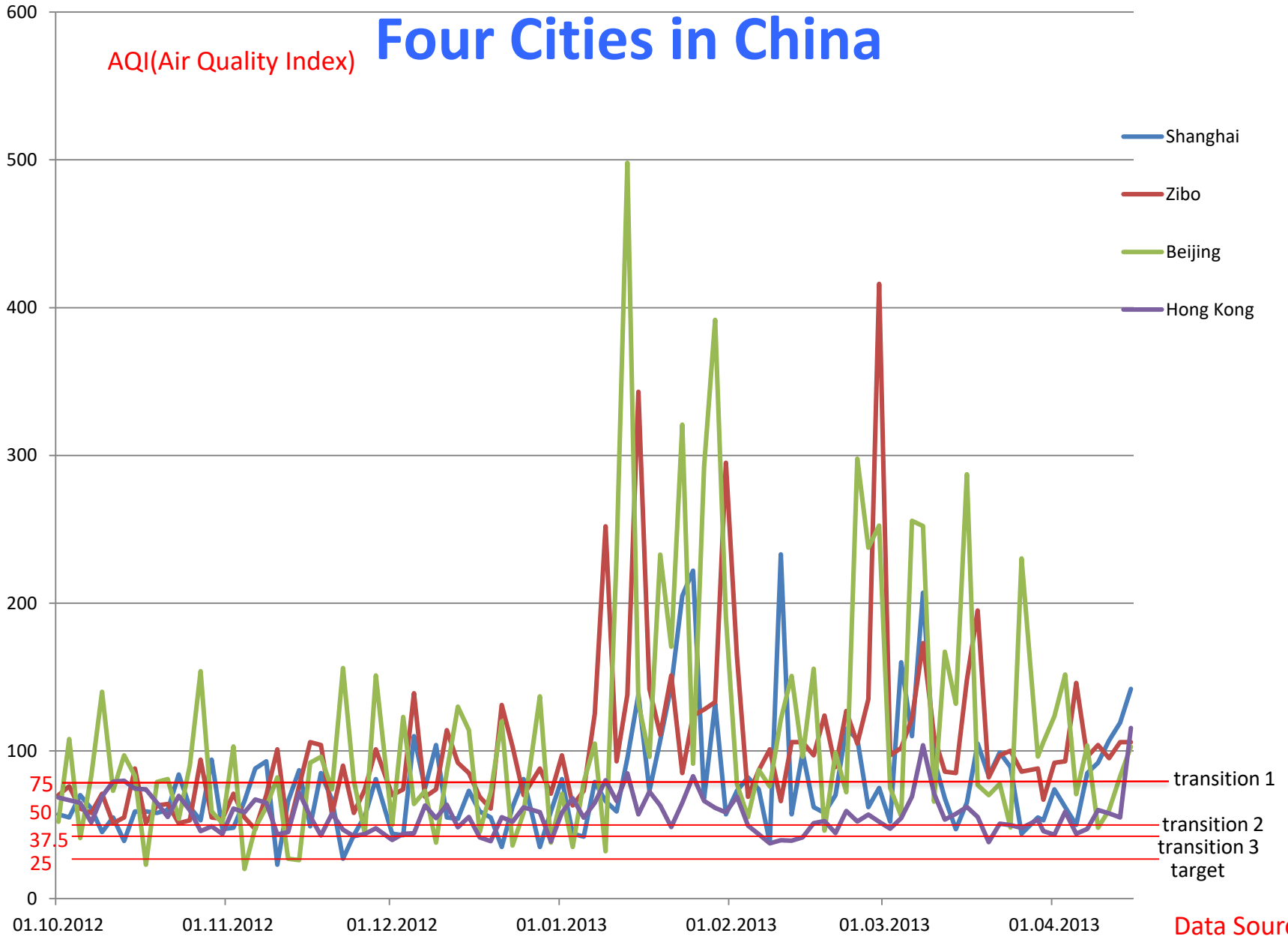


The Oriental Pearl TV Tower

Zibo City

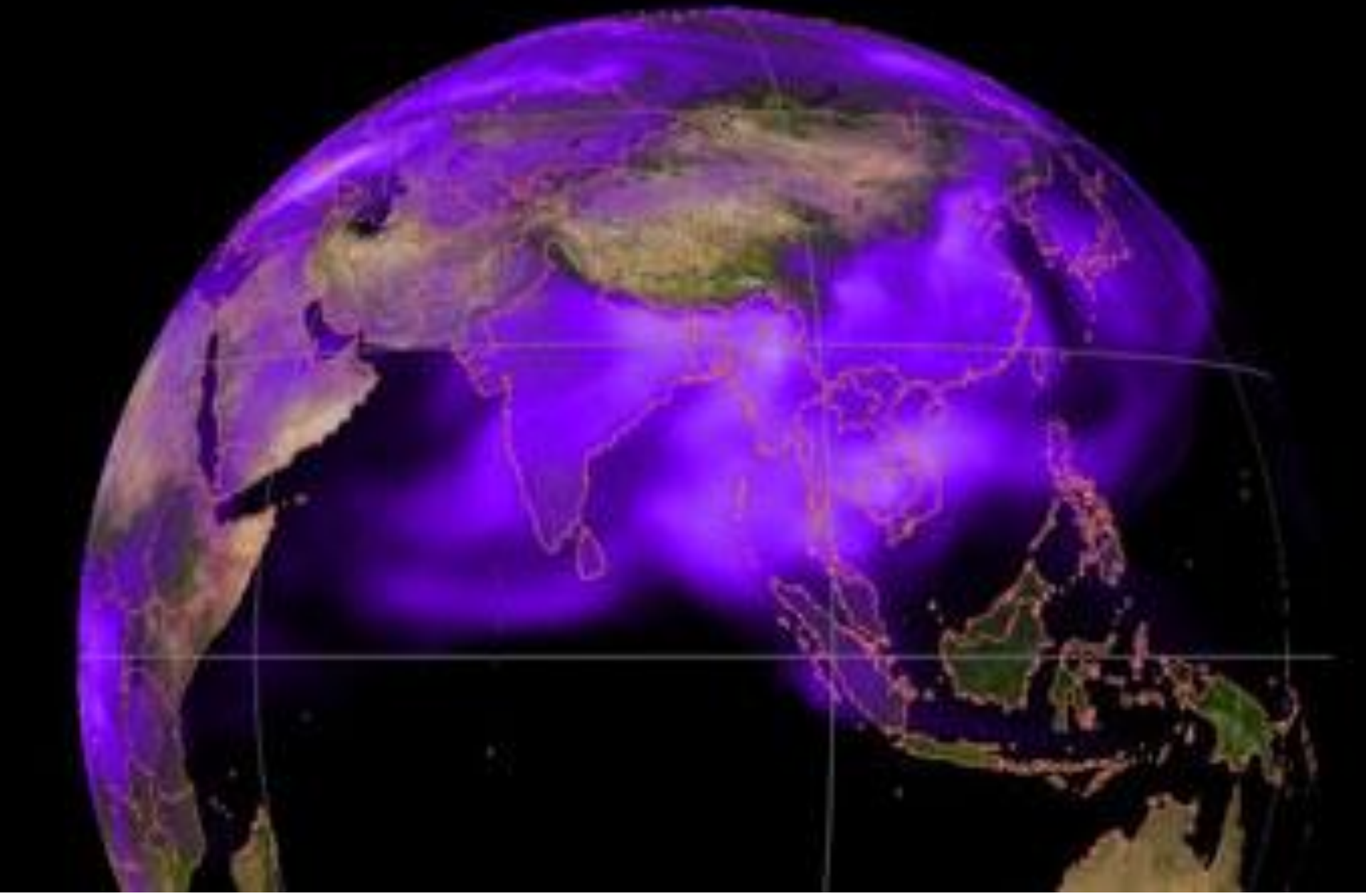
Shandong University

The Air Quality Index of Four Cities in China



Data Source: EPA

Controlled burns release huge amounts of sooty black carbon into the atmosphere.



Black carbon, a short-lived pollutant (shown in purple), shrouds the globe.

How Many People Die Due To Air Pollution Each Year?

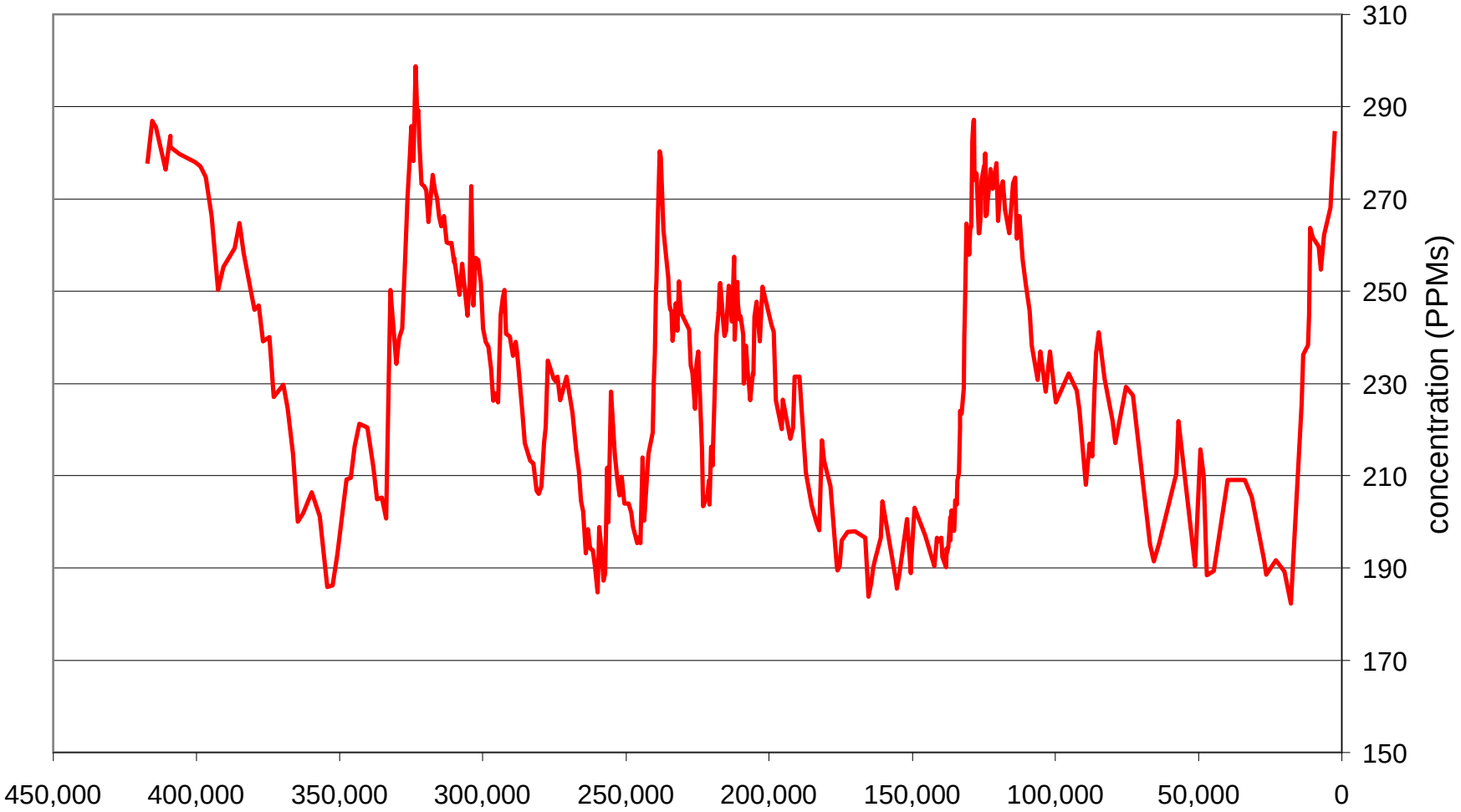
How Many People Die Due To Air Pollution Each Year?

- **Polluted air causes 5.5 million deaths a year new research says**
- According to BBC Science Report February 2016

In What Ways can Circular Economy Systems Be Designed and Implemented to Prevent or Reduce Air Pollution?

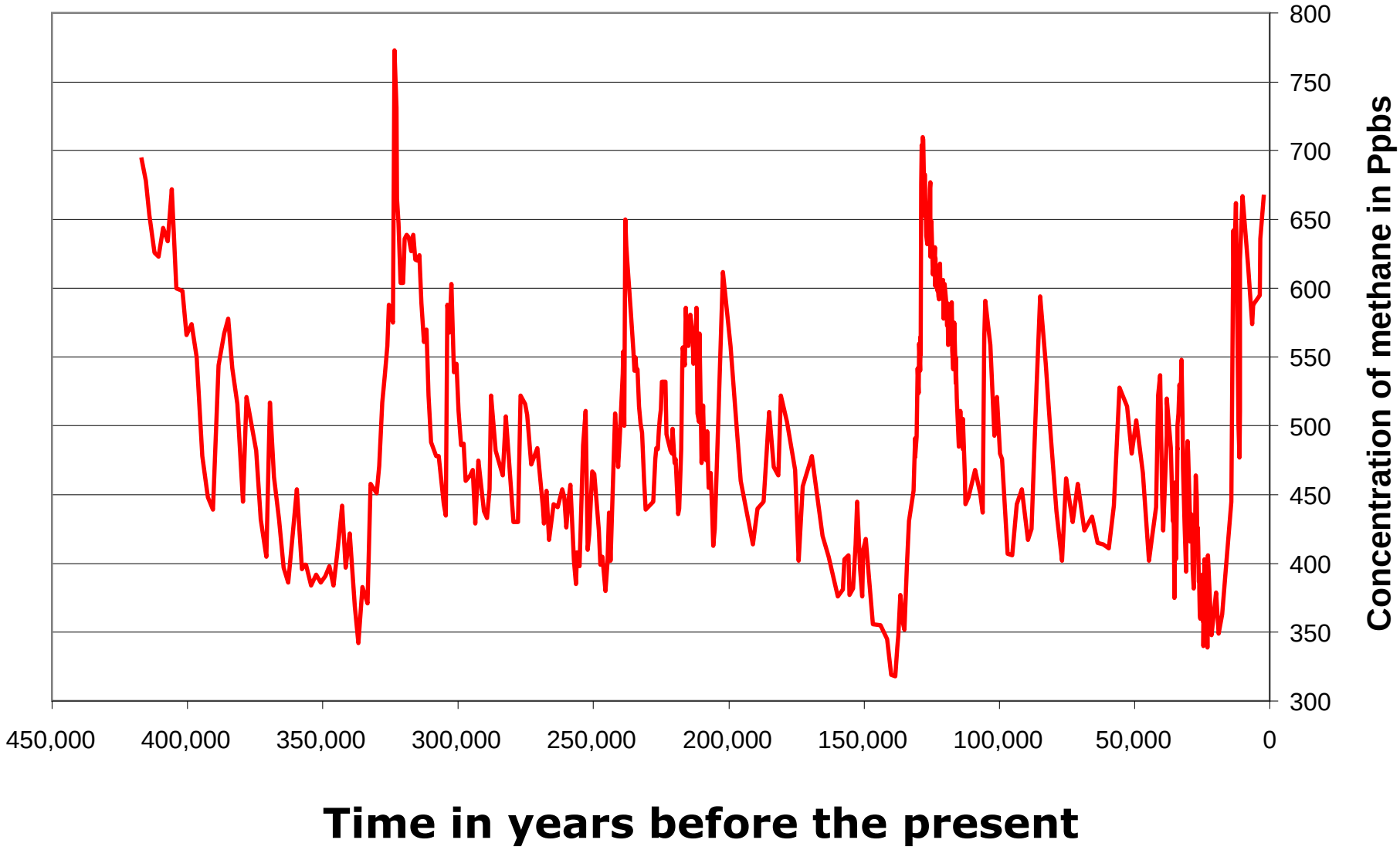
What can we learn from history?

Concentration of Carbon Dioxide in Antarctic ice

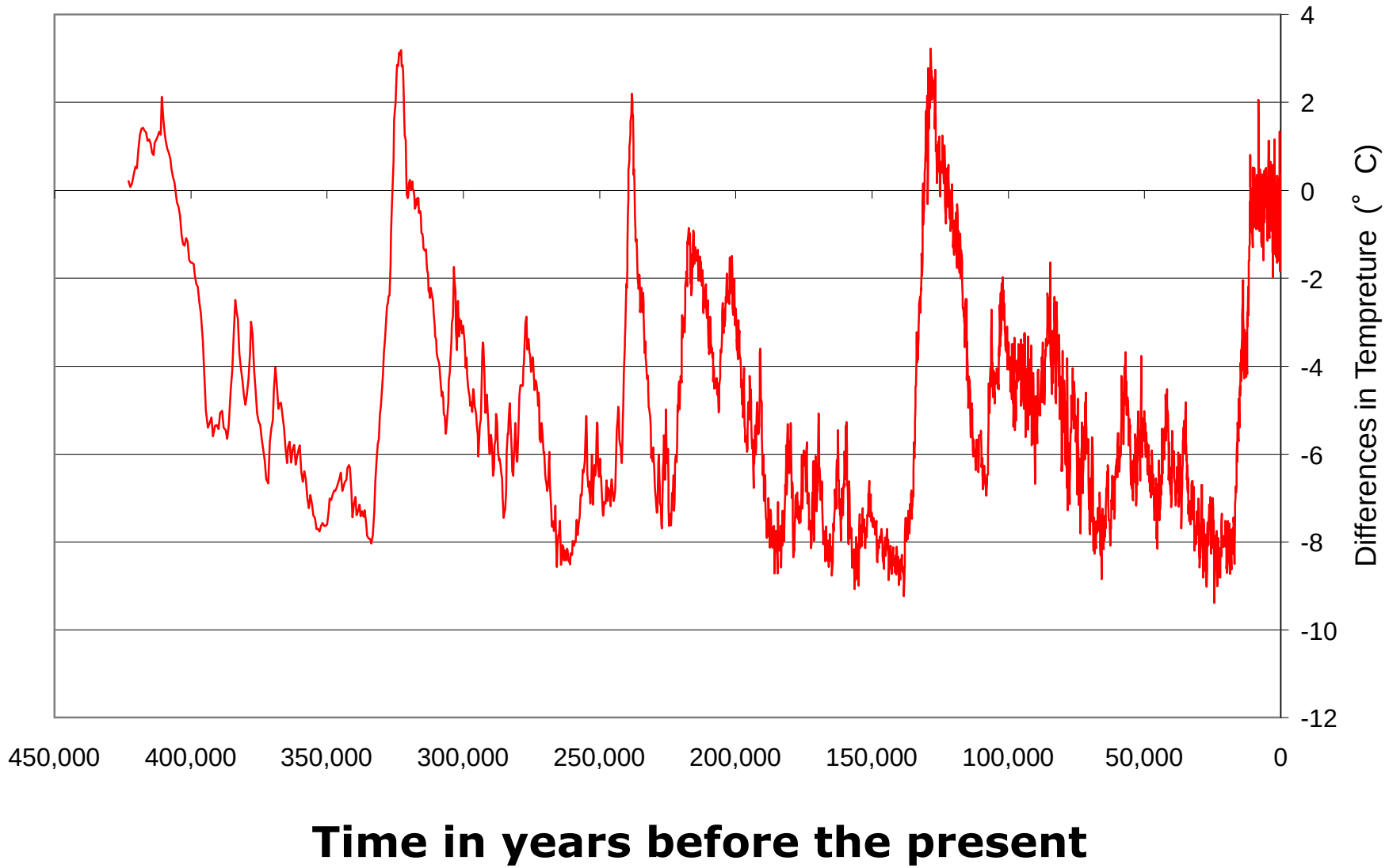


Time in years before the present

Methane Concentration in the Antarctic ice



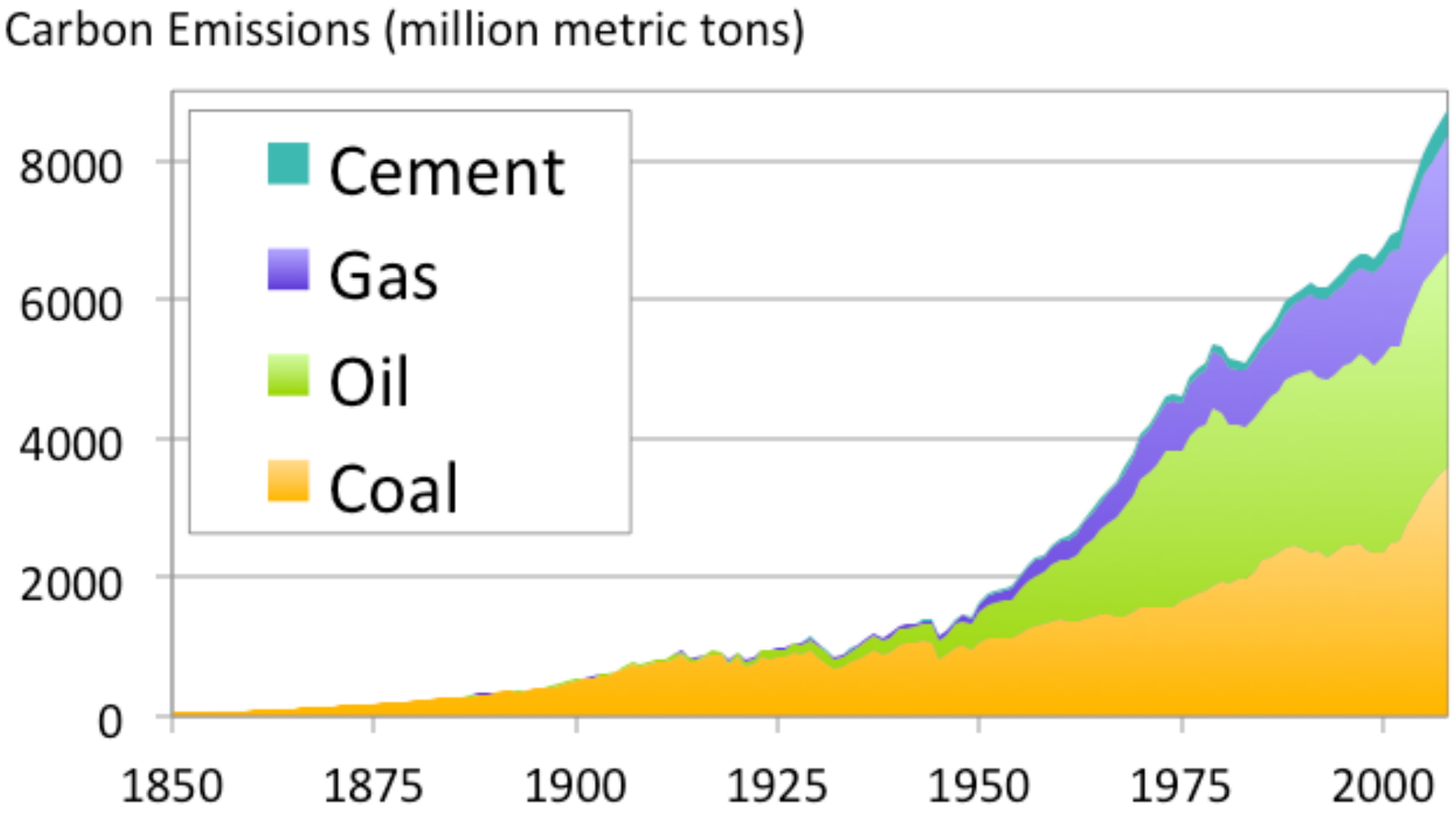
Atmospheric Temperature Variations as Detected from the Antarctic ice



Ranges and Concentrations during 450,000 years

- **Carbon dioxide concentration range = (185 – 295 PPM) (2012 *393* PPM) (2019 411 PPM)**
  Projected by 2050 to be between *450 & 750* PPM!
- **Methane concentration range = (340 -760 PPB) (2004 *1700* PPB)**
  Projected by 2050???
- **The average temperature range during this period was 10° C.**

…and we continue to increase our rate of release of carbon dioxide!!



What is the net quantity of carbon dioxide that is being added each day to the atmosphere, globally?

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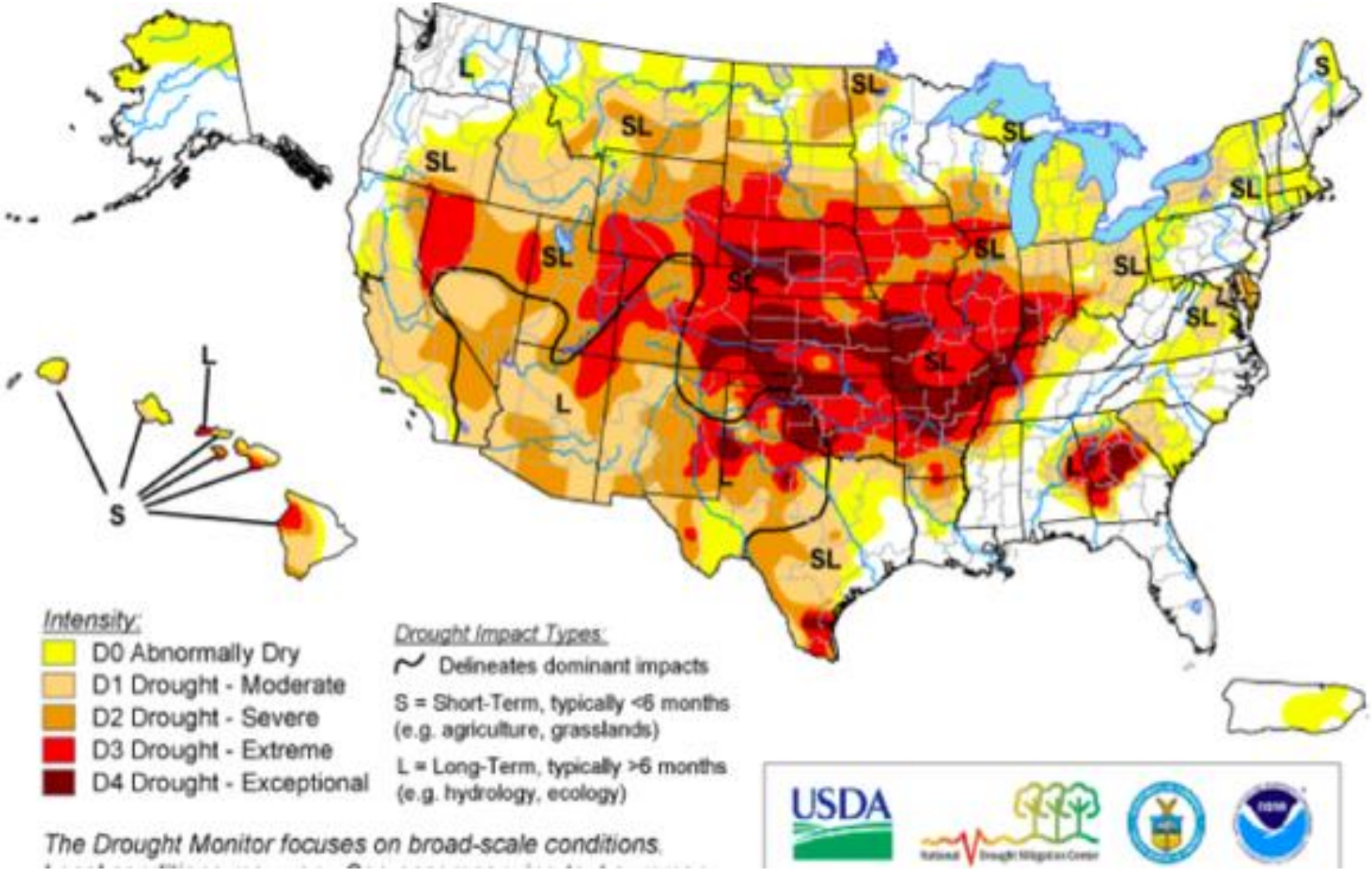
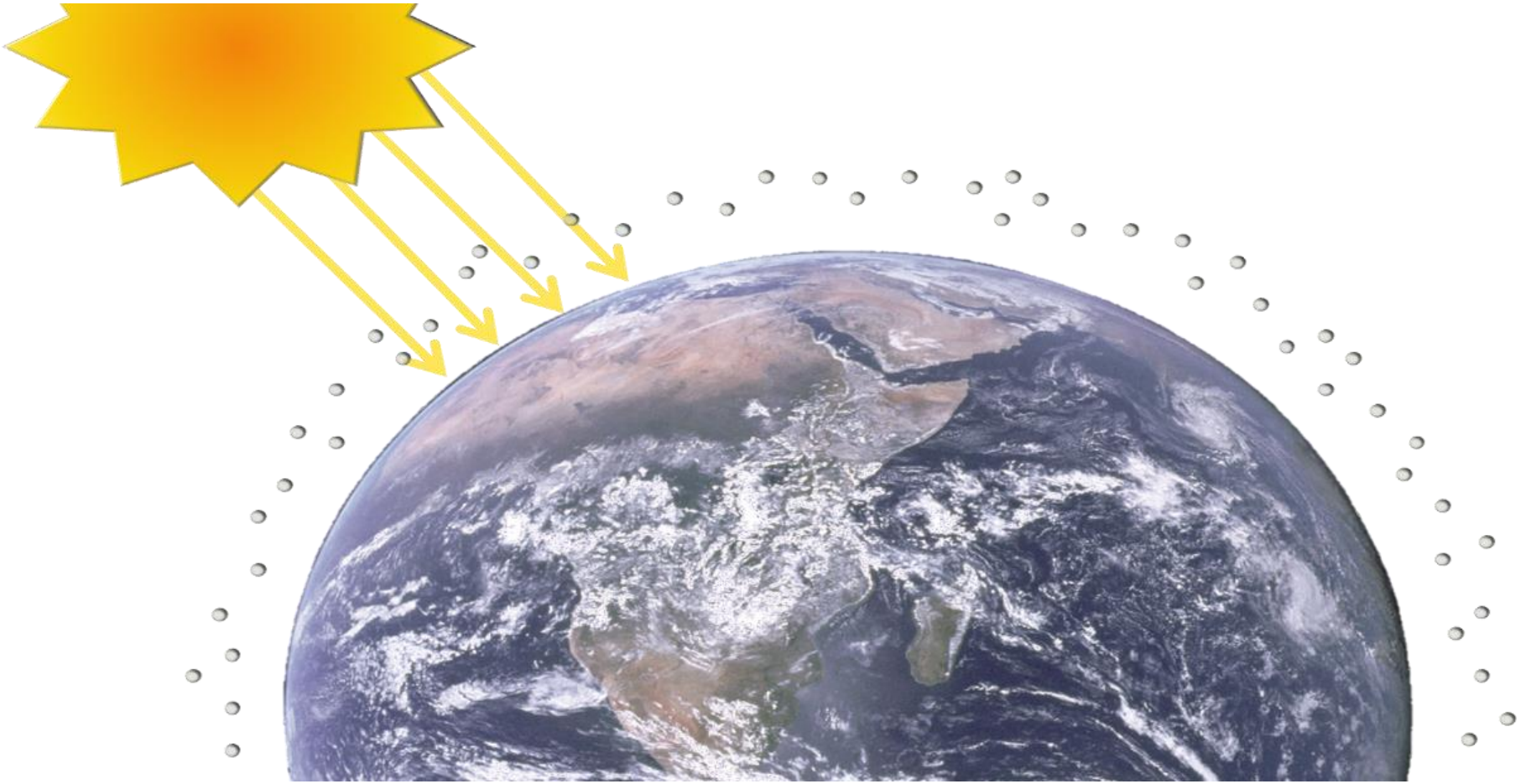
Estimates vary from 100,000,000 tons per day to more than 1,000,000,000 tons per day!

Drought Index U.S. August 2012



The NATURAL greenhouse effect



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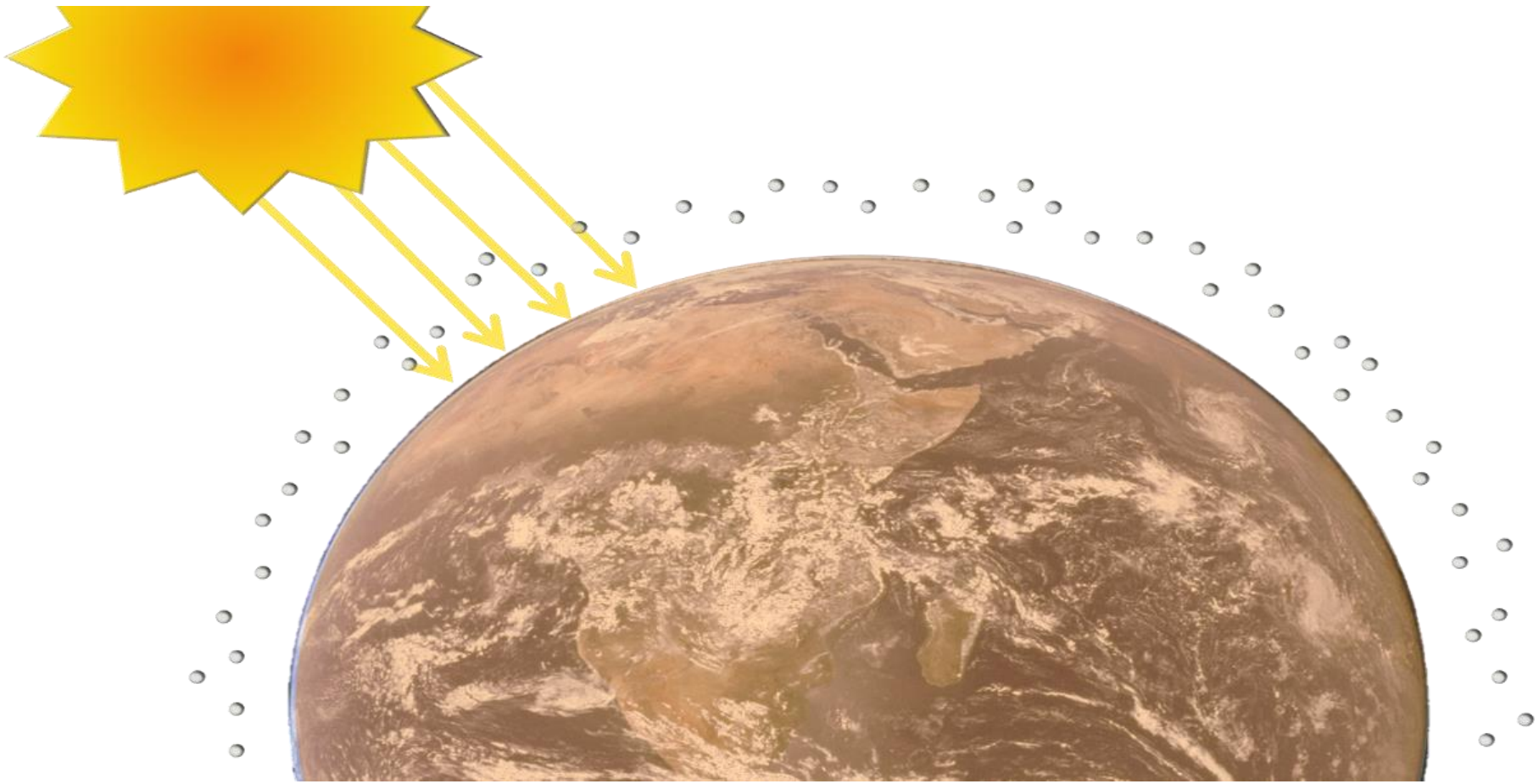

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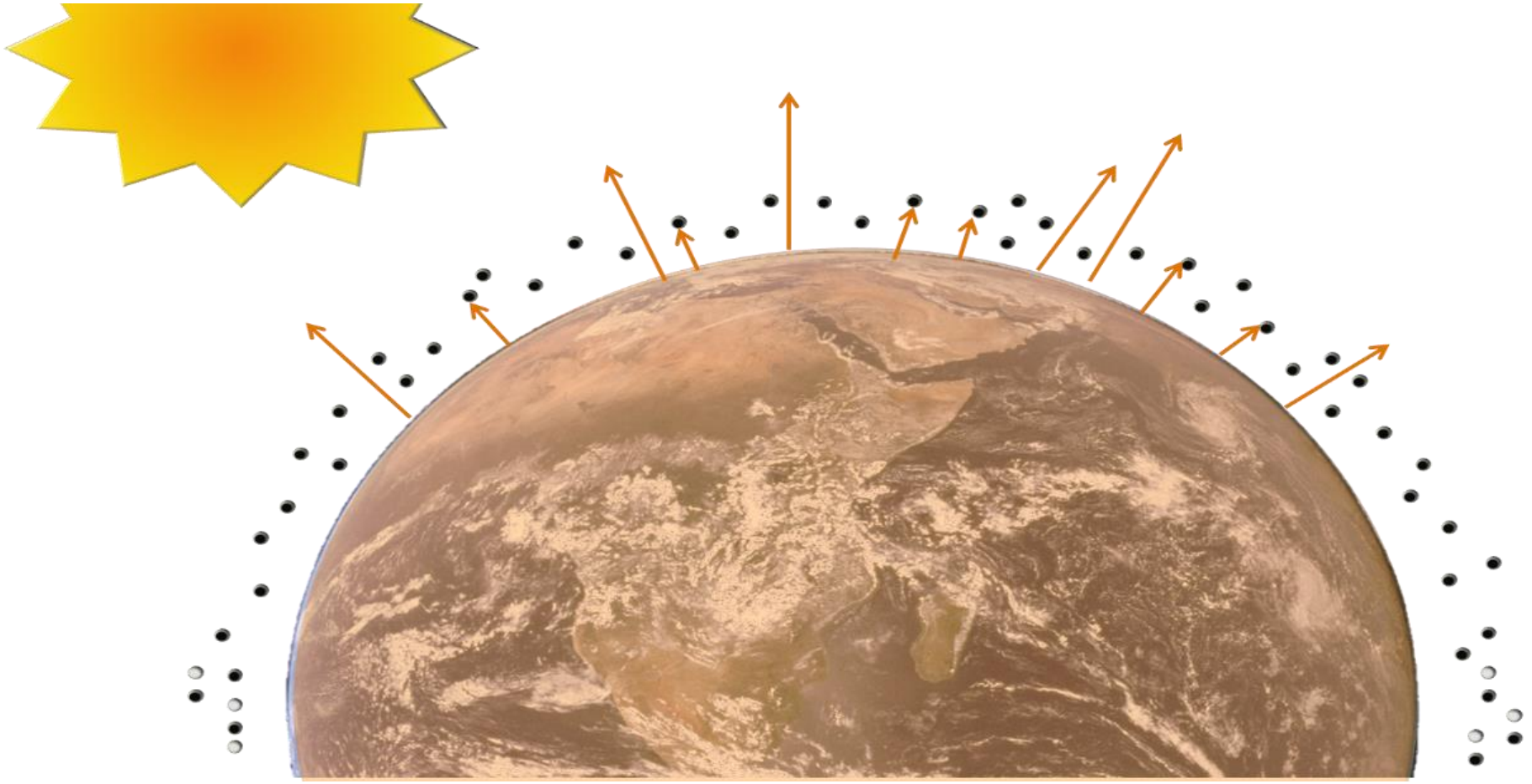
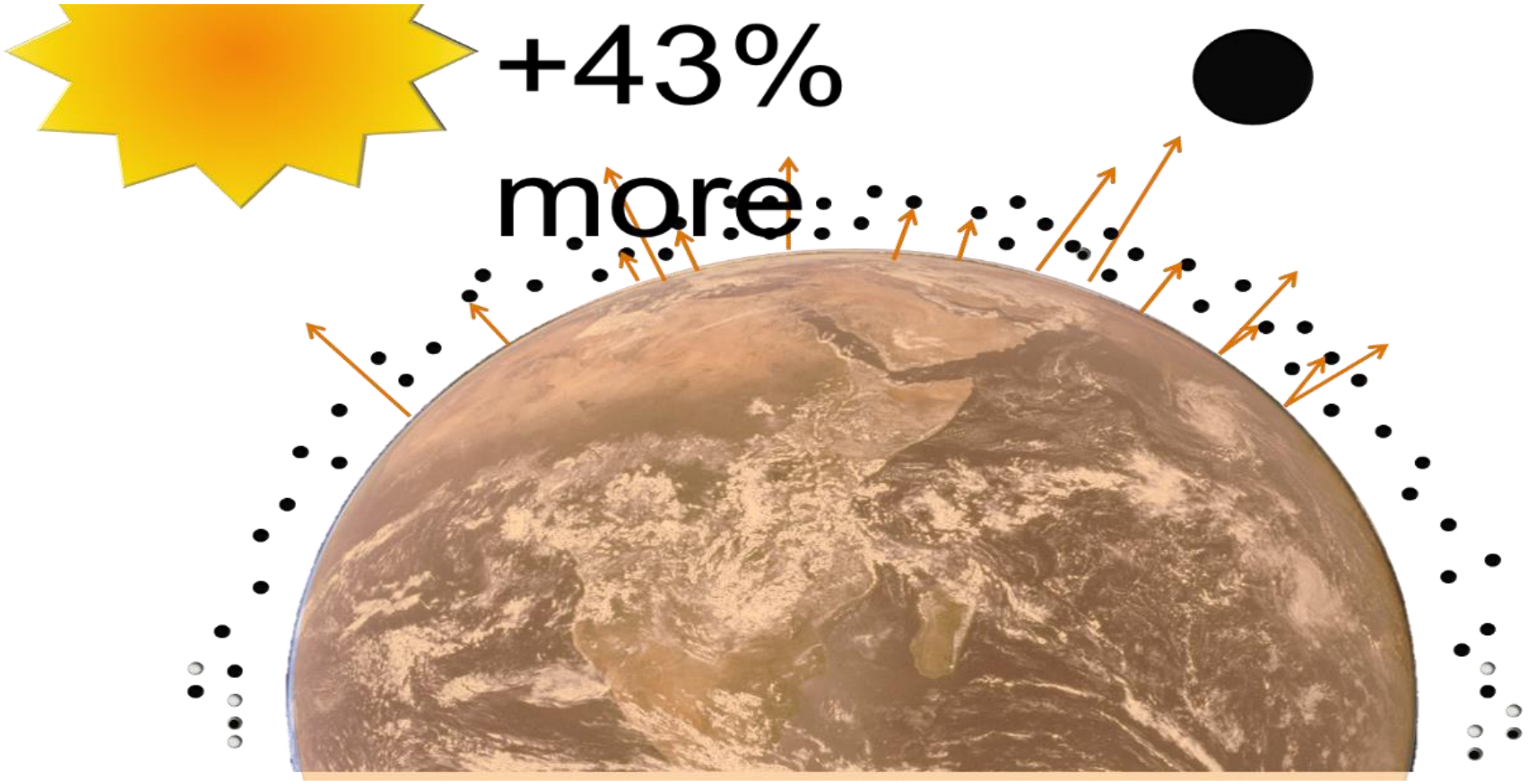
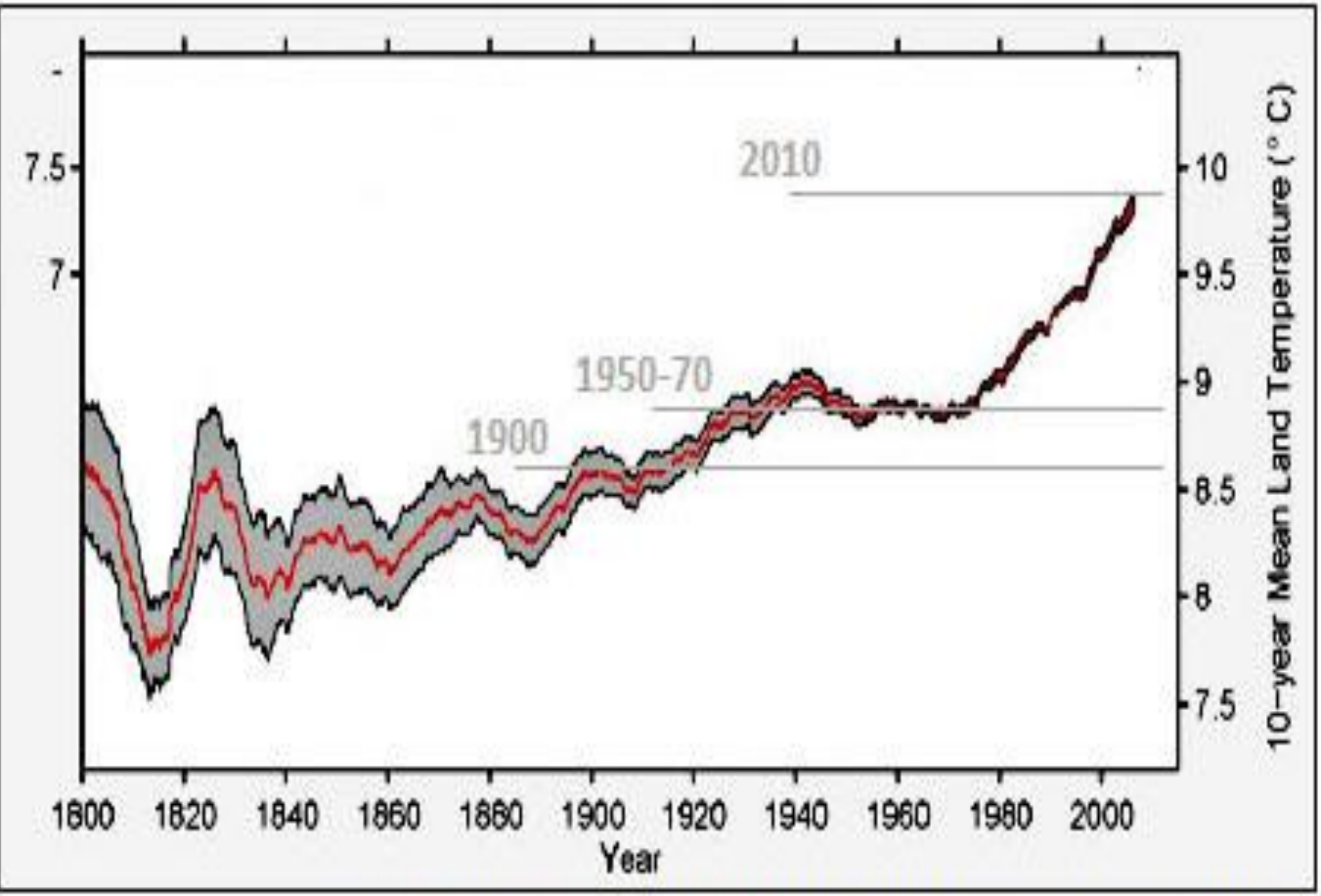
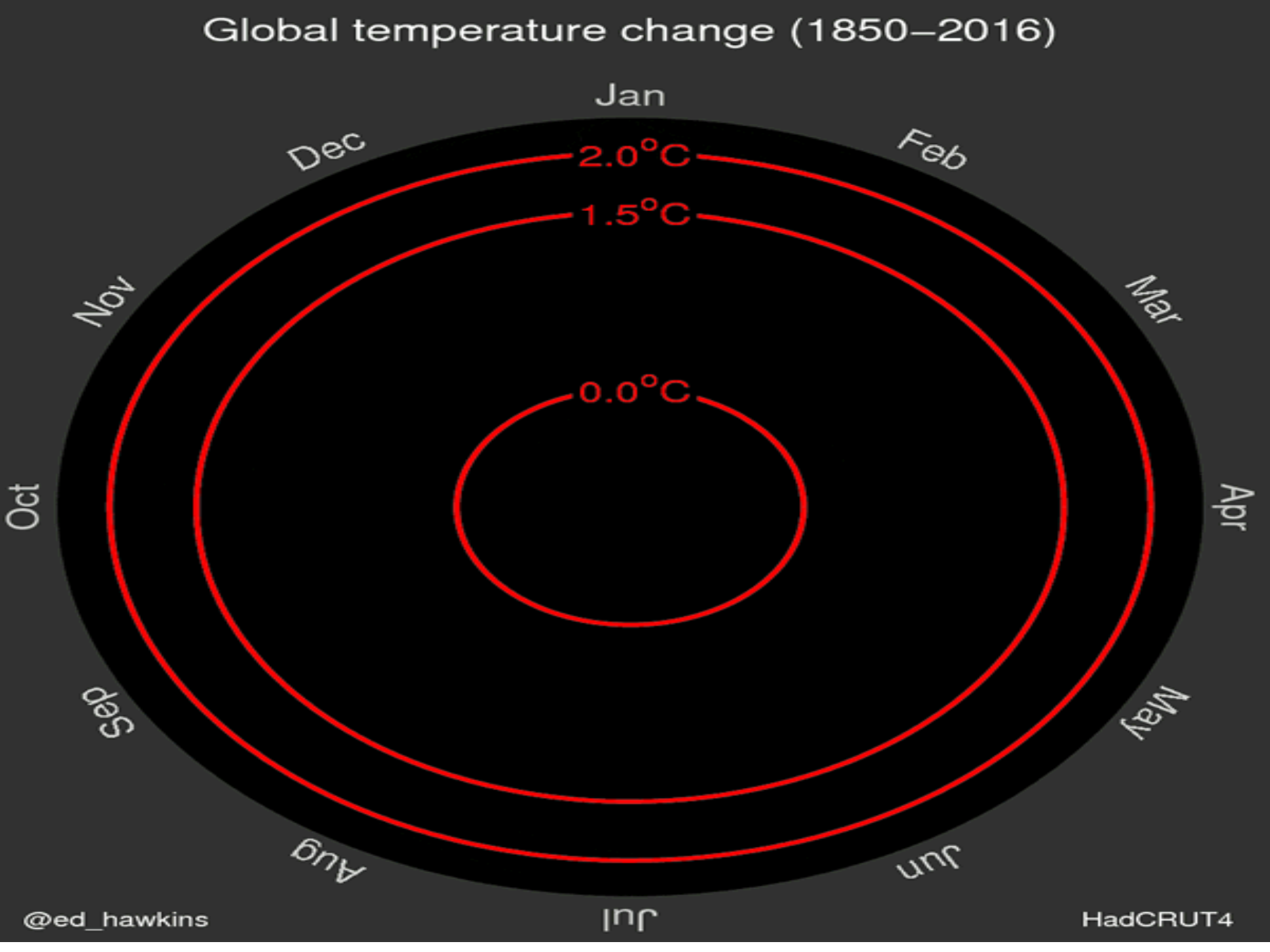


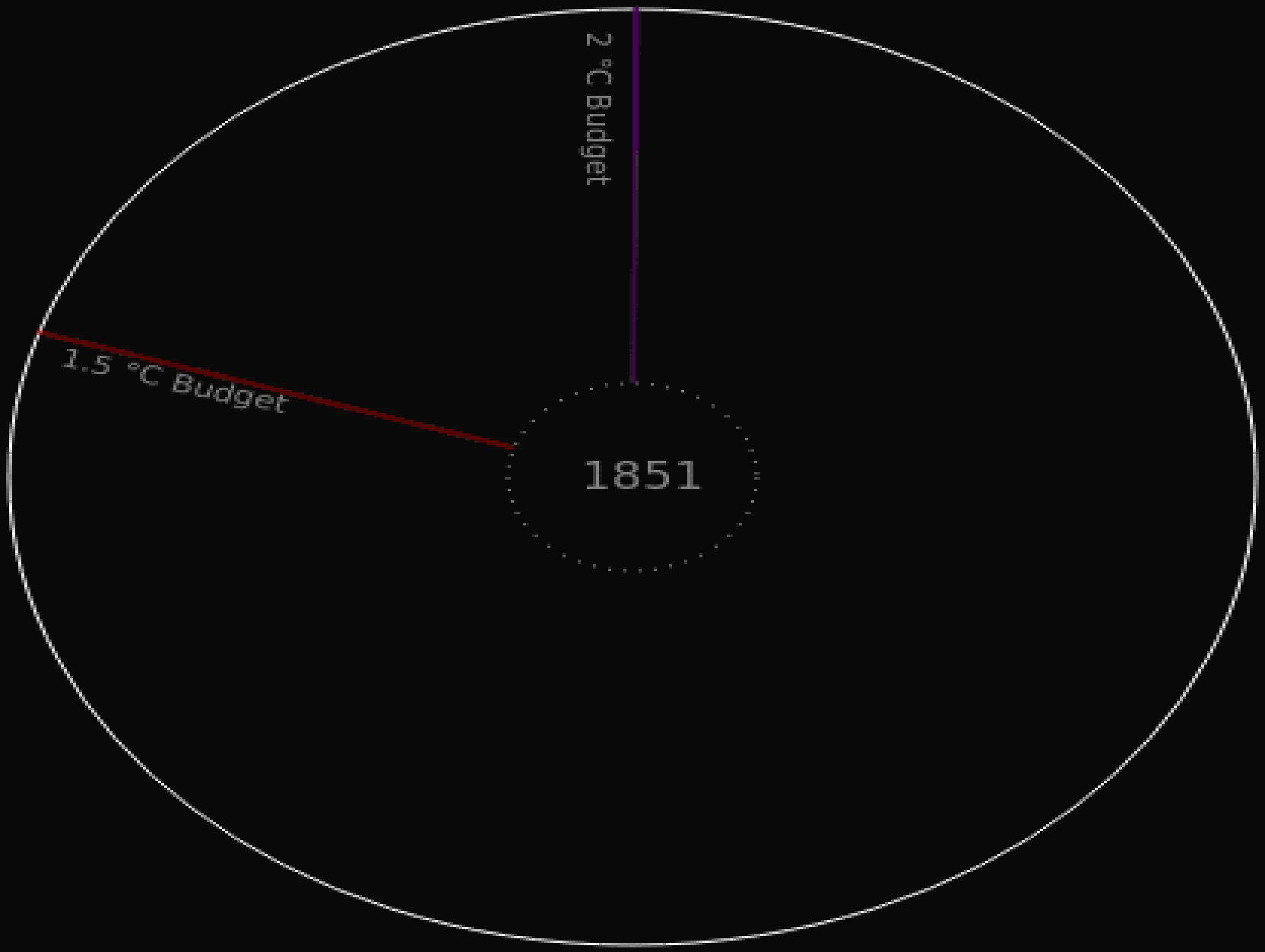
The ARTIFICIAL greenhouse effect



Increasing Average Temperatures

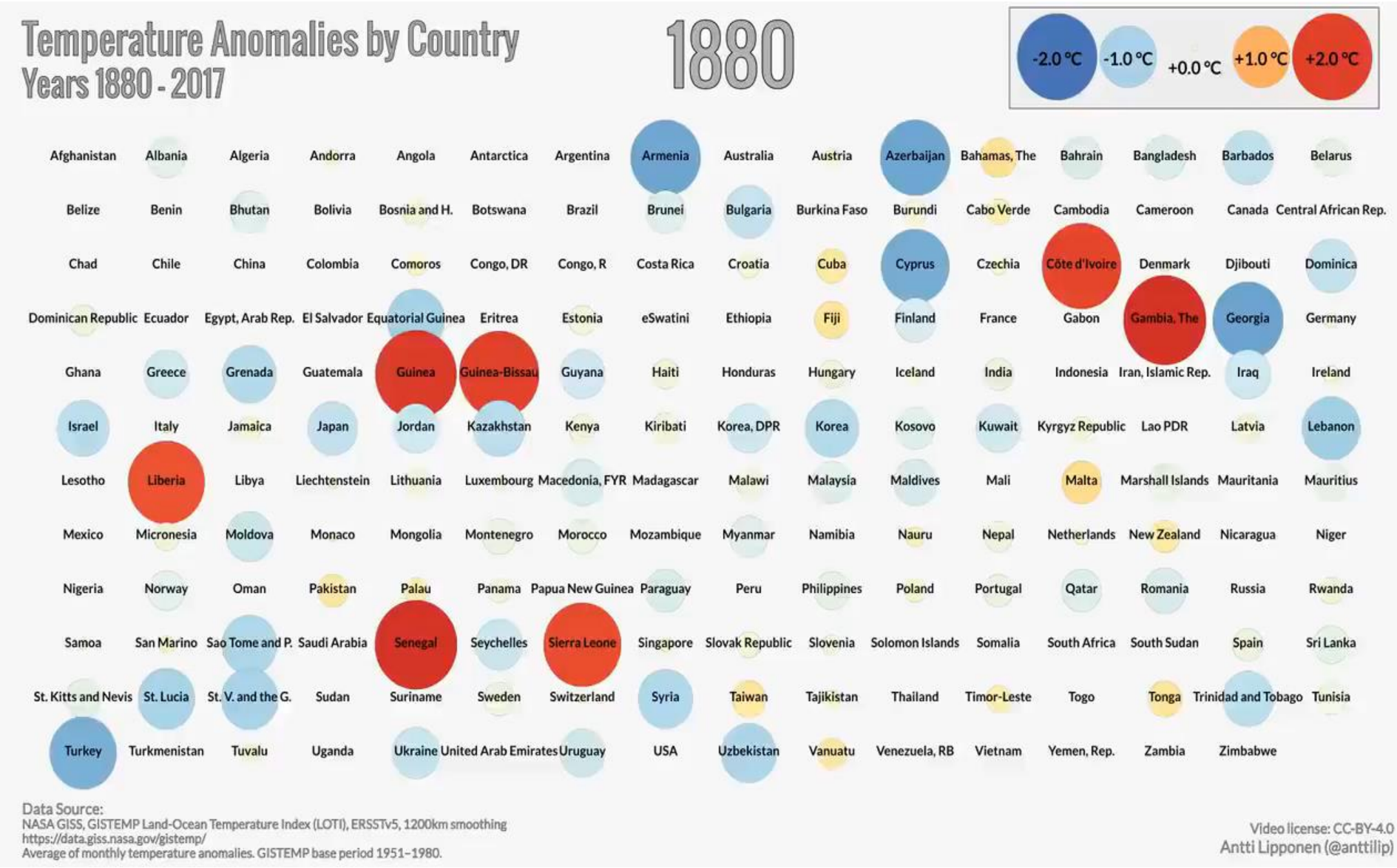



Global temperature change (1850–2016)
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2.0°C
1.5°C
0.0°C
@ed_hawkins
HadCRUT4

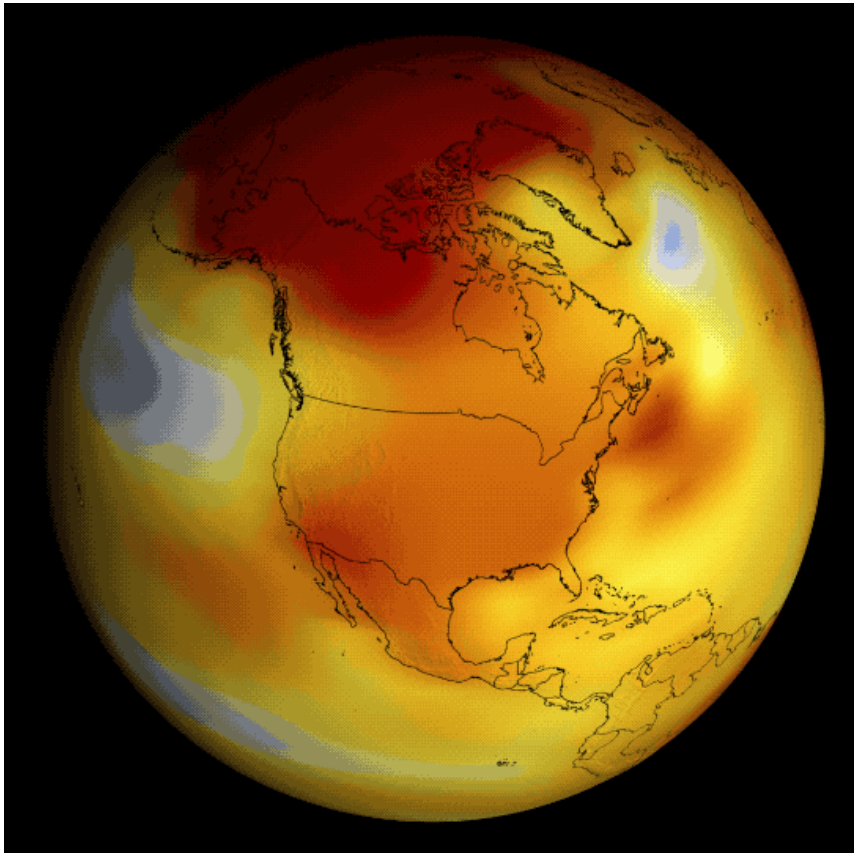


The Carbon Budget. pik-potsdam.de/primap-live/ & climatecollege.unimelb.edu.au, Gieseke, Meinshausen. Thx to Ed Hawkins

Temperature Anomalies for 191 Countries, 1880 - 2017



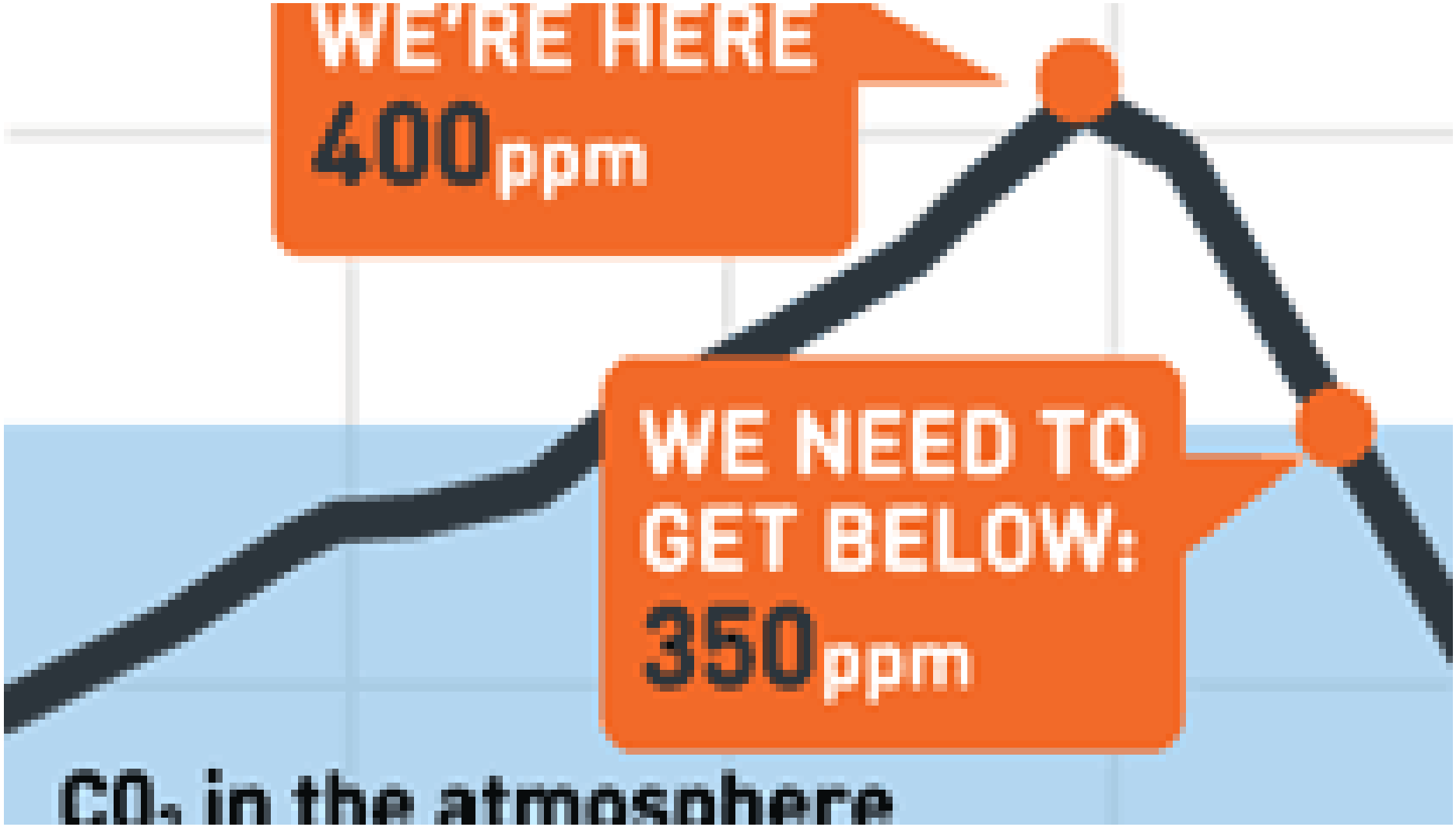
2017 Temperature Data



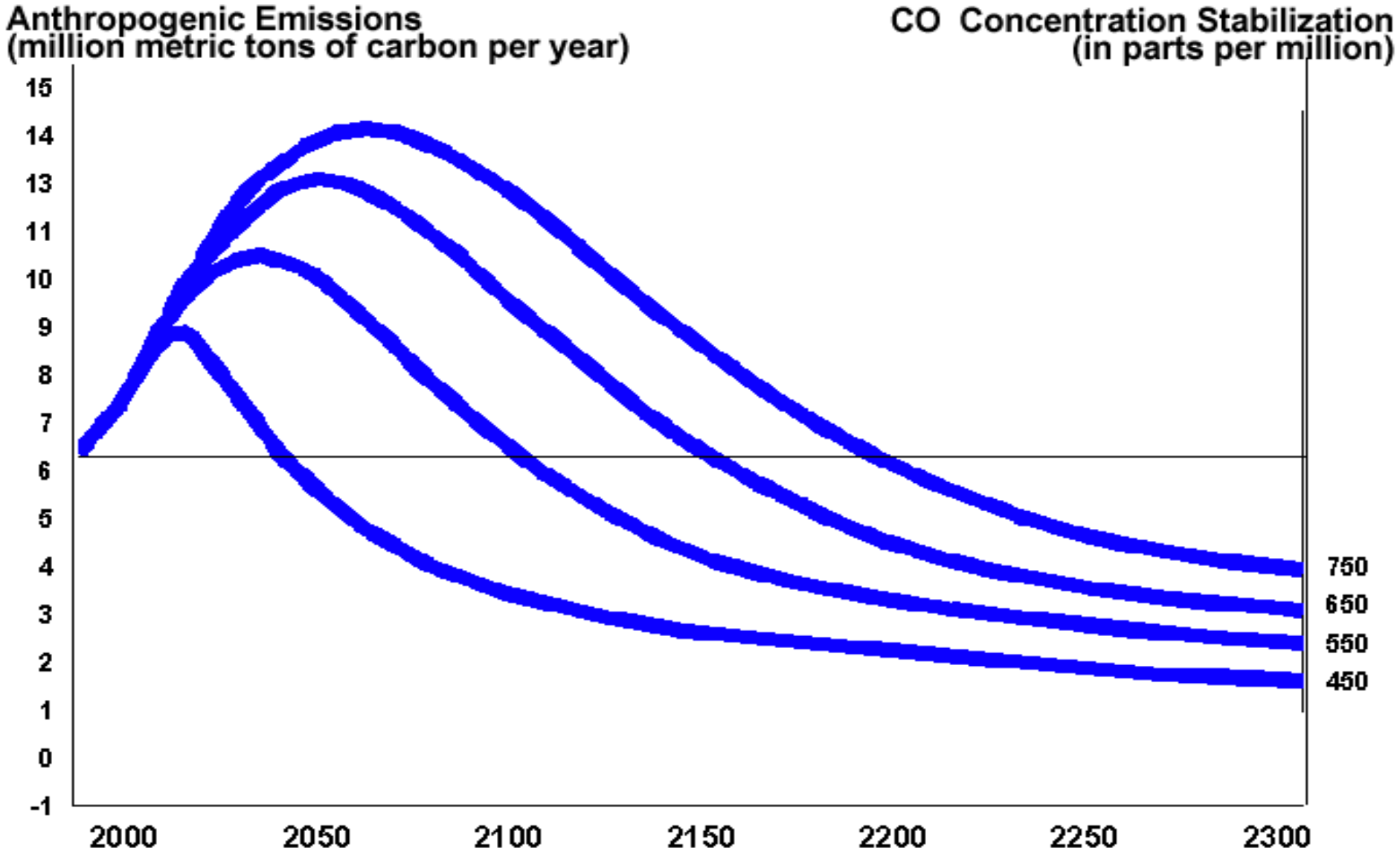
A few facts about climate changes!

1. 2017 was the hottest year on record!
2. Global Sea level has risen 17 Cm in the last century.
3. Ocean water acidity has increased 30% since the Industrial Revolution
4. Arctic Sea Ice is melting at the rate of 13% per decade.

275, 400, 350 PPM Carbon Dioxide in the Atmosphere



Stabilizing CO_2 Means Steep Emission Cuts



In What Ways can Circular Economy Systems Be Designed and Implemented to Contribute to Slowing down or Reversing Global Warming?

Half of the world's forests have been destroyed by human activity. *Annually*, 9 million hectares of forests are being cut; ***this is an area equal to the size of Portugal!!***


MAN
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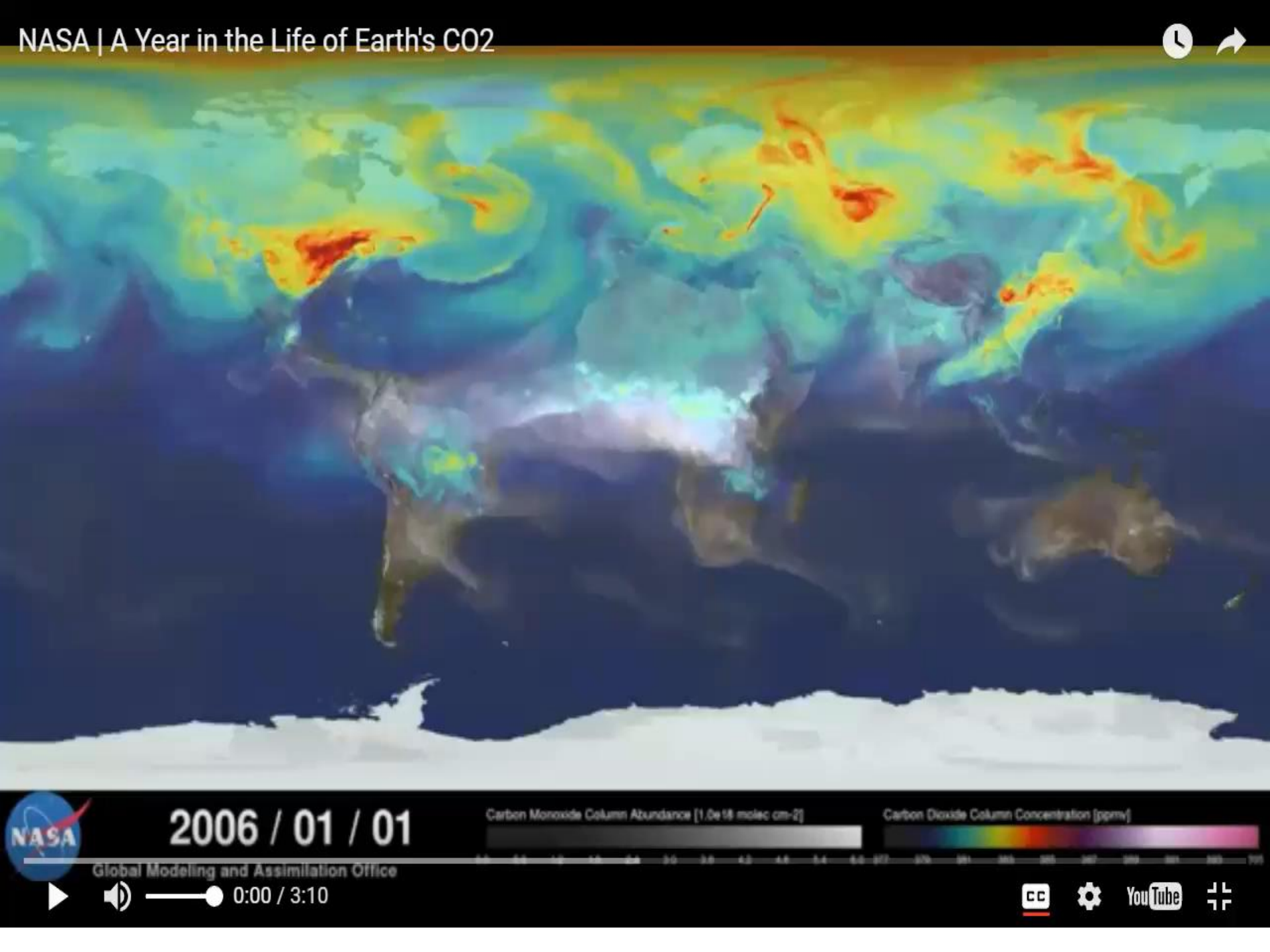

NASA | A Year in the Life of Earth's CO2
2006 / 01 / 01
Carbon Monoxide Column Abundance [1.0e18 molec cm-2]
Carbon Dioxide Column Concentration [ppmv]
Global Modeling and Assimilation Office
0:00 / 3:10

In What Ways can Circular Economy Systems Be Designed and Implemented to Contribute to Slowing down or Reversing Global Warming?

The Shellfish Know Climate Change is Real

- The pH of Seawater is approximately 8.2
- Shellfish and Corals use calcium carbonate to make shells/skeletons
- At pHs below 8.1 they have difficulty making these structures;
- Coral dieoff is occurring and oysters, clams are decreasing, causing economic and environmental impacts;

The Shellfish Know Climate Change is Real

- These filter feeders perform numerous ocean cleaning functions;
- If we continue to increase the global carbon dioxide concentrations, by 2100, the ocean's pH could be ***7.8*** worldwide and these species may totally disappear from our eco-systems!

66% of oceanic fisheries are fished at or beyond their sustainable yields!

In What Ways can Circular Economy Systems Be Designed and Implemented to Contribute to Slowing down or Reversing Global Warming?

The Earth is Shrinking!!!

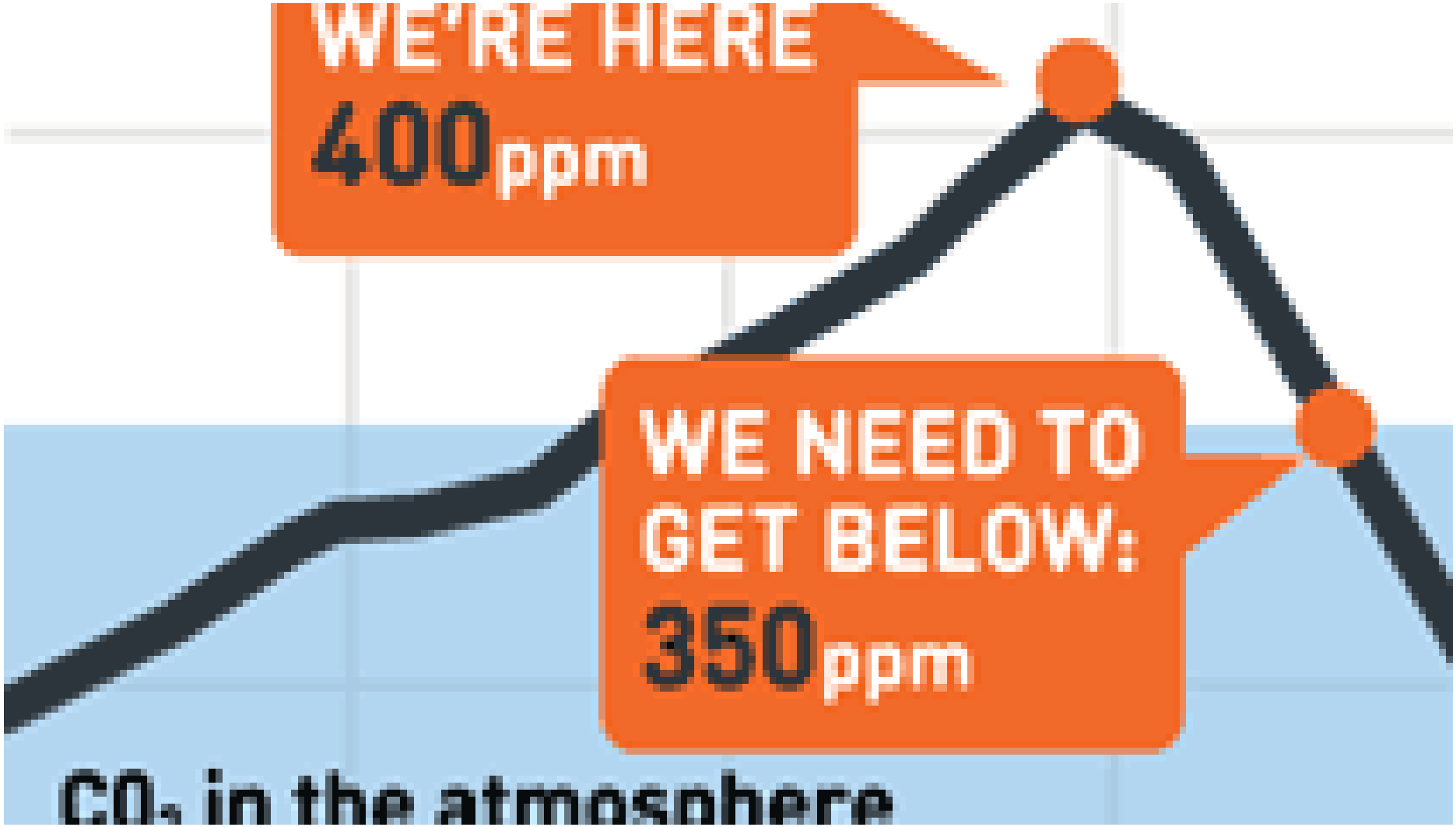
- **The Human Population continues to increase:**
  - **88,000,000+ per year!**

  - **That means net increase approximately equal to the population of Germany *is being added to the earth each year!!!!!!!!!!!***
  - **From, "The Earth is Shrinking: Advancing deserts and Rising Seas Squeezing Civilization,"**
    by Lester Brown
    http://www.earthpolicy.org/updates/2006/update61.htm


1 C.E.
HAN DYNASTY

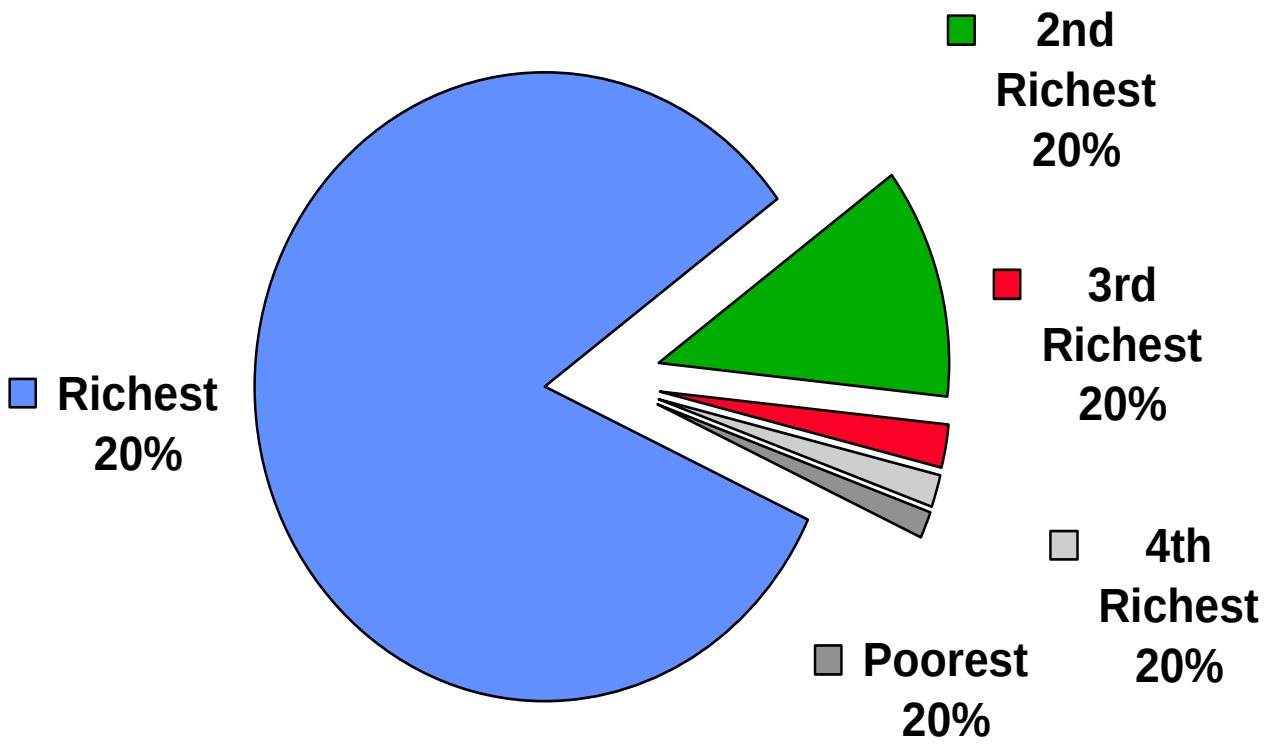
In What Ways can Circular Economy Systems Be Designed and Implemented to Contribute to Reductions in Human Population Growth?

285, 400, 350 PPM Carbon Dioxide in the Atmosphere



Global Income and Economic Disparities

In Distribution of World Income



Source: Agenda for Change, Center for our Common Future. 1989 figures from UNDP

In What Ways can Circular Economy Systems Be Designed and Implemented to Contribute to Reversing Inequities including *Gender Inequities?*

Iceland's Political Decision

- As of the first day of 2018 Iceland wasthe first country in the world to *legalise* equal pay between men and women.
- Iceland has ranked #1 in gender equity for the last nine years in a row!
- For comparison, the United Stated is ranked 49th!!!!!!

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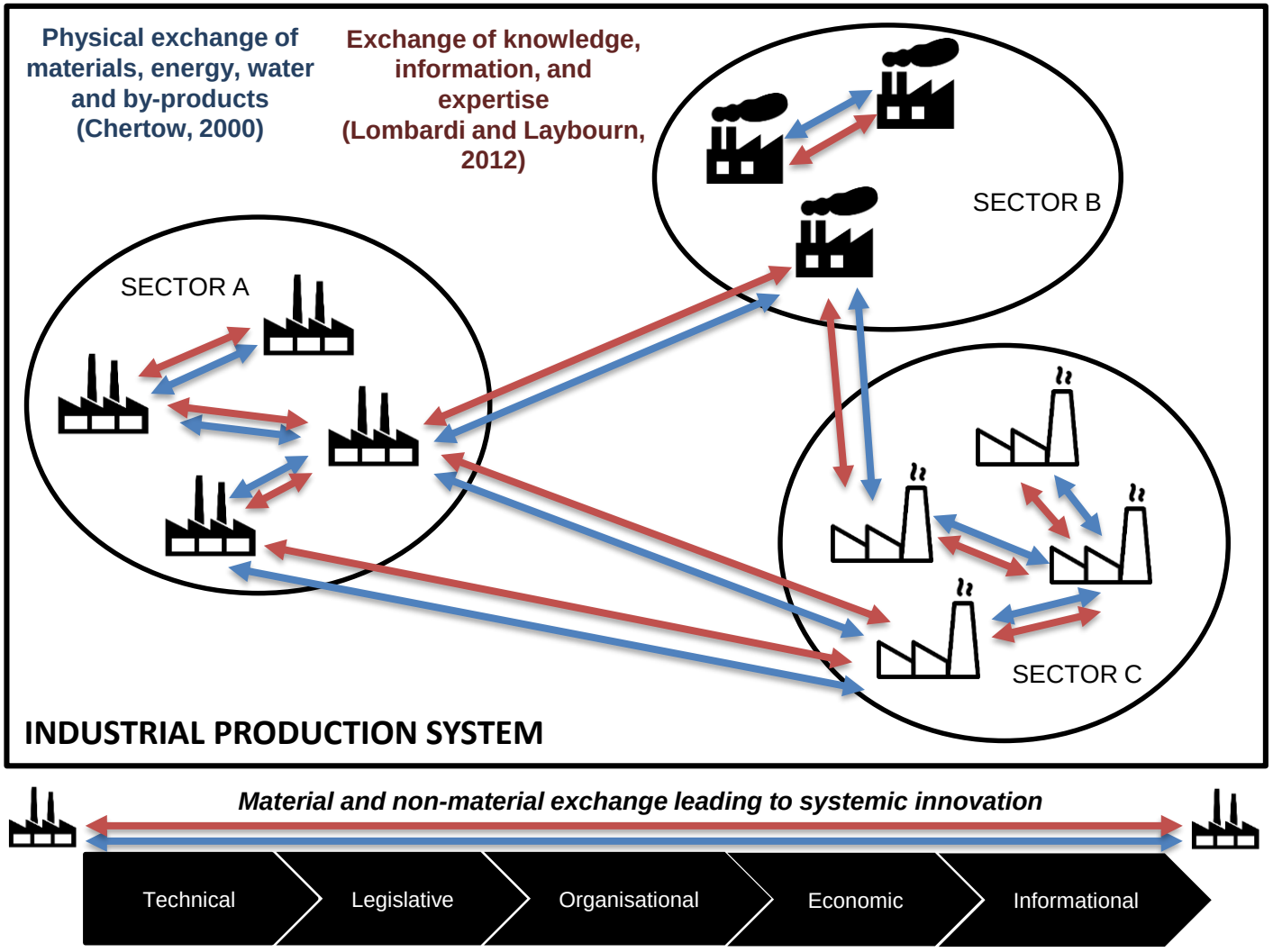
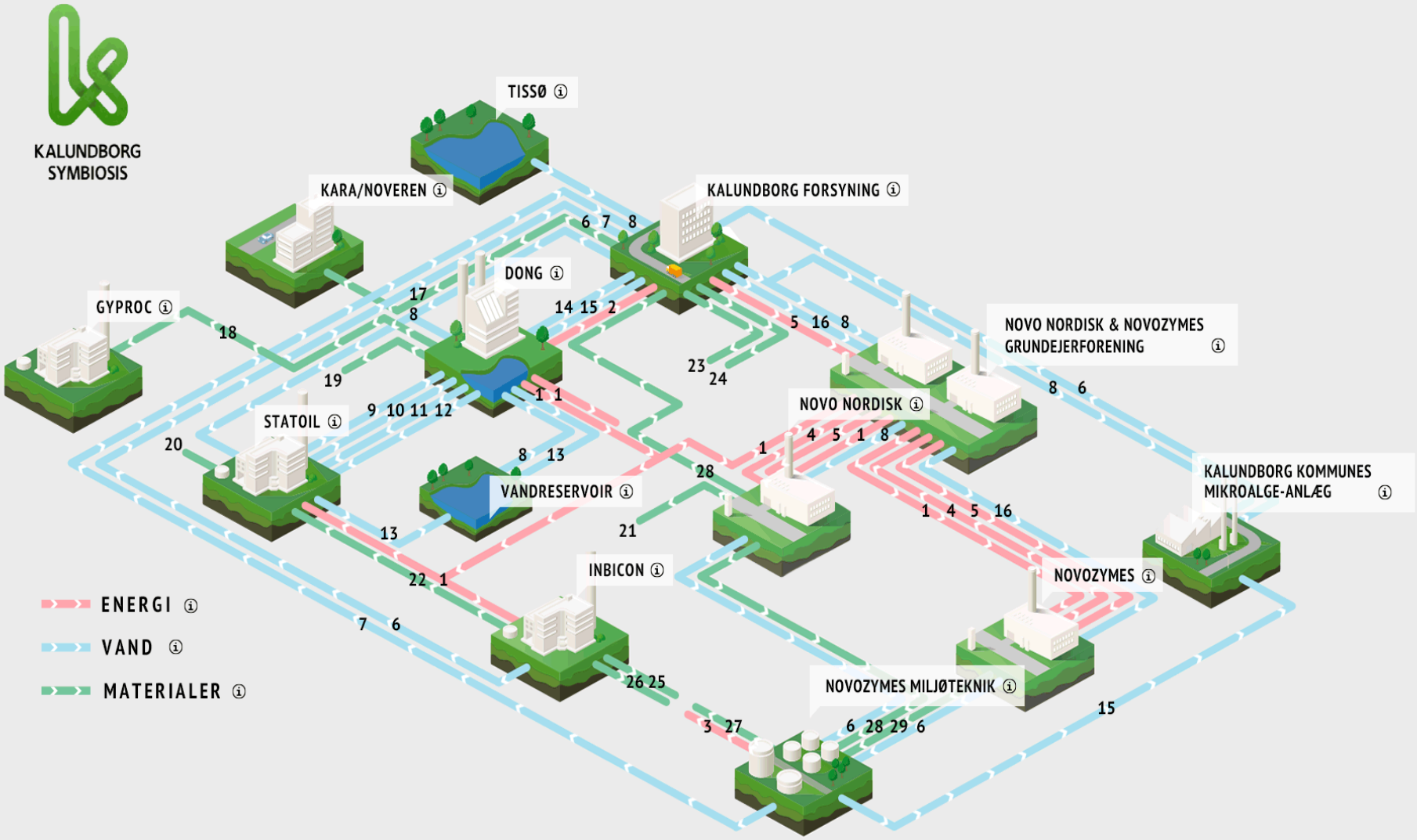
- What are the Roles of Good Examples to Motivate People to Change to Equitable, Sustainable Post-Fossil Carbon Societies?

Industrial Symbiosis and Eco-industrial Parks and Implementing Circular Economies


Physical exchange of materials, energy, water and by-products (Chertow, 2000)
Exchange of knowledge, information, and expertise (Lombardi and Laybourn, 2012)
SECTOR A
SECTOR B
SECTOR C
INDUSTRIAL PRODUCTION SYSTEM
Material and non-material exchange leading to systemic innovation
Technical
Legislative
Organisational
Economic
Informational

KALUNDBORG SYMBIOSIS



Industrial ecosystems through industrial symbiosis can contribute to…

End poverty in all its forms everywhere

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Build resilient infrastructure, promote inclusive and sustainable industrializ-ation and foster innovation

Do more and better with less Reducing resource use, degradation and pollution along the whole lifecycle

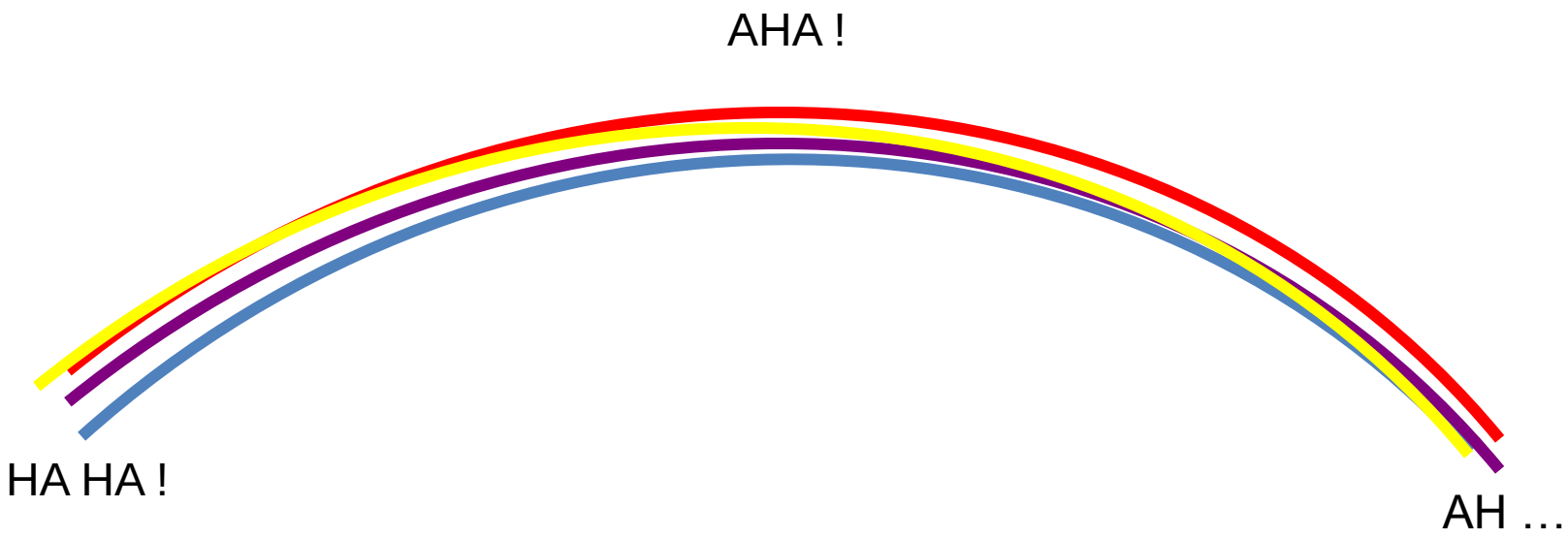
Take urgent action to combat climate change and its impacts

Strengthen the means of implement-ation and revitalize the global partnership for sustainable development

Sustainable development goals

Deadline: 2030

United Nations, 17 Goals to transform our world, 2016



“haha-aha-ah” curve

-after Arthur Koestler

Brief Introduction to Environmental Problem Solution Approaches

- **Dilution is the Solution to Pollution**

Brief Introduction to Environmental Problem Solution Approaches

- **Dilution is the Solution to Pollution**
- **Pollution Control is the Solution to Pollution**

Brief Introduction to Environmental Problem Solution Approaches

- Dilution is the Solution to Pollution
- Pollution Control is the Solution to Pollution
- Pollution Prevention is the Solution to Pollution

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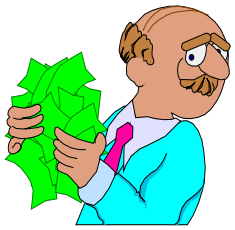
- Dilution is the Solution to Pollution
- Pollution Control is the Solution to Pollution
- Pollution Prevention is the Solution to Pollution
- Cleaner Production of Cleaner Products is the Solution to Pollution
- Sustainable Production & Consumption of Products and Services within Eco-system Boundaries and Circular Economies is the Solution to Unsustainability

Types of Environmental Management in Industry

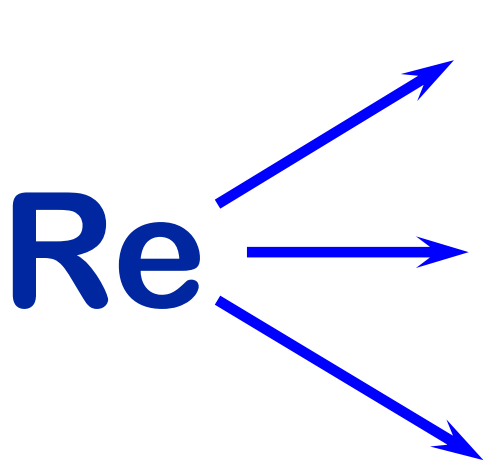
Crisis Management



Cost-oriented Management

Enlightened Management

Waste Prevention,



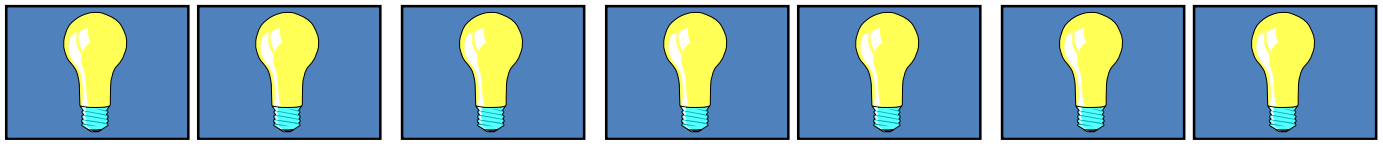
Are good business.

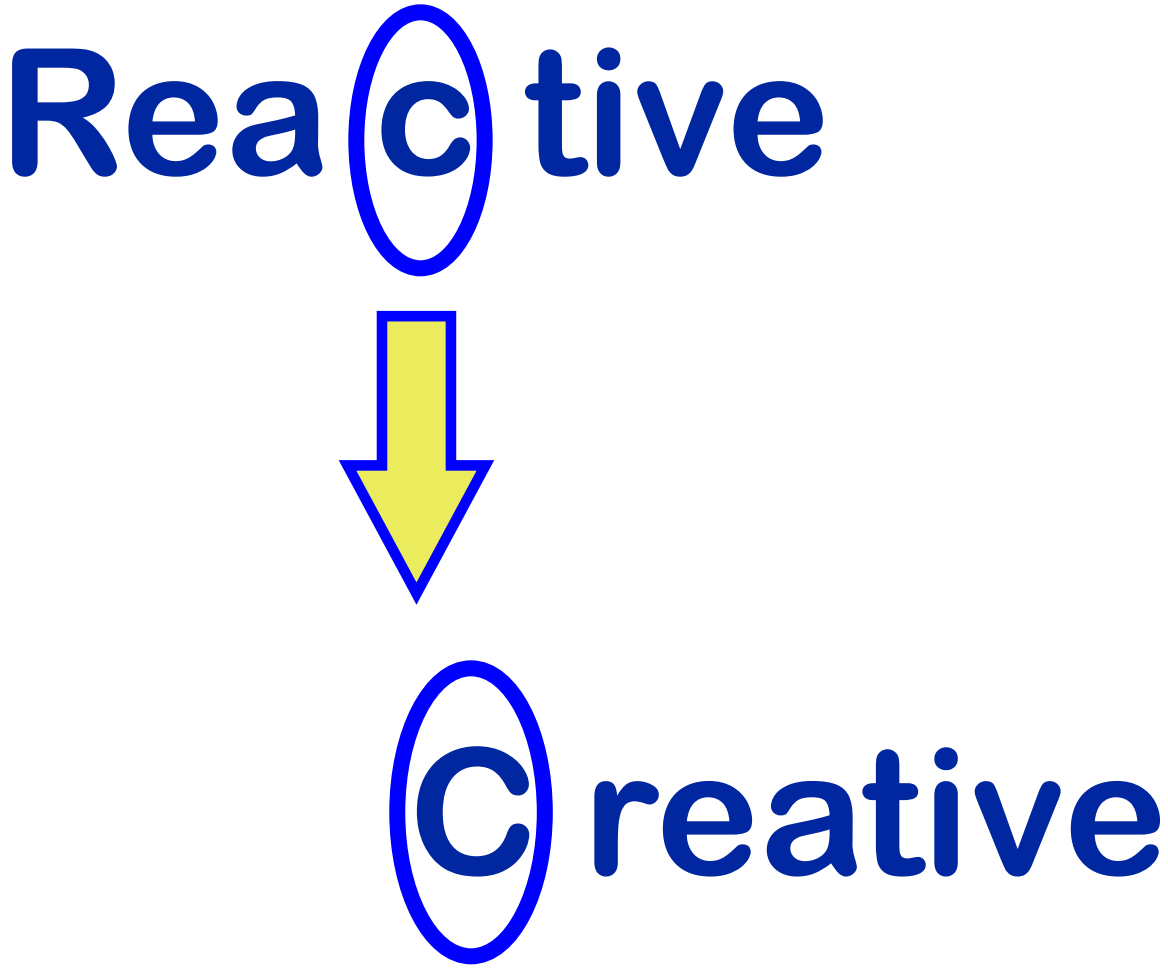
#@!?, #@!?, #@!?, #@!?, #@!?, #@!?,

Problem Multipliers

vs.

Solution Multipliers




Reactive
Creative

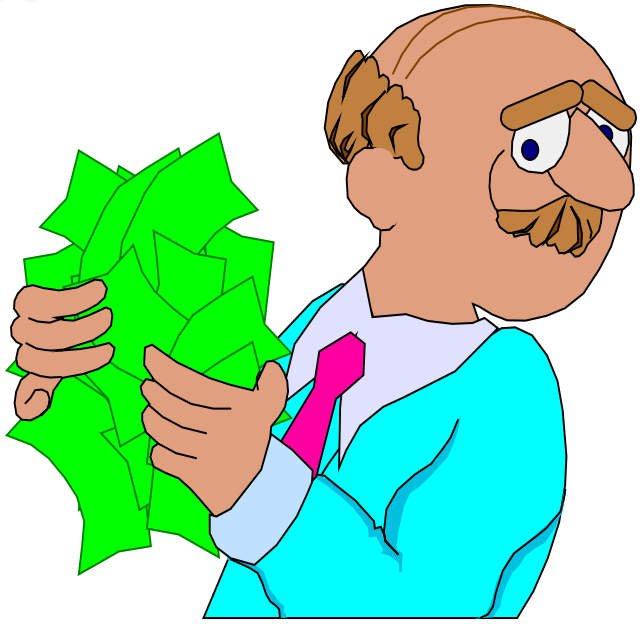
Ten Blocks to Creativity

- **Fear of making mistakes**
- **Fear of being seen as a fool**
- **Fear of being criticized**
- **Fear of being misused**
- **Fear of being alone (a person with an idea is automatically a minority of one.)**
- **Fear of disturbing a tradition AND making changes**
- **Fear of being associated with taboos**
- **Fear of losing the security of habit**
- **Fear of losing the group's love**

Let's Focus Upon These Five Re Words

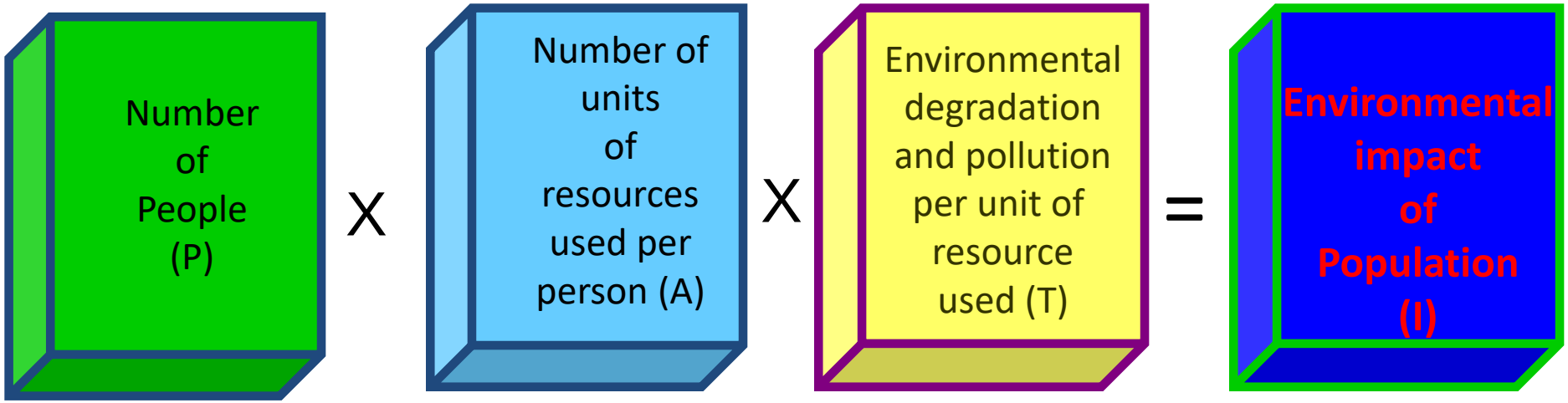
- **Re-thinking;**
- **Re-envisioning;**
- **Re-evaluating;**
- **Re-dedicating;**
- **Re-vitalizing.**

From the Tragedy of the Commons...



To the Treasury of the Commons.

Interconnectedness of Population, Affluence & Technology



Sustainable Development Is a *Journey*

..... Not a Destination!!

In What Ways can Circular Economy Systems Be Designed and Implemented to Contribute to Slowing down or Reversing Global Warming?

Catalyzing Changes Through International Scientific Journals

- The Journal of Cleaner Production that was founded in 1992 and is now published in Thirty-36 volumes per year;

- Prof. Donald Huisingh
- Editor-in-Chief, Emeritus
- Journal of Cleaner Production
- http://ees.elsevier.com/jclepro/default.asp

- The Impact factor for 2017 for the Journal of Cleaner Production is: 6.207

Volume 15 Number 4 2007 ISSN 0959-6526

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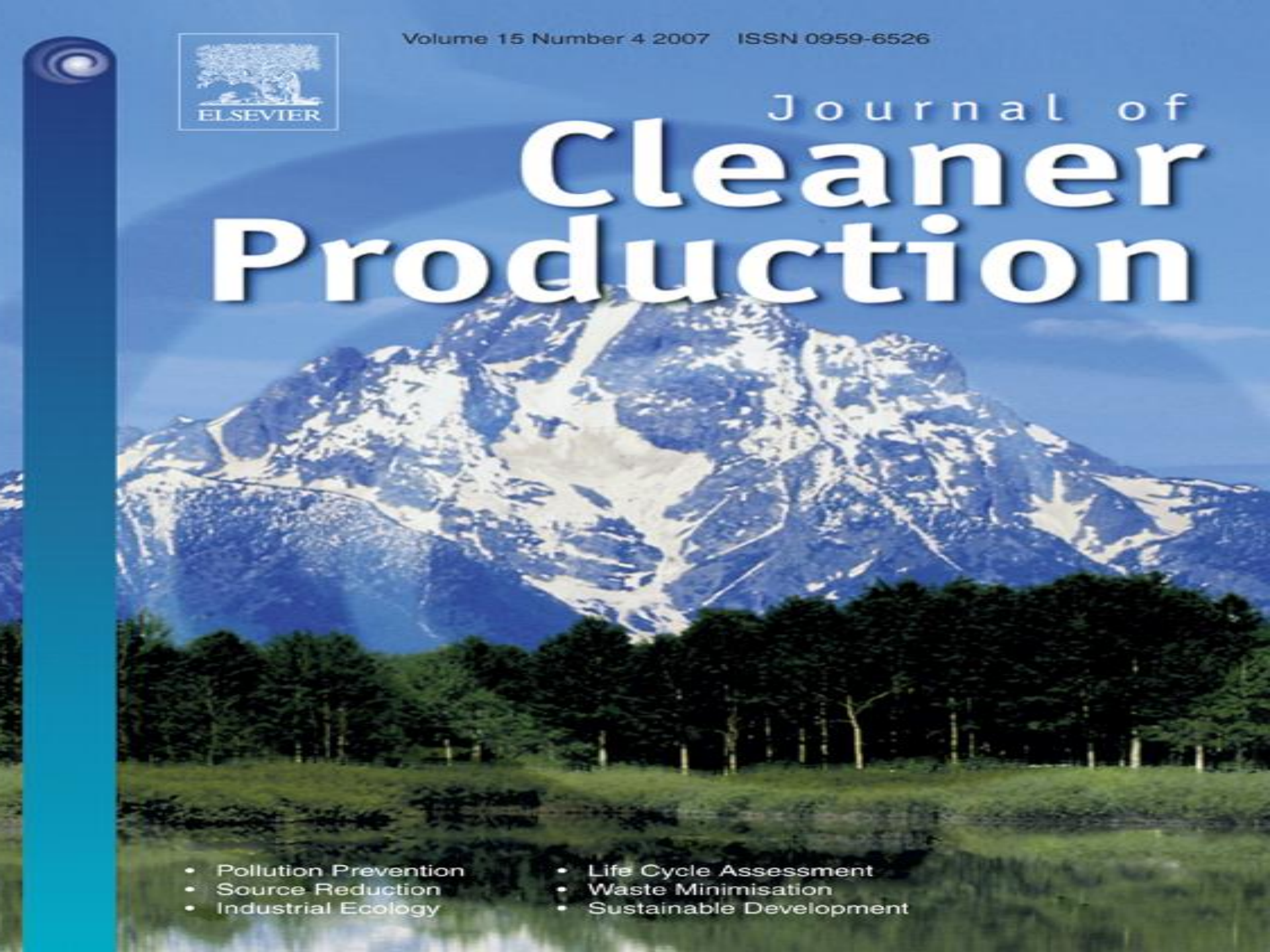
Journal of Cleaner Production



- Pollution Prevention
- Source Reduction
- Industrial Ecology
- Life Cycle Assessment
- Waste Minimisation
- Sustainable Development

Some Special Issues of the Journal of Cleaner Production

- Sustainable Fisheries;
- Sustainable Agriculture;
- Sustainable Tourism;

Some Special Issues of the Journal of Cleaner Production

- Sustainable Production and Consumption;
- Extended Producer Responsibility (EPR);

Some Special Issues of the Journal of Cleaner Production

- Innovations in:
  - Green Chemistry;
  - Green Engineering;
  - Green Buildings;
  - Global Supply Chain Management;
  - Green Employment;
  - Green/Sustainable Regional Issues

Some Special Issues of the Journal of Cleaner Production

- **Sustainable Urban Transformation;**

Some Special Issues of the Journal of Cleaner Production

- **Sustainable Urban Transformation;**
- **Climate Co-benefits in Urban Asia**

Some Special Issues of the Journal of Cleaner Production

- **Sustainable Urban Transformation;**
- **Climate Co-benefits in Urban Asia**
- **Women, Water, Waste, Wisdom and Wealth;**
- **Urban and Landfill Mining;**
- **Zero Waste to Landfills!**

The Chinese Government is supporting its citizen's involvement with the theme:

"Transformation to an Ecologically Sound Society as the Model for Future Development

Special Volumes of the Journal of Cleaner Production at the special request of the Chinese Governmental Colleagues

- **Moving Towards an Ecologically Sound Society: With Special Focus on *Preventing Future Smog Crises in China and Globally***
- **Carbon Emissions Reduction: Policies, Technologies, Monitoring, Assessment and Modeling**

Recently Published SVs

- Toward a Regenerative Sustainability Paradigm for the Built Environment: from Vision to Reality
- Preventative Approaches to the Circular Economy

Published Recently

- Systematic leadership towards sustainability
- Decision-support models and tools for helping to make real progress to more sustainable societies
- Experimentation for climate change solutions

Three Examples of Expanding Horizons in Circular Economies

- Applications of Machine Learning Approaches in Analysis of Energy-Growth-Emissions Nexus in the Era of Globalization
- Industry 4.0, Cleaner Production and Circular Economy: An Agenda for Ethical Business Development
- 100 Resilient Cities - Pioneered by the Rockefeller Foundation

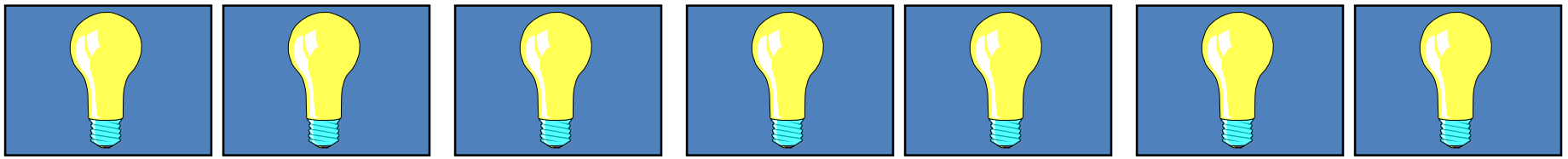
In What Ways can Circular Economy Systems Be Designed and Implemented to Contribute to Slowing down or Reversing Global Warming?

#@!?, #@!?, #@!?, #@!?, #@!?, #@!?,

Problem Multipliers

vs.

Solution Multipliers



Overview of this Presentation

- **What are the Roles of Alternative Paradigms and Indicators as Motivators for People to *Change to Equitable, Sustainable Post-Fossil Carbon Societies?***

Changing our Ways of Thinking & Acting

- **The secret of change is to focus all of your energy not on fighting the old, but on building the new.**
  - ***Socrates***

Changing our Ways of Thinking & Acting

If mankind is to survive, we shall require a substantially new manner of thinking.

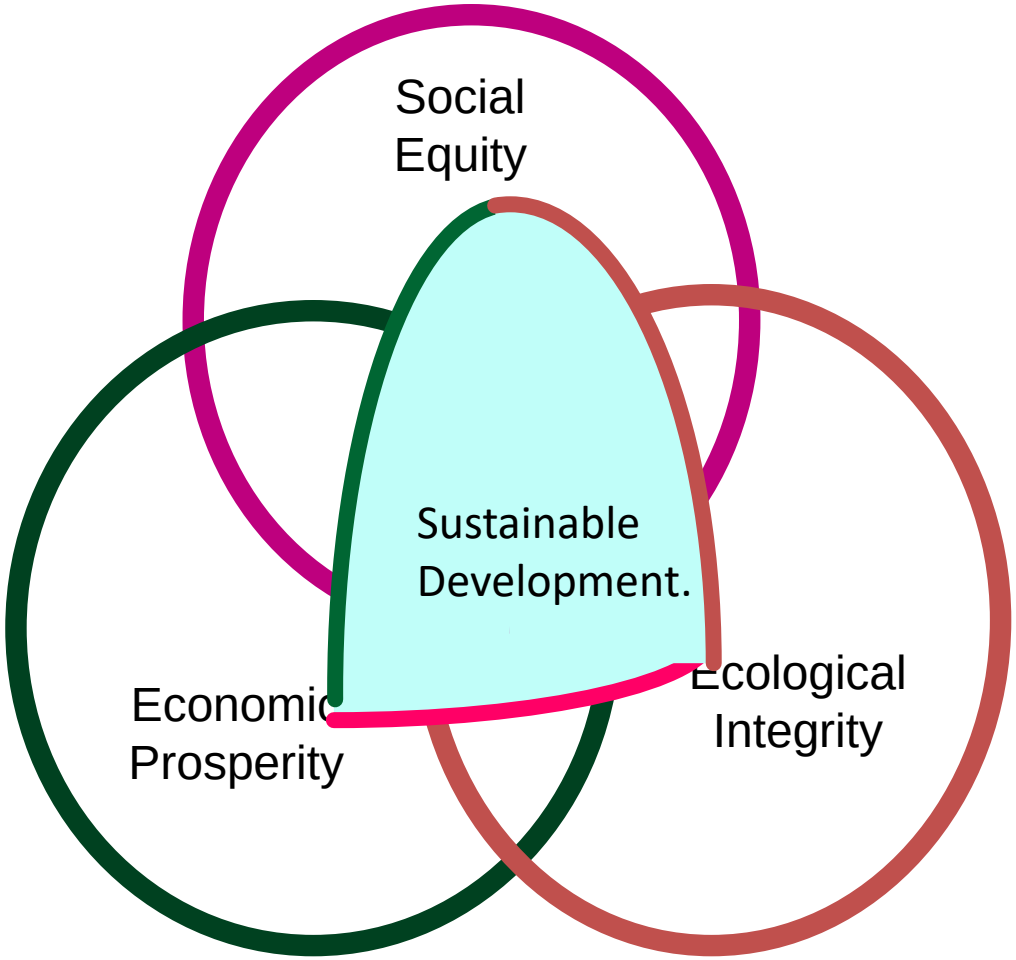
Albert Einstein

Changing our Ways of Thinking & Acting

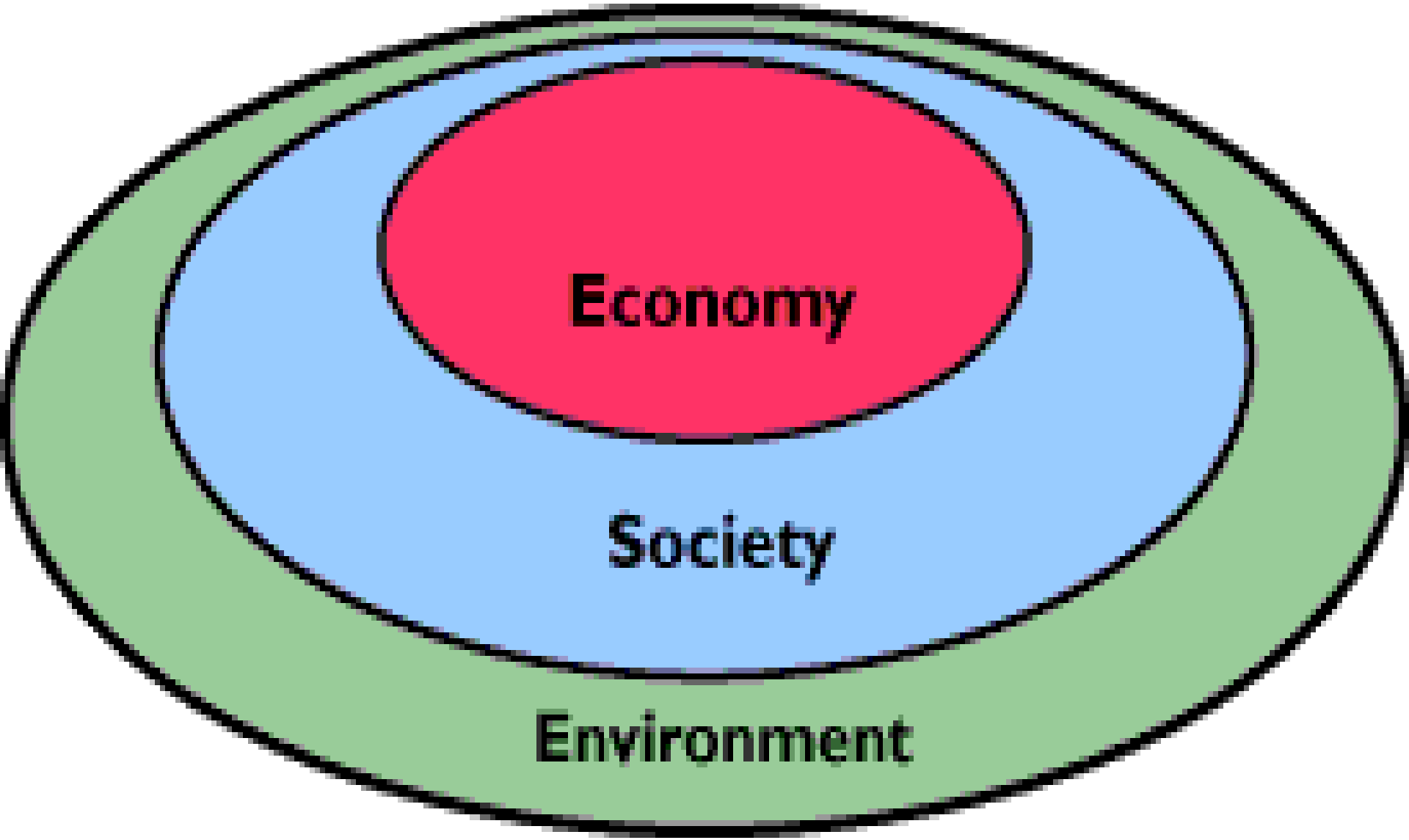
We must begin to see the possibility of evolving a *new lifestyle*, with new methods of production and new patterns of consumption; *a life-style designed for permanence*.

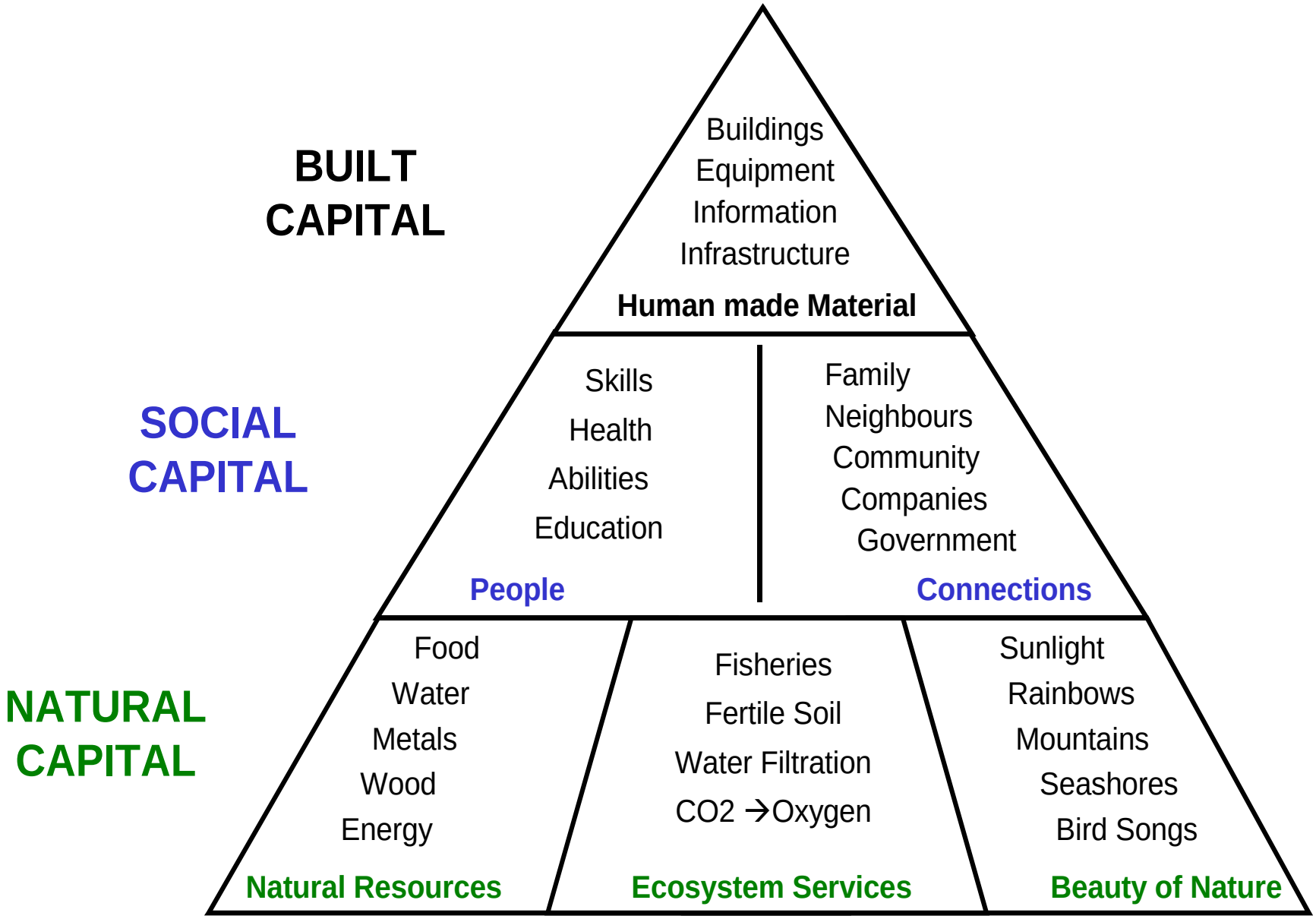
E. F. Schumacher

Sustainable Development

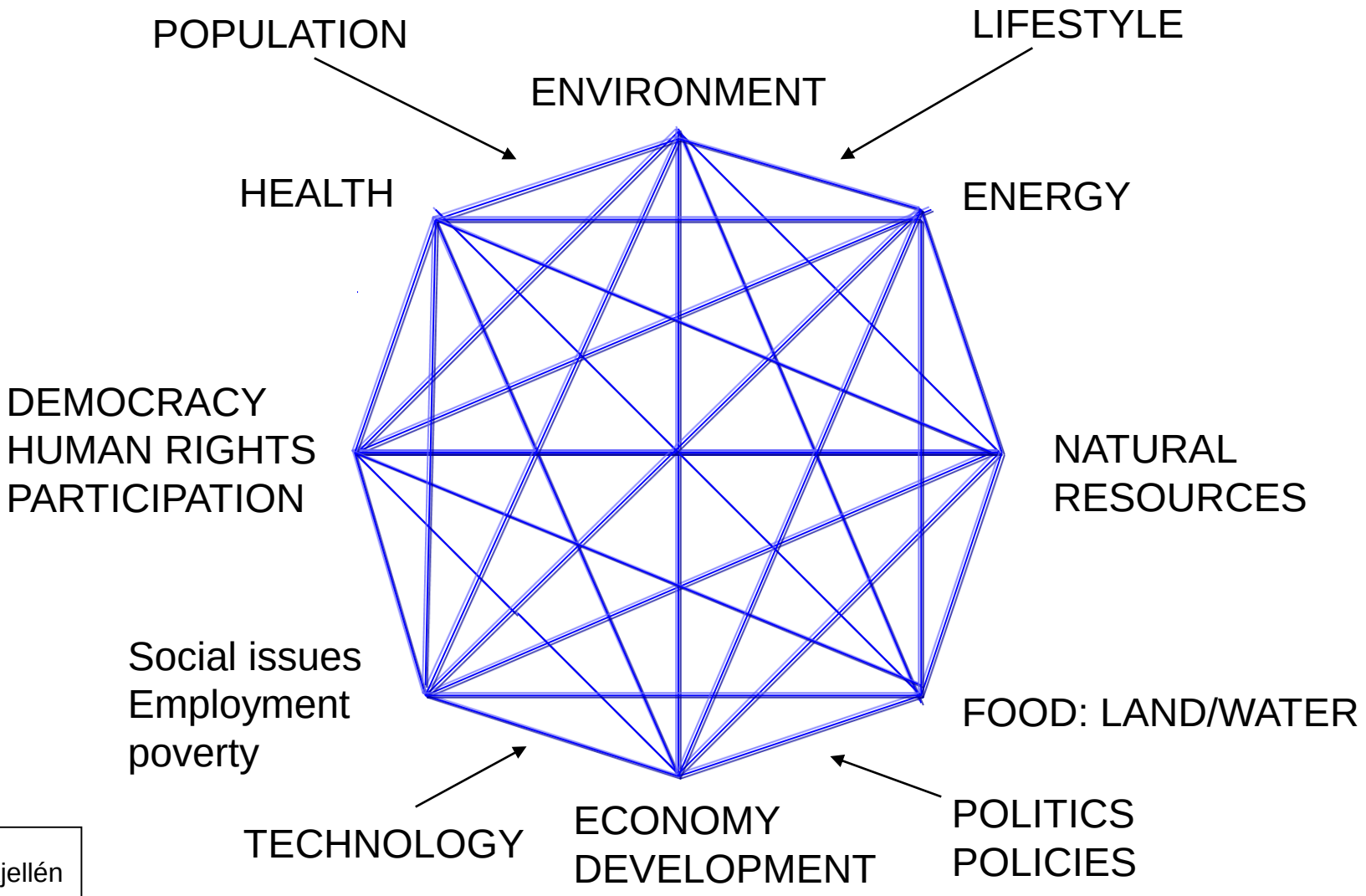


Making Sustainability Sustainable




BUILT CAPITAL
Buildings
Equipment
Information
Infrastructure
Human made Material
SOCIAL CAPITAL
Skills
Health
Abilities
Education
People
Family
Neighbours
Community
Companies
Government
Connections
NATURAL CAPITAL
Food
Water
Metals
Wood
Energy
Natural Resources
Fisheries
Fertile Soil
Water Filtration
CO2 →Oxygen
Ecosystem Services
Sunlight
Rainbows
Mountains
Seashores
Bird Songs
Beauty of Nature

Diamond of Sustainability



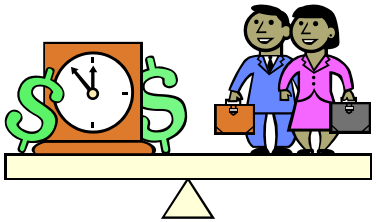
Trans Generational Perspectives

Let's not pass our environmental problems to the next generation

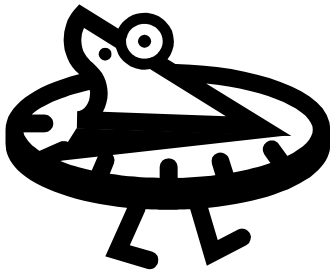
Background image taken from:
http://www.forestwander.com/wp-content/original/2012_04/autumn-flower-field-purple-flowers.jpg

Time…!

Governmental Time…?

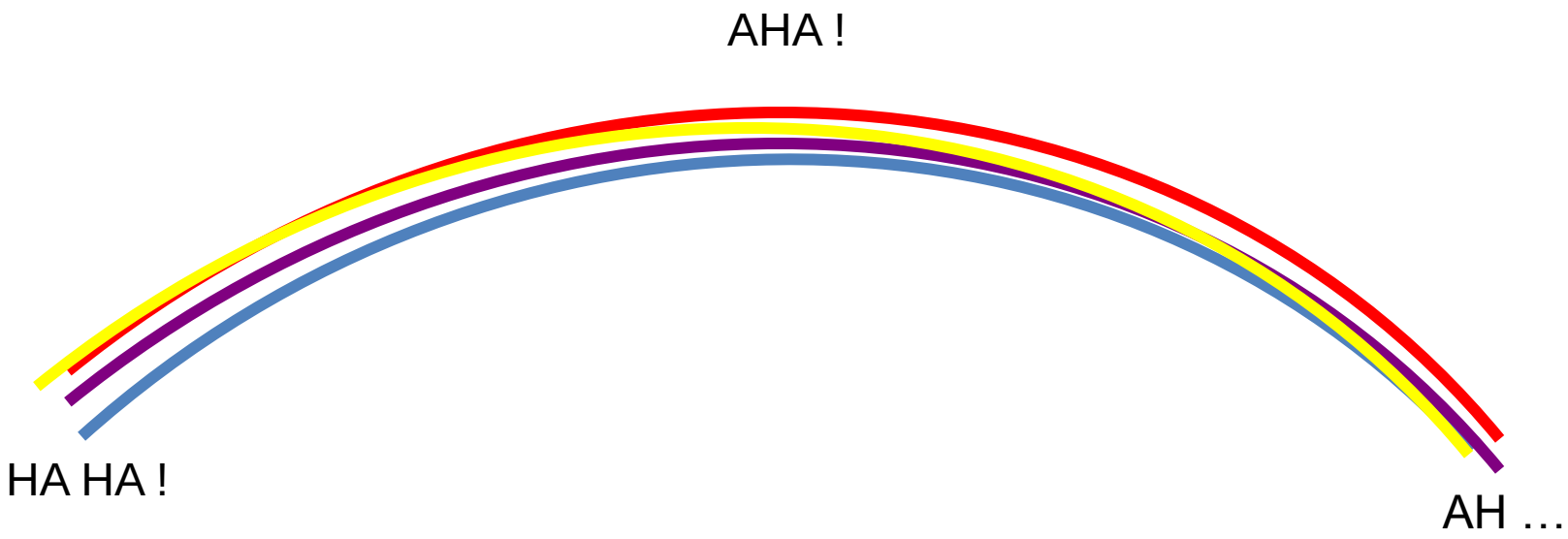


Species Time…?



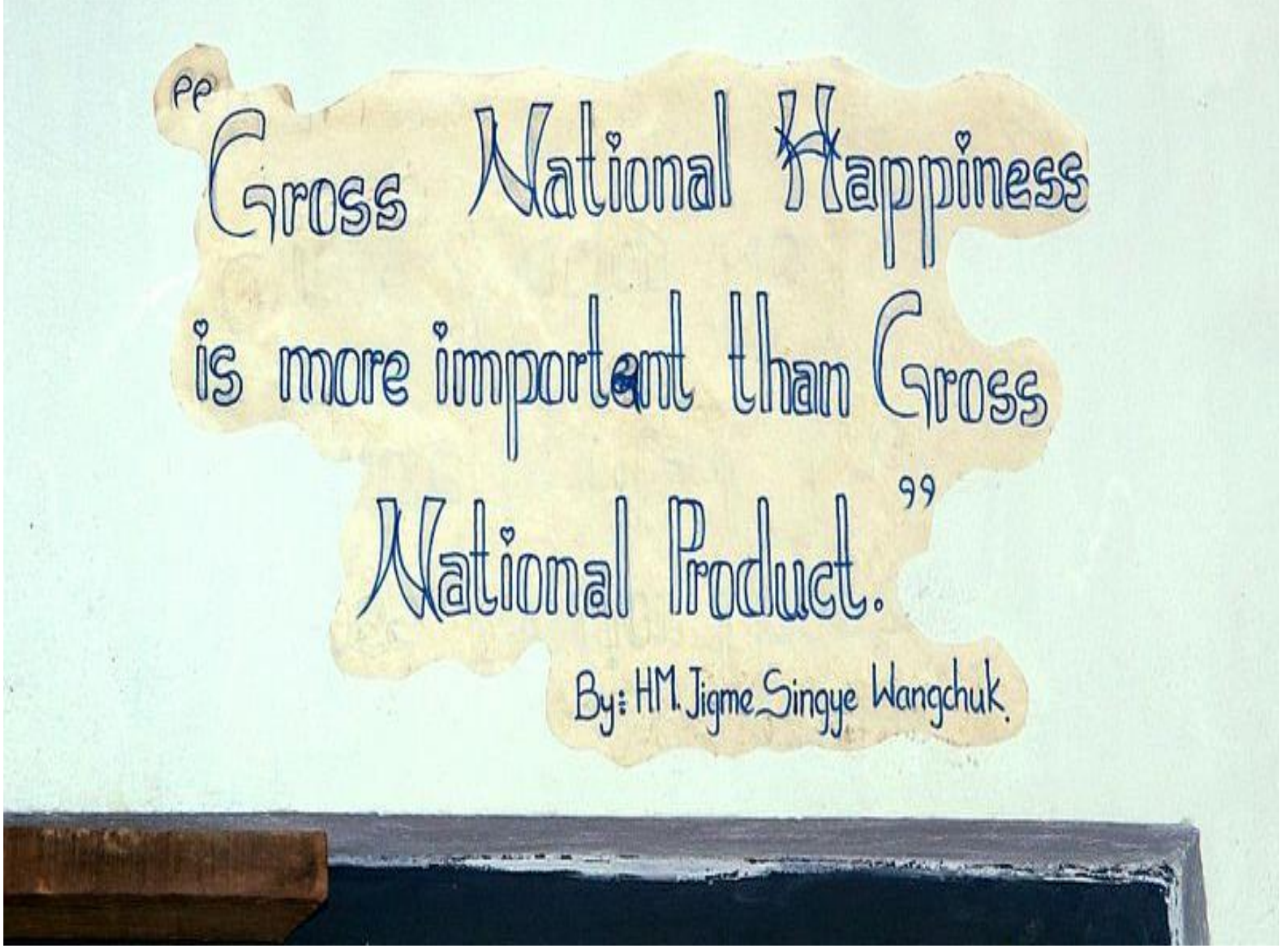
Corporate Time…?

Eco-system Time…?



“haha-aha-ah” curve

-after Arthur Koestler


"Gross National Happiness
is more important than Gross
National Product."
By: HM. Jigme Singye Wangchuk.

Bhutan's Four Pillars of Gross National Happiness

1. Good Governance
2. Balanced Economic Development
3. Environmental Preservation
4. Preserve and Promote Culture

Alternatives to Gross National Product (GNP) or Gross Domestic Product (GDP)

- The Happiness Index (HI);
- The Quality of Life Index (QoLI);
- The Wellness Index (WI);
- The Inclusive Wealth Index (IWI);
- World Happiness Index (WHI);
- The Happy Planet Index;
- The Gallup World Poll (QWP);
- The World Values Survey (WVS)
- The European Social Survey (ESS)
- The OECD Better Life Index
- The UNDP's Human Development Index (HDI);
- The True Sustainability Index;
- Country Futures Indicators;
- Human Development Index (HDI);
- The Calvert-Henderson Quality of Life Indictors;
- The Canadian Index of Well-Being.

ONE WORLD: Living Principles

- 1 Zero fossil-carbon
- 2 Zero waste
- 3 Sustainable transport
- 4 Sustainable materials
- 5 Local and sustainable food
- 6 Sustainable water
- 7 Land and wildlife
- 8 Culture and heritage
- 9 Equity and local economy
- 10 Health and happiness

In What Ways can Circular Economy Systems Be Designed and Implemented to Contribute to Slowing down or Reversing Global Warming?

Sustainable Development In Higher Education Requires Us to Adopt

- **New thinking;**

Sustainable Development In Higher Education Requires Us to Adopt

- New thinking;
- New paradigms;

Sustainable Development In Higher Education Requires Us to Adopt

- New thinking;
- New paradigms;
- New policies;

Sustainable Development In Higher Education Requires Us to Adopt

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- New paradigms;
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- New paradigms;
- New policies;
- New technologies;
- New management;
- New cooperation;

Sustainable Development In Higher Education Requires Us to Adopt

- New thinking;
- New paradigms;
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- New technologies;
- New management;
- New cooperation;
- New values.

Volume 15 Number 4 2007 ISSN 0959-6526

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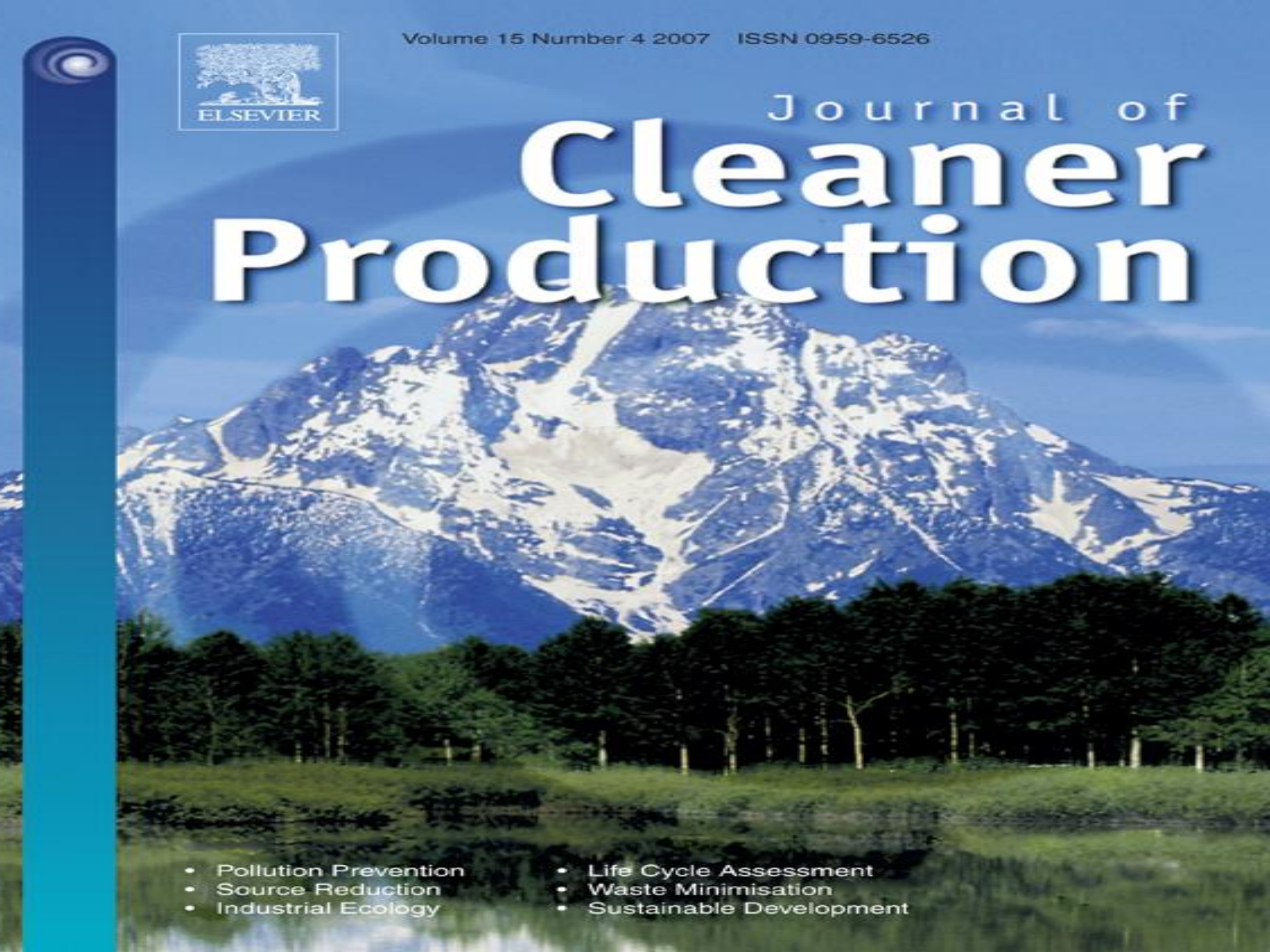


- Pollution Prevention
- Source Reduction
- Industrial Ecology
- Life Cycle Assessment
- Waste Minimisation
- Sustainable Development

Some Special Issues of the Journal of Cleaner Production

- **Eleven Special Issues have been published on:**

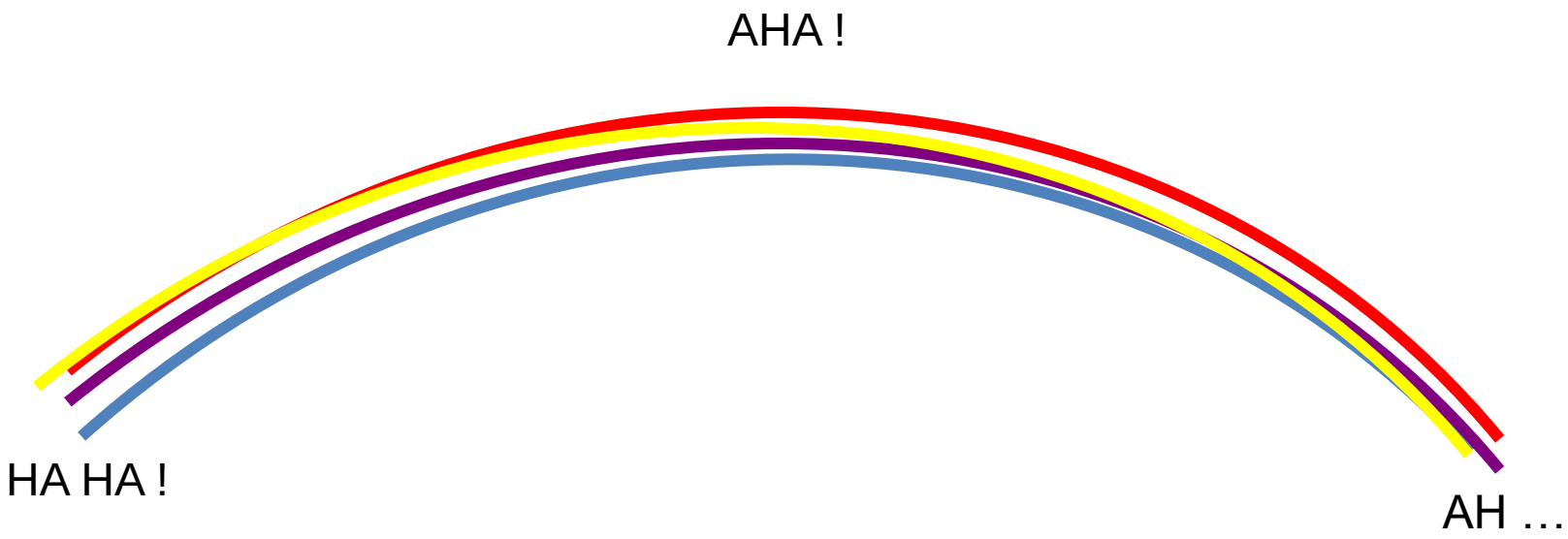
Education for Sustainable Societies

Sustainable development goals

Deadline: 2030

United Nations, 17 Goals to transform our world, 2016

In What Ways can Circular Economy Systems Be Designed and Implemented to Contribute to Slowing down or Reversing Global Warming?



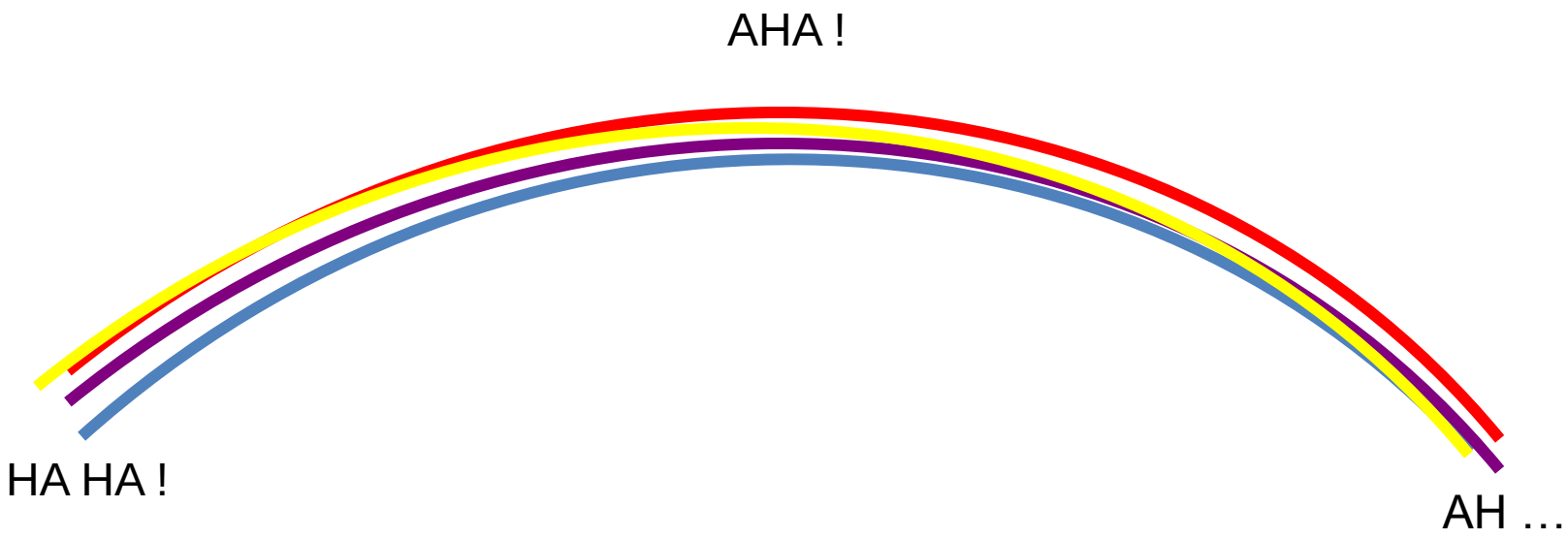
“haha-aha-ah” curve

-after Arthur Koestler

"Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse GLOBAL WARMING,"

***Edited by Paul Hawk*en**

- **The top ten most effective ways to make drawdown progress:**
  - **1. Refrigeration**
  - **2. Wind Turbines (Onshore)**
  - **3. Reduced Food Waste**
  - **4. Plant-rich diets**
  - **5. Expand Tropical Forests**
  - **6. Educate Girls**
  - **7. Family Planning**
  - **8. Solar Farms**
  - **9. Silvopasture**
  - **10.Rooftop Solar**



“haha-aha-ah” curve

-after Arthur Koestler

#UNLOCKING RESPONSIBLE LUXURY
The Manifesto

Developed for the Conference on the Fashion Industry's responsibilities in the context of Climate Changes held at POLITECNICO DI MILANO on Nov 28, 2018 .

The Manifesto was prepared by:

Hakan Karaosman, Lisa Niepelt, Alessandro Brun, Alessandro Motta and Ida Ferrer

10 MASTER KEYS TO UNLOCK RESPONSIBLE LUXURY

- **1 Create an inclusive social dialogue with downstream and upstream partners;**

10 MASTER KEYS TO UNLOCK RESPONSIBLE LUXURY

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- 2 Create a supply chain culture that ensures welfare, health and safety and fair wages at all stages;

10 MASTER KEYS TO UNLOCK RESPONSIBLE LUXURY

- 1 Create an inclusive social dialogue with downstream and upstream partners;
- 2 Create a supply chain culture that ensures welfare, health and safety and fair wages at all stages;
- 3 Be more than ‘less unsustainable’;

10 MASTER KEYS TO UNLOCK RESPONSIBLE LUXURY

- 1 Create an inclusive social dialogue with downstream and upstream partners;
- 2 Create a supply chain culture that ensures welfare, health and safety and fair wages at all stages;
- 3 Be more than ‘less unsustainable’;
- 4 Preserve the Human Capital by Empowering, guiding, inspiring and respecting others;

10 MASTER KEYS TO UNLOCK RESPONSIBLE LUXURY

- 1 Create an inclusive social dialogue with downstream and upstream partners;
- 2 Create a supply chain culture that ensures welfare, health and safety and fair wages at all stages;
- 3 Be more than ‘less unsustainable’;
- 4 Preserve the Human Capital by Empowering, guiding, inspiring and respecting others;
- 5 Engage consumers to become more conscious;

10 MASTER KEYS TO UNLOCK RESPONSIBLE LUXURY

- **6 Design products in accordance with circular design principles;**

10 MASTER KEYS TO UNLOCK RESPONSIBLE LUXURY

- 6 Design products in accordance with circular design principles;
- 7 Utilise innovative and sustainable materials to design creative, responsible and lovable items;

10 MASTER KEYS TO UNLOCK RESPONSIBLE LUXURY

- 6 Design products in accordance with circular design principles;
- 7 Utilise innovative and sustainable materials to design creative, responsible and lovable items;
- 8 Create value with limited resources;

10 MASTER KEYS TO UNLOCK RESPONSIBLE LUXURY

- 6 Design products in accordance with circular design principles;
- 7 Utilise innovative and sustainable materials to design creative, responsible and lovable items;
- 8 Create value with limited resources;
- 9 Create a supply chain culture to maximize resource efficiency;

10 MASTER KEYS TO UNLOCK RESPONSIBLE LUXURY

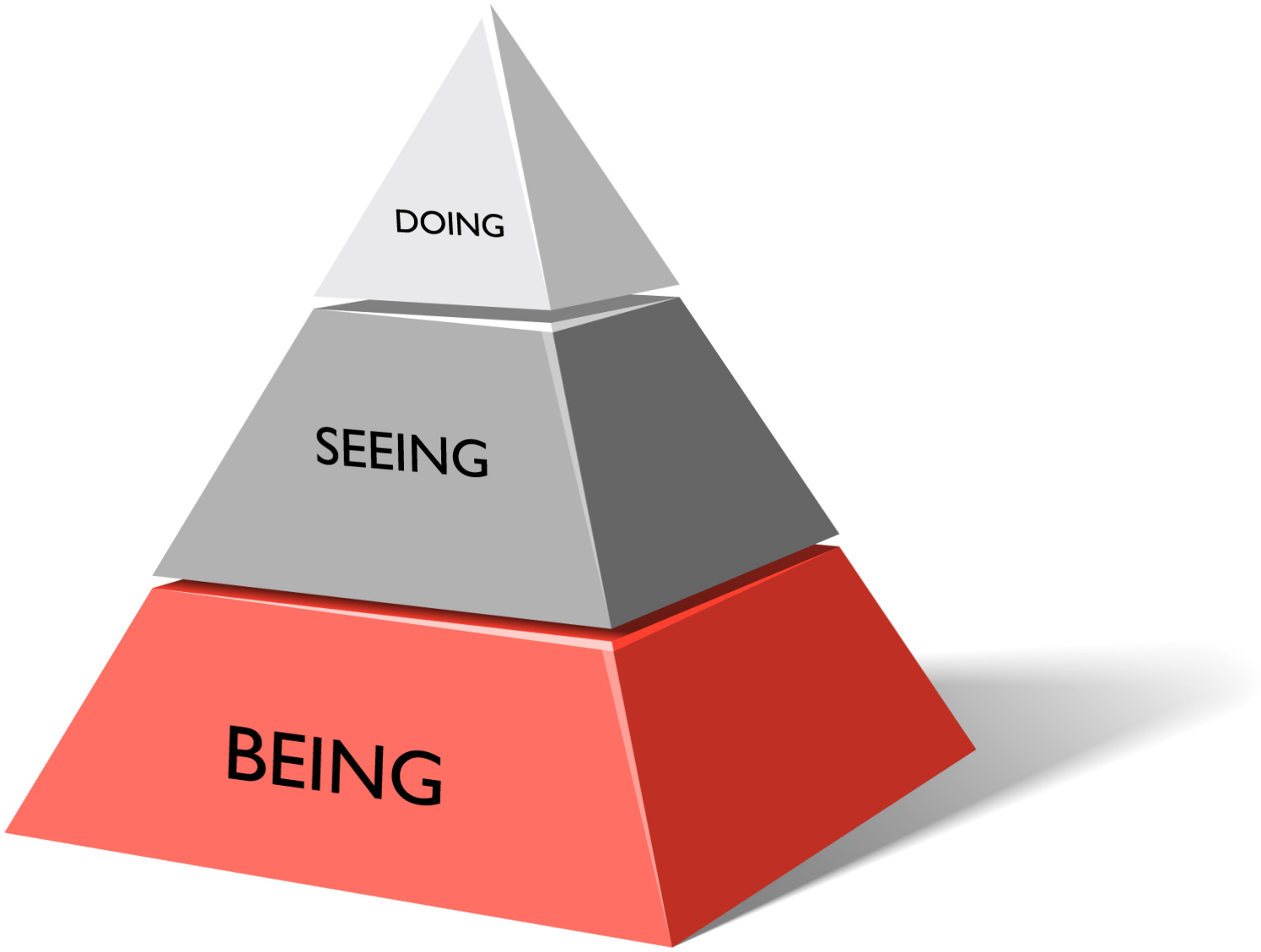
- 6 Design products in accordance with circular design principles;
- 7 Utilise innovative and sustainable materials to design creative, responsible and lovable items;
- 8 Create value with limited resources;
- 9 Create a supply chain culture to maximize resource efficiency;
- 10 Implement cleaner production and circular economy strategies at supplier's facilities;

Overview of this Presentation

- **What are the roles of Change Agents in Catalyzing Changes to *Equitable, Sustainable, Post-Fossil Carbon Societies?***

Crucial Characteristics of Effective Change Agents

The Transformational Change Agent Framework: Being-Seeing-Doing



The Transfomational Change Agent Framework

- **BEING – personal characteristics and qualities of transformational change agents**
- **SEEING – the ability to make sense of, and to reshape perceptions of 'reality'**
- **DOING – the specific skills and methods for creating change**

BEING – personal characteristics and qualities of transformational change agents

- **1. They are a role model first and a preacher second**
- **2. They are optimistic; they inspire hope not fear**
- **3. They are courageous and selfless**
- **4. They are trusted, and leverage it**
- **5. They are in service, not subservience**

SEEING – the ability to make sense of, and reshape perceptions of 'reality'

- 6. They see a different 'normal'
- 7. They see the distinction between fact and truth
- 8. They see leaders in a sympathetic light
- 9. They see all interventions in a strategic context
- 10. They see a 'higher self'

DOING – the specific skills and methods for creating change

- 11. They create a setting for success, without needing to control the process
- 12. They artfully apply frameworks, models and tools
- 13. They provide correction to senior executives without causing resentment
- 14. They appeal to the heart (emotion) and then to the head (logic)
- 15. They make a call to action

How can faculty, students and alumni work with cities, governments, industries, NGOs and citizens to catalyze changes to Equitable, Sustainable, Post-Fossil Carbon Societies"

- **Learn how the systems work;**
- **Understand how to work with the systems by effectively using leverage points;**
- **Be a role model for the changes you hope to see evolve in society.**

In What Ways can Circular Economy Systems Be Designed and Implemented to Contribute to Slowing down or Reversing Global Warming?

Cleaner Production, Circular Economies and Sustainable Societies
are parts of the Local, Regional & Global

Journey

..... But not the Destination!

In Summary

- **Have the crises helped us to make the necessary transitions?**

In Summary

- Have the crises helped us to make the necessary transitions?
- Have the good examples helped us to make necessary transitions?

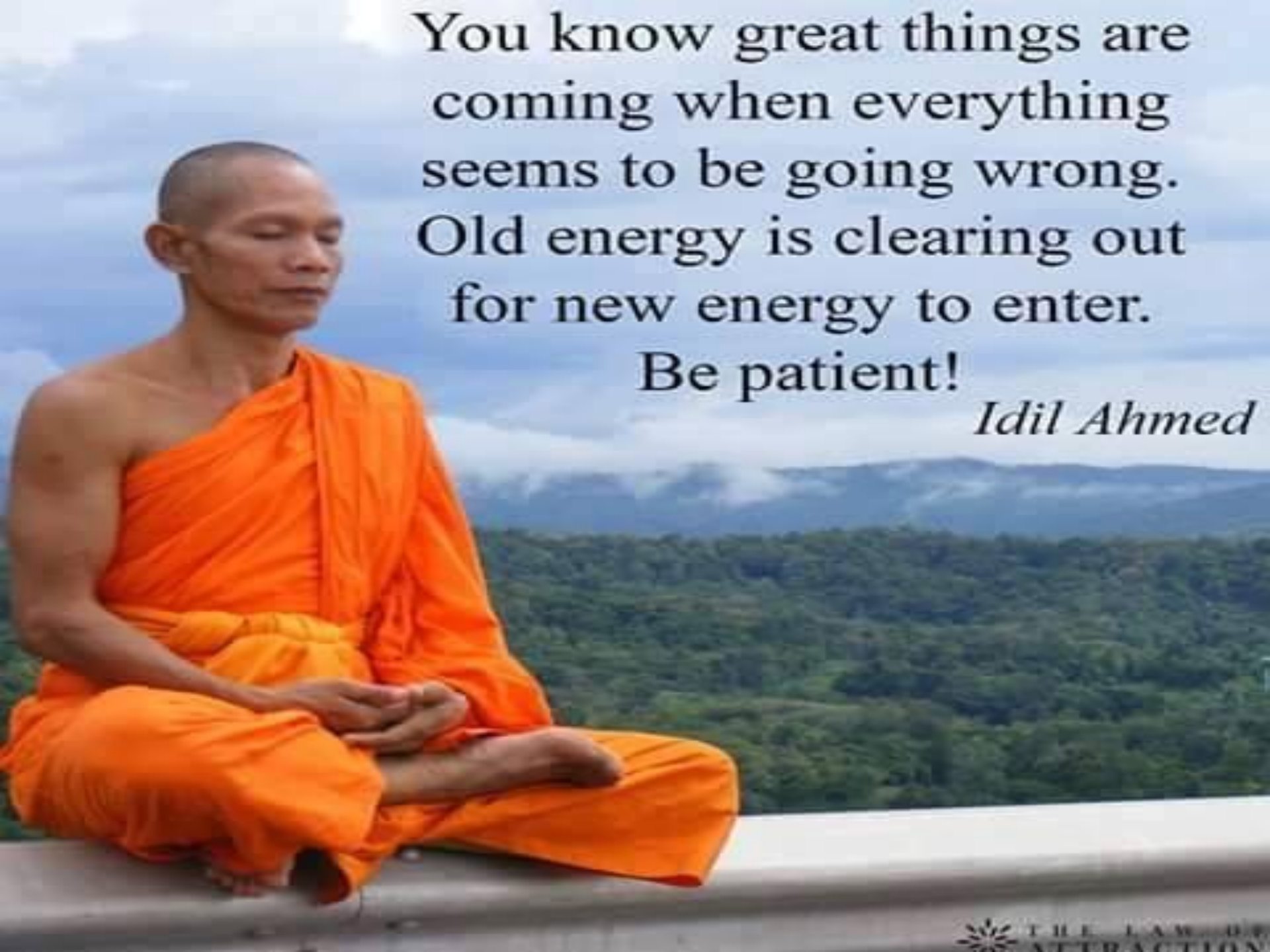
In Summary

- Have the crises helped us to make the necessary transitions?
- Have the good examples helped us to make necessary transitions?
- Have the alternative paradigms helped us to make necessary transitions?

In Summary

- Have the crises helped us to make the necessary transitions?
- Have the good examples helped us to make necessary transitions?
- Have the alternative paradigms helped us to make necessary transitions?
- Have the change agents helped us to make the necessary transitions?


TOO
MUCH
EGO
WILL
KILL
YOUR
TALENT


You know great things are
coming when everything
seems to be going wrong.
Old energy is clearing out
for new energy to enter.
Be patient!
Idil Ahmed

Iceland's Political Decision

- As of the first day of 2018 Iceland wasthe first country in the world to *legalise* equal pay between men and women.
- Iceland has ranked #1 in gender equity for the last nine years in a row!
- For comparison, the United Stated is ranked 49th!!!!!!

危

Danger

wei

机

Opportunity

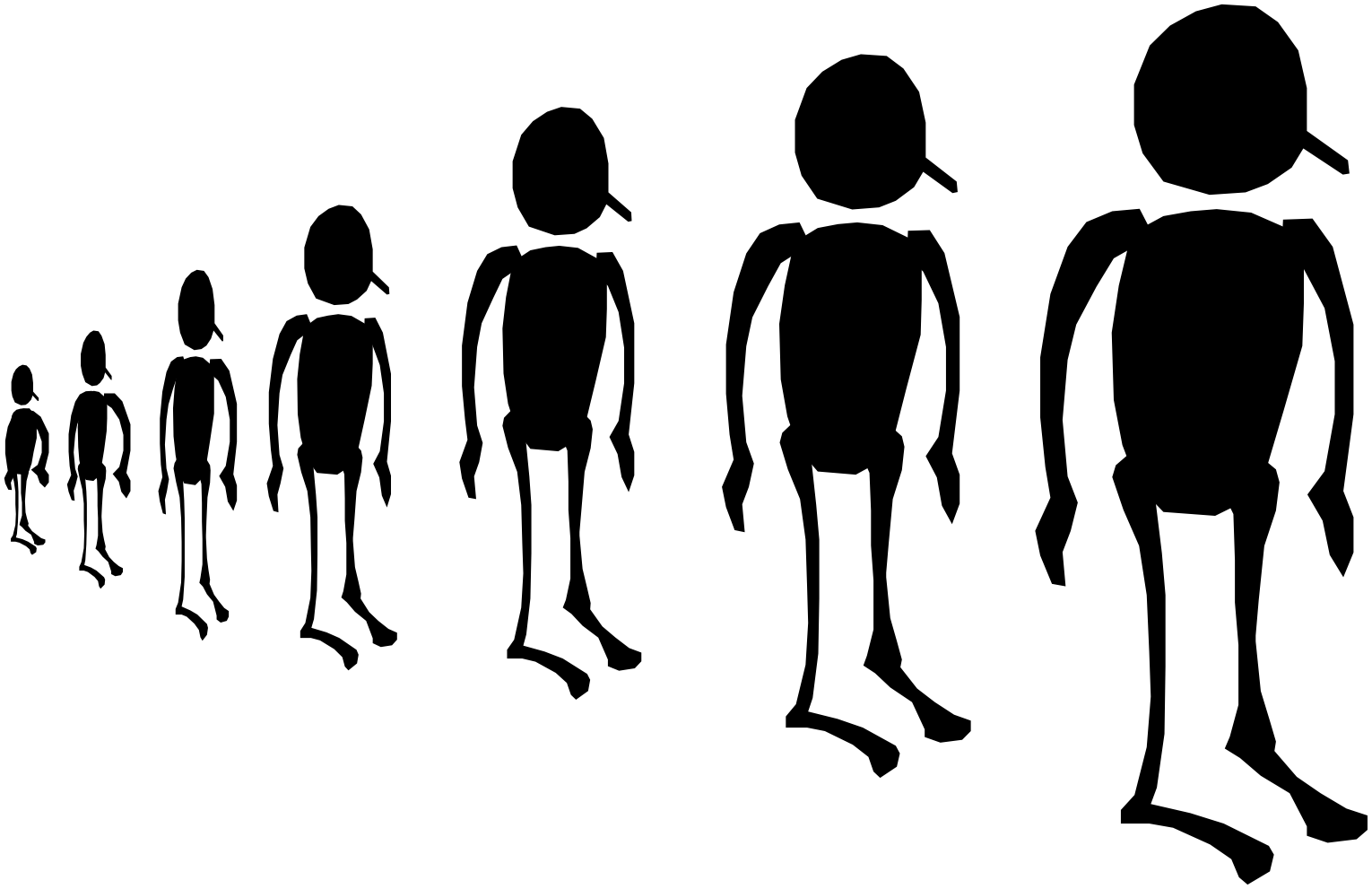
Ji

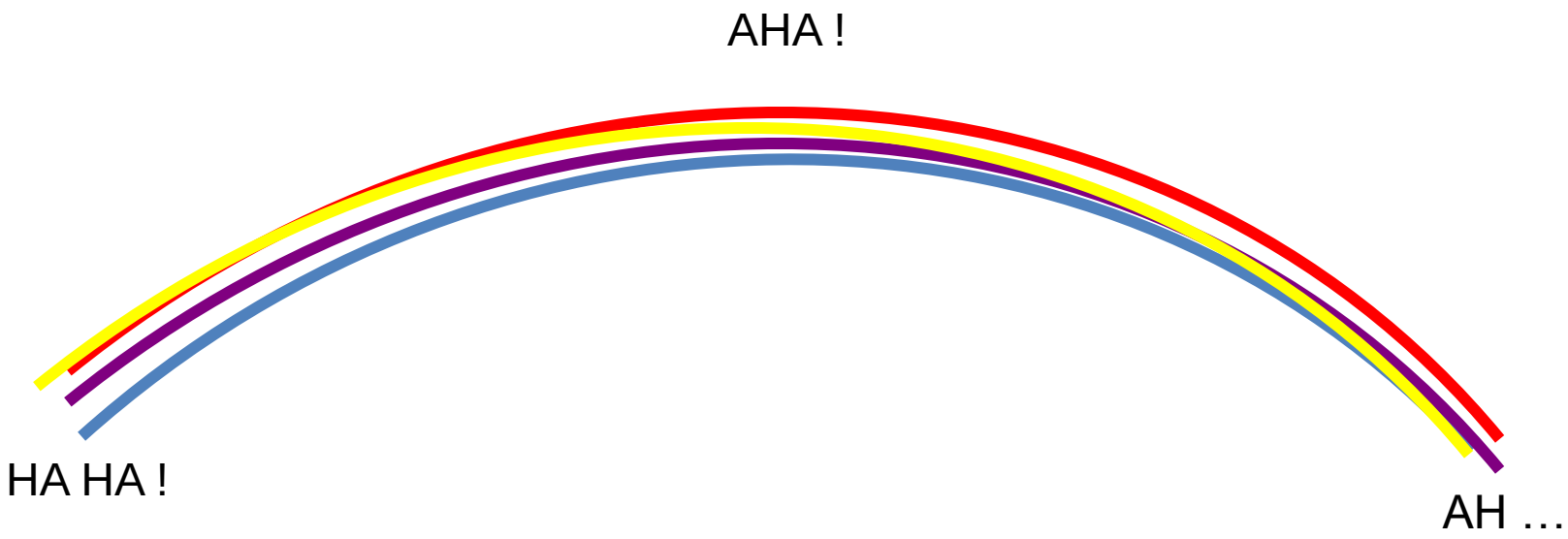
What can we learn from history?

What can we learn?

Can we learn?????

Who should be empowered to make decisions on international and global welfare issues?





“haha-aha-ah” curve

-after Arthur Koestler

Why Do You Think that You/We Can MAKE A DIFFERENCE IN THE HUMAN FUTURE ON PLANET EARTH?

In What Ways Can Circular Economy Systems Be Designed and Implemented To Accelerate the Transition To *Truly Sustainable, Equitable, Livable, Post-Fossil Carbon Societies?*

What Can We Learn From The Snail???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www.abunawaf.com

We have to stretch beyond our comfort zones and venture into new ways of thinking & acting to lead in, "Accelerating the Transition to Equitable, Sustainable, Livable, Post-Fossil Carbon Societies!!!

-Old Polish Proverb

If you don’t want to do something, you can always find an excuse!

If you don’t want to do something, you can always find an excuse!

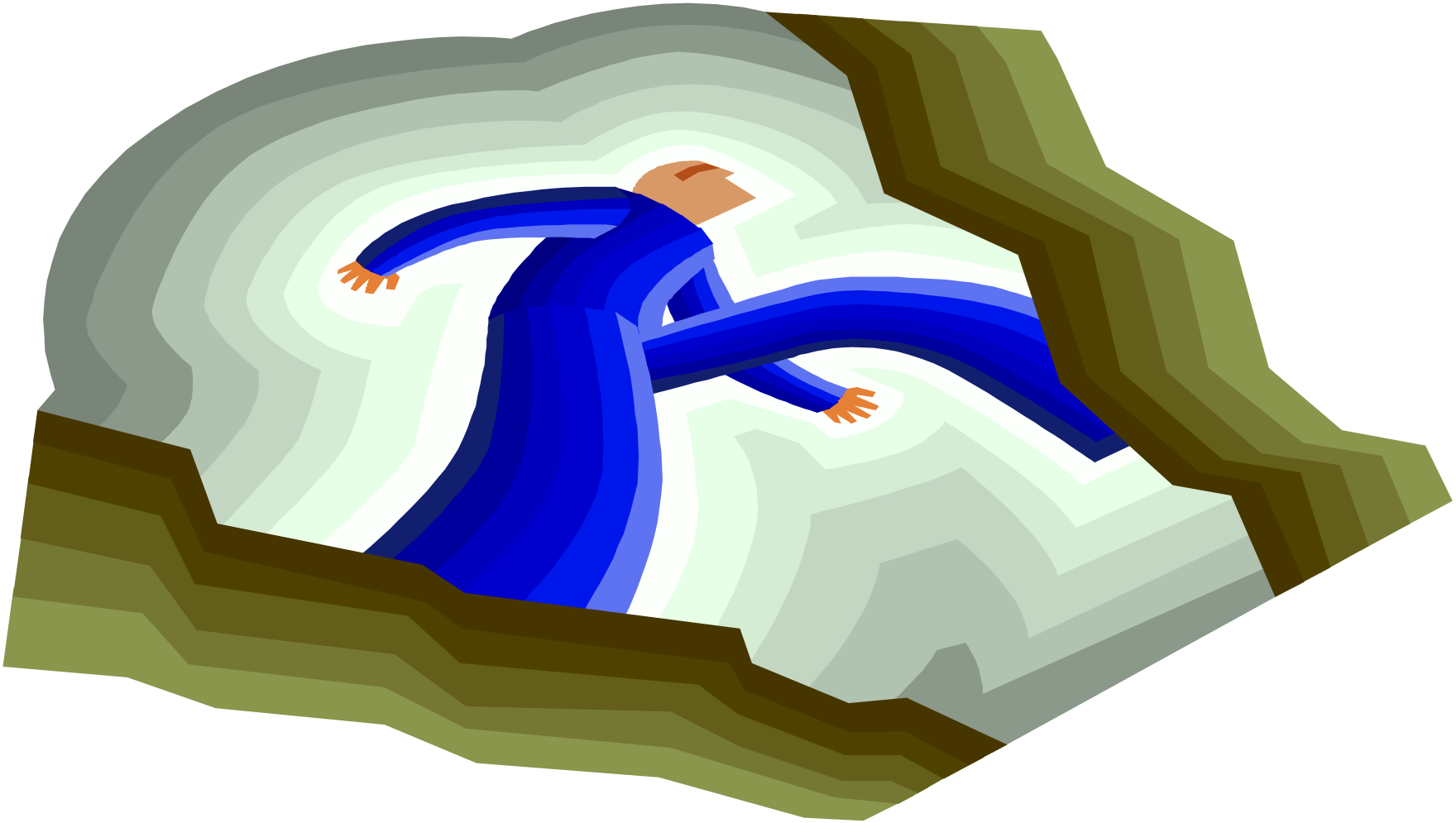
If you do want to do something,

you can always find a way!!!

If you want to go fast, go alone.
If you want to go far, go together.

African Proverb

- ***Are we <u>ready & willing</u>* to take the necessary steps?**



What can we learn from history?

What can we learn?

Can we learn?????

Prove it!

Show the World and Yourself that,

"YOU CAN HELP TO MAKE CHANGES HAPPEN!!"

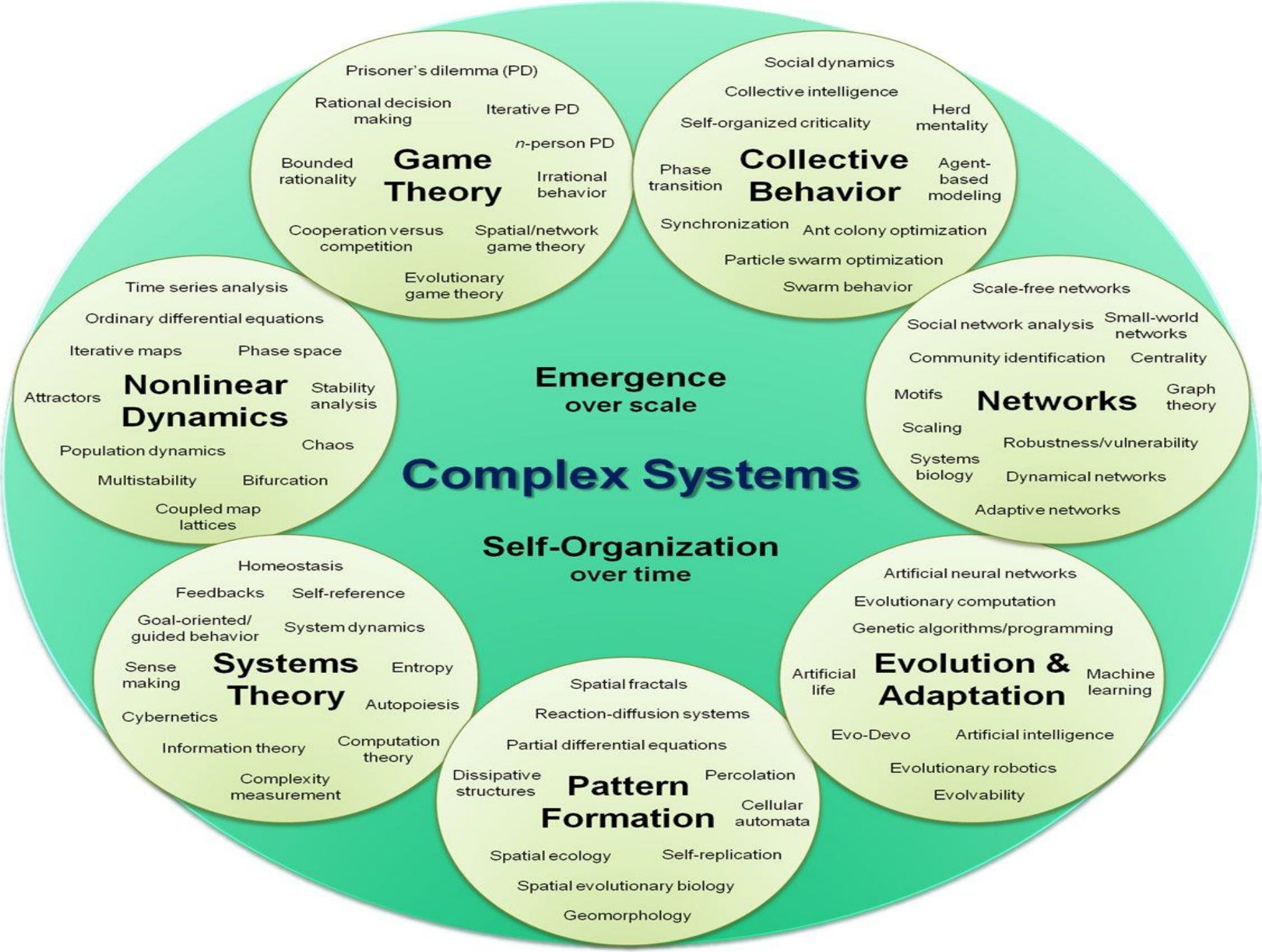
The Choice to Evolve

- **“Your every thought, decision and action moves us one step closer to our downfall or towards our evolution as caring stewards of this Earth.**
- **You will make a measurable difference by your actions or through your apathy.**
- **Let the work begin, let each of us choose individually how to BE the Change that will Evolve humanity and heal that Earth.”**
  - From THE ENVIROPEADIA-2006 (www.enviropeadia.com)


Dec. 4, 1992
Gemma M. M. Jones
"Thinking"

Let's not pass our environmental problems to the next generation

Background image taken from:
http://www.forestwander.com/wp-content/original/2012_04/autumn-flower-field-purple-flowers.jpg


Complex Systems
Emergence
over scale
Self-Organization
over time
Game Theory
Prisoner's dilemma (PD)
Rational decision making
Iterative PD
n-person PD
Bounded rationality
Irrational behavior
Cooperation versus competition
Spatial/network game theory
Evolutionary game theory
Collective Behavior
Social dynamics
Collective intelligence
Herd mentality
Self-organized criticality
Phase transition
Agent-based modeling
Synchronization
Ant colony optimization
Particle swarm optimization
Swarm behavior
Nonlinear Dynamics
Time series analysis
Ordinary differential equations
Iterative maps
Phase space
Attractors
Stability analysis
Chaos
Population dynamics
Multistability
Bifurcation
Coupled map lattices
Networks
Scale-free networks
Social network analysis
Small-world networks
Community identification
Centrality
Motifs
Graph theory
Scaling
Robustness/vulnerability
Systems biology
Dynamical networks
Adaptive networks
Systems Theory
Homeostasis
Feedbacks
Self-reference
Goal-oriented/ guided behavior
System dynamics
Sense making
Entropy
Autopoiesis
Cybernetics
Information theory
Computation theory
Complexity measurement
Evolution & Adaptation
Artificial neural networks
Evolutionary computation
Genetic algorithms/programming
Artificial life
Machine learning
Evo-Devo
Artificial intelligence
Evolutionary robotics
Evolvability
Pattern Formation
Spatial fractals
Reaction-diffusion systems
Partial differential equations
Dissipative structures
Percolation
Cellular automata
Spatial ecology
Self-replication
Spatial evolutionary biology
Geomorphology