



# 5<sup>th</sup> INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

São Paulo - Brazil  
May 20<sup>th</sup> - 22<sup>nd</sup> - 2015

“CLEANER PRODUCTION TOWARDS A SUSTAINABLE TRANSITION”

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

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**The Institute for a Secure and Sustainable Environment,  
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# Overview of this Presentation

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

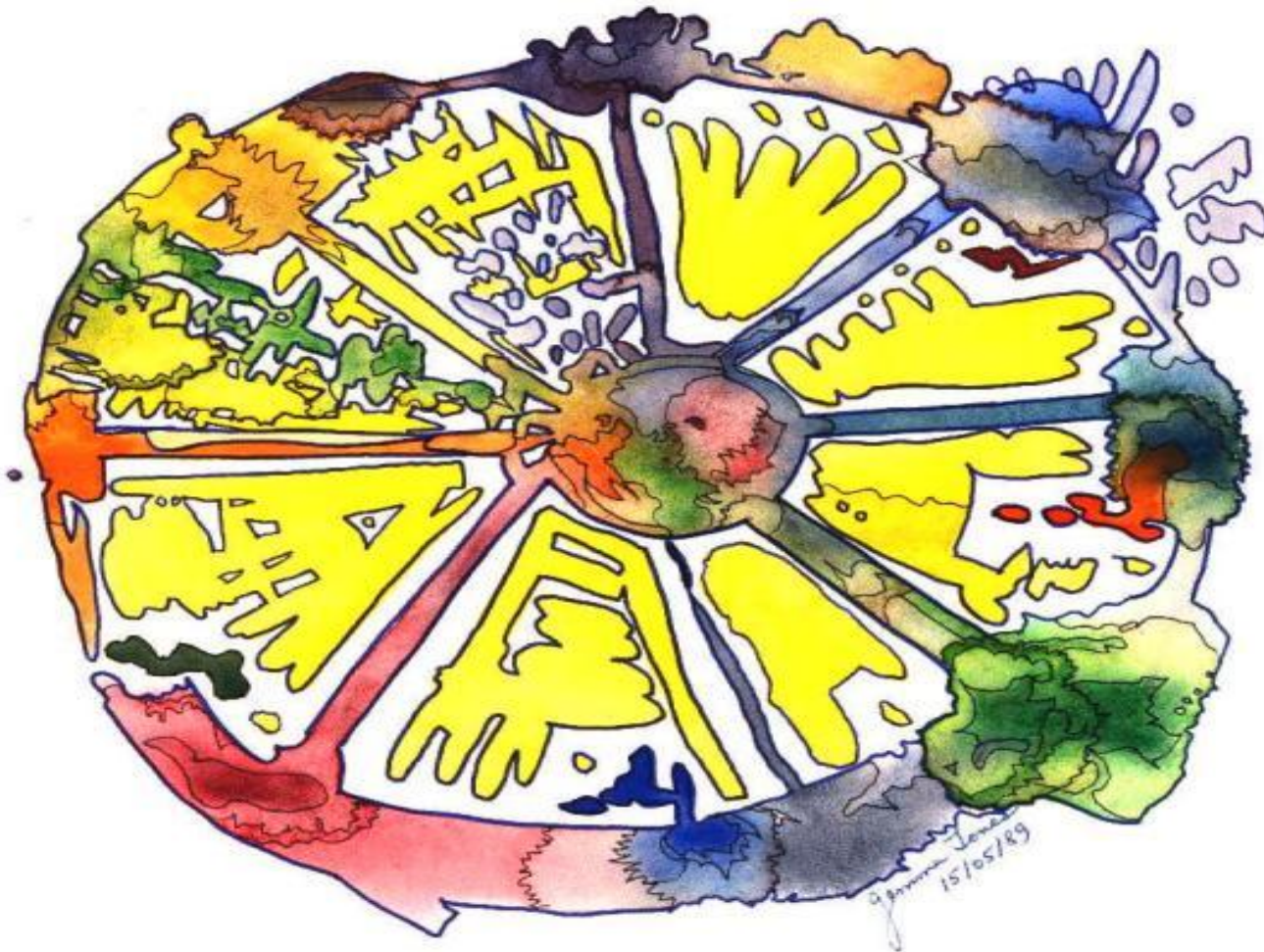
# Overview of this Presentation

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

# Overview of this Presentation

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

# Where Are We and Where Are We Going?



# What is Ahead on our Road to the Future?



# What is Ahead on our Road to the Future?

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

# What is Ahead on our Road to the Future?

- ***What do we envision for a sustainable future society?***
  - \_What will it look like?***
  - \_How will it function differently from current societies?***
  - \_How will we achieve such societies?***
  - \_How will we know if we achieve such societies?***
  - \_How will we know if we don't achieve such societies?***

# 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 evidence do we have that we are **NOT** on the proper path to achieve a Sustainable Society?

-What can/should we do to get on the proper path?

-How soon do we need to get **ON** that proper path?

# 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 into opportunities????***

***What types of indicators, governance, education/training & values will be needed to make the transitions?***



# **SUSTAINABILITY THROUGH INTERCONNECTIONS**

**This 115 cm X 115 cm wall hanging was created for the Global Conference to build upon the planner's vision of integrating art and science to promote sustainable societal changes.**

- I liked the complexity of this pattern because it reflects the scientific concepts of reductionism and holism. When one first looks at the world, as in looking at the wall hanging, it is incredibly complex.**
- Continued study helps one to break it down into recognizable elements and to then put them back together with all of their interconnections being observable in a clearer way.**

# **SUSTAINABILITY THROUGH INTERCONNECTIONS**

- I developed this wall hanging from scraps of 120 different fabrics I saved while making other quilts. This reflects the value of conservation.
- Some of the fabrics are representative of various countries or cultures. They are incorporated into the design to emphasize that the search for knowledge includes everyone and that we all have a role in the work that needs to be done.
- It is my hope that this wall hanging will inspire us to use our intuitive and logical skills for preventing and solving societal problems. I share it with happiness and hope that we will soon make the transition to equitable, sustainable, post-fossil carbon societies. Lovingly, Jo Huisingh

***If you want to go  
fast, go alone.***

***If you want to go  
far, go together.***

**African Proverb**

# Overview of this Presentation

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

***What can we  
learn from  
history?***

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learn?***

*What can we  
learn from  
history?*

*What can we  
learn?*

*Can we learn?*

# 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) Fukushima (2011) Nuclear reactor meltdowns-
- Smogs and Climate Change (1930 – Present)
- <http://www.worldwatch.org/brain/features/timeline/timeline.htm>

危机

**Crisis**

危

**Danger**

wei

机

Opportunity

Ji

危机

**Crisis**

**weiji**

# 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?

# Six of the Top Ten Environmental Crisis Incidents in 20<sup>th</sup> Century

1930.12	Belgium	Meuse Valley fog
Causes	Combination of industrial air pollution and climatic conditions & pollutants: <b>SO<sub>2</sub>, SO<sub>3</sub>, Particulates</b>	
Consequences	<b>Sixty-Three human deaths in one week; main symptom was dyspnea (shortness of breath);</b>	



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



1948.10.16-21	Pennsylvania, USA	Donora smog
<b>Causes</b>	The town lies in a <b>valley</b> with mountains on both sides; toxic gases such as <b>SO<sub>2</sub>, NO<sub>x</sub>, HF</b> were emitted from <b>sulphuric acid and steel plants</b> & accumulated in the valley due to a thermal inversion	
<b>Consequences</b>	<b>Twenty human deaths</b> and 14,000 severe illnesses; symptoms were <b>eye diseases, respiratory and digestive diseases</b>	



1952.12.5-9	London, UK	Great Smog
Causes	<b>CO<sub>2</sub>, CO, SO<sub>2</sub>, TSP</b> emissions from <b>coal burning</b> ; <b>vehicle exhaust</b> —particularly from diesel-fuelled buses; & heavily polluted air from <b>continental Europe</b>	
Consequences	<b>Four thousand human deaths</b> in four days; symptoms: <b>bronchitis, acute respiratory failure, heart failure.</b>	

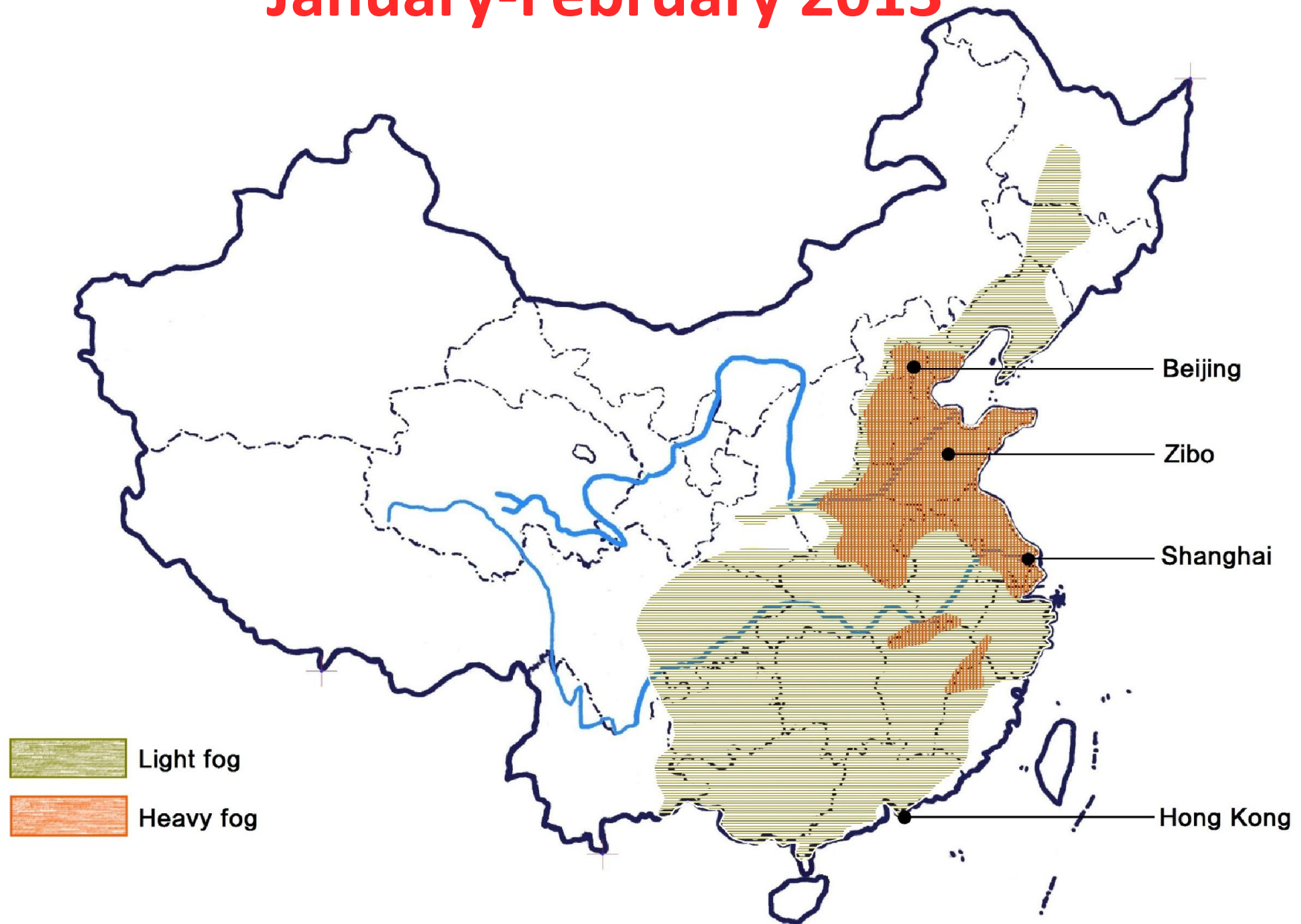


1961	Yokkaichi, Japan	Yokkaichi asthma
Causes	<b>SO<sub>2</sub>, TSP</b> emissions from petrochemical processing facilities and refineries	
Consequences	Severe cases of <b>obstructive pulmonary disease, chronic bronchitis, pulmonary emphysema, and bronchial asthma</b>	



# Great F(Smog) of China

## January-February 2013



Tian 'an Men Square



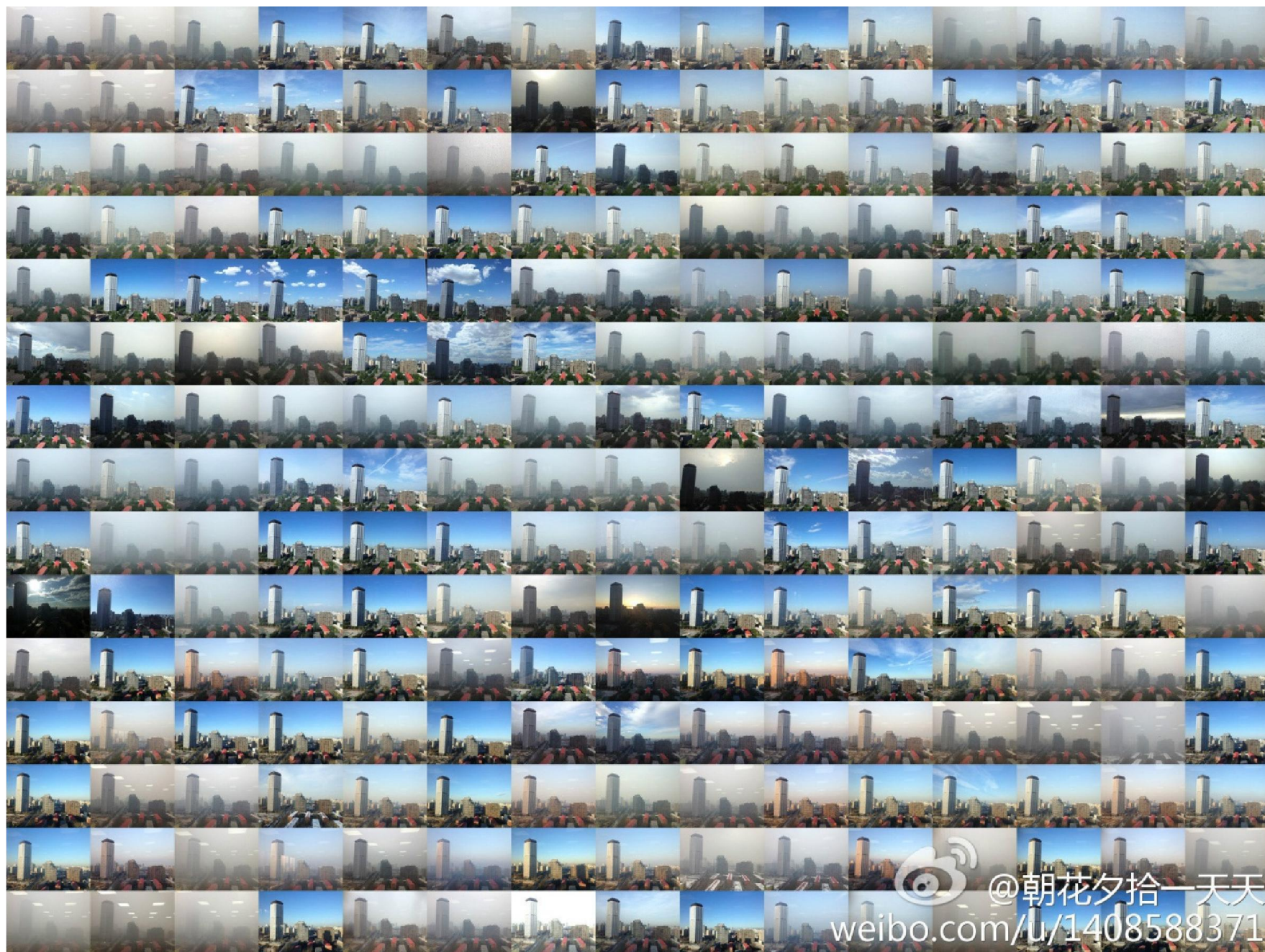
The Oriental Pearl TV Tower

Zibo City

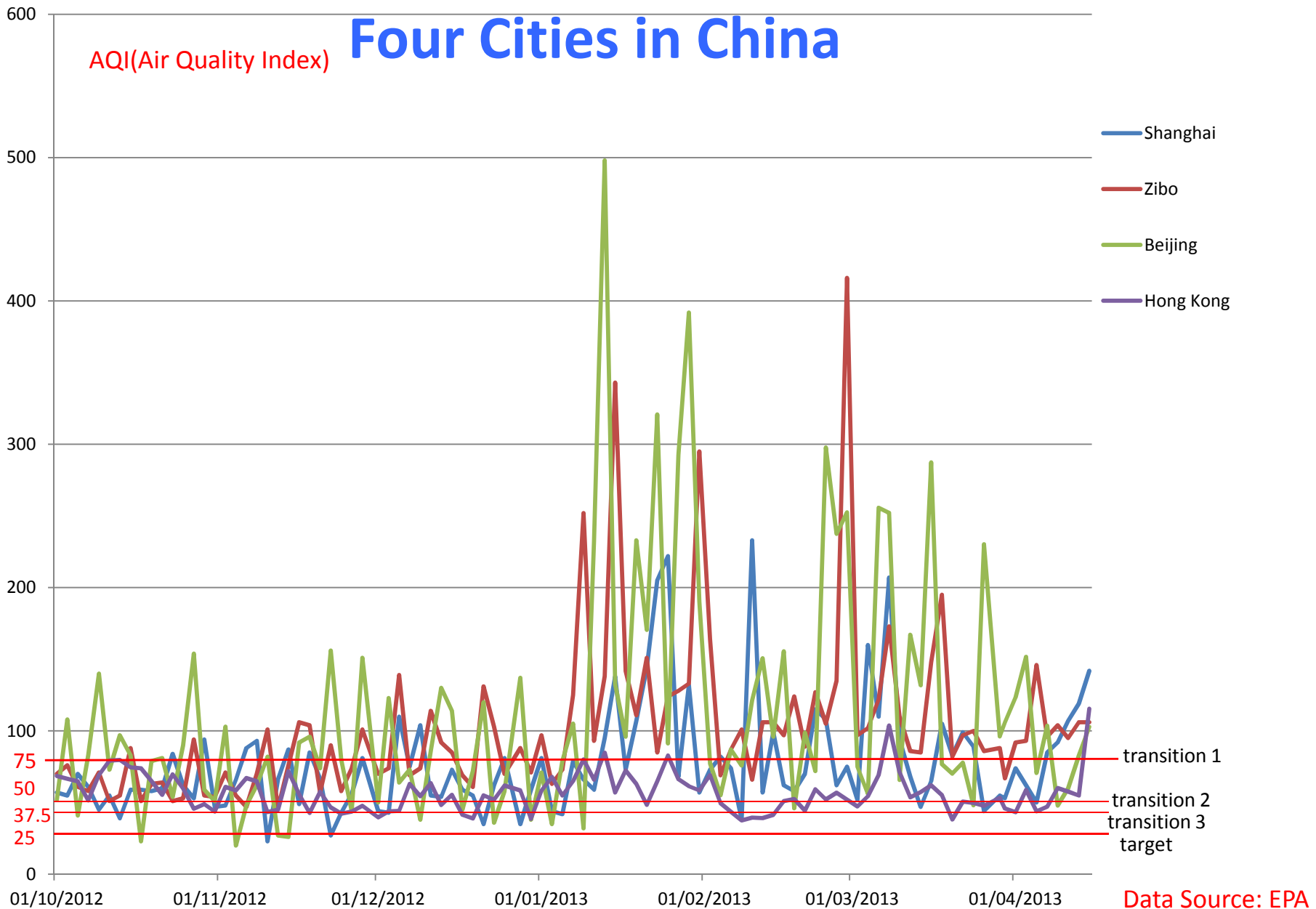


Shandong University

Beijing's Sky 2012.3.1-2013.3.5 8:00-9:00



# The Air Quality Index of Four Cities in China



# A few sources of air pollutants

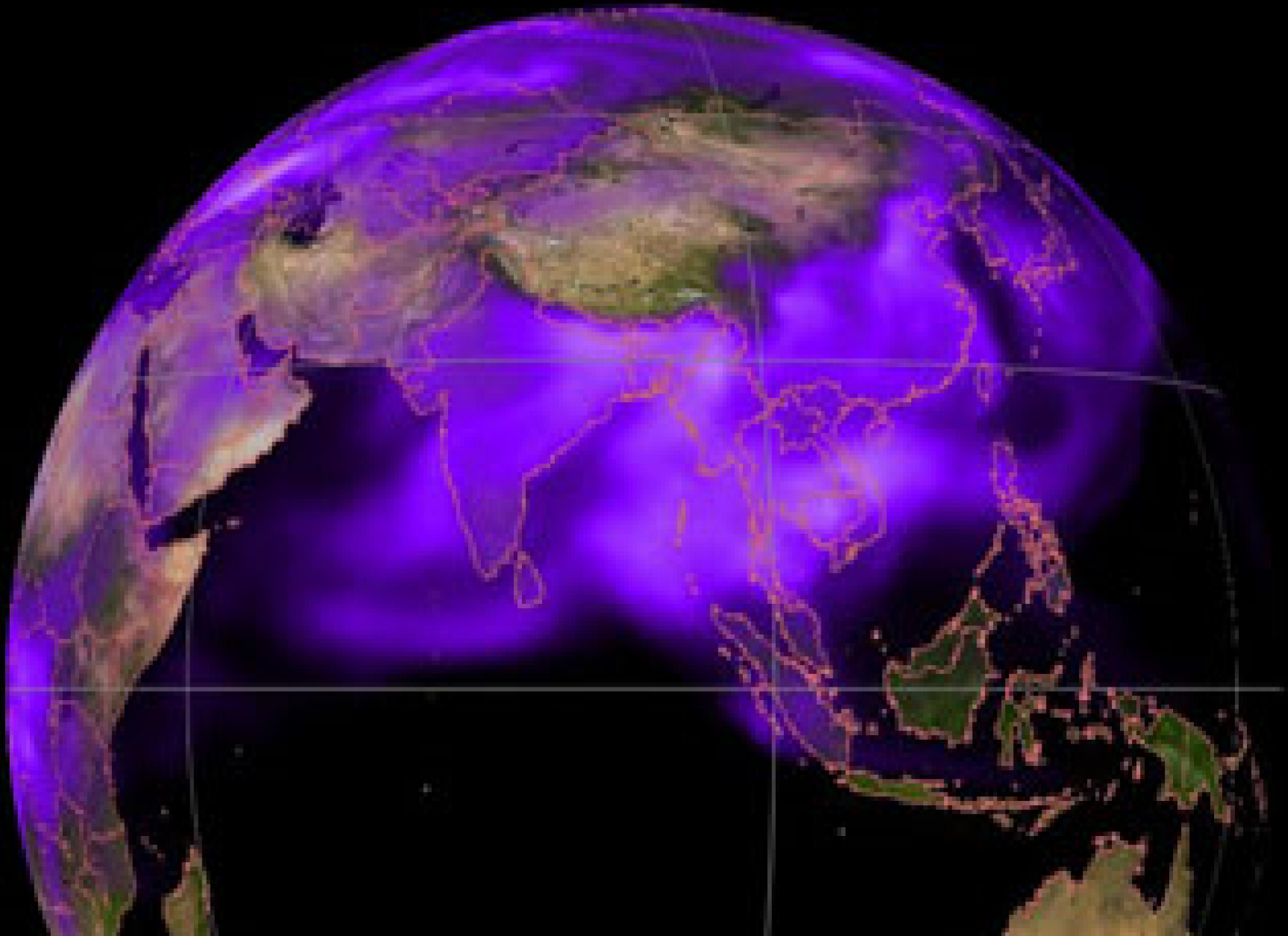




**Soot in exhaust spews out black carbon**

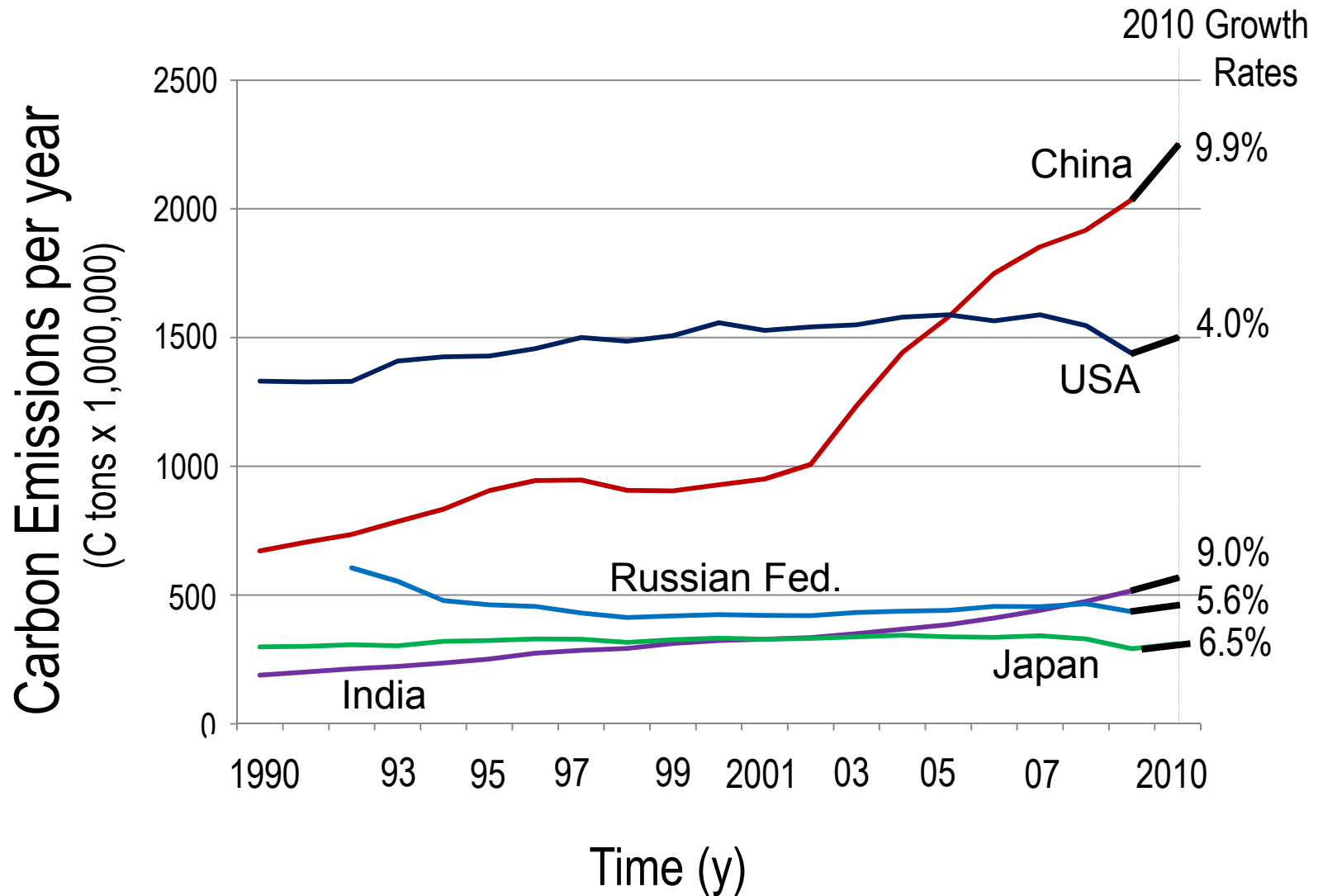


**Controlled burns release huge amounts of sooty black carbon into the atmosphere.**

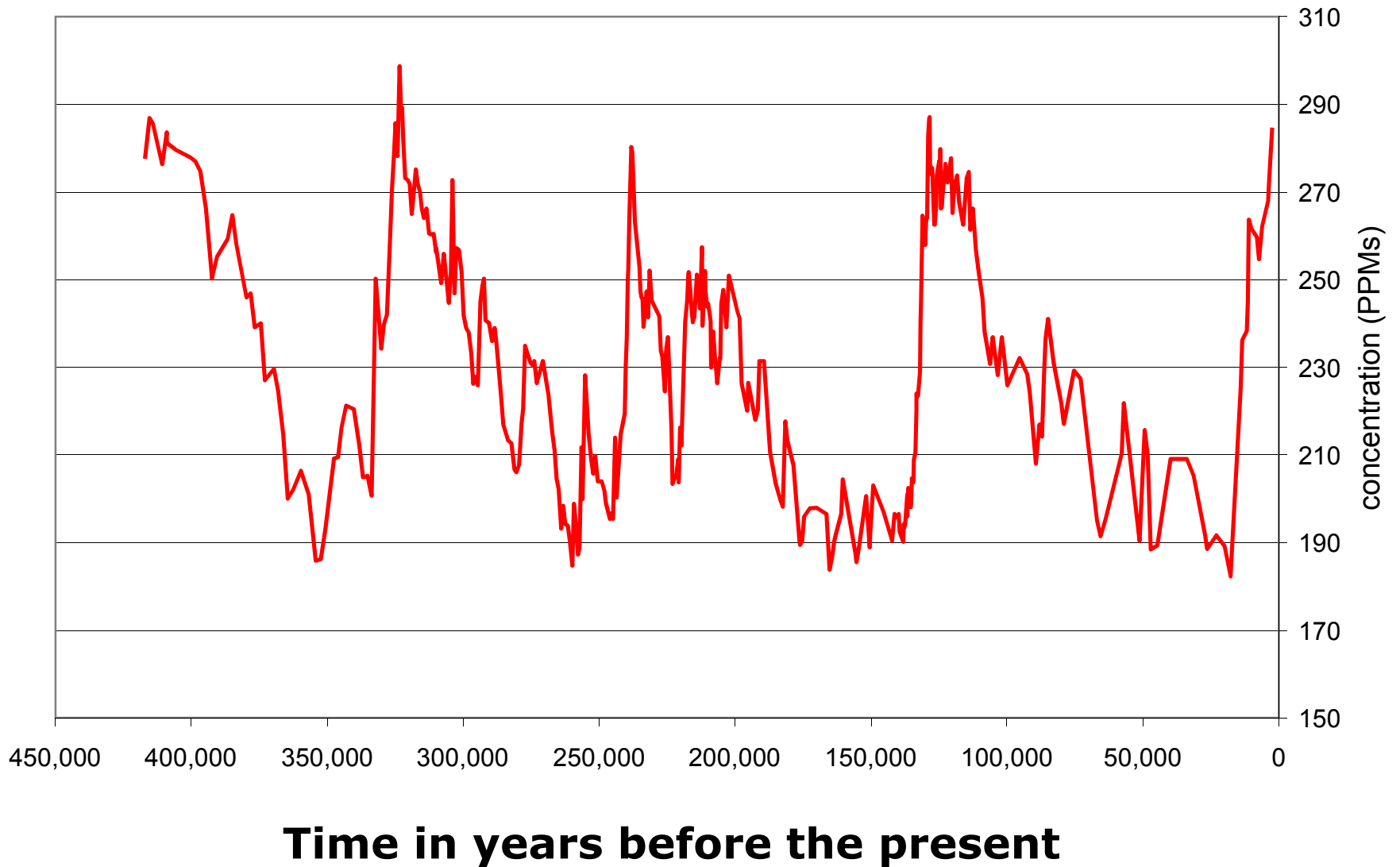


**Black carbon, a short-lived pollutant (shown in purple), shrouds the globe.**

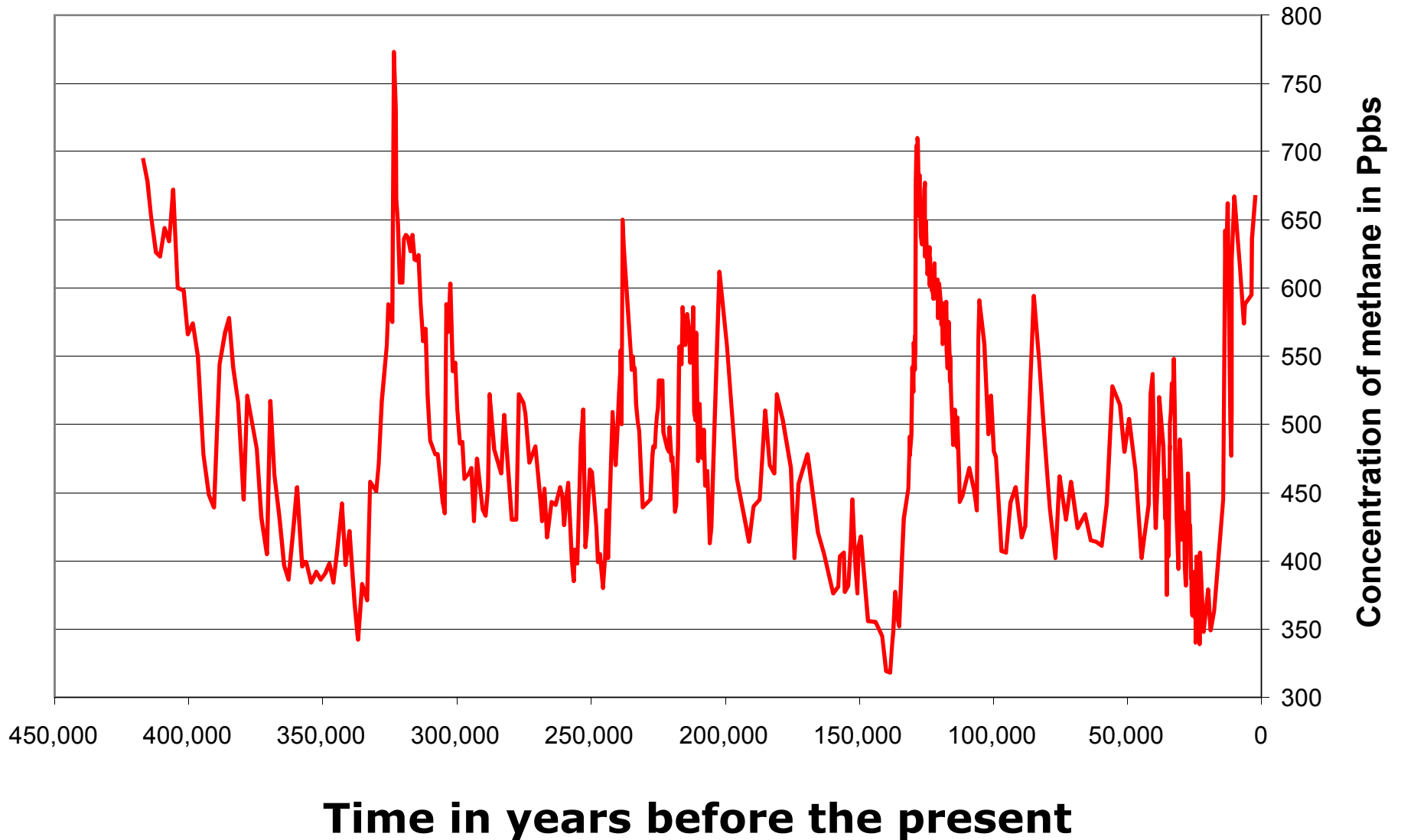
# Fossil Fuel & Cement CO<sub>2</sub> Emissions: Top Emitters



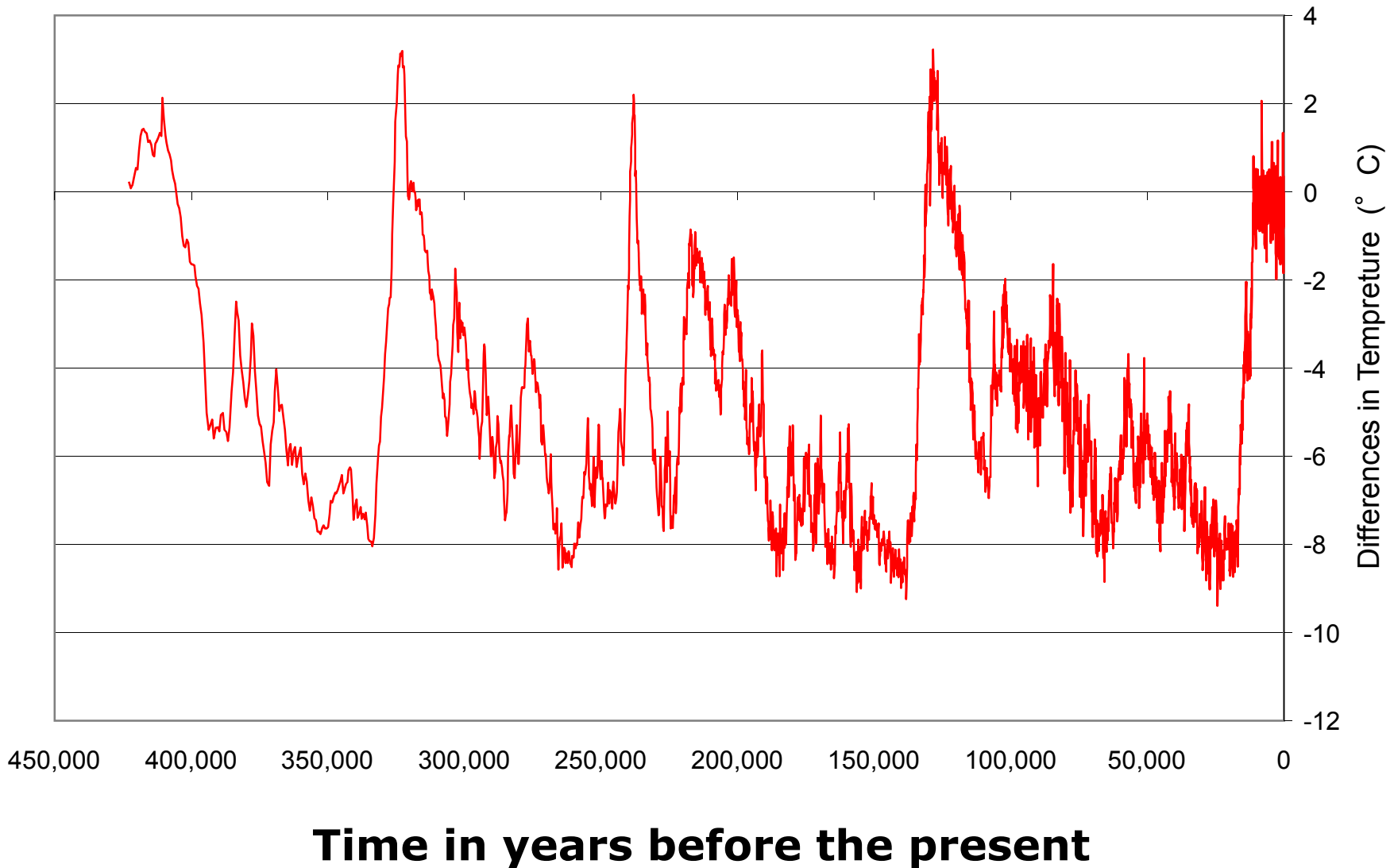
# Concentration of Carbon Dioxide in Antarctic ice



# 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**)  
Projected by 2050 to  
be between **450 & 750 PPM!**

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# Ranges and Concentrations during 450,000 years

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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.**

# Increase in Carbon Dioxide Concentration at Mauna Loa, Hawaii

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1880      285 ppm (Est.)

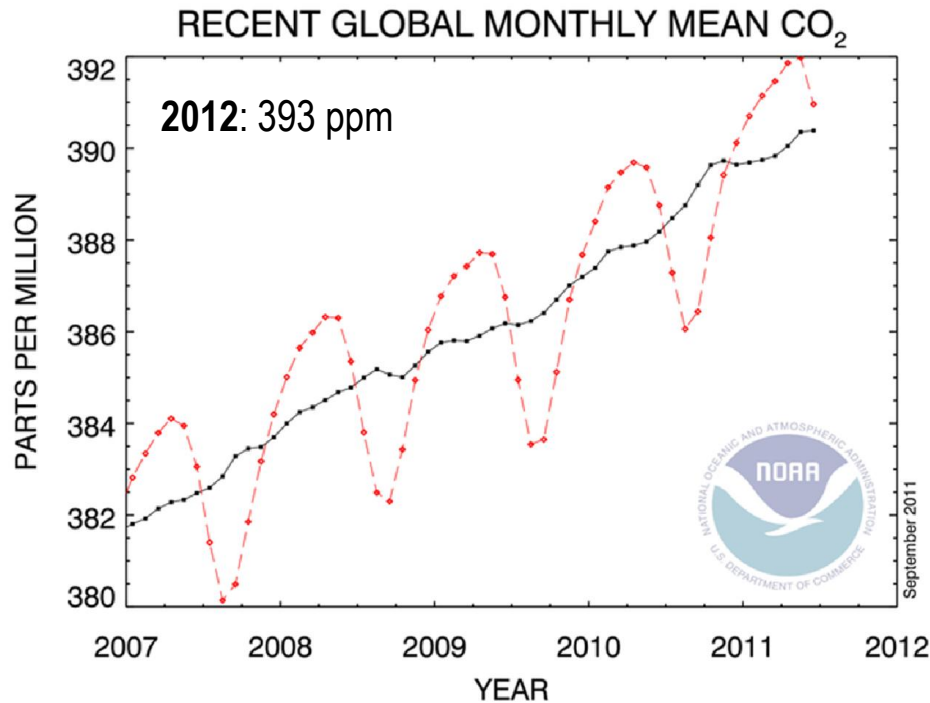
1958      315 ppm

2012      393 ppm

Increase of 108 ppm in 132 years

= *.82 ppm/yr.*

# Atmospheric CO<sub>2</sub> Concentration



Annual Mean Growth Rate (ppm y<sup>-1</sup>)

**2010 2.37 (3x)**

2009	1.63
2008	1.81
2007	2.11
2006	1.83
2005	2.39
2004	1.58
2003	2.20
2002	2.40

Annual Growth Rates  
(decadal means)

1970 – 1979: 1.3 ppm y<sup>-1</sup>  
 1980 – 1989: 1.6 ppm y<sup>-1</sup>  
 1990 – 1999: 1.5 ppm y<sup>-1</sup>  
**2000 – 2010: 1.9 ppm y<sup>-1</sup>**

# News, May 12, 2013

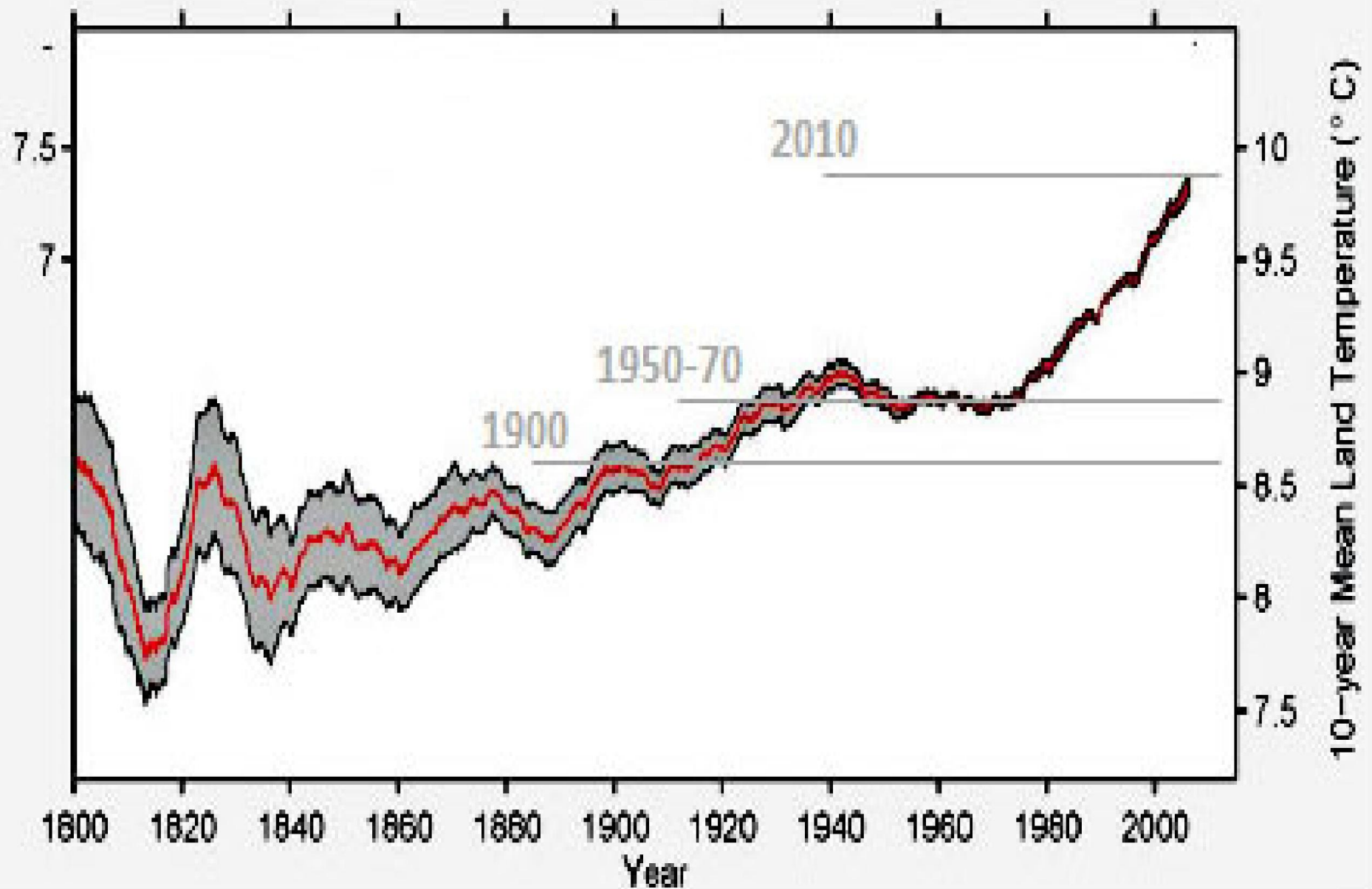
- 400 PPM  
Carbon  
Dioxide!
- Mauna Loa,  
Hawaii
- Which is the  
highest it has  
been in the  
last
- two million  
years!

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

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

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

# Increasing Average Temperatures



# This is what climate change sounds like

130 years of global temperature data,  
converted to music, io9

# CHASING ICE

# CHASING ICE

from the Producer of Academy Award-Winning  
**THE COVE**

WINNER  
EXCELLENCE IN CINEMATOGRAPHY  
AWARD: U.S. DOCUMENTARY  
2012  
**SUNDANCE**  
FILM FESTIVAL

WINNER  
**FULL FRAME**  
Film Festival

WINNER  
**HOT DOCS**  
Film Festival

WINNER  
**SXSW**  
Film Festival

WINNER  
**MOUNTAINFILM**  
Film Festival

WINNER  
**RIVER RUN**  
Film Festival

WINNER  
**BERKSHIRE**  
Film Festival

WINNER  
**CINEMAMBIENTE**  
Film Festival

WINNER  
**BIG SKY**  
Film Festival

WINNER  
**BOULDER INT'L**  
Film Festival

OFFICIAL SELECTION  
**BONNAROO**  
Music Festival

OFFICIAL SELECTION  
**SUNDANCE LONDON**  
Film and Music Festival

NOMINATED  
**SHEFFIELD**  
Film Festival

OFFICIAL SELECTION  
**SILVERDOCS**  
Film Festival

OFFICIAL SELECTION  
**SAN FRANCISCO**  
Film Festival

OFFICIAL SELECTION  
**NANTUCKET**  
Film Festival

*In Theaters This November!*

[Chasing Ice - A documentary about receding glaciers](http://www.imdb.com/title/tt1579361/)

<http://www.imdb.com/title/tt1579361/>

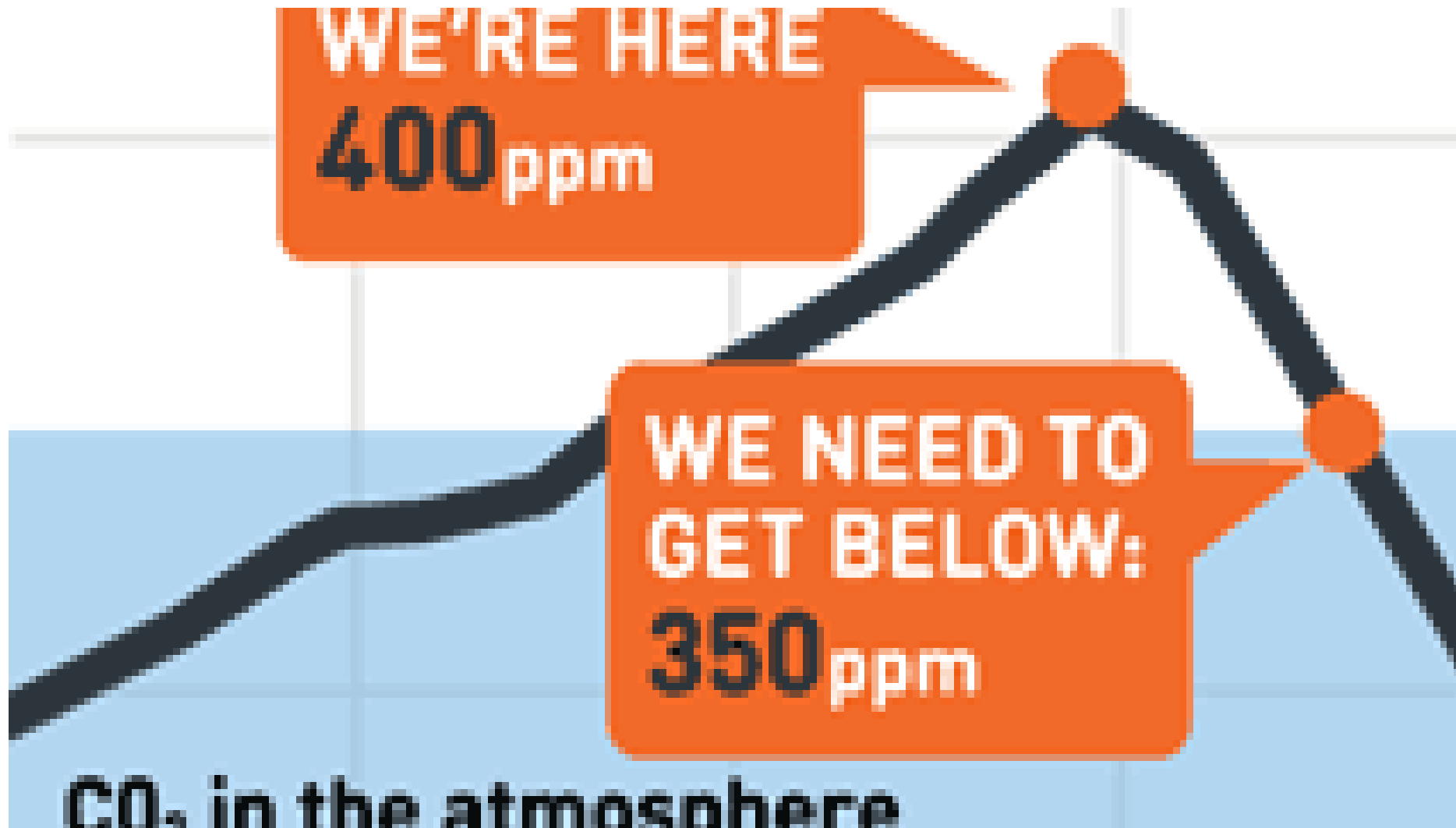
# The Earth is Shrinking!!!

- The Human Population continues to increase:
  - 70,000,000 per year!
  - **That means about 30% of the entire population of Brazil is 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>

# The Earth is Shrinking!!!

- With the melting of ice globally, some scientists project that we will have 1- 3 meters of sea level rise.
- What will that mean for hundreds of millions of people living in thousands of cities that will be directly and indirectly impacted globally?
- What will that mean for food security, and and and?

# 285, 400, 350 PPM Carbon Dioxide in the Atmosphere



# **The Earth is Shrinking!!!**

- **Desserts are spreading;**
  - **China is losing productive land to deserts at an accelerating rate**
    - **1950 – 1975 they lost 1,560 sq. km/yr..**
    - **By 2000 they lost 2,480 sq. km/yr.**
  - **In recent years Afghanistan lost 100 villages and Iran lost 124 villages due to advancing desserts;**

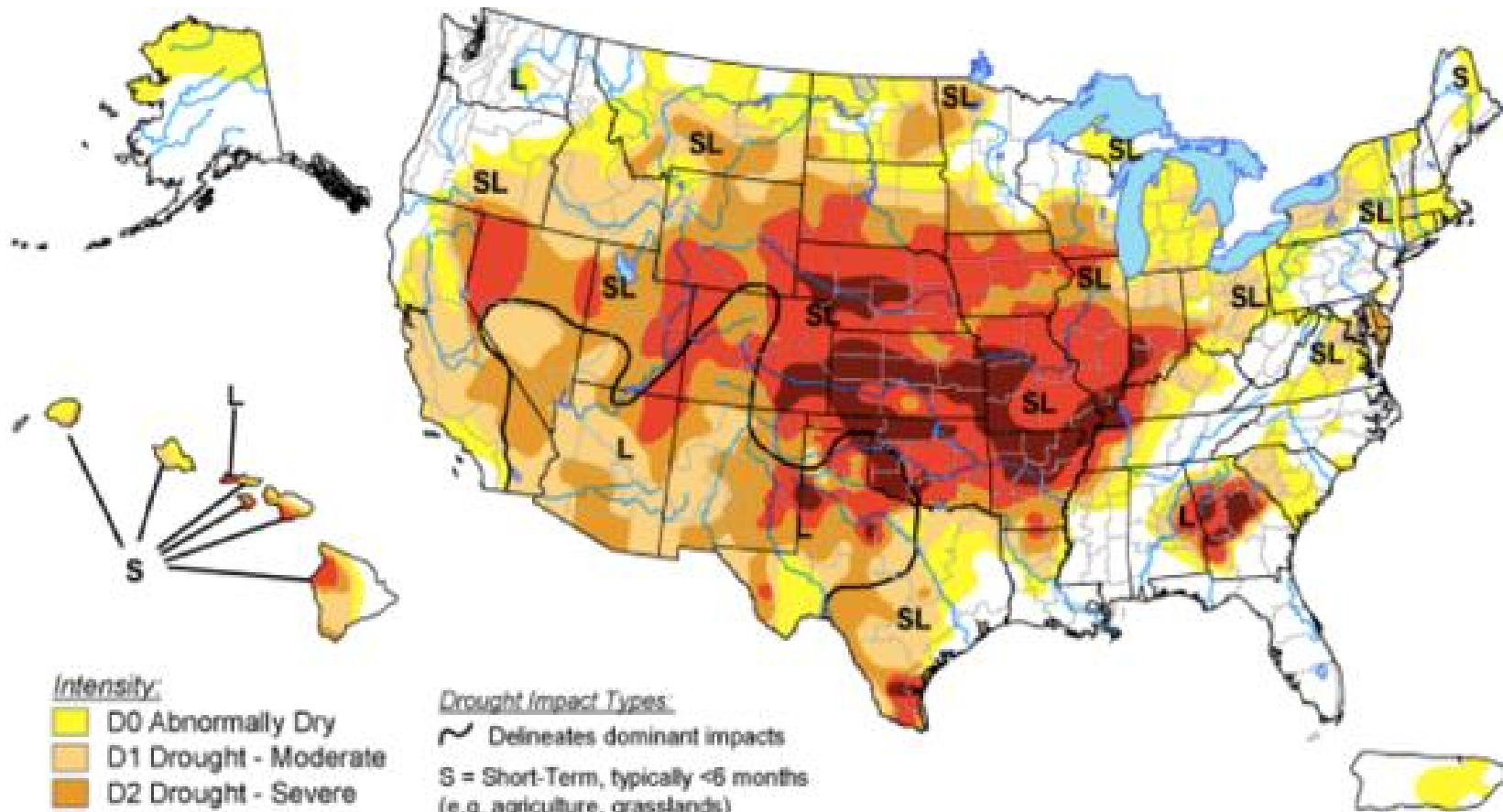


# The Earth is Shrinking!!!

- Nigeria had a 4x increase in population from 33 million to 134 million between 1950 and 2006;
- At the same time it had an 11x increase in domestic animal population and **lost 3,400 sq. km to deserts;**
- *Does anyone see any problems?*
- *What do you think should be done?*



# Drought Index U.S. August 2012



## Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

## Drought Impact Types:

- ~ Delineates dominant impacts
- S = Short-Term, typically <6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically >6 months (e.g. hydrology, ecology)

*The Drought Monitor focuses on broad-scale conditions.*













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!!





Over-pumping of aquifers is  
common on all continents  
except Antarctica!





20% of coral reefs have  
been destroyed.

60% are severely  
threatened.

# 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-system!





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

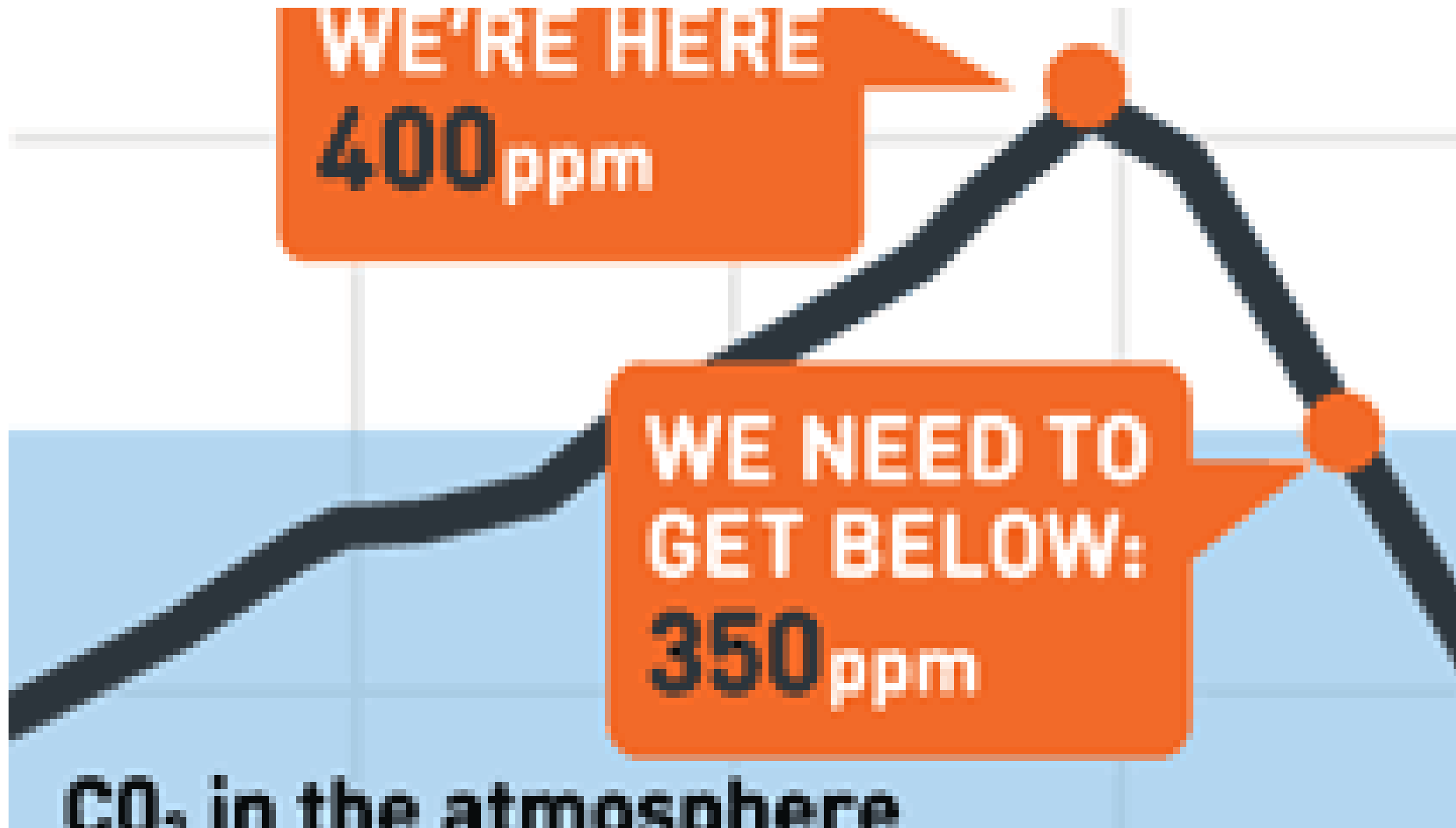


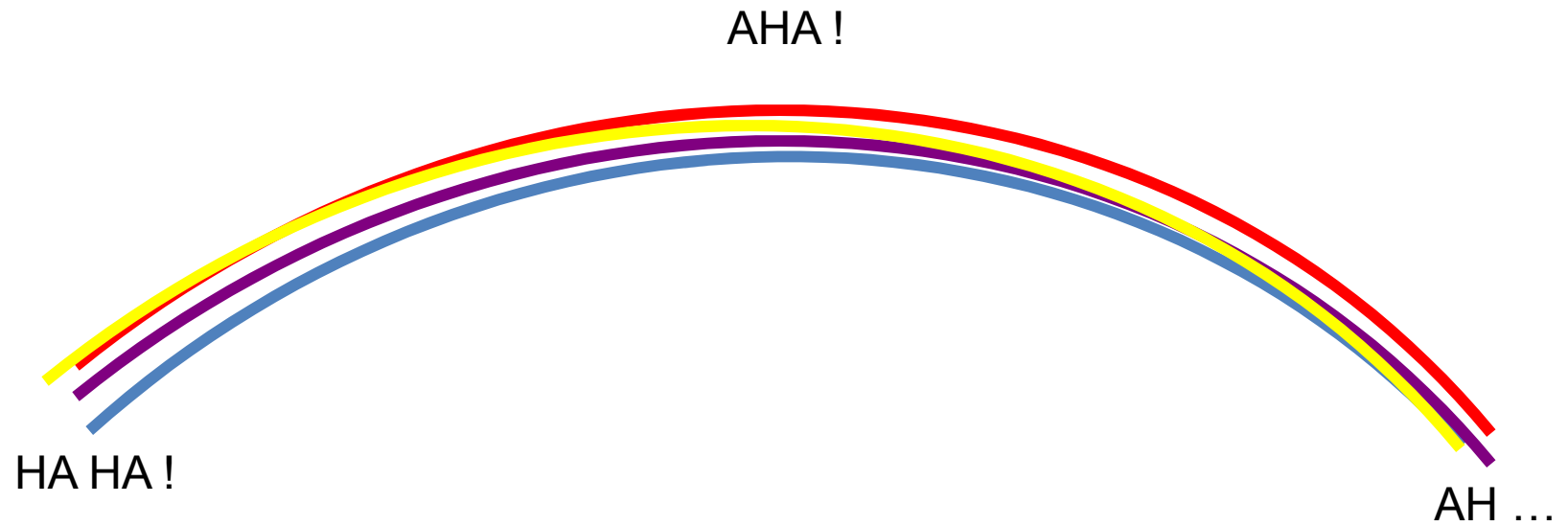
**We are now in a period of  
mass species extinction.**

**104 species become  
extinct  
every day!**

**We must find solutions for  
these problems?**

# 275, 400, 350 PPM Carbon Dioxide in the Atmosphere





# “haha-aha-ah” curve

-after Arthur Koestler

**Have These Crises Stimulated us to  
Make the Essential Changes?**

# What is Ahead on our Road to the Future?



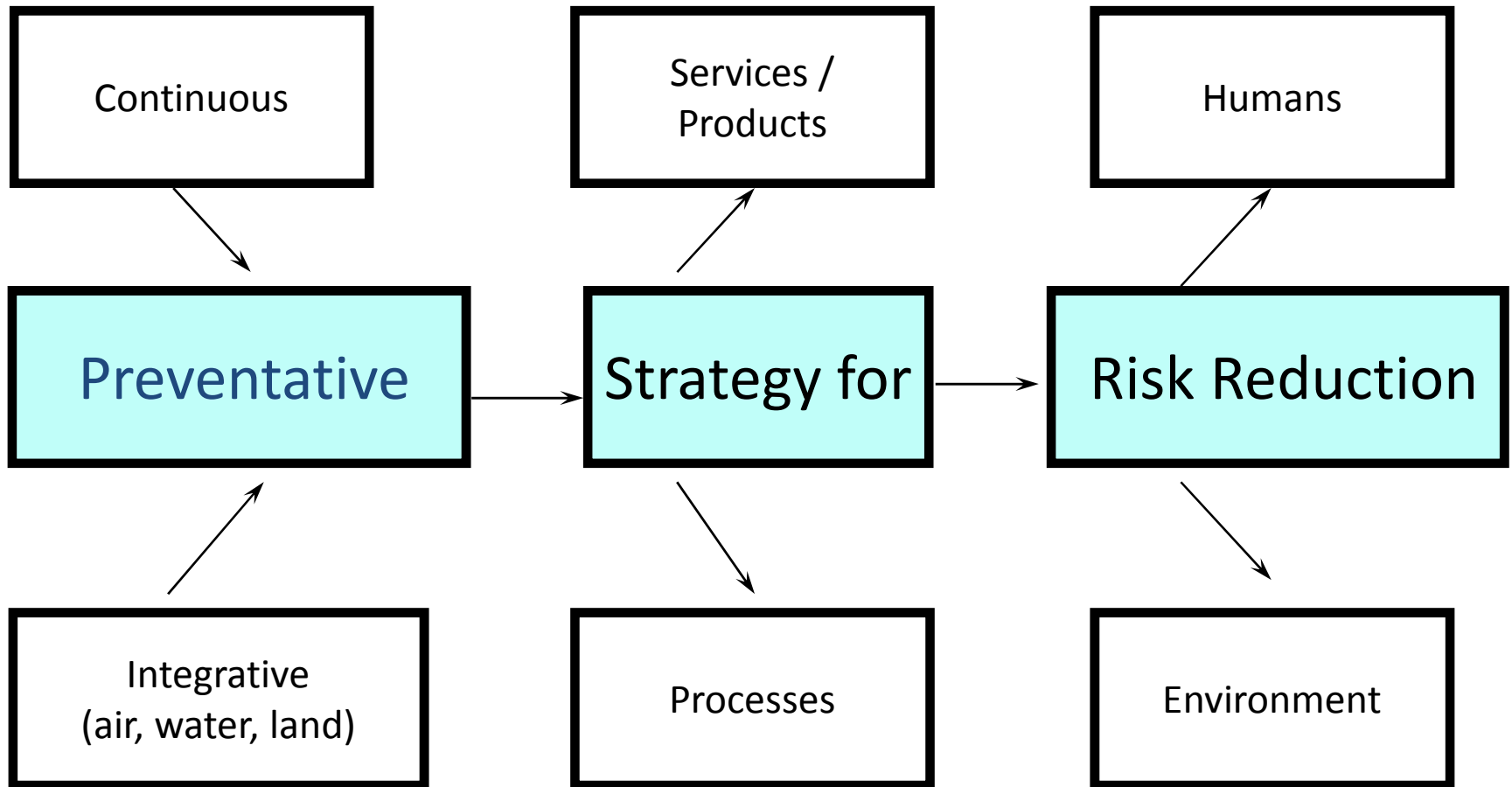
# Overview of this Presentation

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

*Foul & Flee*  
*Dilute & Disperse*  
*Concentrate & Contain*  
*End-of-pipe Treatment*  
*Preventive Approaches*

**Cleaner Production**  
**Cleaner Products**  
**Sustainable Production**  
**& Consumption**  
**Sustainable Communities**  
**& Regions**

# Essential Elements of a Cleaner Production Strategy



Source: United Nations Environment Programme Industry and Environment

# .....CP is accomplished by.....

---

- ❖ Product modifications and changes;
- ❖ Input substitutions;
- ❖ Process modifications and changes;
- ❖ Modifications and changes in operational practices;
- ❖ Reuse of materials;
- ❖ On site recycling;

# **A Norwegian Pulp and Paper Company**

*Examples of Phases of  
Environmental Protection*

# **Dilution is the Solution to Pollution**

- **Build a 23 km long pipe, 1.5 meters in diameter**
- **Cost: 100,000,000 NOK**

# **Pollution Control is the Solution to Pollution**

- **Build a waste water treatment plant**
- **Cost: 32,000,000 NOK**
- **Operating cost: 8,000,000 NOK/year**

# Cleaner Production is Solution to Pollution

- Incorporate a series of procedural and technical changes within the facility
- Cost: 10,000,000 NOK

# Results of Implementation of Cleaner Production Options

- Saved 5,000,000 NOK/year on chemicals;
- Saved 10,000,000 NOK/year on energy;
- Saved 8,000,000 NOK/year due to increased productivity;

# Summary

- Cleaner Production options paid for themselves in less than 5 months.
- All other approaches had built-in annual costs.
- Cleaner Production options resulted in more environmental quality improvement than wastewater treatment would have done!!!

Transition to Equitable, Sustainable,  
Post Fossil Carbon Societies  
How will we achieve that goal  
soon enough?

**The Chinese Government is  
Encouraging its citizen's  
Involvement with the Approach:**

***“Transformation to an  
Ecologically Sound Society as  
the Model for our Future  
Development”***

# Jeremy Rifkin's, “The Third Industrial Revolution”

- Society built upon energy efficiency and renewable energy;

# Jeremy Rifkin's, “The Third Industrial Revolution”

- Society built upon renewable energy;
- Buildings serve as mini-power plants, which feed into the smart, decentralized energy grid;

# Jeremy Rifkin's, “The Third Industrial Revolution”

- Society built upon renewable energy;
- Buildings designed to serve as mini-power plants that feed electrical energy into the decentralized energy grid;
- Energy stored as hydrogen or in electric vehicle batteries;
- Smart energy internet grid distribution system.

Changes are  
happening all  
over the world!

# **Through ISO and GRI-related efforts**

- **The ISO series of ISO 9000, 14000, 18000, 26000 and others help company leaders to reduce risks, waste and environmental damages;**
- **The Global Reporting Initiative and Advances in Corporate Social Responsibility Reporting;**

# **Through Current ISO/TC 268 Efforts**

- **Sustainable Development of Regional Sustainable Management;**
- **Development of Smart/Sustainable City Indicators and Indices**

# **Through International Scientific Journals**

- **The International Journal of Industrial Ecology;**
- **The International Journal of Life Cycle Assessment;**
- **The International Journal of Environmental Management;**
- **The International Journal of Sustainability in Higher Education;**

# Through International Scientific Journals

- The Journal of Cleaner Production that was founded in 1992, is now published in twenty-four volumes per year;
- Prof. Donald Huisingh
- Editor-in-Chief
- Journal of Cleaner Production
- <http://ees.elsevier.com/jclepro/default.asp>
- The Impact factor for 2014 for the
- Journal of Cleaner Production is: 3.590 & the Five year IF is 4.088.



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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**

- **Innovation and Innovation  
Diffusion;**
- **Sustainable Transportation;**

# **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**

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

# **Journal of Cleaner Production**

## **Calls for Papers**

- **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**
- <http://www.journals.elsevier.com/journal-of-cleaner-production/call-for-papers/>

# Journal of Cleaner Production

## Calls for Papers

- **Systematic leadership towards sustainability**
- **Decision-support models and tools for helping to make real progress to more sustainable societies**
- <http://www.journals.elsevier.com/journal-of-cleaner-production/call-for-papers/>

# **Journal of Cleaner Production**

## **Calls for Papers**

- **Toward a Regenerative Sustainability Paradigm for the Built Environment: from Vision to Reality**
- **Tourism and Sustainability**
- <http://www.journals.elsevier.com/journal-of-cleaner-production/call-for-papers/>

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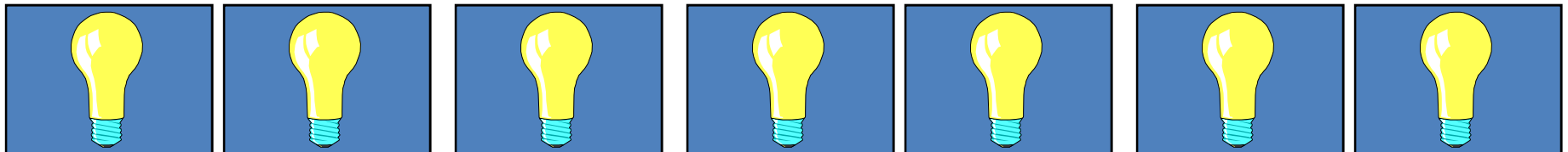
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#@!?, #@!?, #@!?, #@!?, #@!?, #@!?,

Problem Multipliers

VS.

Solution Multipliers



# 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 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

- New thinking;
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# Sustainable Development In Higher Education Requires Us to Adopt

- New thinking;
- New paradigms;
- New policies;
- New technologies;
- New management;



# Sustainable Development In Higher Education Requires Us to Adopt

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



# Sustainable Development In Higher Education Requires Us to Adopt

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



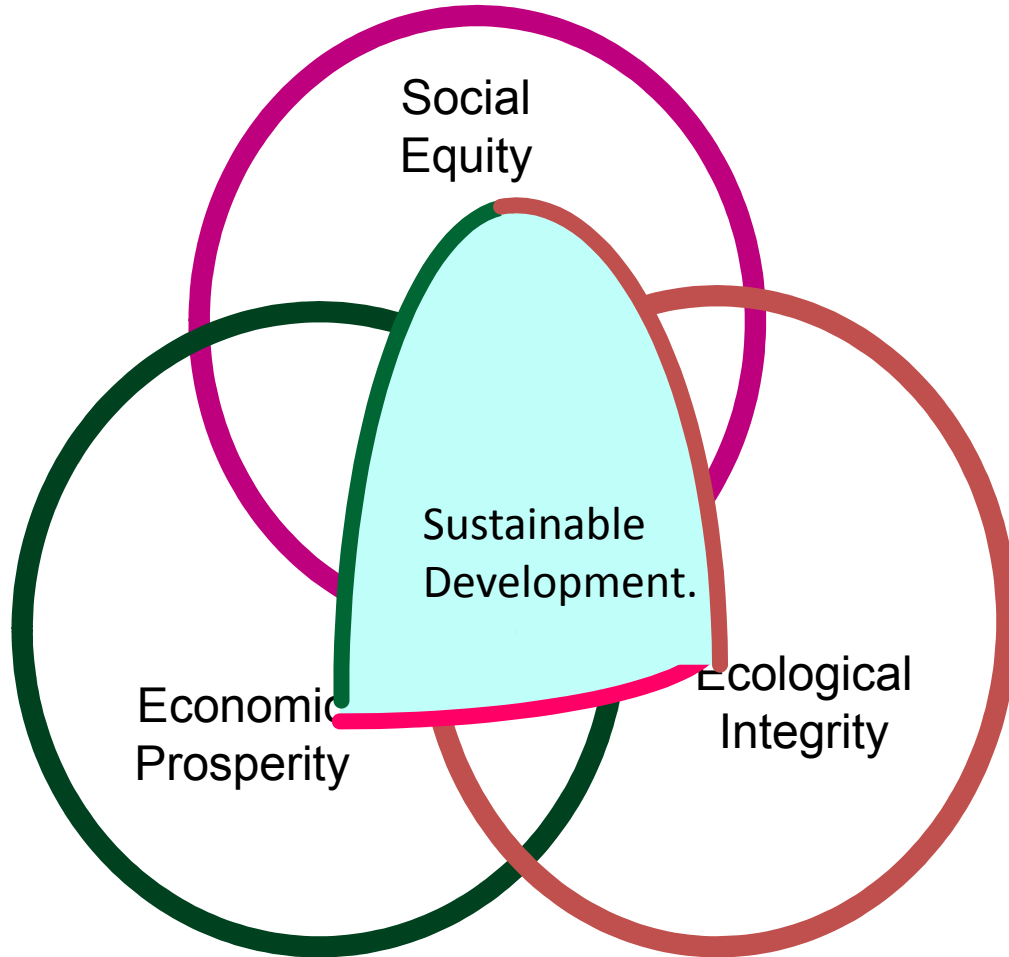
# **Some Special Issues of the Journal of Cleaner Production**

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

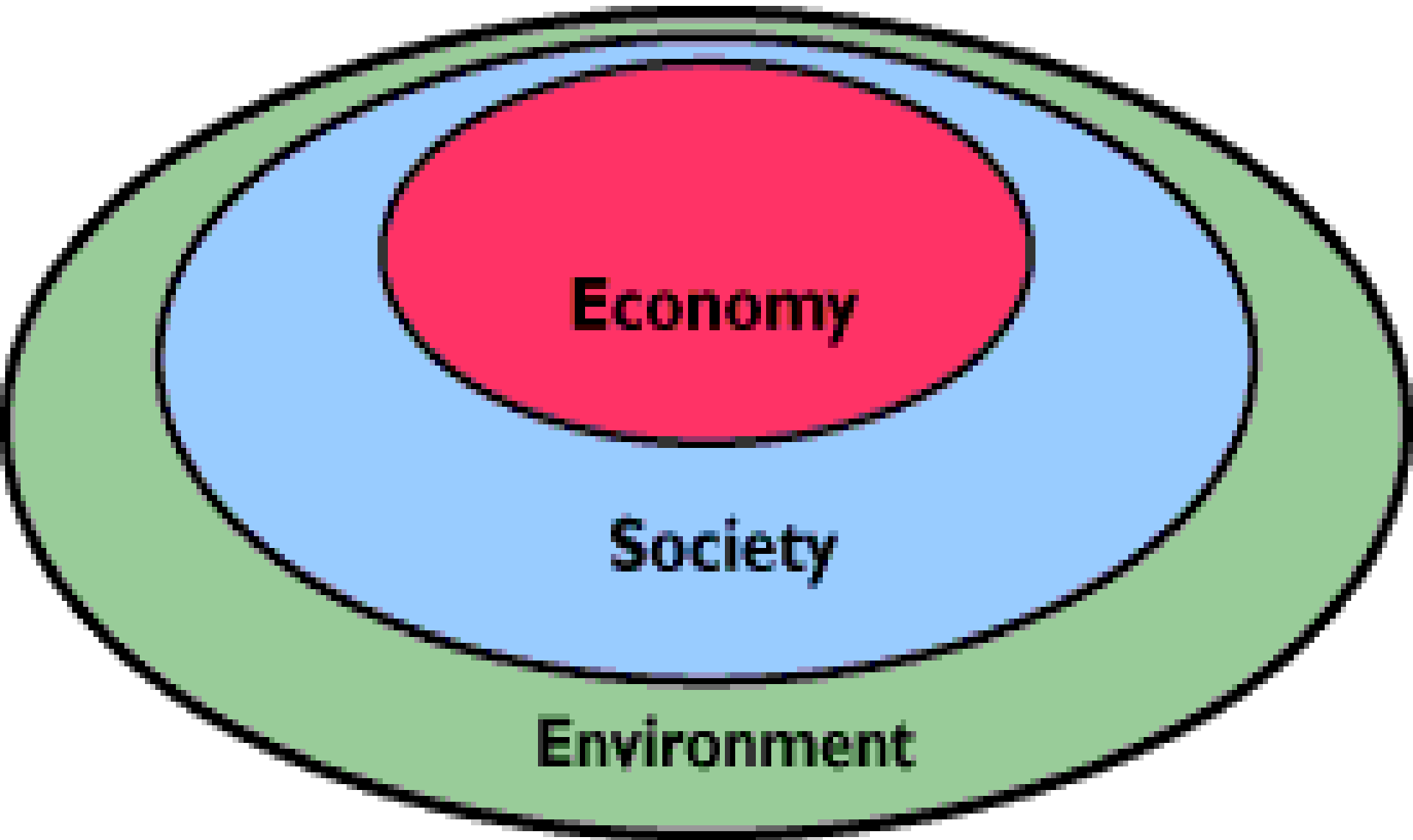
**Education for Sustainable  
Societies**

Changes are  
happening all  
over the world!

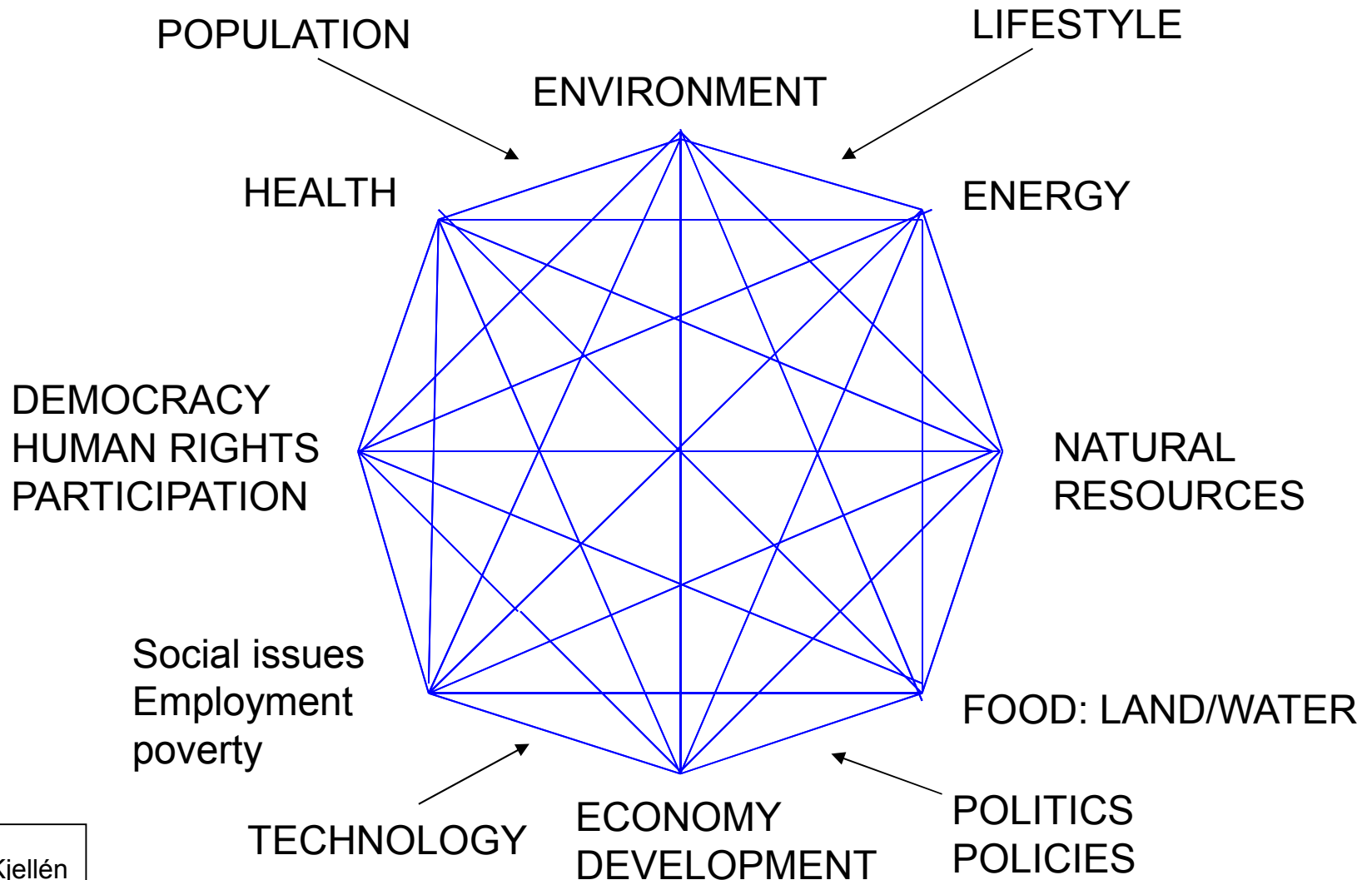
# Sustainable Development



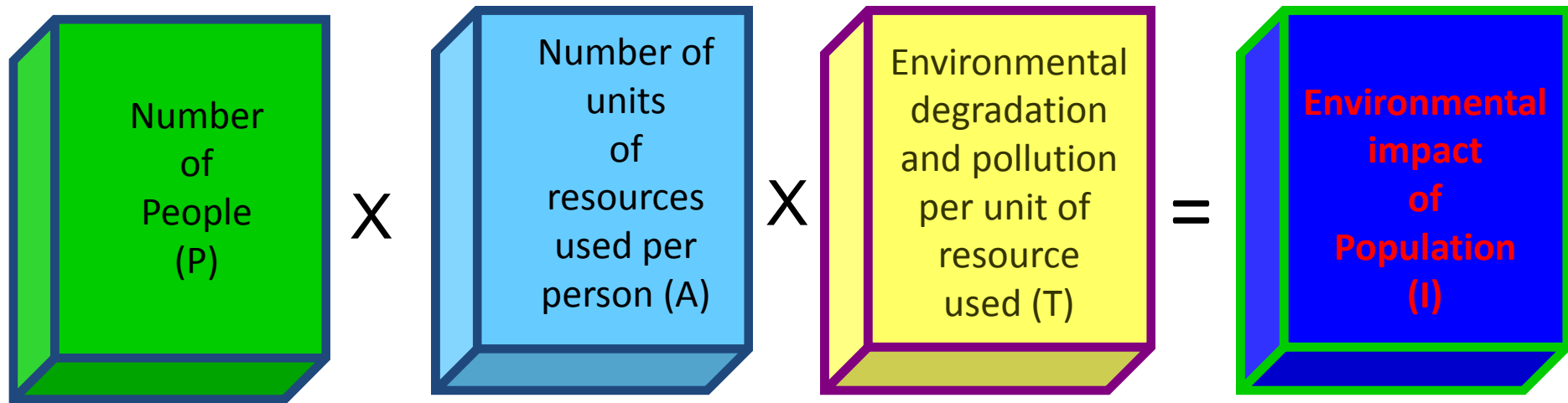
# Sustainable Development?

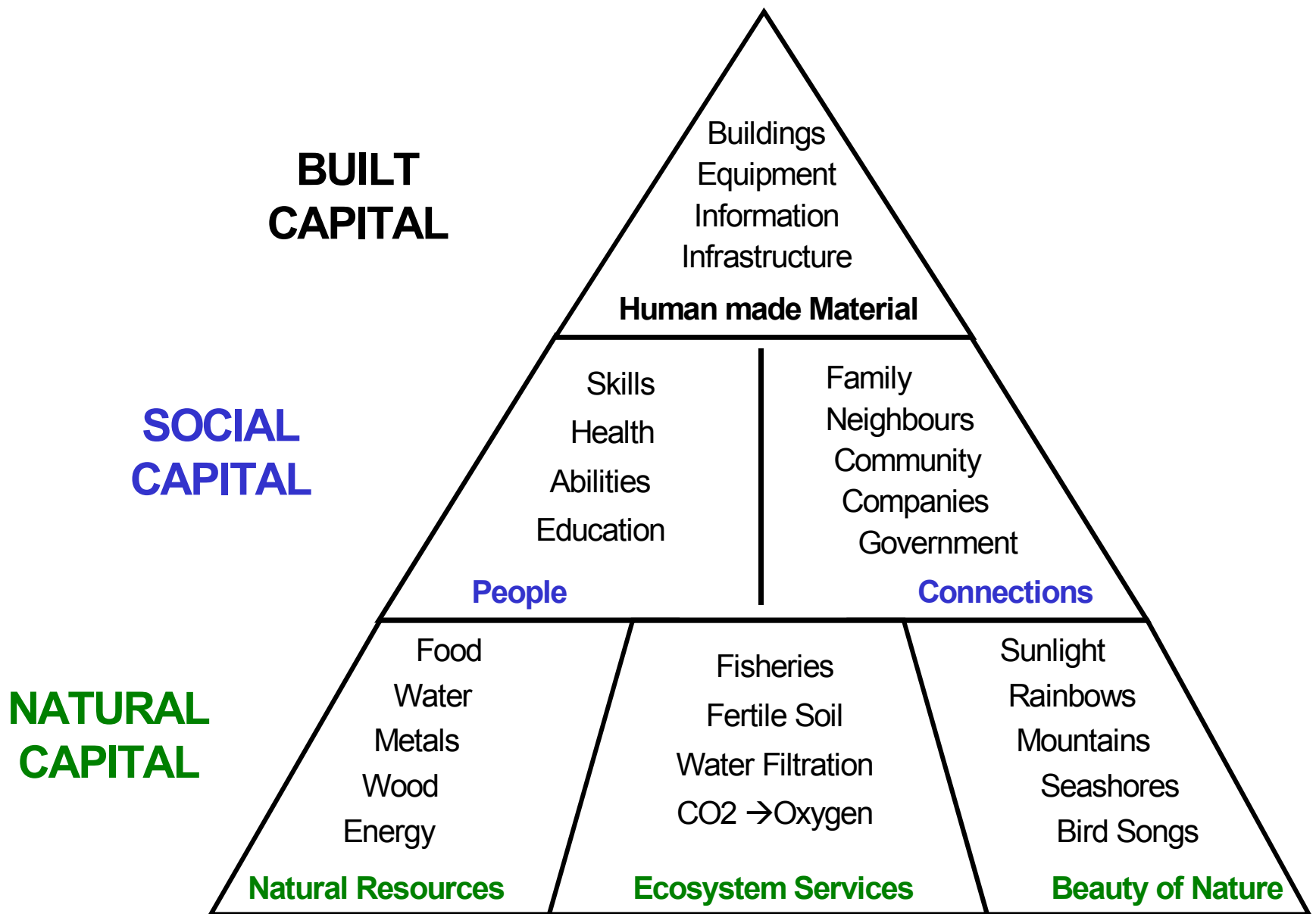


# Diamond of Sustainability



# Interconnectedness of Population, Affluence & Technology





# Trans Generational Perspectives



# **A Brief History of Preventive Environmental Protection**

- **Agenda 21;**
- **The Earth Charter;**
- **Millennium Development Goals**
- **The Precautionary Principle;**
- **The Natural Step Principles;**
- **The Melbourne Principles;**
- **The Decade of Education for Sustainable Development (EfSD) 2005 – 2014;**
- **The Equator Principles for Sustainable Finance.**

# 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.
- .

“

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**

# *Worldwide Support for True Wealth Measures*

- **Approximately, 1,000 respondents in each of the ten countries were asked which of two points of view was closest to their own:**

**1. That governments should measure national progress using money-based statistics because economic growth is the most important focus for the country; or**

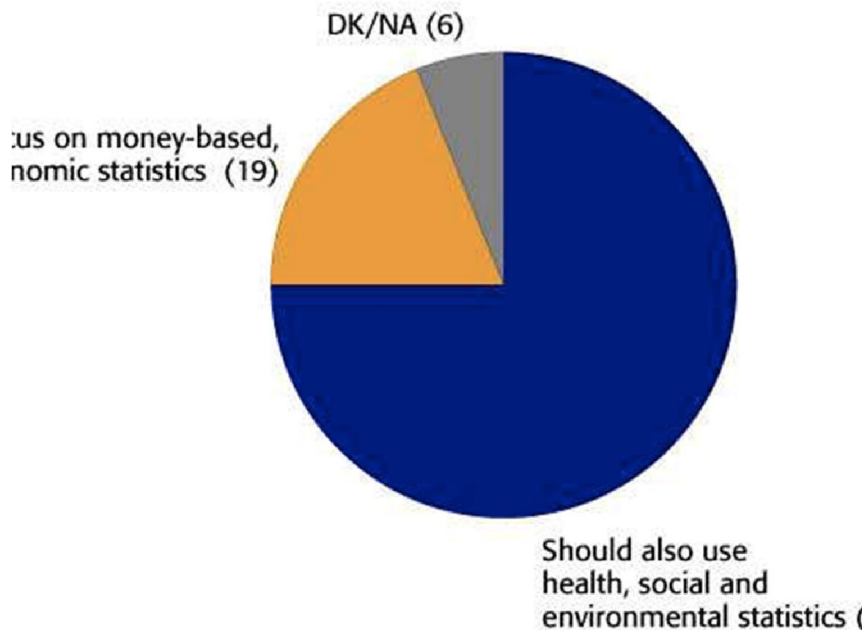
**2. That health, social and environmental statistics are as important as economic ones and that governments should also use these for measuring national progress.**

- **Mr. Chris Coulter, Vice-President**
- **GlobeScan Incorporated**
- **London, UK**
- **+44 20 7253 1441**
- **chris.coulter@GlobeScan.com**

# Worldwide Support for True Wealth Measures:

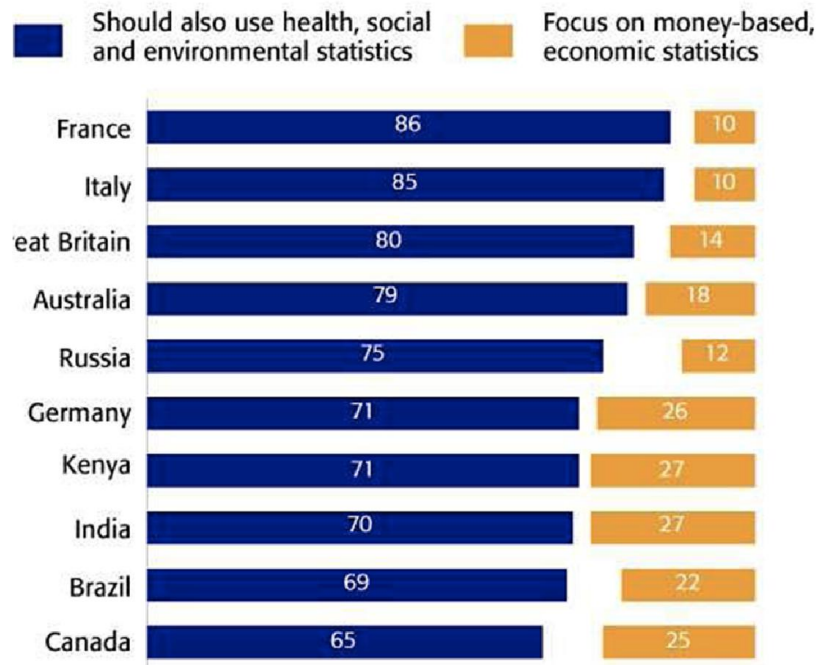
## Best Approach to Measure National Progress and Development

10 Country Average, 2007



## Progress and Development

By Country, 2007



The white space in this chart represents "DK/NA."

**Now let's focus upon the roles of local and regional governments in making the transition to the post-fossil carbon societies.**

# **How can we work within cities, regional and national governments to help them to become catalysts and role models for change?**

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

# **Be a catalyst and role model for change**

- **Move increasingly from "site thinking" to "regional thinking";**
- **Move from production thinking to sustainable production & consumption thinking;**
- **Foster integration of ethical and social factors into sustainable city and regional planning;**

# **Be a catalyst and role model for change**

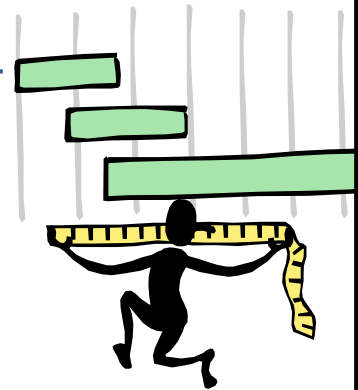
- **Foster the development of Sustainable eco-communities based upon bio-regionalism;**
- **Participate in international networks on sustainable city & regional development.**

# **Be a catalyst and role model for change**

- **Develop and enforce regulations designed to achieve *sustainable societies*;**
- **Develop ecological, economic and ethical *sustainability performance indicators*;**

# Be a catalyst and role model for change

- Use sustainability performance indicators to monitor progress toward sustainable societies;
- Report on the progress or lack of progress and correct policies, procedures and processes as needed



# **Rob Hopkins, Founder of the Transition Network**

*a. The Transition Handbook: From  
Oil Dependence to Local Resilience,*

*b. The Transition Companion:  
Making Your Community More  
Resilient in Uncertain Times,*

*c. The Power of Just Doing Stuff:  
How Local Action Can Change the  
World*

<http://www.transitionnetwork.org/about>

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**Cleaner Production and  
Sustainable Development  
are parts of the local and  
regional**

***Journey***

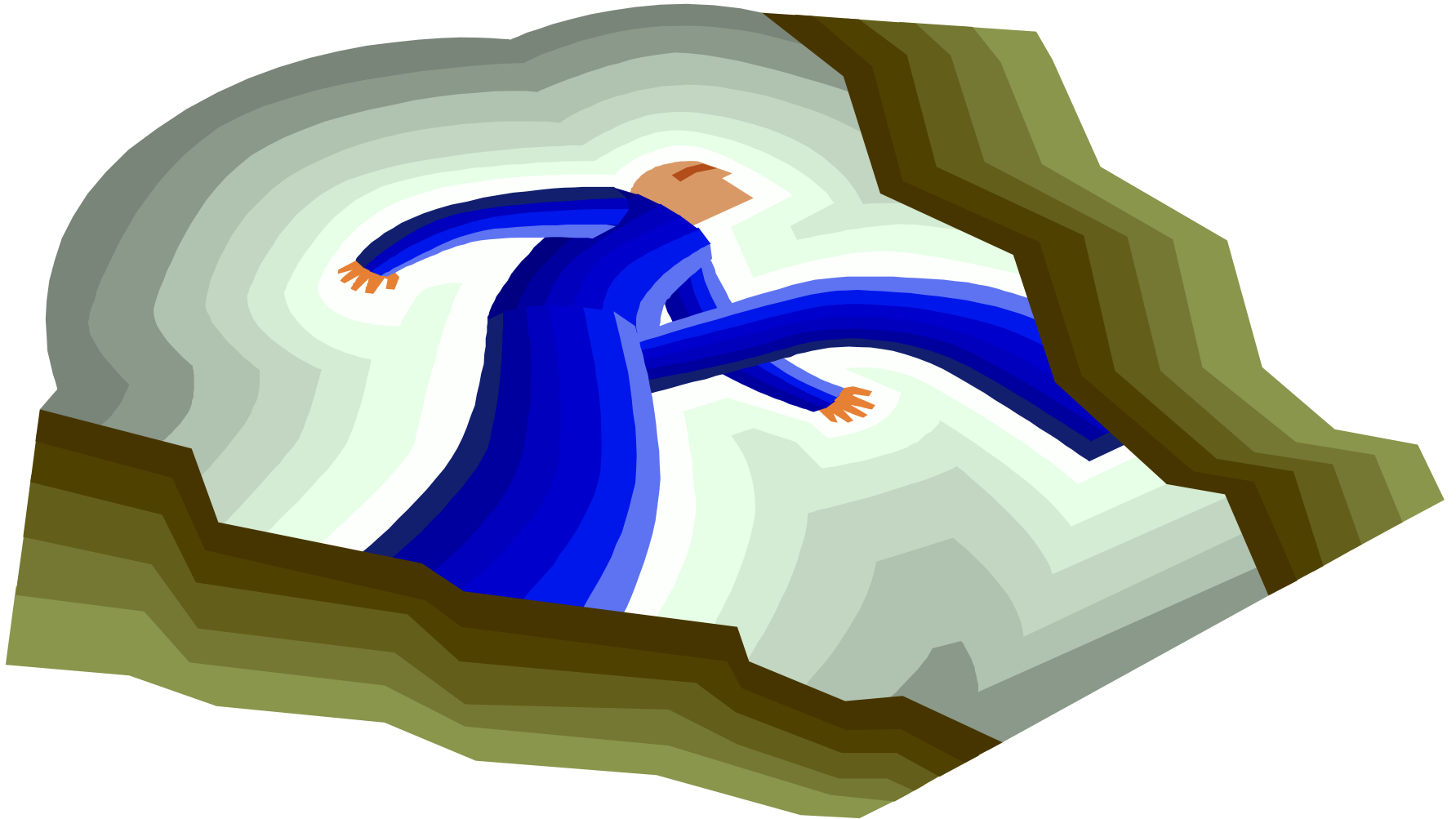
**..... not the Destination!**

*What can we learn  
from history?*

*What can we  
learn?*

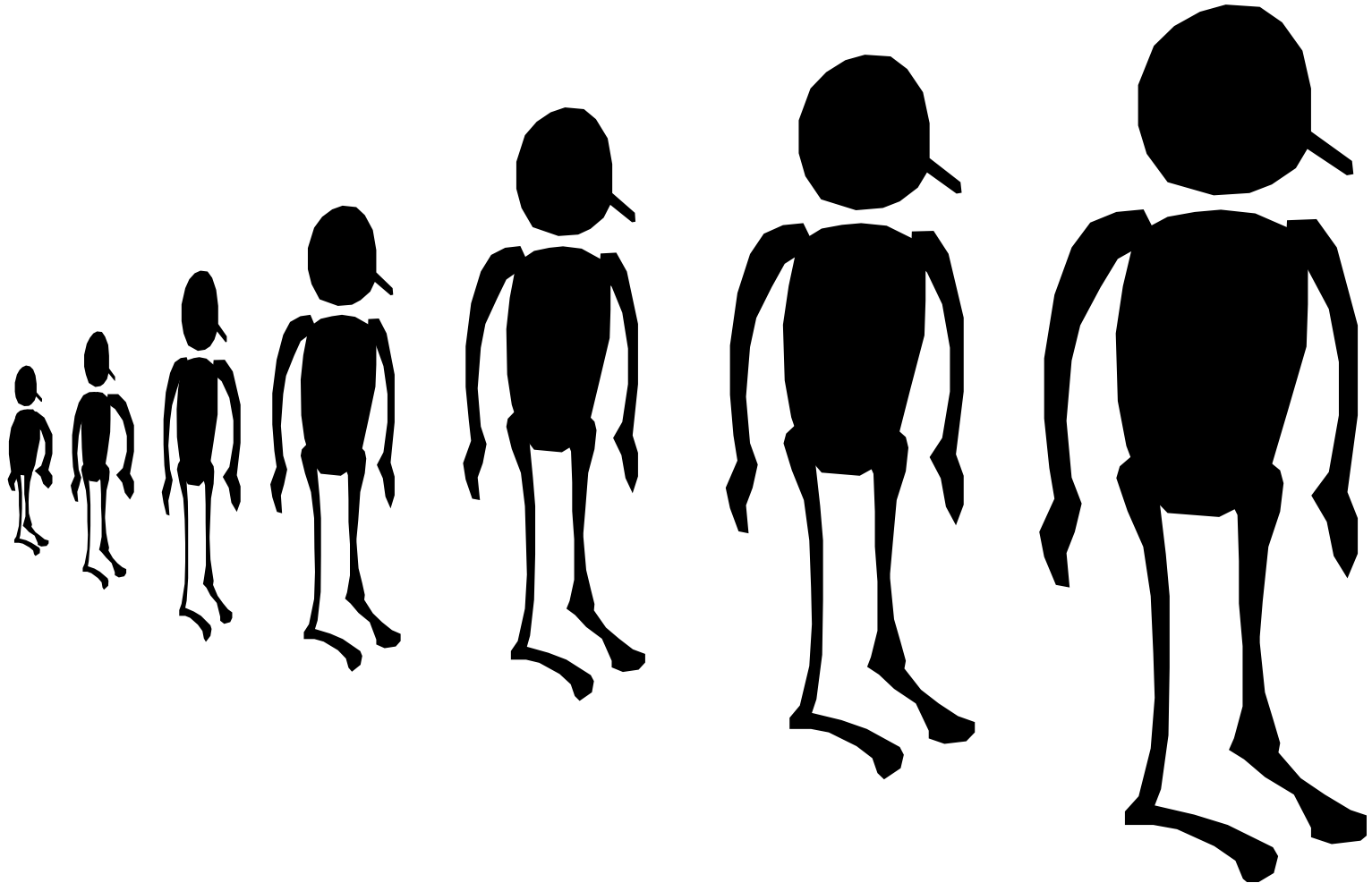
*Can we learn?????*

- *Are we ready & willing to take the necessary steps?*



***Prove it!***  
***Show the World***  
***and yourself that***  
***it can be done!***

**Who should be empowered to make  
decisions on the local, regional,  
international and global welfare issues?**













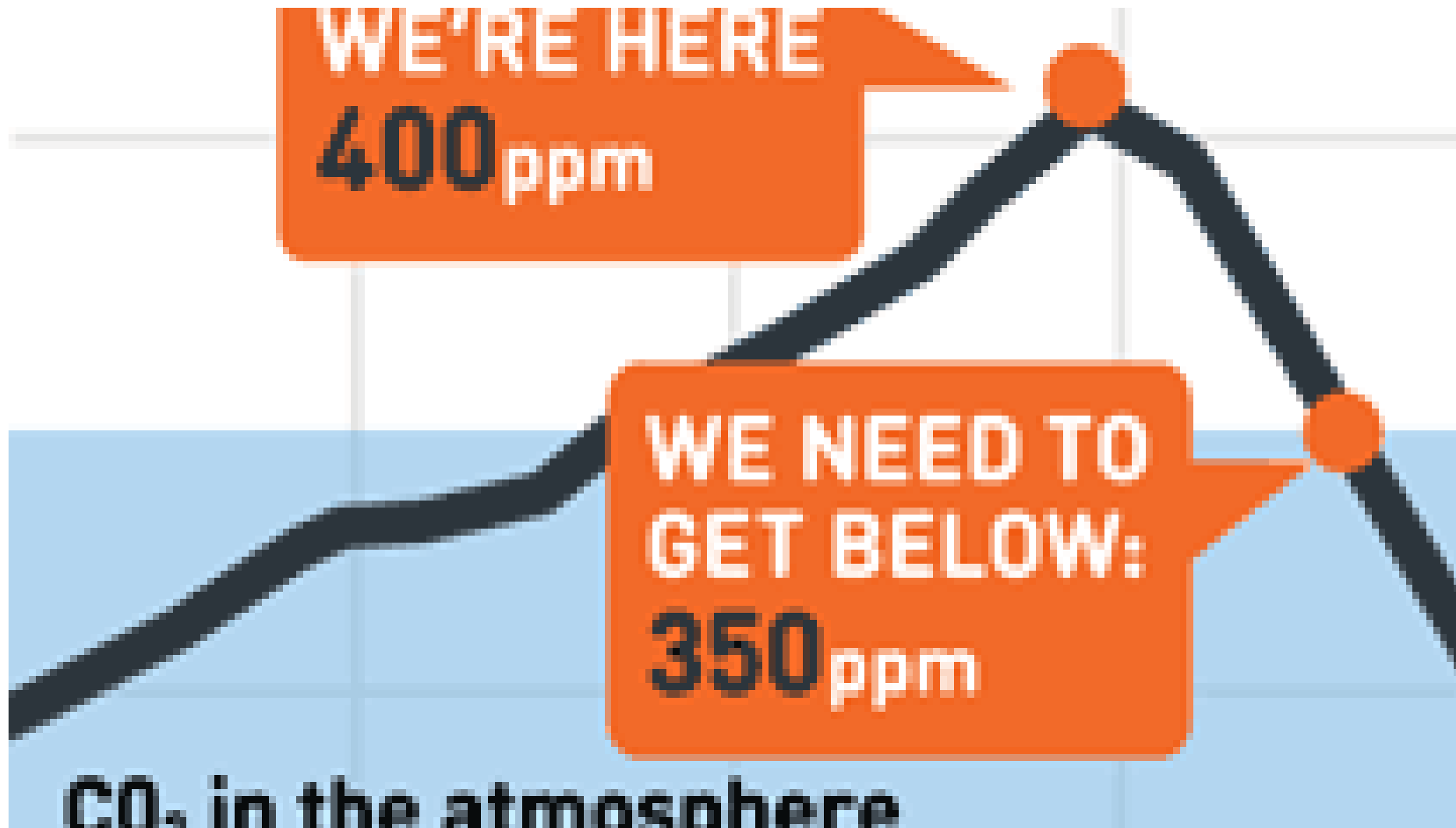


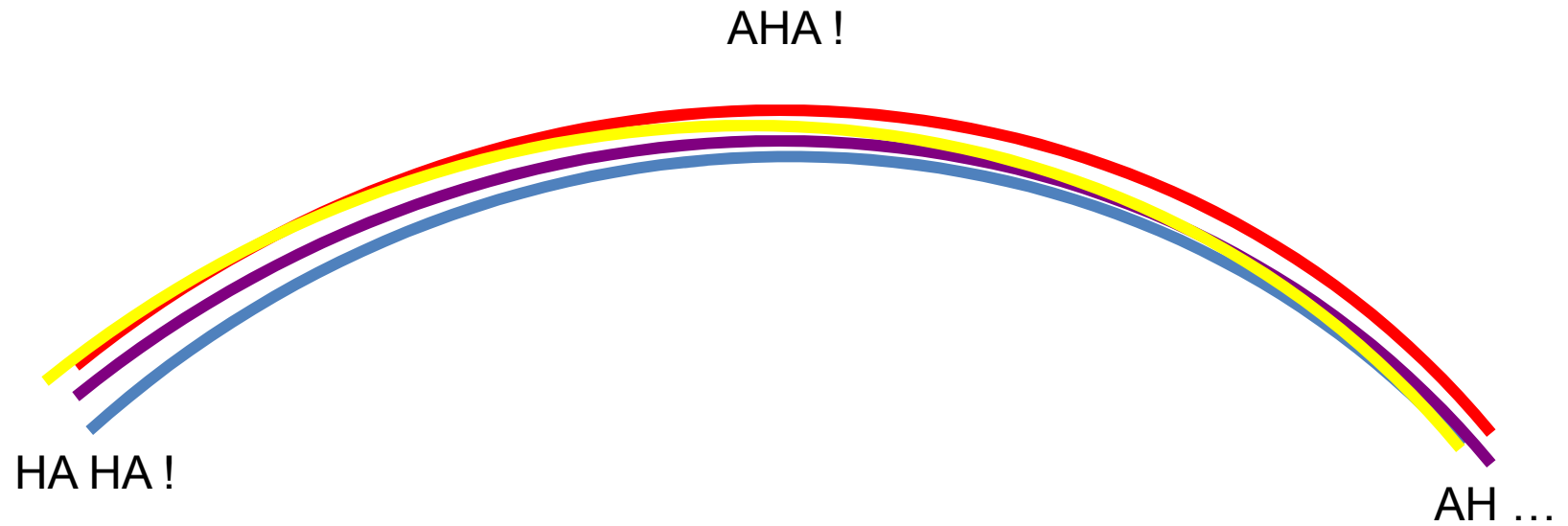




Changes are  
happening all  
over the world!

# 275, 400, 350 PPM Carbon Dioxide in the Atmosphere

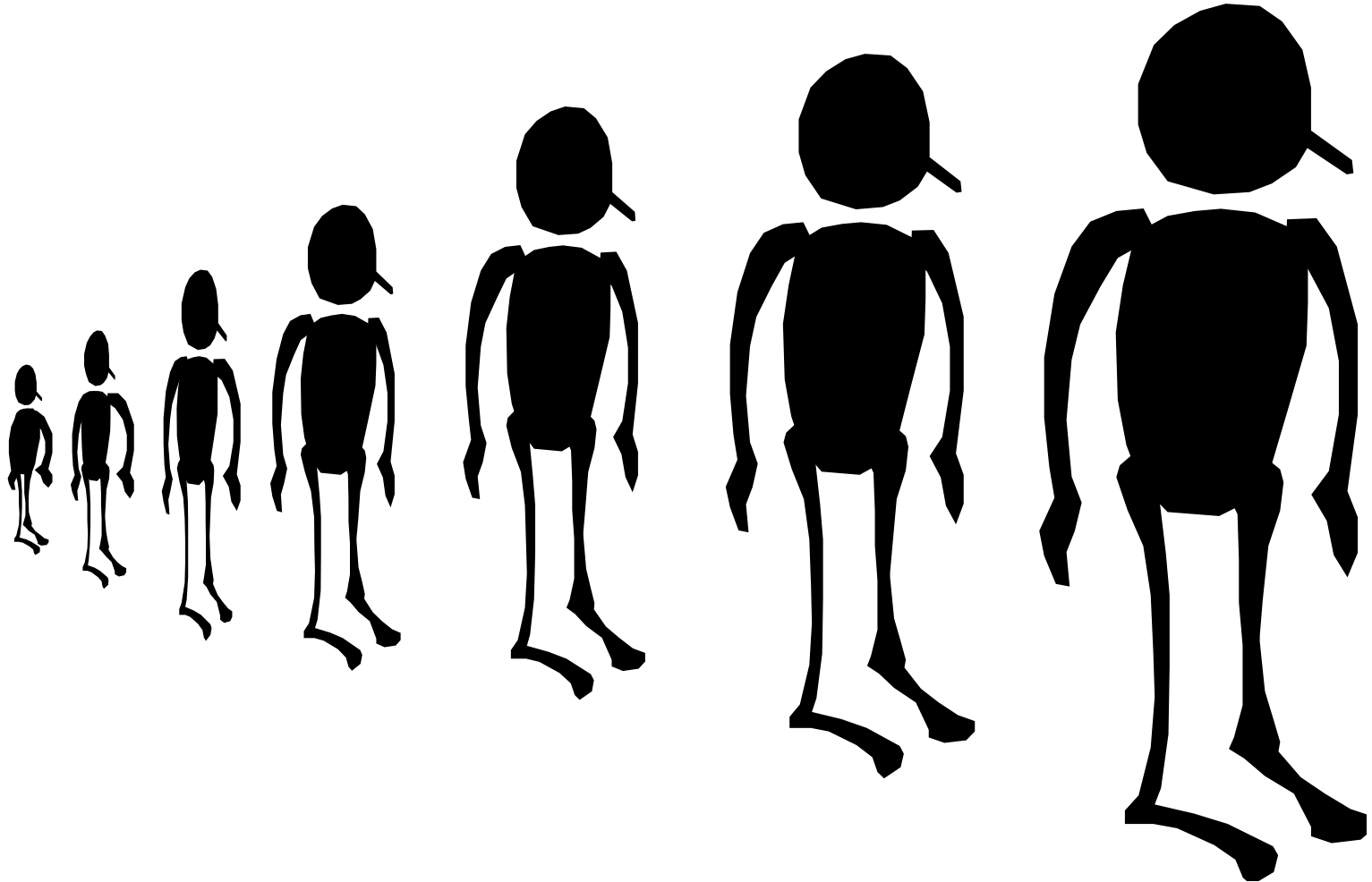




# “haha-aha-ah” curve

-after Arthur Koestler

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






Dec. 4, 1992  
Jemma R. M. Jones  
"Thinking"





# GLOBAL CLEANER PRODUCTION AND SUSTAINABLE CONSUMPTION CONFERENCE

## ***“Accelerating the Transition to Equitable, Sustainable, Post-Fossil Carbon Societies.”***



Prof. Donald Huisingh  
Univ. of Tennessee  
Editor-in-Chief  
Journal of Cleaner Production  
E-mail: [donalduisingh@comcast.net](mailto:donalduisingh@comcast.net)  
SKYPE name: huisinghdon



SITGES,  
BARCELONA, SPAIN  
1-4 NOVEMBER

2015

# Global Exhibition: “Sustainable Futures in Practice.”

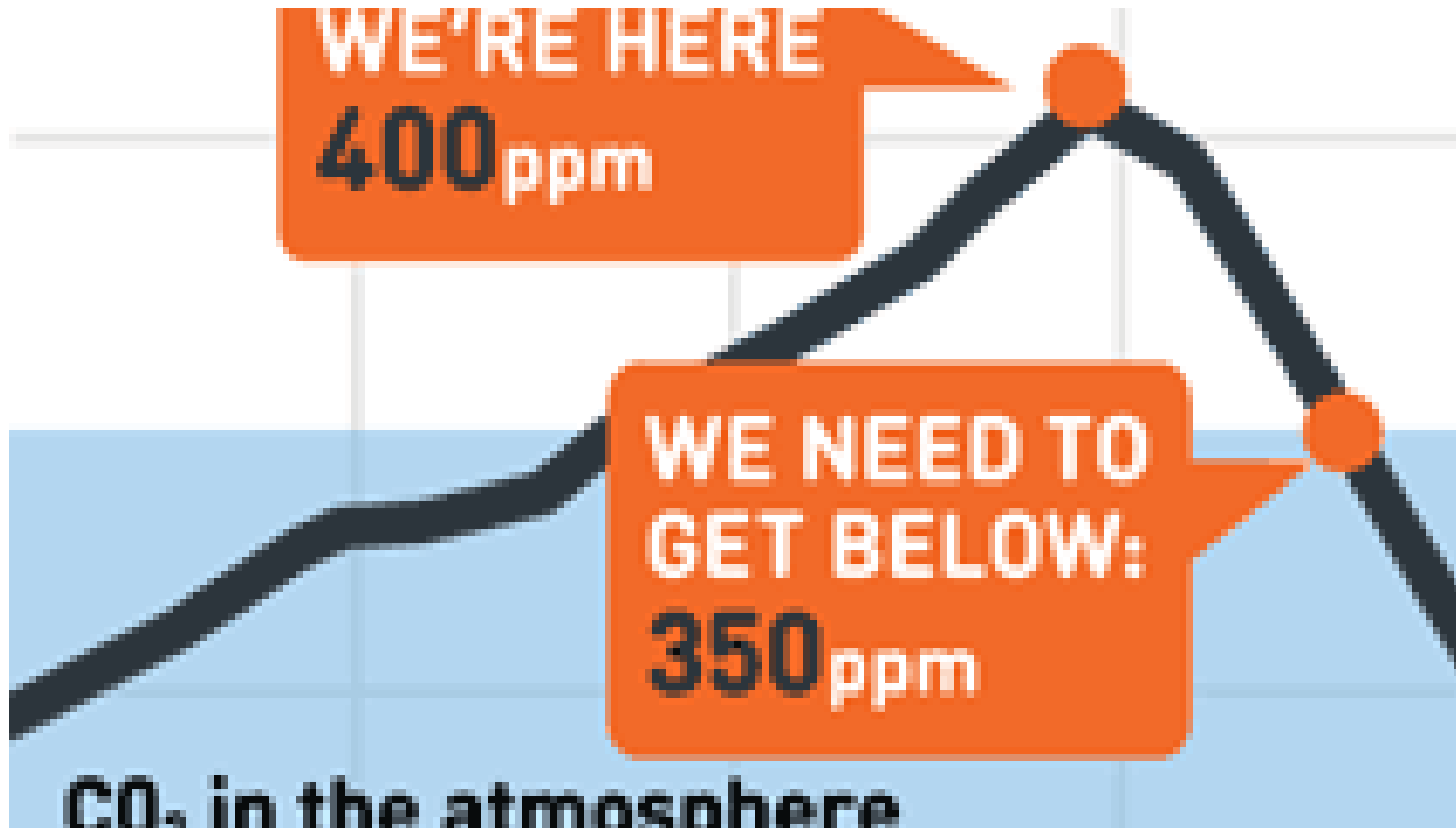
- Exhibitors will provide interactive learning opportunities about products, services, that document that sustainability transformations are happening!
- What can we learn from those examples?
- How can we mainstream them to accelerate the transition to more sustainable societies?

• Add text here

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1-4 NOVEMBER

2015

# 275, 400, 350 PPM Carbon Dioxide in the Atmosphere



# **GLOBAL CLEANER PRODUCTION AND SUSTAINABLE CONSUMPTION CONFERENCE**

- **Our Scientific Committee is co-working with Elsevier in planning the**
  - **Global Conference**



SITGES,  
BARCELONA, SPAIN  
1-4 NOVEMBER

**2015**

# **GLOBAL CLEANER PRODUCTION AND SUSTAINABLE CONSUMPTION CONFERENCE**

**Please access our website and  
look at 30+ workshops.**

**A wonderful array of  
opportunities for sharing and co-  
planning and co-learning**



**SITGES,  
BARCELONA, SPAIN  
1-4 NOVEMBER**

**2015**

# GLOBAL CLEANER PRODUCTION AND SUSTAINABLE CONSUMPTION CONFERENCE

- To help us to integrate our ethical, emotional, intuitive and logical dimensions, we seek to challenge all to integrate arts within their presentations, activities etc.
- Add text here

SITGES,  
BARCELONA, SPAIN  
1-4 NOVEMBER

2015

# **GLOBAL CLEANER PRODUCTION AND SUSTAINABLE CONSUMPTION CONFERENCE**

- **Roundtable of Roundtables +**
- **We anticipate more than 100 roundtables, associations, academic institutes, UN agencies, Trade Associations, NGOs and networks will co-work to plan, implement and follow-up**

SITGES,  
BARCELONA, SPAIN  
1-4 NOVEMBER

**2015**

# GLOBAL CLEANER PRODUCTION AND SUSTAINABLE CONSUMPTION CONFERENCE

- On Oct. 31, we will sponsor a one-day workshop for Ph.D candidates from around the world to learn, through five workshops, about how to become more effective Ph.D candidate researchers and thesis or article writers!

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BARCELONA, SPAIN  
1-4 NOVEMBER

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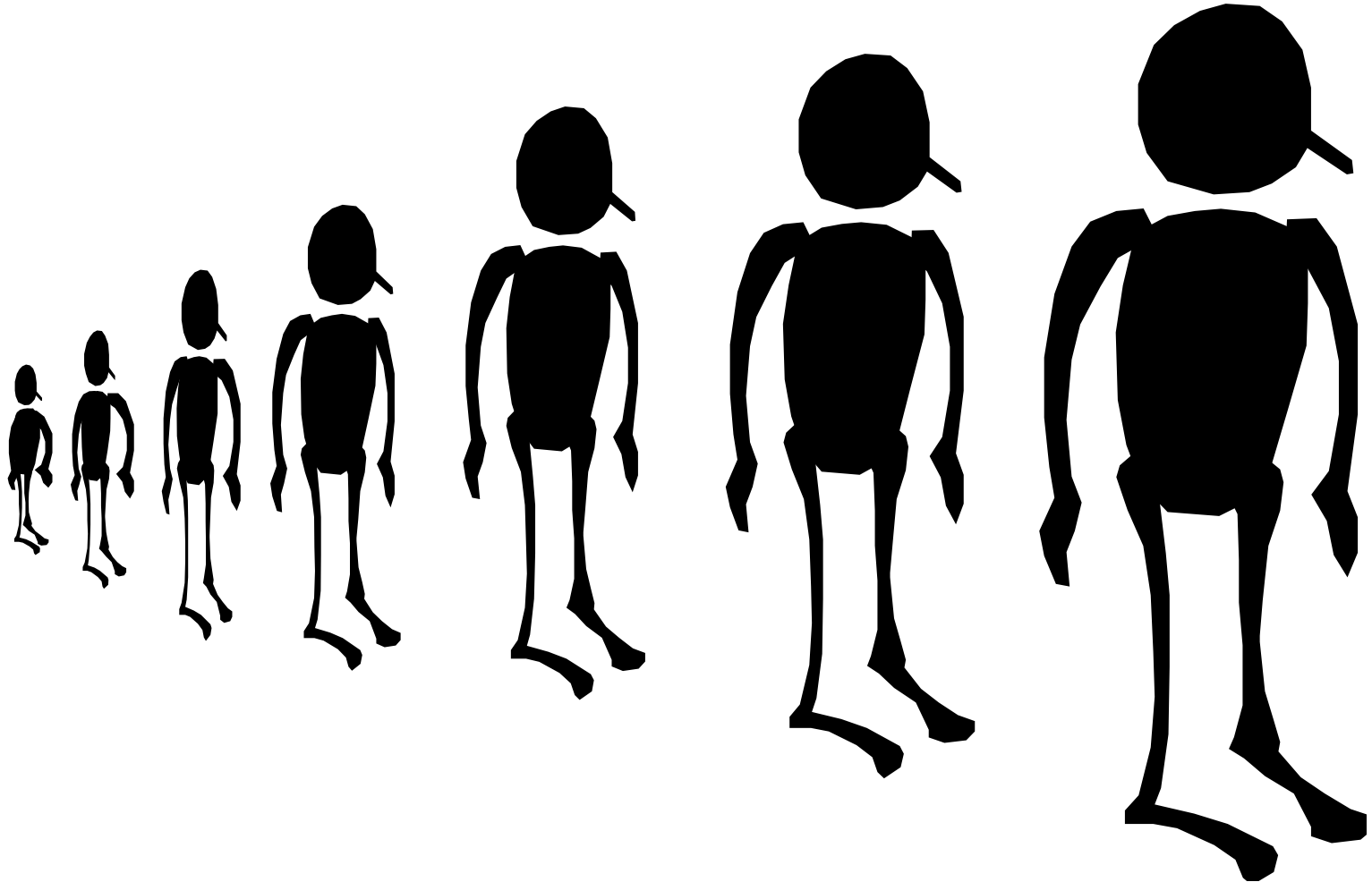
Gross National Happiness  
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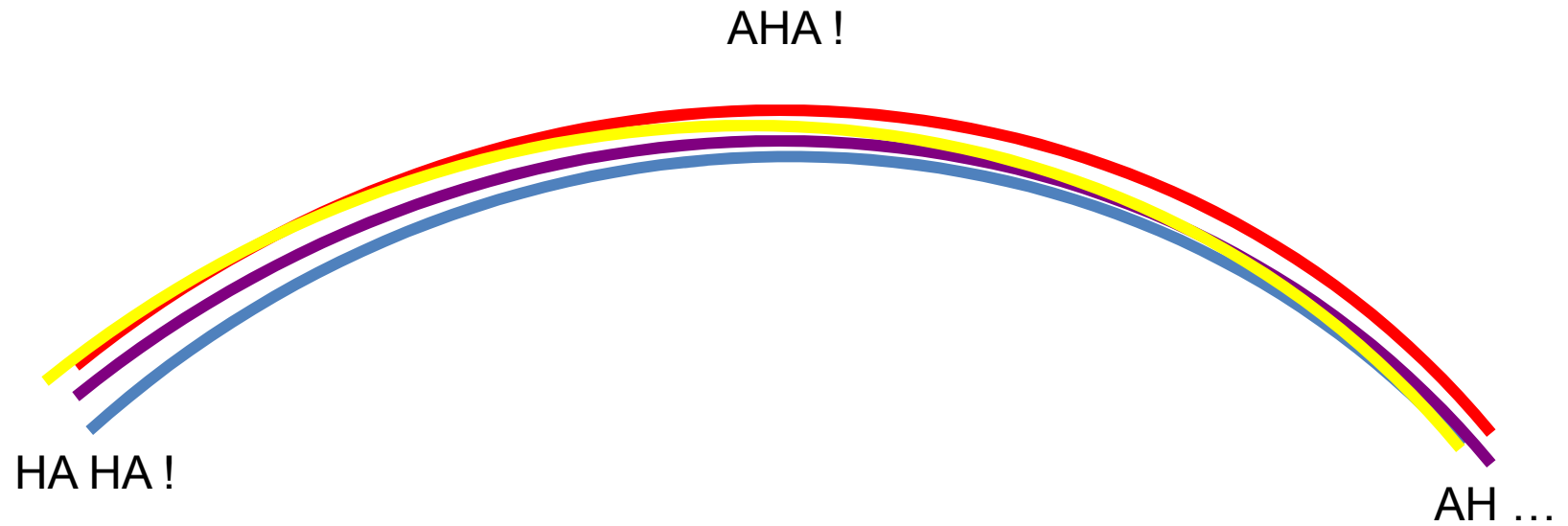
By: HM. Jigme Singye Wangchuk.



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





# “haha-aha-ah” curve

-after Arthur Koestler

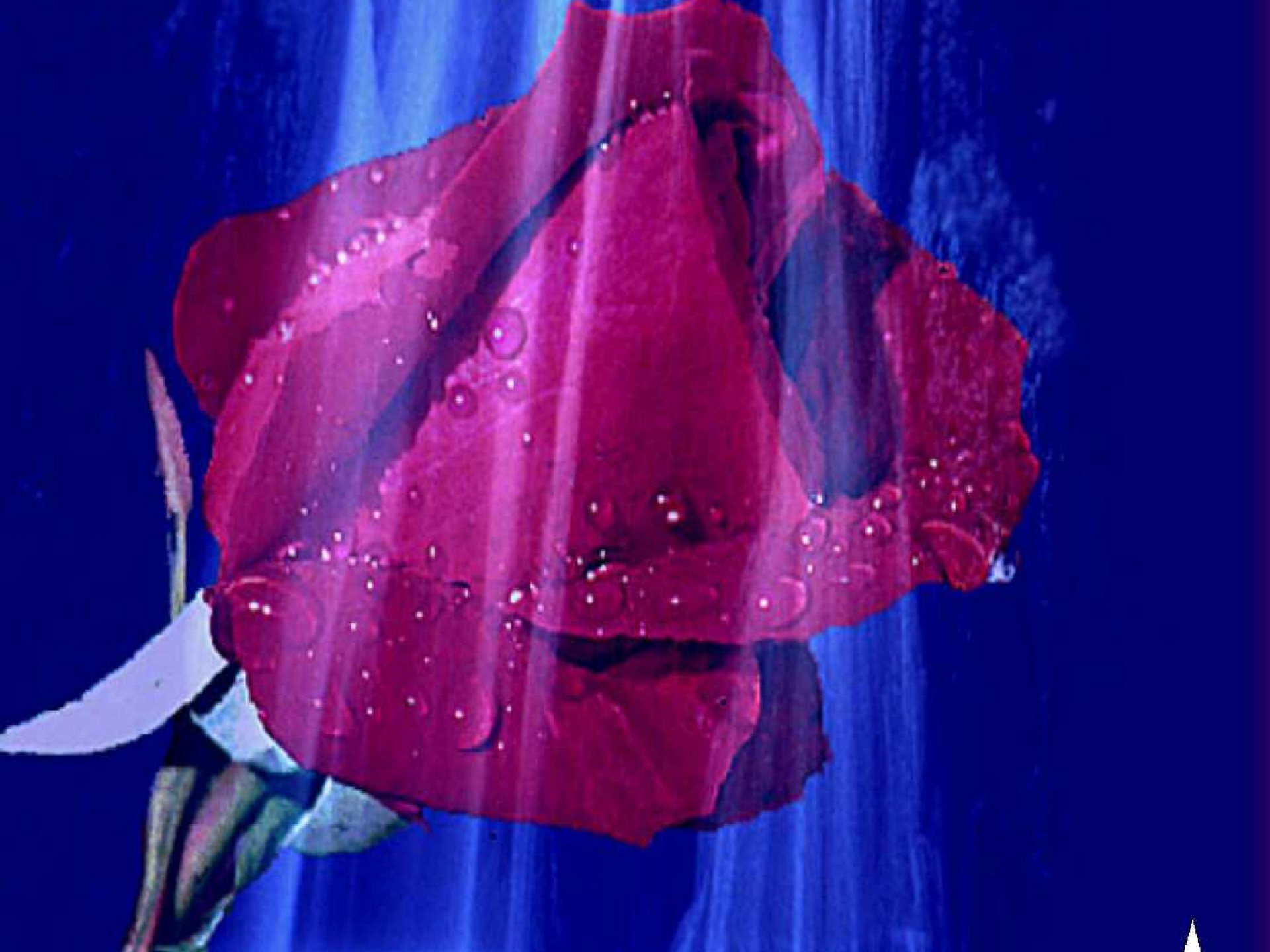
# GLOBAL CLEANER PRODUCTION AND SUSTAINABLE CONSUMPTION CONFERENCE

- Please spread the word!
- **We** will catalyze the changes that are needed to accelerate the transition to **equitable, sustainable, post fossil carbon societies!!!!!!!!!!**



SITGES,  
BARCELONA, SPAIN  
1-4 NOVEMBER

2015







Tack

Vielen Dank

Obrigado

Merci

ありがとうございます

Bedankt

Takk

感謝您

Terima Kasih

谢谢

Grazie

ขอบคุณ

Спасибо

Thank You

Kiitos

Tak

Teşekkür Ederiz

감사합니다

Gracias

Dziękujemy

Σας ευχαριστούμε

