

# Navigating the Storm: the Transition to Sustainability

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# The standard definition of SUSTAINABLE DEVELOPMENT

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

It contains within it two key concepts:

- the concept of 'needs', in particular the **essential needs of the world's poor**, to which overriding priority should be given; and
- the idea of **limitations** imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

# Sustainability is a dynamic concept

- Not a goal to be reached but a balance to be maintained in space and in time
- Involving complex interactions in the whole system that maintains life on Earth (the **environmental** component)
- Including the human system (the **social** and **economic** components)
- That must respect planetary limits and ethical standards

# The Storm



The crises of environment  
and unsustainability



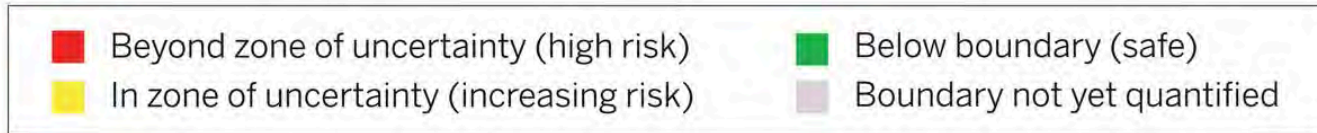
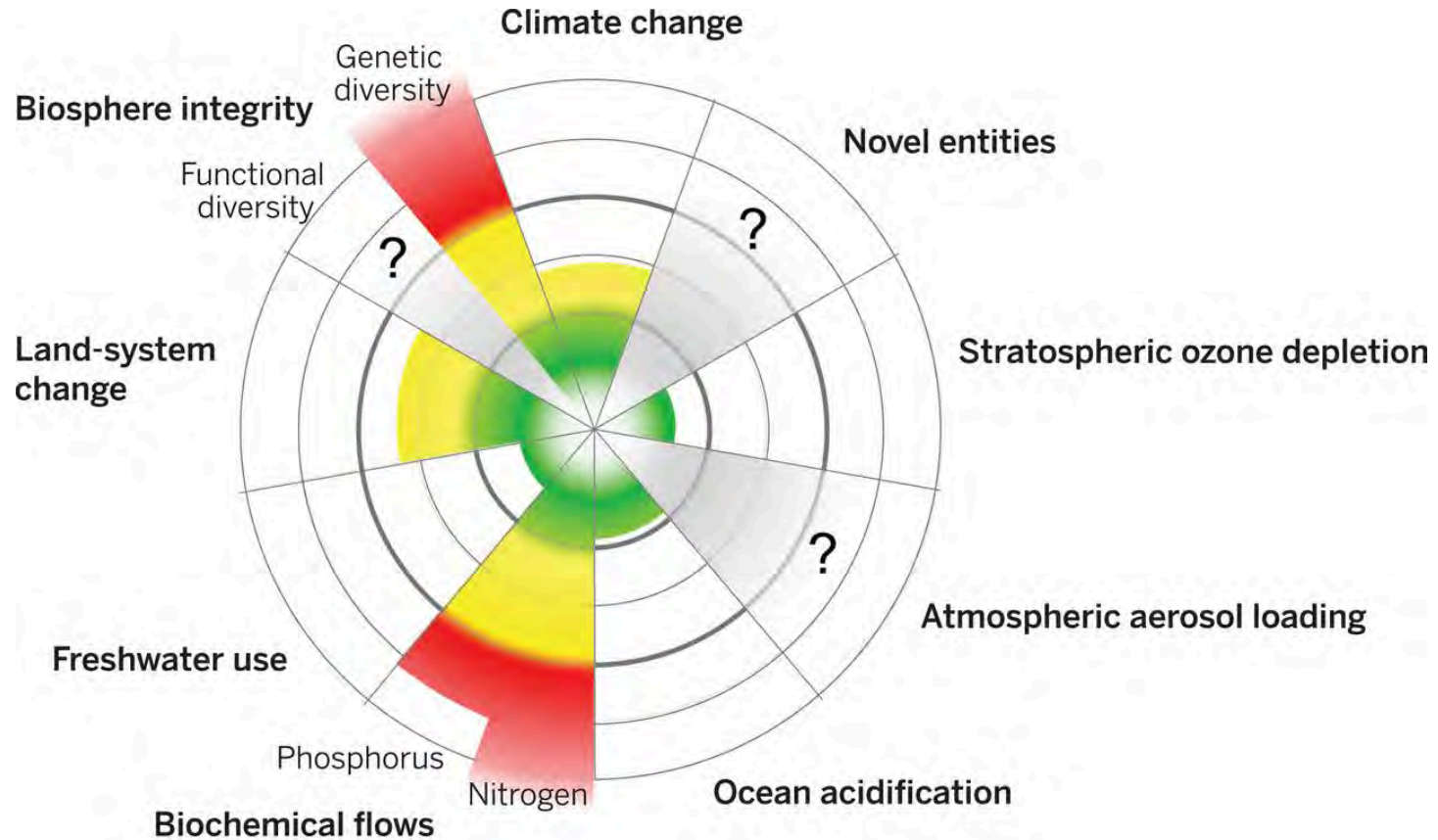
# Planetary boundaries

**Earth system processes  
with limits we must not cross**

**Challenges of the Anthropocene**



**Current status of the control variables for seven of the planetary boundaries. The green zone is the safe operating space, the yellow represents the zone of uncertainty (increasing risk), and the red is a high-risk zone.**



**Will Steffen et al. Science 2015;347:1259855**





# Threats from Climate Change

Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history.

This has led to atmospheric concentrations of carbon dioxide, methane and nitrous oxide that are unprecedented in at least the last 800,000 years.

Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems.



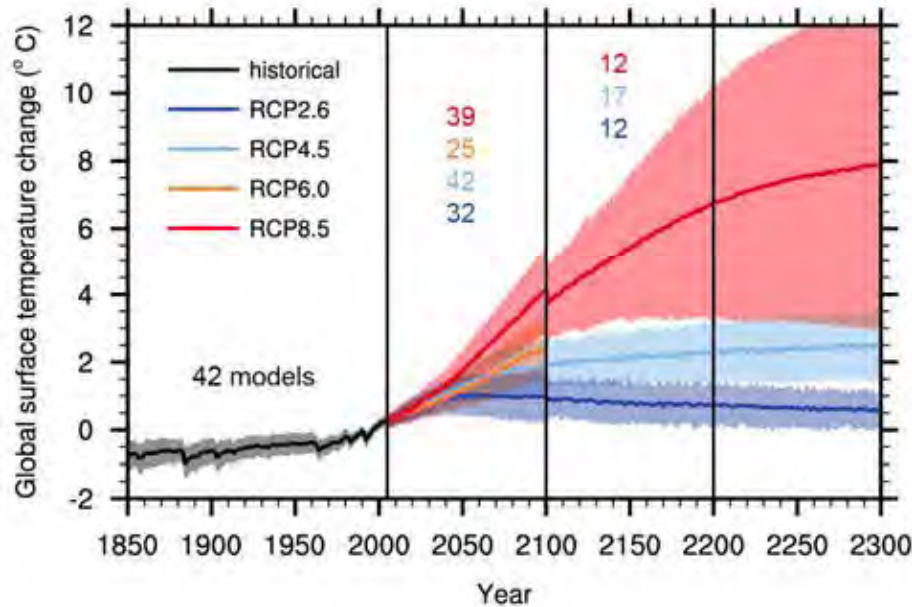
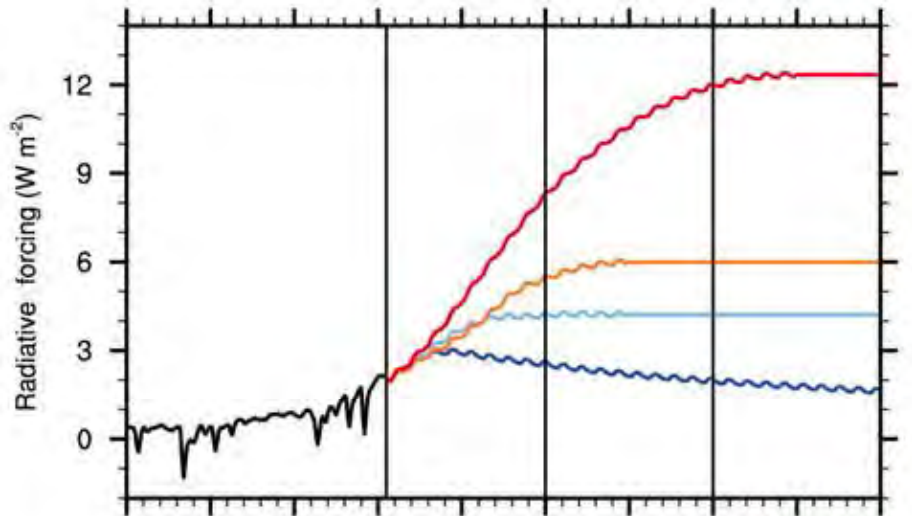
# Fossil fuels and climate change

- accepted limit for global warming is 2° C, probably too high
- remaining capacity of the atmosphere to absorb carbon within this limit is 565 gigatons of CO<sub>2</sub>
- proven oil, coal and gas reserves total 2,795 gigatons (not counting unconventional sources)
- to prevent catastrophic climate change, 80% of proven reserves need to be taken off asset accounts and left in the ground

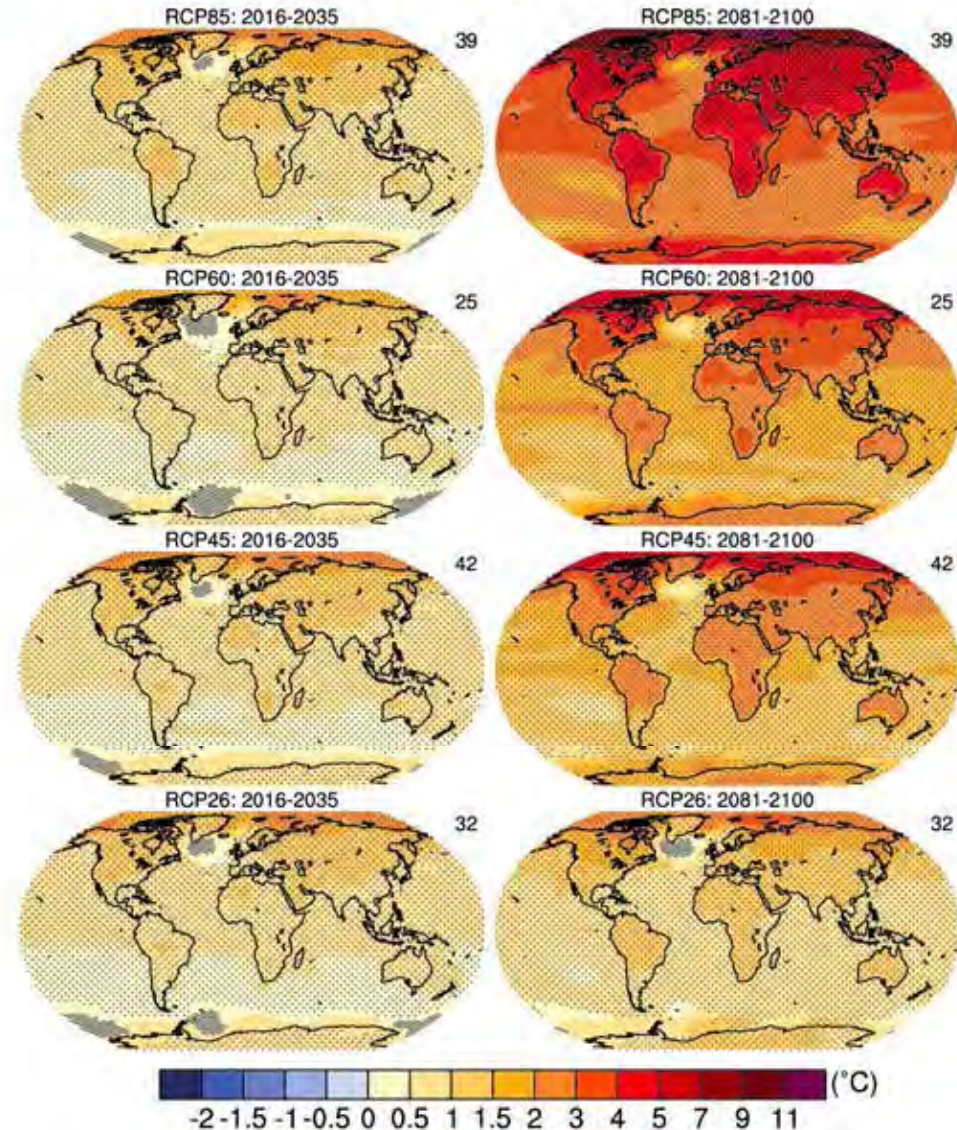


# What the models say

IPCC 2013



Annual mean temperature change



# The most vulnerable areas risking catastrophic collapse this century

- Arctic Ocean and Greenland ice sheet
- Amazon rain forest
- Northern boreal forests
- El Nino affecting weather in North America, South-East Asia and Africa (3° C rise)
- Collapse of West African monsoon
- Erratic Indian summer monsoon
- Sea level rise of 2 or more meters



# Loss of biosphere integrity

- Extinction rate is now **1000** times the pre-industrial level
- Global warming  $2^{\circ}$  C = 20% species loss;  
 $4^{\circ}$  C = 50%



# Freshwater Use

By 2025, 1.8b people will live in regions with absolute water scarcity, and 2/3 of the world population could be subject to water stress as climate change reduces rainfall in these areas



# Land Use Change

- Growing population and technologies change the land surface and exploit its resources, converting natural landscapes and ecosystems for human use, degrading land and reducing ecosystem services

# Release of Novel Entities

Man-made chemical pollutants, radioactive materials, nanomaterials, microplastics, and novel life-forms that can contaminated the entire planet, interfering with biological processes, upsetting hormonal balances and immune systems, causing cancers and other diseases, damaging the ozone layer, and having other as yet unknown effects



# The energy challenge

- Industrial economy, agriculture, transportation, communications, trade, urbanization, consumer lifestyle all depend on unsustainable fossil fuels
- Wind, tidal and wave turbines; photovoltaic panels; hydroelectricity; geothermal energy can be scaled up today to meet 100% of energy needs in 20-40 years
- Are we ready to make the transition?



# Human Population

- The world population is expected to rise to 9.7 billion by 2050 and 11.2 b by 2100
- We seem to be following a classic ecological pattern of overshoot and collapse
- The planetary carrying capacity depends on numbers versus standard of living; increasing one reduces the other





# The coming soil crisis

- Many past civilizations collapsed because they degraded their soil
- In Indiana, for each ton of grain harvested, a ton of soil is lost
- Since 1945, erosion has degraded 1.2 billion hectares, equal to China plus India, 38% of global crop land

# Coming Food Crisis

- Intensive agriculture requires expensive energy, fertilizer and petrochemical inputs
- World cereal production per person peaked in the 1980s
- Feeding the growing world population and reducing hunger by half will require doubling world food production by 2050
- There were absolute planetary food shortages 2008 and 2012, with rising prices

# Health Threats to Sustainability

- Risk of bird/swine flu pandemic
- Rise of malaria and tuberculosis; no profit in medicines for the poor
- Emerging epidemic diseases (Ebola, SARS)
- Growing antibiotic resistance from overuse
- Unhealthy products: tobacco, alcohol, infant formula, junk foods
- Food system: hunger and obesity 800m

# Refusal of Social Globalization

when climate change will cause mass migrations

- Reinforcing frontiers
- Rejection of immigrants
- Rise of xenophobia
- Fear of delocalizations
- Failure to deal with poor governance

Globalization should include the free movement of people as well as capital, goods and services





# 20<sup>th</sup> century consumer society rooted in materialism

- The early twentieth century materialistic interpretation of reality has become the dominant world faith in the direction of society
- Dogmatic materialism has captured all significant centres of power and information at the global level, ensuring that no competing voices can challenge projects of world wide economic exploitation

(UHJ, *One Common Faith*, 2005)



# The attractions of consumer culture

- Materialism's vision of human progress produced today's consumer culture with its ephemeral goals
- For the small minority of people who can afford them, the benefits it offers are immediate
- The breakdown of traditional morality has led to the triumph of animal impulses and hedonism
- Selfishness has become a prized commercial resource; falsehood reinvents itself as public information; greed, lust, indolence, pride, violence are broadly accepted and have social and economic value

(UHJ, *One Common Faith*, 2005)



# Consumption-based economy in trouble

- Origins in the consumer society living beyond its means, accumulating debt
- Head of European Central Bank (Feb. 2009): "We live in non-linear times: the classic economic models and theories cannot be applied, and future development cannot be foreseen."
- Financial derivatives over \$700 trillion
- European countries on brink of insolvency

# Growth-debt Trap

- Economic growth today is largely fueled by consumer, corporate and government borrowing
- As long as the growth rate is higher than the interest rate, reimbursement is possible
- If growth slows or stops, defaulting is inevitable
- The consumer society was a necessary creation to maintain the economic growth/debt paradigm





# We are accumulating economic, social, and environmental debt

- Financial crisis is the most immediate threat to world stability
- UK Chief Scientist (19 March 2009): the world faces a 'perfect storm' of problems in 2030 as food, energy and water shortages interact with climate change to produce public unrest, cross-border conflicts and mass migrations

# Scenarios from World 3

(Meadows et al. (1992) *Beyond the Limits*)

SCENARIO 1

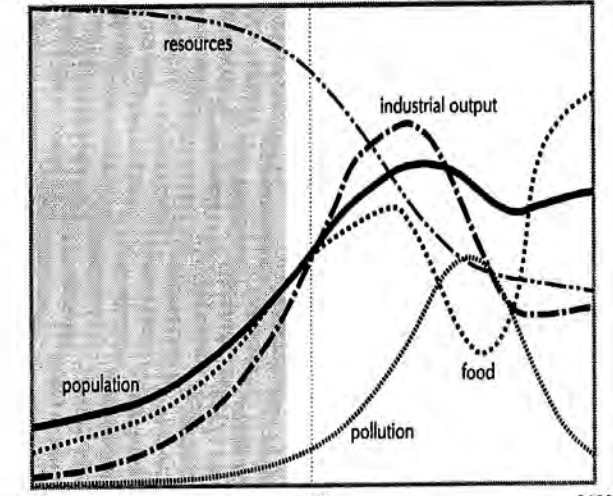
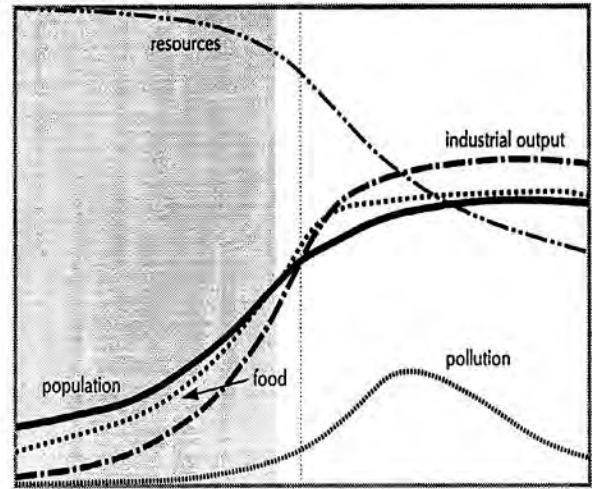
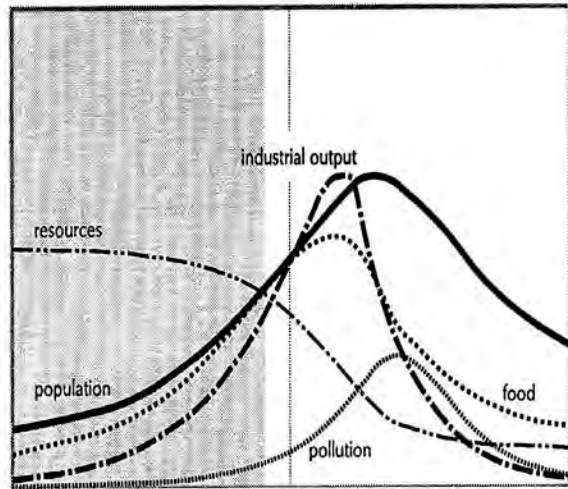
SCENARIO 10

SCENARIO 12

State of the world

State of the world

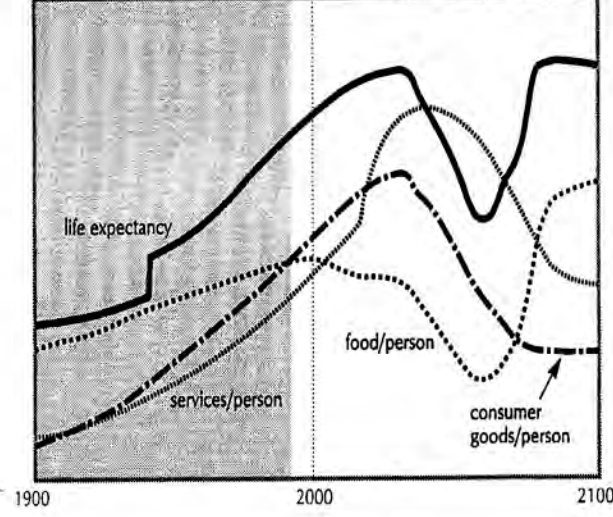
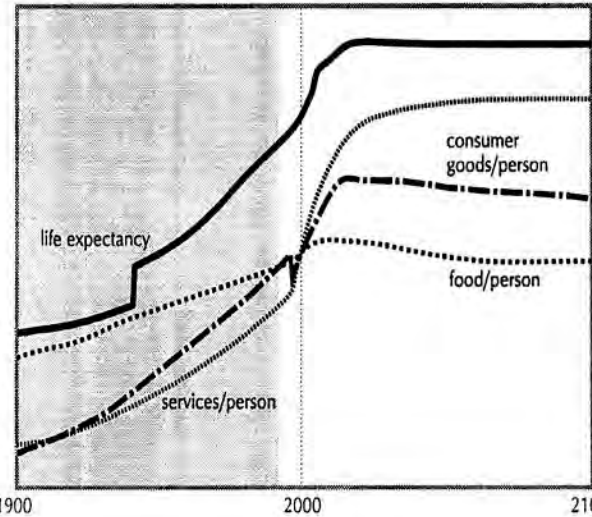
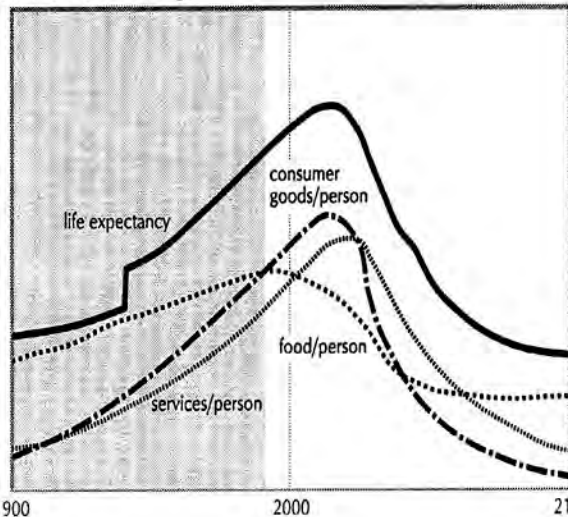
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Material standard of living

Material standard of living

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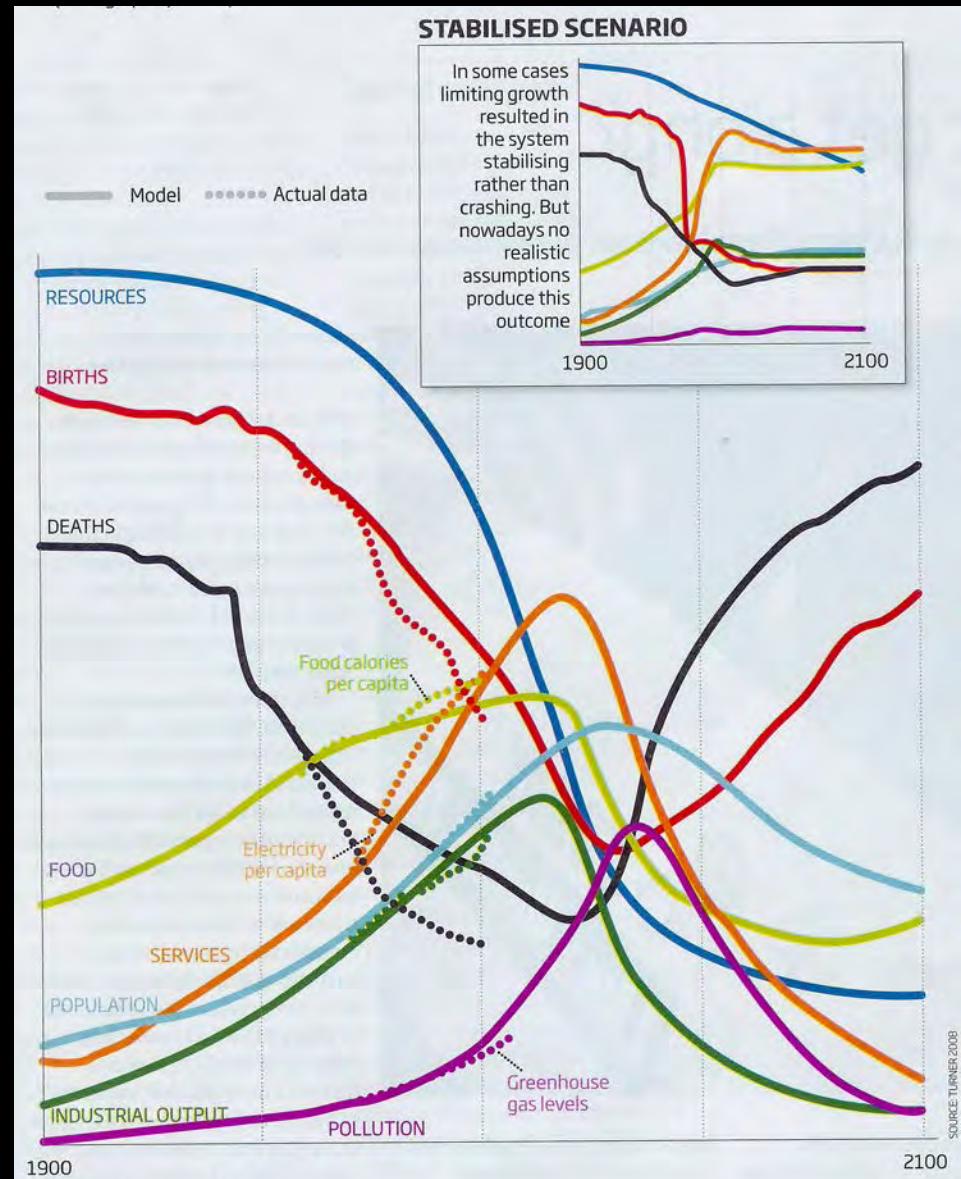
Business as usual

Transition 1995

Transition 2015

# Where are we now?

MacKenzie, Debra. 2012  
Doomsday Book. *New Scientist*,  
7 January 2012, pp. 38-41.





# 2052: A Global Forecast

Jorgen Randers (2012)

- beauties of nature and undisturbed ecosystems will disappear
- enough resources to meet demand but not need, 5 billion people poor, 1 billion still starving
- nothing done to address extremes of wealth and poverty
- increasing inequity in the rich world, producing more social instability
- **Wildcards:** financial meltdown, revolution in USA, generational rebellion



# 2052: A Global Forecast

Jorgen Randers (2012)

Five central issues:

- capitalism leads inevitably to extremes of wealth and poverty
- economic growth produces over-consumption
- democracy is too slow for the changes that are necessary
- intergenerational harmony will fail
- the climate will become increasingly unstable



# Historical cycles

Peter Turchin (mathematical ecologist) 2010:

- a civilization or empire depends on social cohesion (indicator: collective violence)
- population growth and new technology generate wealth for elite → oversupply of labour increases poverty → concentration of wealth → young of rich rebel → anarchy → collapse → restart (200 year cycle)
- predicted political instability/impending crisis in Western Europe and US peaking 2020
- need to reduce social inequality



# The Transition to Sustainability

# Welcome to the new sustainability paradigm

- **balance**
- **optimal size**
- **subsidiarity**
- **efficiency**
- **de-materialization**
- **closed systems**





# Systems Thinking for Sustainability

## **Cycles**

- From linear to circular thinking, closing loops, feedback, response times, balance

## **Long-term**

Know where you want to go, keep your direction in spite of distractions; remember your principles and goals, but be flexible in finding local solutions

# HOW DOES NATURE DO IT?

## Sustainability in the coral reef ecosystem:

- Efficient solar energy and materials capture by generating large surface area
- Efficient energy transfers within system, symbioses
- Little waste, effective recycling
- High complexity and integration
- Maximizes total productivity, not just most productive

**Sustainability  
is fundamentally an  
Ethical Challenge**

**egotism** versus **altruism**  
**me first** versus **all together**



# We need an alternative to the consumer society

- sufficiently attractive to overcome resistance and habit
- worth sacrificing the superficial for what is deeper and more fundamentally rewarding
- combines individual transformation with social action



# Sustainability - an ethical concept

As trustees or stewards of the planet's resources and biodiversity, we must:

- ensure sustainability and equity of resource use into distant future
- consider the environmental consequences of development activities
- temper our actions with moderation and humility
- value nature in more than economic terms
- understand the natural world and its role in humanity's collective development both material and spiritual



# Sustainability - fundamental responsibility

Sustainable environmental management must come to be seen not as a discretionary commitment mankind can weigh against other competing interests, but rather as a fundamental responsibility that must be shouldered, a pre-requisite for spiritual development as well as the individual's physical survival.

(based on Bahá'í International Community, *Valuing Spirituality in Development*. 1998)

# Values for a sustainable society

- Justice
- Solidarity
- Altruism
- Cooperation
- Trust
- Moderation
- Unity





# Justice and Equity

It is unjust to sacrifice the well-being of most people -- and even of the planet itself -- to the advantages which technological breakthroughs can make available to privileged minorities

(based on Baha'i International Community, *Prosperity of Humankind*)



# Solidarity and Altruism

We should consider every human being as a trust of the whole.

The goal of wealth creation should be to make everyone wealthy.

Voluntary giving is more meaningful and effective than forced redistribution.

# Cooperation and Reciprocity

Cooperation and reciprocity are essential properties of all natural and human systems, increasing in more highly evolved and complex systems





# Trust and Trustworthiness

*Trustworthiness is the greatest portal leading unto the tranquillity and security of the people. In truth the stability of every affair hath depended and doth depend upon it.*

(Bahá'u'lláh, Tablets of Bahá'u'lláh, p. 37)

Trust is equally important in the relationships between states. If governments cannot trust each other to respect their engagements, agreements that require shared efforts become impossible.



# Moderation in Material Civilization

- the foundation of sustainability

*“The civilization, so often vaunted by the learned exponents of arts and sciences, will, if allowed to overleap the bounds of moderation, bring great evil upon men.”*

*“...be content with little, and be freed from all inordinate desire.”*

*“Take from this world only to the measure of your needs, and forego that which exceedeth them.”*

Bahá'u'lláh (1817-1892)

# Primacy of Oneness of Humanity

- Since humanity is one, each person is born into the world as a trust of the whole, and each bears a responsibility for the welfare of all humanity
- This collective trusteeship constitutes the moral foundation of human rights, sustainability and governance
- The welfare of each country and community can only be derived from the well-being of the whole planet



# The true purpose of economics

Economics has ignored humanity's broader social and spiritual needs, resulting in:

- Corrosive materialism among the wealthy
- Persistent poverty for masses of the world's peoples

Economic systems should give the peoples and institutions of the world the means to achieve the real purpose of development: the cultivation of the limitless potentialities in human consciousness.

(adapted from Bahá'í International Community, *Valuing Spirituality in Development*, 1998)



# Values for the economic system

Sustainability requires new values-based economic models

- The aim should be a dynamic, just and thriving social order:
- Strongly altruistic and cooperative in nature
- Providing meaningful employment
- Helping to eradicate poverty in the world.



# Preserving the Ecological Balance

For the sustainable economic and social development of all countries, agriculture and the preservation of the ecological balance of the world are fundamental.

(UHJ)





# Living within environmental limits is possible

To maintain the planet's ecological balance, we must:

- base the economy on renewable energy and resources (agriculture, forests, fisheries, bio-industries), closed materials cycles and integrated product life-cycles
- reduce human impacts to a level appropriate to the vulnerability and resilience of the systems
- restore damaged systems to the level necessary to maintain natural and human ecosystem services
- allow population growth and development only to the extent that system improvements extend the carrying capacity of the planetary system

# Sustainability requires innovation

We are in the middle of a major transformation in society

The past is not a good predictor of the future

Change is inevitable, and the rate of change is accelerating, requiring adaptive management

Globalization cannot be stopped, but it can be transformed

We can consciously work for change, or wait for catastrophe to force us to change

Creativity and innovation will be increasingly necessary for success

Values and ethics will be fundamental to social and economic transformation



# Sustainability Requires World Order

...a world legislature... will... ultimately control the **entire resources** of all the component nations, and will enact such laws as shall be required to regulate the life, satisfy the needs and adjust the relationships of all races and peoples.

The economic resources of the world will be **organized**, its sources of raw materials will be tapped and fully utilized, its markets will be coordinated and developed, and the distribution of its products will be **equitably regulated**.

(Shoghi Effendi, *The World Order of Bahá'u'lláh*, p. 203-204)



# Sustainability Requires World Order

A **world federal system**, ruling the whole earth and exercising unchallengeable authority over its **unimaginably vast resources**,... liberated from the curse of war and its miseries, and bent on the exploitation of all the available sources of **energy** on the surface of the planet,... such is the goal towards which humanity, impelled by the unifying forces of life, is moving.

(Shoghi Effendi, *The World Order of Bahá'u'lláh*, p. 203-204)

# UN Climate Conference 2015

2015 is a make or break year for the climate change process, with break leading us to global catastrophe.

The UN Climate Conference COP21 in Paris in December must adopt a legally-binding treaty to reduce by 80% by 2050 and then eliminate greenhouse gas emissions in this century



# BIC Statement on Climate Change

## **Seizing the Opportunity: Redefining the Challenge of Climate Change (COP14 Poznan 2008)**

- opportunity to take the next step in the transition from a state-centered mode of interacting on the world stage to one rooted in the unity which connects us as the inhabitants of one biosphere, the citizens of one world and the members of one human civilization.



# BIC Statement on Climate Change

- in the face of the destructive impacts of climate change – exacerbated by the extremes of wealth and poverty – need new approaches centered on the principles of justice and equity
- moral challenge which calls for the transformation of thoughts and behaviors so as to allow our economic and social structures to extend the benefits of development to all people

(Bahá'í International Community. 2008)



# BIC Statement on Climate Change

- forge a coherent ethic for the resolution of the climate change crisis, beyond a world community driven by a largely economic and utilitarian calculus, to one of shared responsibility for the prosperity of all nations.
- recognize the broader human agenda – which subsumes those of climate change, poverty eradication, gender equality, development, and the like – and seeks to use both human and natural resources in a way that facilitates the progress and well-being of all people





# Pope's Encyclical 2015

## **Laudato Si': on care for our common home** (18 June 2015)

- addressed to all the peoples of the world, not just Catholics
- environmental challenges facing the world and persistent poverty - two aspects of the same spiritual illness facing the world today
- integrated systems perspective on the material and spiritual challenges, and the need for spiritual solutions



# Pope's Encyclical 2015

- summarizes the major environmental challenges as defined by science: pollution and climate change, water (for which access is a basic human right), loss of biodiversity
- describes decline in the quality of human life and the breakdown of society, global inequality, weak responses, and the variety of opinions
- strong critiques of consumerism, the economy and multilateral corporations
- explores their deeper causes in a materialistic society of short-term selfish interests bent on profit without regard for the needs of the poor or the environment



# Islamic Declaration on Climate Change

Calls:

- **Well-off nations and oil-producing states:** phase out greenhouse gas emissions, leave 2/3 proven fossil fuel reserves in ground, invest in green economy, reduce consumption so poor may benefit, preserve the environment
- **People of all nations** and their leaders: phase out greenhouse gas emissions, commit to decentralized renewable energy, pursue economic growth in moderation, priority to adaptation and resilience to climate change
- **Corporations, finance and business sector;** reduce carbon footprint and environmental impacts, shift investments to renewable energy, divest from fossil fuel economy
- **All groups** are invited to join in collaboration, cooperation; significant contributions of other faiths
- **all Muslims**, not to "*strut arrogantly on the earth*"



# Islamic Declaration on Climate Change

## Calls:

- a fresh model of wellbeing, based on an alternative to the current financial model which depletes resources, degrades the environment, and deepens inequality
- change from the current business model which is based on an unsustainable escalating economy, and adopt a circular economy that is wholly sustainable and more socially and ecologically responsible

*"The world is sweet and verdant, and verily Allah has made you stewards in it, and He sees how you acquit yourselves."*

# Synthesis Report of the Secretary-General

## **The Road to Dignity by 2030: Ending Poverty, Transforming All Lives and Protecting the Planet**

Synthesis Report of the Secretary-General On the Post-2015 Agenda, released 4 December 2014

*"young people will be the torch bearers... the first truly globalized, interconnected, and highly mobilized civil society, ready and able to serve as a participant, joint steward, and powerful engine of change and transformation."*



# Synthesis Report of the Secretary-General

- fundamental transformation is needed in society and the economy
- Sustainable Development Goals (SDGs) define a paradigm shift for people and planet
- inclusive and people-centred, leaving no one behind
- integrate the economic, social and environmental dimensions
- in a spirit of solidarity, cooperation, mutual accountability
- with the participation of governments and all stakeholders

# Synthesis Report of the Secretary-General

Six essential elements

- **Dignity:** to end poverty and fight inequalities
- **People:** to ensure healthy lives, knowledge, and the inclusion of women and children
- **Prosperity:** to grow a strong, inclusive, and transformative economy
- **Planet:** to protect our ecosystems for all societies and our children
- **Justice:** to promote safe and peaceful societies, and strong institutions
- **Partnership:** to catalyse global solidarity for sustainable development



# Sustainable Development Goals

**17 action oriented, global in nature and universally applicable SDGs**

1. End **poverty** in all its forms everywhere
2. End hunger, achieve **food security** and improved nutrition, and promote sustainable agriculture
3. Ensure **healthy lives** and promote well-being for all at all ages
4. Ensure inclusive and equitable quality **education** and promote life-long learning opportunities for all
5. Achieve **gender equality** and empower all women and girls
6. Ensure availability and sustainable management of **water** and sanitation for all





# Sustainable Development Goals

7. Ensure access to affordable, reliable, sustainable, and modern **energy** for all
8. Promote sustained, inclusive and sustainable **economic growth**, full and productive **employment** and decent work for all
9. Build resilient infrastructure, promote inclusive and sustainable **industrialization** and foster innovation
10. Reduce **inequality** within and among countries
11. Make cities and **human settlements** inclusive, safe, resilient and sustainable
12. Ensure **sustainable consumption and production** patterns
13. Take urgent action to combat **climate change** and its impacts



# Sustainable Development Goals

15. Protect, restore and promote sustainable use of **terrestrial ecosystems**, sustainably manage forests, combat desertification, and halt and reverse **land degradation** and halt **biodiversity** loss
16. Promote peaceful and inclusive societies for sustainable development, provide access to **justice** for all and build effective, accountable and inclusive **institutions** at all levels
17. Strengthen the **means** of implementation and revitalize the global partnership for sustainable development

# Integrating indicators


- SDG target **17.19** *By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product....*
- Stiglitz et al. 2009 beyond GDP
- Bhutan Gross National Happiness
- World Happiness Report 2013
- OECD; European Environment Agency
- World Bank living life project
- Many national projects on well-being and happiness

# Appropriating the SDGs

The United Nations process is essentially top-down, building a global consensus among governments

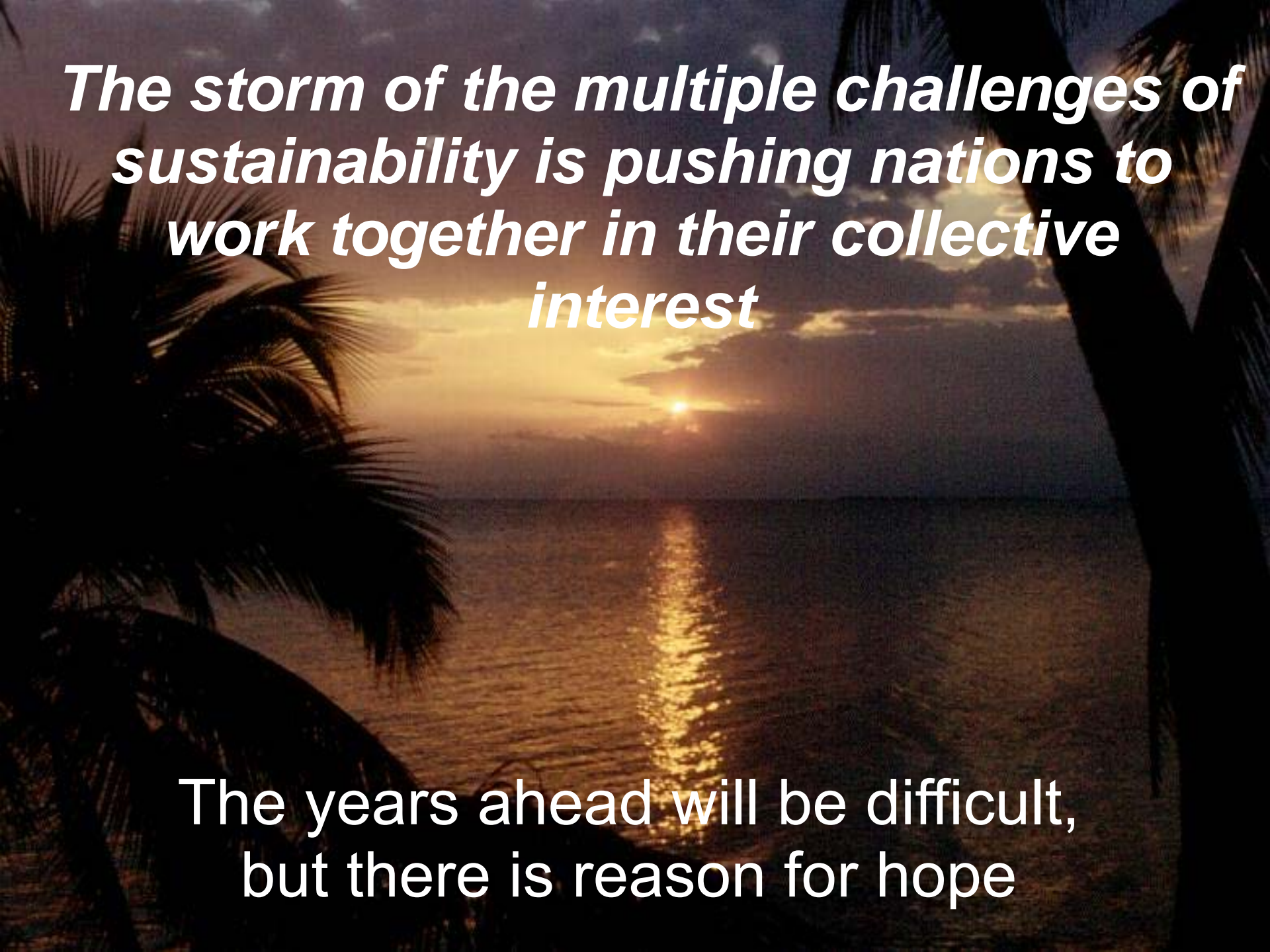
The SDGs need to be appropriated by individuals, communities and civil society to start a bottom-up process, translating the goals into local realities

We should not wait for governments to act, as they always do too little, too late



...the pathway to sustainability will be one of empowerment, collaboration and continual processes of questioning, learning and action in all regions of the world.... As the sweeping tides of consumerism, unfettered consumption, extreme poverty and marginalization recede, they will reveal the human capacities for justice, reciprocity and happiness.

(Bahá'í International Community)

A tropical sunset scene with palm trees and a reflection on the water. The sun is low on the horizon, casting a golden glow across the sky and reflecting on the water. The palm trees are silhouetted against the bright sky.

***The storm of the multiple challenges of sustainability is pushing nations to work together in their collective interest***

**The years ahead will be difficult,  
but there is reason for hope**