

Global Environmental and Energy Policy 2018
The University of Tokyo

Sustainability

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My Background

- Sustainability
 - Ecological (BSc)
 - Social (Graduate Certificate, PhD)
- Consulting Projects
 - Language / Research & Analysis / Contents/ Engagement
 - Visions/targets/strategy
 - Disclosure/dialogue/social networking
- Civil Activity
 - JFS Sustainability Index
 - Asia for Sustainability

Japan for Sustainability - www.japanfs.org

For a Happy, Sustainable Future. Initiatives from Japan. For the World.

The screenshot displays the homepage of the Japan for Sustainability website. At the top, the tagline "For a Happy, Sustainable Future. Initiatives from Japan. For the World." is visible alongside the JFS logo and navigation links for Contact, Sitemap, and Japanese language options. A search bar with "Enter Keywords" and "Advanced Search" is present. Below the navigation bar, a grid of topic categories includes Resilience, Well-Being, Steady-State Economy, Biodiversity / Food / Water, Energy, Policy / Systems / Technology, Climate Change, and Civil Society. The main content area features several articles:

- December 7, 2013:** "Number of 'Environmental Meisters' in Japan Tops 3,000". The article states that according to the Citizens Environmental Foundation (CEF) of Japan, the number of "environmental meisters," professionals certified by CEF to advise consumers in selecting environmental conscious products, has reached over 3,000.
- December 6, 2013:** "Government of Japan Taking More Proactive Role in Dealing with Contaminated".
- December 5, 2013:** "High School Students and Companies Prove Effects of Roof Greening with Used".
- November 30, 2013:** "Interviews" section featuring a video titled "JFS Interview: Helena Norberg-Hodge".
- November 17, 2013:** "Update: Recent Developments in Nuclear Energy Policy Issues in Japan". The article reports that after the March 2011 nuclear accident, nuclear power plants that supplied more than 30% of Japan's electricity before the earthquake have all been shut down in Japan. It provides updates on current energy policy.
- November 14, 2013:** "Interview with Helena Norberg-Hodge for JFS's 'Local Well-being' Project".

Additional elements include a "To Support JFS" section with links to "Tell Friends", "Tell Us", and "Donate", and a "Subscribe to JFS Newsletter" button. A "MIRACLE MIRACLE" section is also visible, featuring a green background and a small character illustration.

Japan for Sustainability (JFS) carefully tracks efforts and signs of positive change in Japan, and provides its findings to people everywhere who share an interest in change for the better.

Goal of the Sessions

Imagine that we are holding
“SDGs (Sustainable Development Goals) Dialogue”
in this room.

You should be able to present the followings;

1. define “sustainable X” (X=country/region)
2. propose
 - a. your own vision and goals
 - b. key indicators
 - c. key policies
 - d. how your research can contribute

Plan

12/18

- Introduction/Workshop Setup
- Defining Sustainability
- Vision, Indicators, and Policies -> Group Work

1/8

- Group work (continued)
- Presentation
- Feedback & Further workshop

Workshop Setup

The **SDGs** are ...

- ▶ A set of 17 goals for the world's future, through 2030
- ▶ Backed up by a set of 169 detailed actionable 'Targets'
- ▶ Agreed to by the United Nations, governments, business leaders, and NGOs on the 25 Sept 2015

SDGs NOW! 17 Goals to Transform Our World

<https://www.youtube.com/watch?v=WXpZ-b4Qskg>

Group

Country/region

Main Areas

Group A

Group B

Group C

Group D

Teaming Exercise

Your name/ country/region	Research area/interest
Your “personal” sustainability policy	Research – SDGs link

Prep: 5 minutes

Communicate: 10 minutes

1 NO POVERTY



2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



4 QUALITY EDUCATION



5 GENDER EQUALITY



6 CLEAN WATER AND SANITATION



THE GLOBAL GOALS

For Sustainable Development

7 AFFORDABLE AND CLEAN ENERGY



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



16 PEACE AND JUSTICE STRONG INSTITUTIONS



17 PARTNERSHIPS FOR THE GOALS



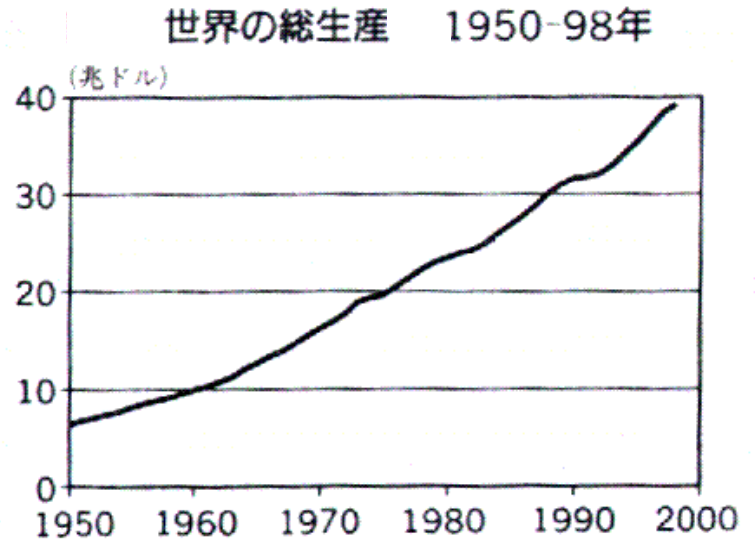
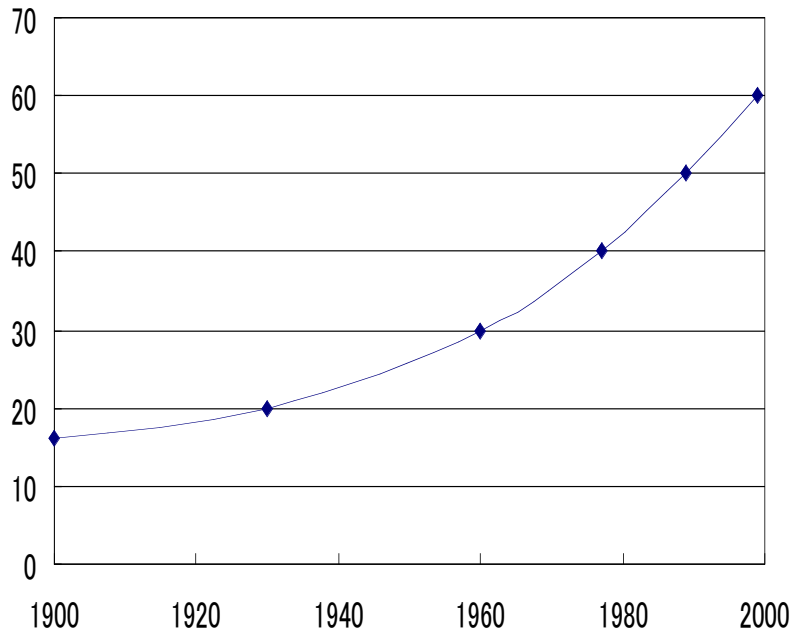
Defining Sustainability

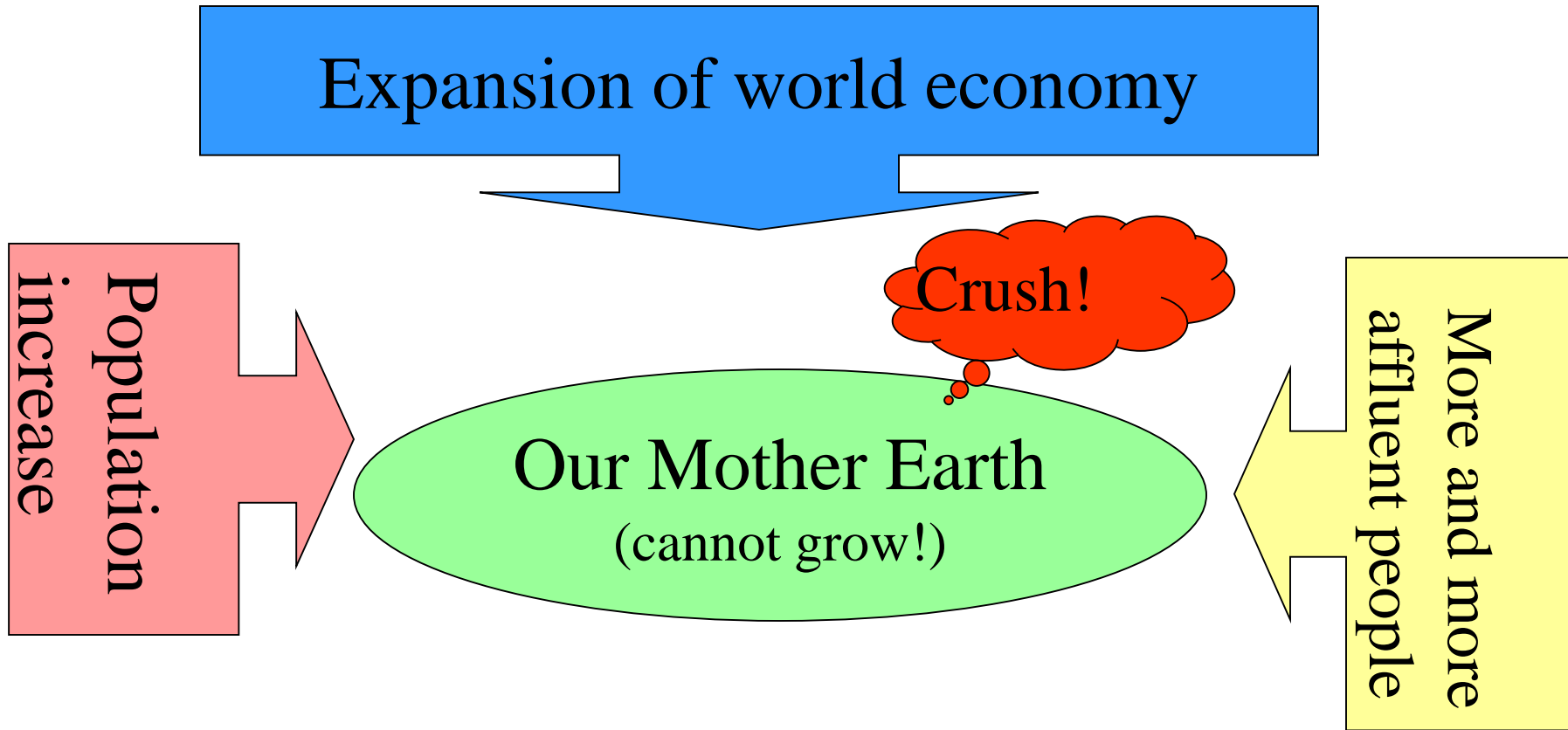
Background: Root causes of global environmental crisis

Population



World Economy



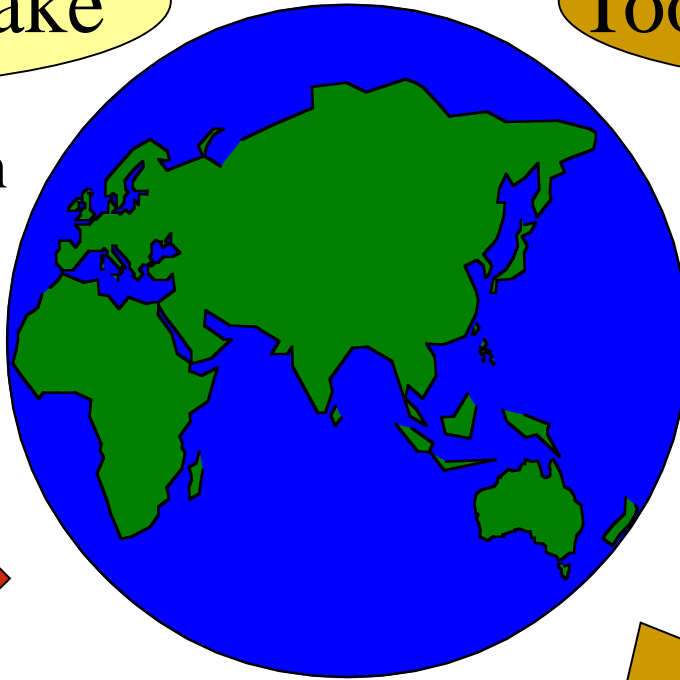
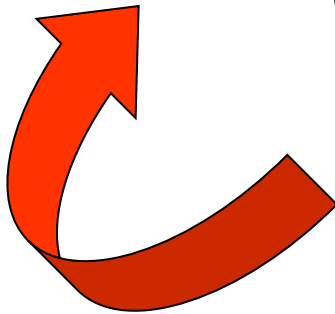


$$\text{Impact} = \text{Population} \times \text{Affluence} \times \text{Technology}$$

Root causes are...

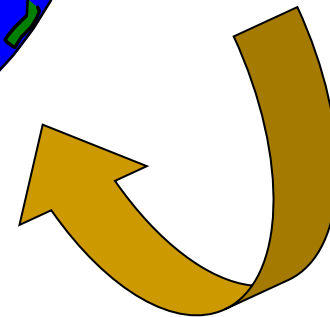
Too much intake

- Resource depletion
- Lowing aquifers
- Shrinking forests



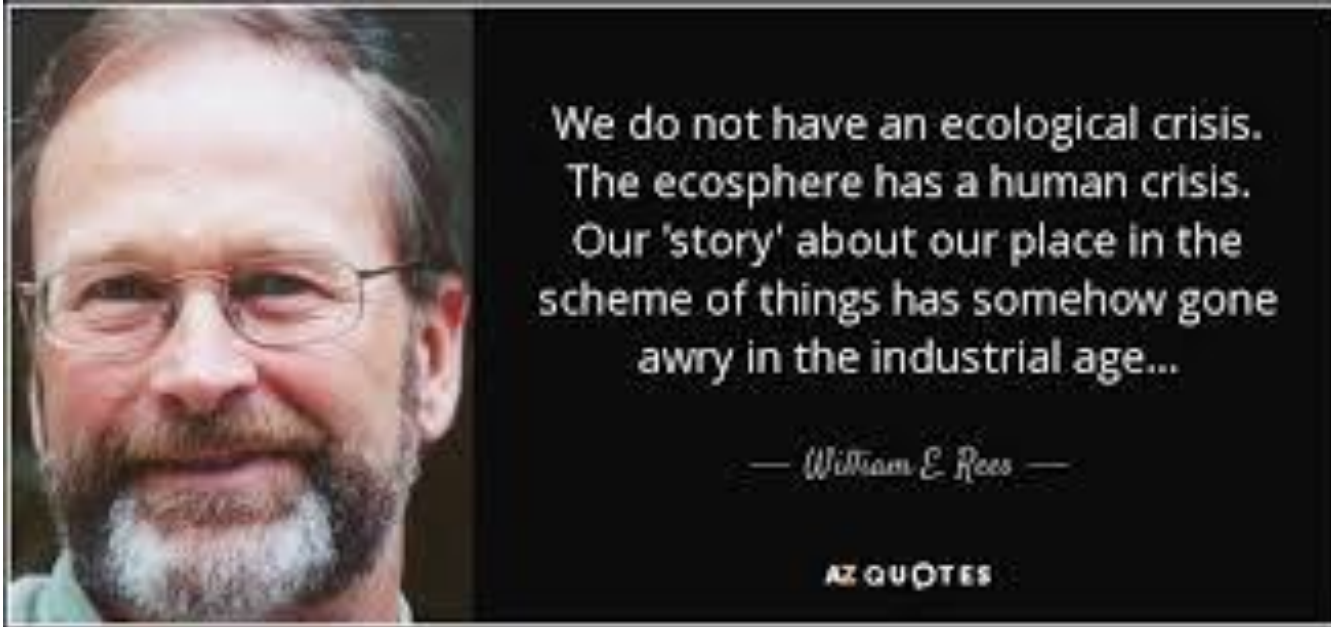
Too much emission

- CO₂/ GHGs
- Wastes
- Toxic Substances
- NO_x, SO_x...



“If everyone lived as we do in the UK we’d need three planets to support us.”

Are we sustainable?



Webster's New International Dictionary

"Sustain - to cause to **continue** (as in existence or a certain state, or in force or intensity); to keep up, especially without interruption, diminution, flagging, etc.; to prolong."

Webster's New International Dictionary.

(Springfield, Mass.: Merriam-Webster Inc., 1986)

Our Common Future

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

Page 8, *World Commission on Environment and Development. Our Common Future.* (Oxford, Great Britain: Oxford University Press, 1987). (Frequently referred to as the Brundtland report after Gro Harlem Brundtland, Chairman of the Commission)

World Business Council on Sustainable Development

"Sustainable development involves the **simultaneous** pursuit of economic prosperity, environmental quality and social equity. Companies aiming for sustainability need to perform not against a single, financial bottom line but against the **triple bottom line**."

World Business Council on Sustainable Development (cont.)

"Over time, human and social values change. Concepts that once seemed extraordinary (e.g. emancipating slaves, enfranchising women) are now taken for granted. New concepts (e.g. responsible consumerism, environmental justice, intra- and inter-generational equity) are now coming up the curve."

<http://www.wbcsd.ch/>

Interfaith Center on Corporate Responsibility (ICCR)

"Sustainable development...[is] the process of building equitable, productive and participatory structures to increase the economic **empowerment** of **communities** and their surrounding **regions**."

Jerry Sturmer

**Santa Barbara South Coast Community
Indicators**

“Sustainability is meeting the needs of all humans, being able to do so on a finite planet for generations to come while ensuring some degree of openness and flexibility to **adapt to changing circumstances.**”

The Native American Iroquois Confederacy

“Seventh generation” philosophy mandates that chiefs always consider the effects of their actions on their descendants through the **seventh generation** in the future.

Sustainable Development: A Critical Review

SHARACHCHANDRA M. LÉLÉ*

Energy & Resources Group, University of California, Berkeley

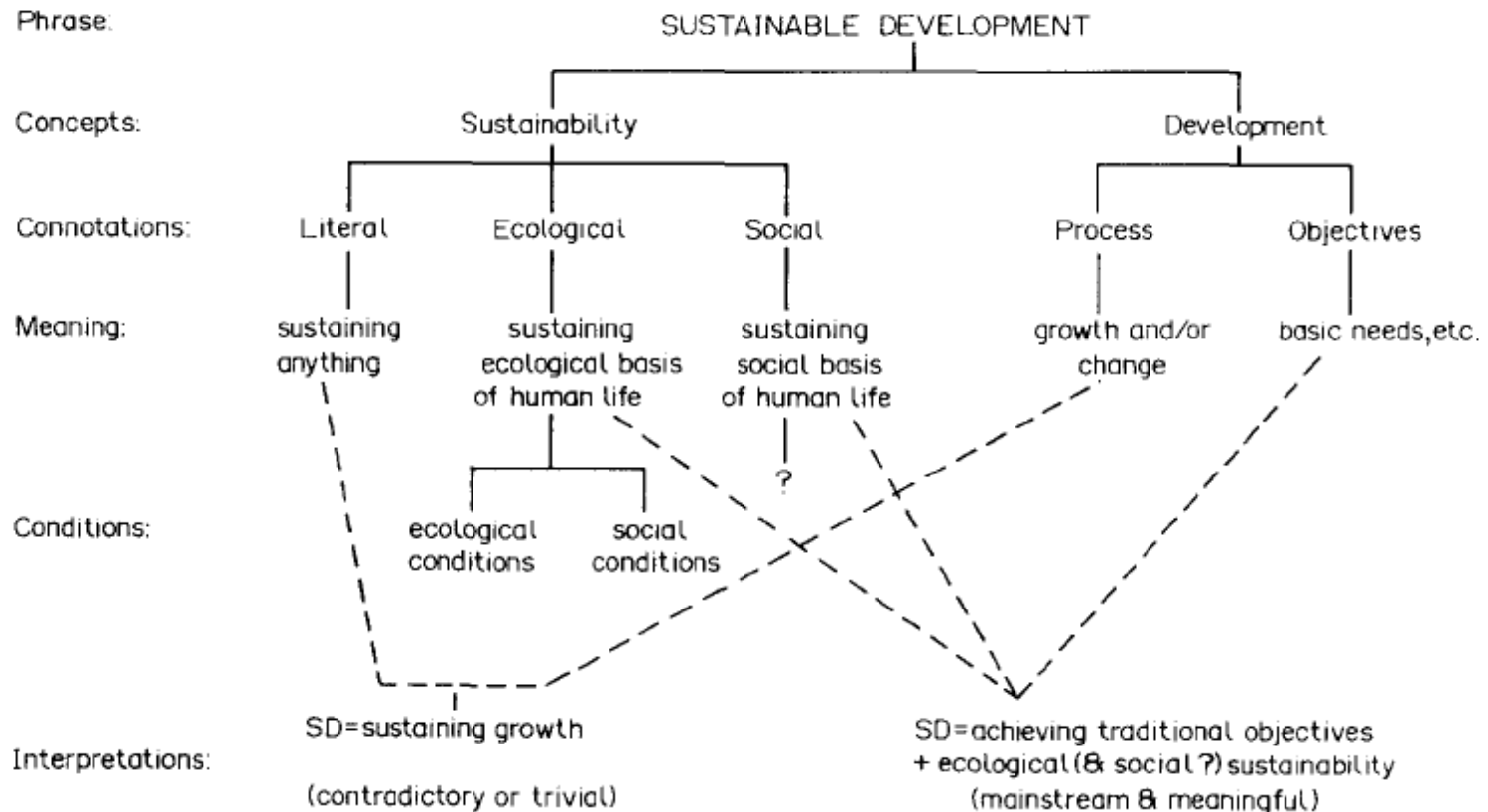


Figure 1. *The semantics of sustainable development.*

Sustainable Development: Mapping Different Approaches

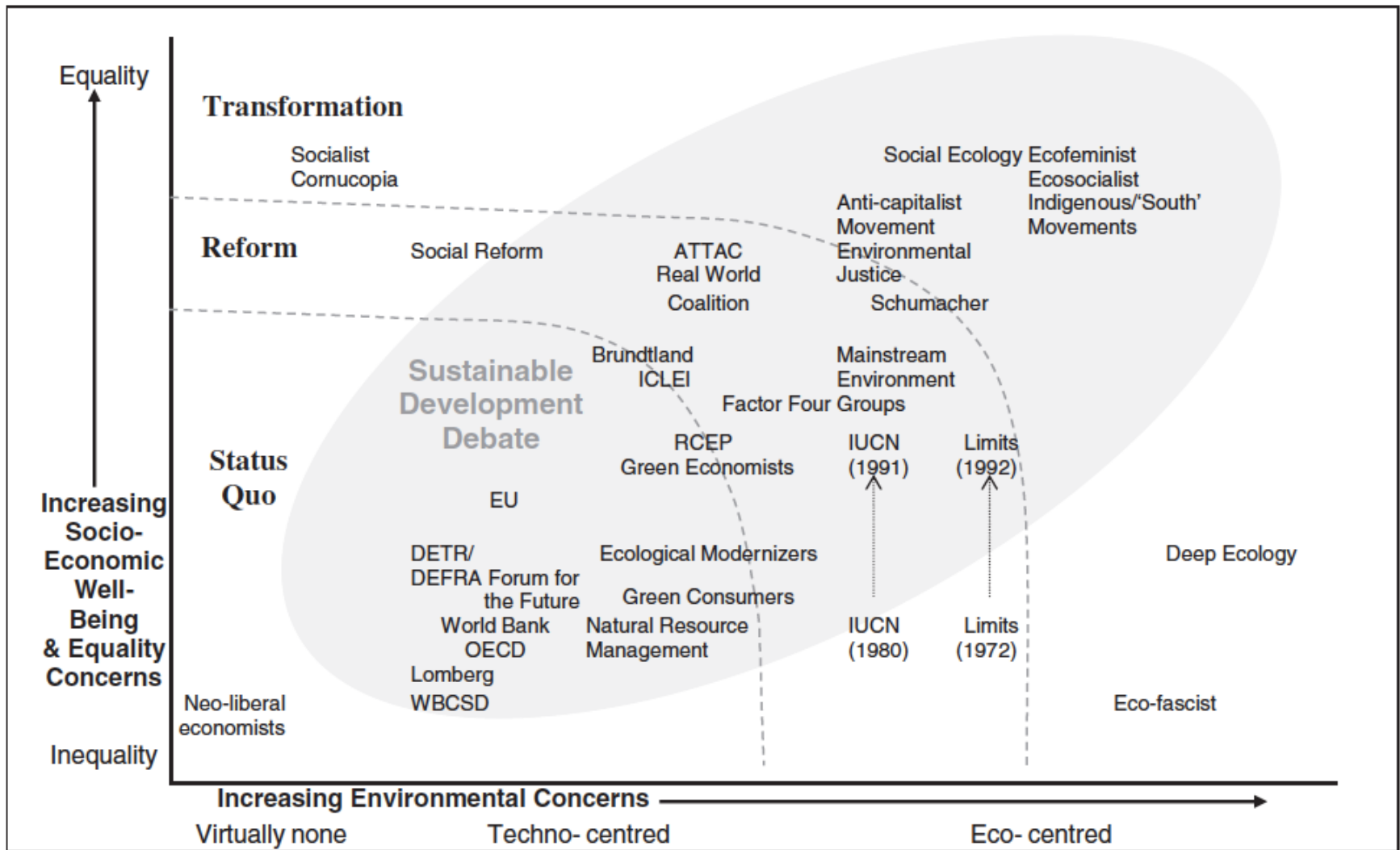
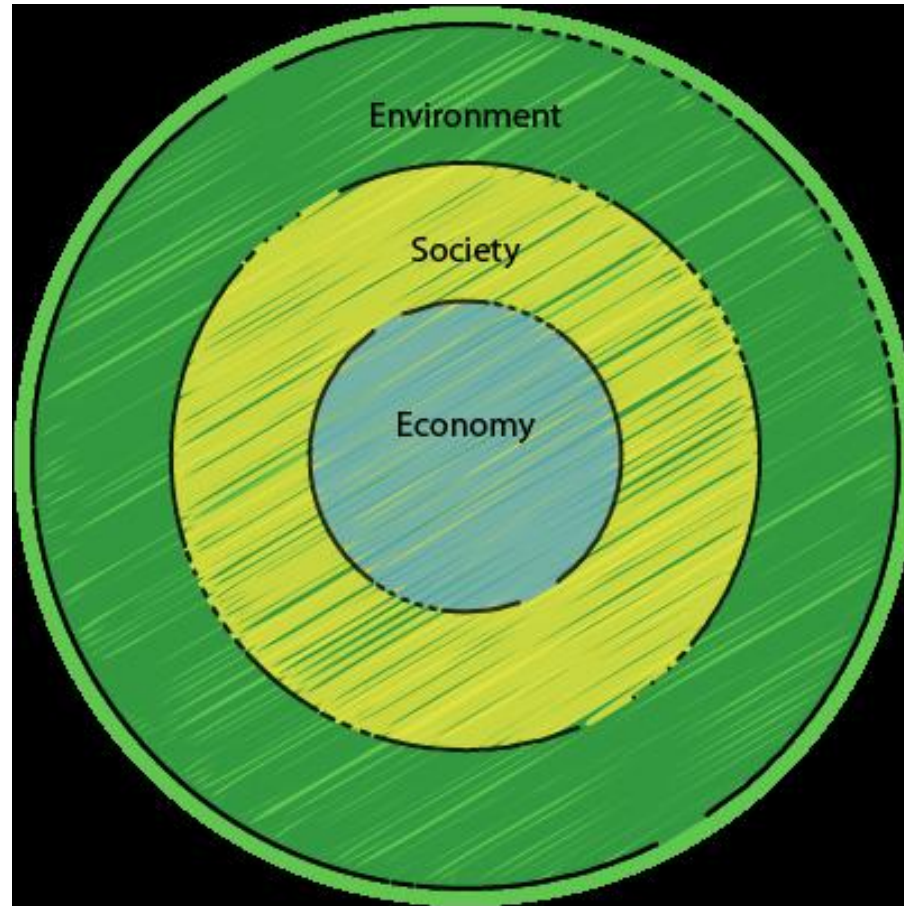


Figure 1. Mapping of views on sustainable development

Defining Sustainability (continued)

Ecological



<http://www.sustainablewellbeing.info/theory--sustainability---wellbeing---happiness.html>

Ecological Footprint

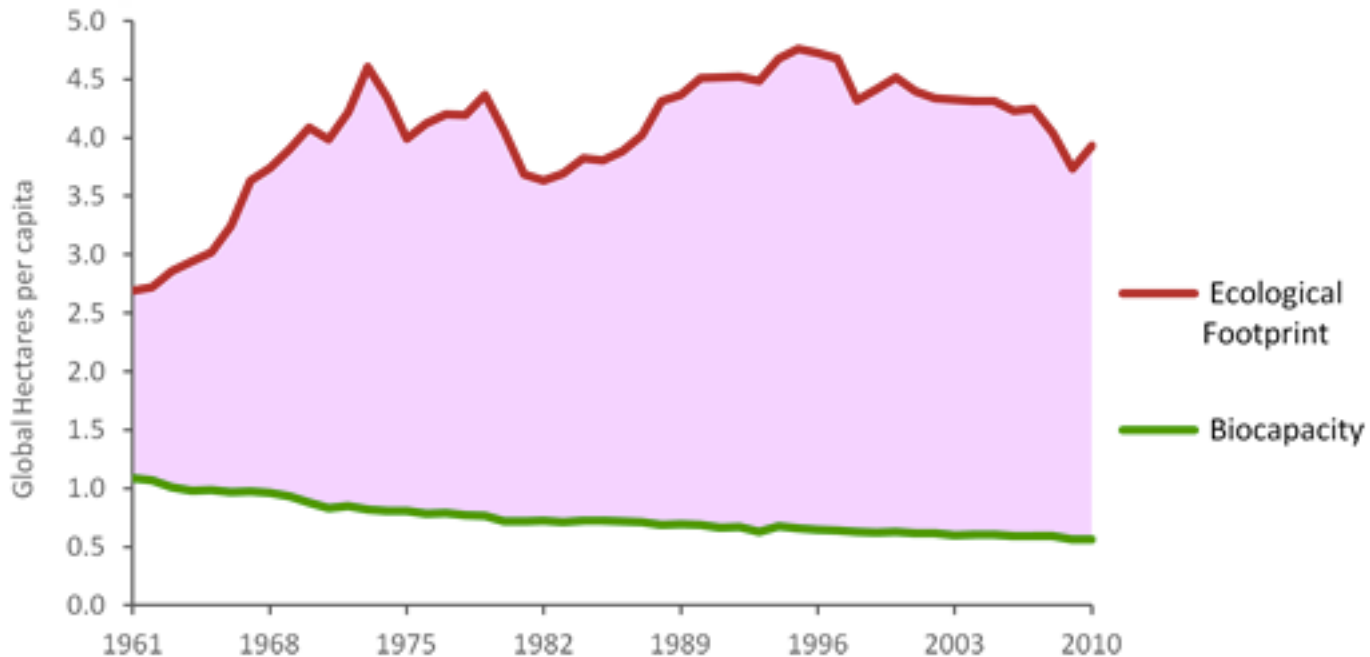
www.youtube.com/watch?v=fACkb2u1ULY



Our current global situation: *Since the mid 1980s, humanity has been in ecological **overshoot** with annual demand on resources exceeding what Earth can regenerate each year.*

http://www.footprintnetwork.org/gfn_sub.php?content=footprint_overview

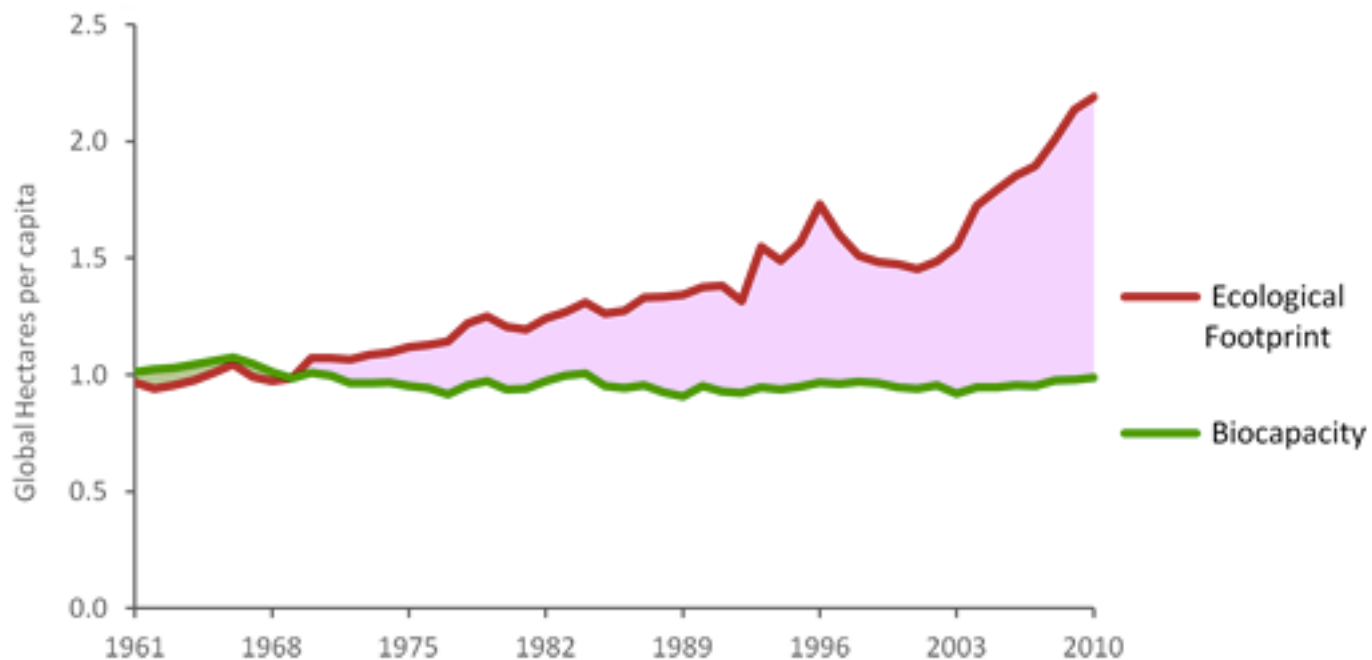
Japan



Associated Graph

Figure 1 tracks the per-person resource demand **Ecological Footprint** and **biocapacity** in Japan since 1961. Biocapacity varies each year with ecosystem management, agricultural practices (such as fertilizer use and irrigation), ecosystem degradation, and weather, and population size. Footprint varies with consumption and production efficiency. Where a dotted line is shown, interpolation estimates have been used in place of highly unlikely outliers in the results.

China



Associated Graph

Figure 1 tracks the per-person resource demand **Ecological Footprint** and **biocapacity** in China since 1961. Biocapacity varies each year with ecosystem management, agricultural practices (such as fertilizer use and irrigation), ecosystem degradation, and weather, and population size. Footprint varies with consumption and production efficiency. Where a dotted line is shown, interpolation estimates have been used in place of highly unlikely outliers in the results.

<daily examples>

hangover, driving on icy road,
CFCs, stock market...

<Causes>

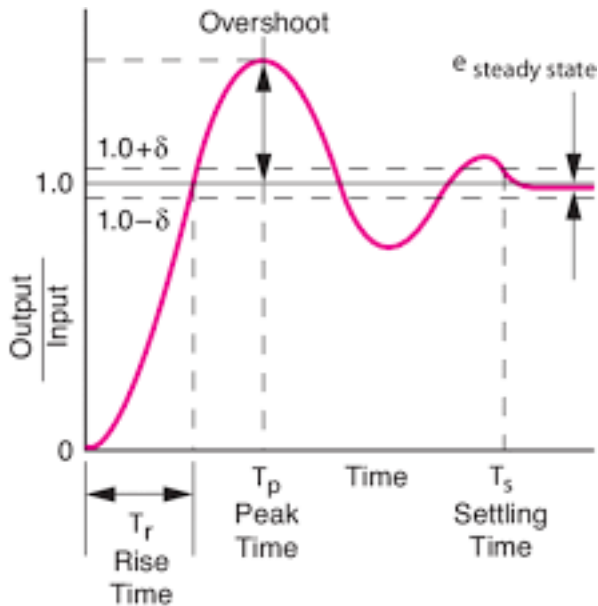
Growth, acceleration, rapid change,
Limit, barrier

Delay or mistake in the perceptions and the responses that strive to keep the systems within its limits

<Results>

Crash of some kind

Deliberate turnaround, correction, careful easing down



Limits to Growth – The 30-Year Update

World 3 model – looking at dynamic systems

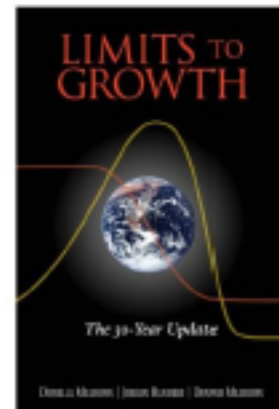
-Sets of interconnected material and immaterial elements that change overtime
-Many elements of demography, economy, and the environment as one planetary system

- Stocks and flows
- Feedback loops
- Sources & sinks
- Thresholds
- Overshoot

Some quote

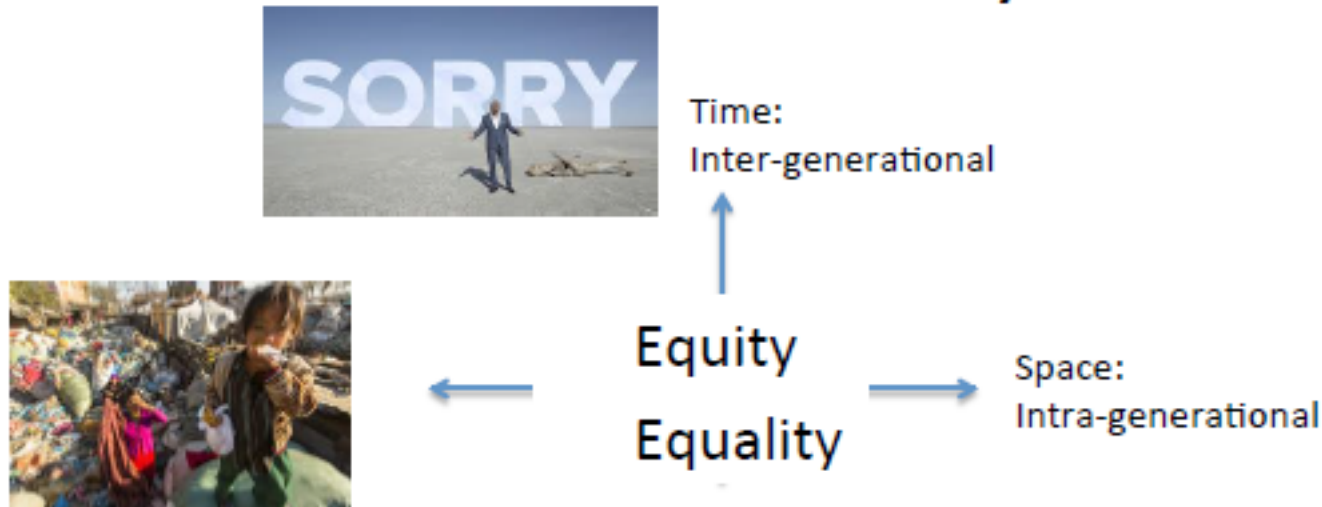
“We worry that current policies will produce global overshoot and collapse through ineffective efforts to anticipate and cope with ecological limits.”

“Ecological overshoot seems to us to be a much more important concept in the 21st century than free trade. But it is far behind in the fight for public attention and respect. This book is a new attempt to close that gap.”



Defining Sustainability (continued)

Social

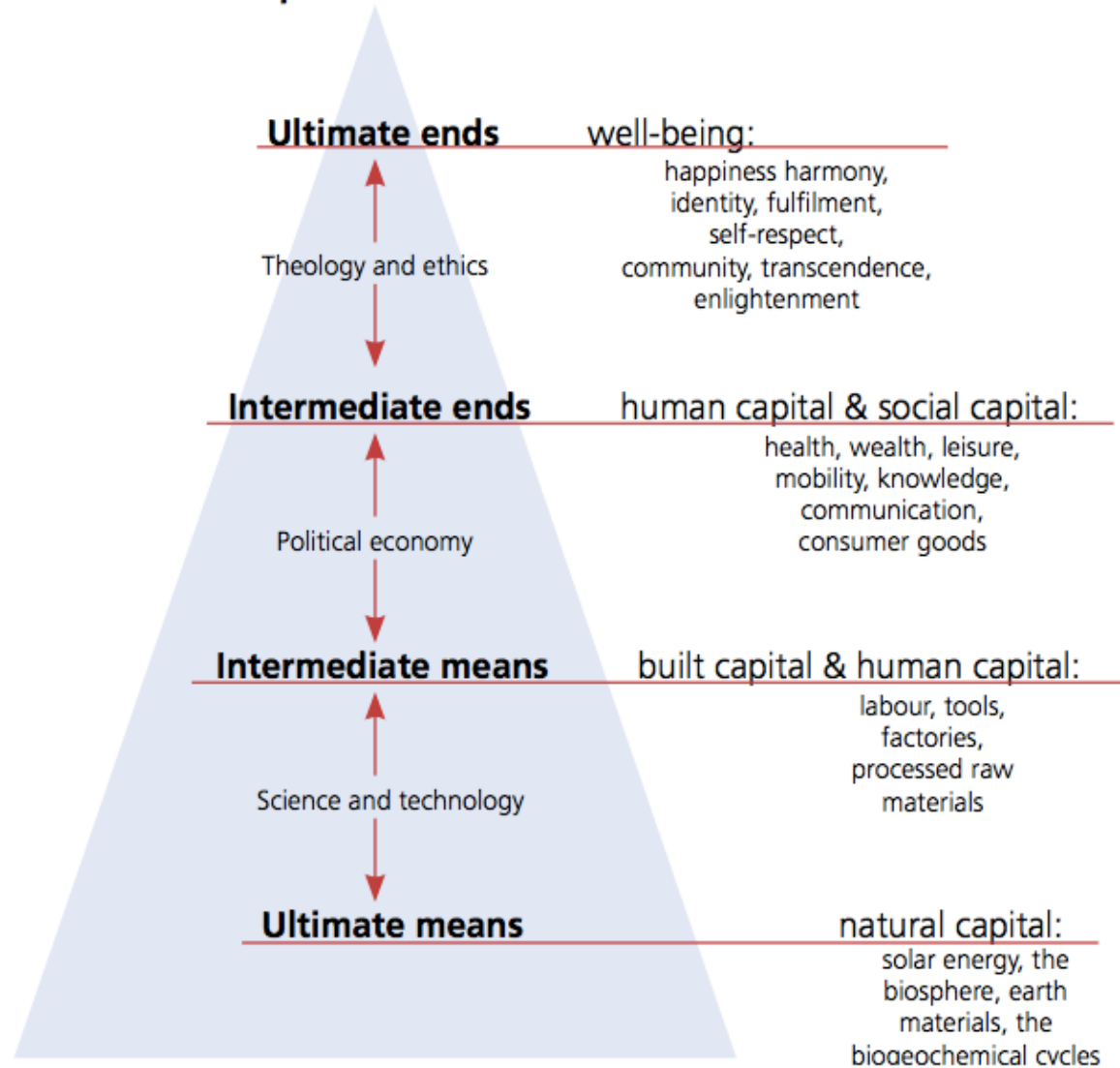


2 approaches:

-**Liberal**: seen to exist when **circumstances** are arranged so that all individuals can **compete equally** (Kumra & Manfredi, 2012)

-**Radical**: can be claimed only when the **distribution** of those from all social groups is consistent with their **representation** within society (Jewson & Mason, 1986)

End-means conceptual framework



Meadows, 1998^B

Meadows, D. H. (1998). *Indicators and information systems for sustainable development*, Hartland.

Defining Sustainability

Group Work 1

- List up elements/key words
- Define sustainability with your own terms
- Discuss and agree on rough definition as a group

Group work (10 minutes)

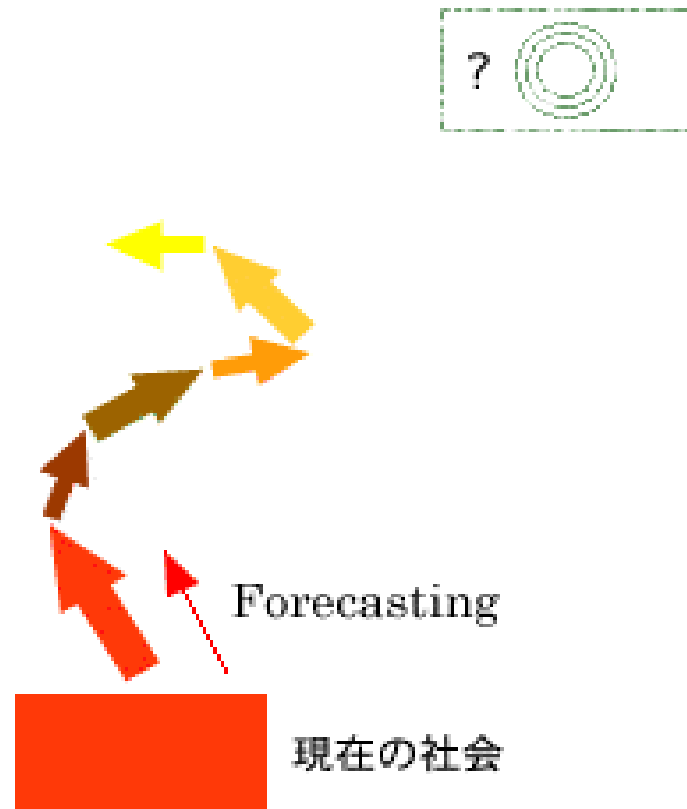
Share in the class (1 minutes)

- definition
- what was different

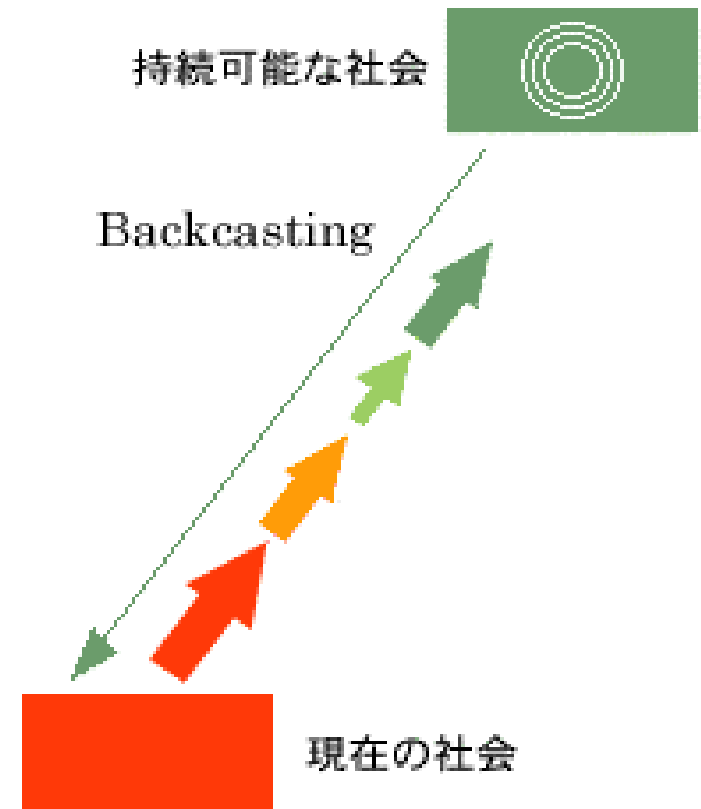
Vision, Indicators, and Policies

Two Approaches to Future

フォアキャストイング手法



バックキャストイング手法



Vision, Indicators, and Policies

Guiding Vision

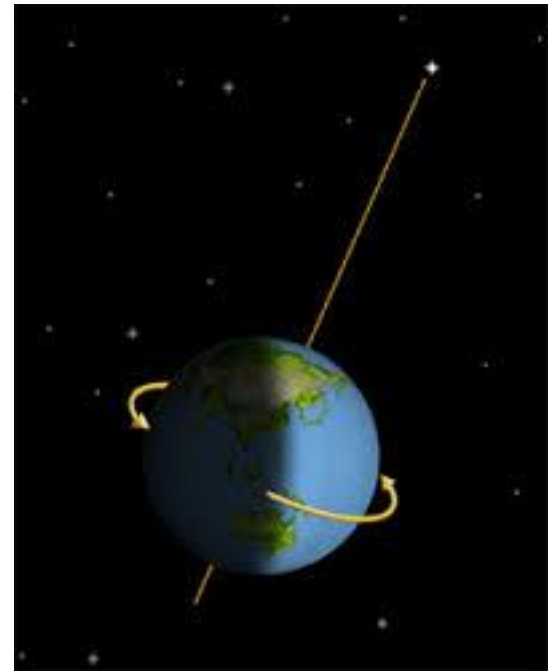
Different from “forecast” or “prediction”

An ideal state

- Where you want to go
- Inspire the best brains

The Polar Star

- Guide us through the journey



The Paris climate agreement: key points

The historic pact, approved by 195 countries, will take effect from 2020



Temperatures

2100



- Keep warming “well below 2 degrees Celsius”. Continue all efforts to limit the rise in temperatures to 1.5 degrees Celsius”

Finance

2020-2025



- Rich countries must provide 100 billion dollars from 2020, as a “floor”
- Amount to be updated by 2025

Differentiation



- Developed countries **must continue to “take the lead”** in the reduction of greenhouse gases
- Developing nations are encouraged to “enhance their efforts” and move over time to cuts

Emissions objectives

2050



- Aim for greenhouse gases emissions to peak “as soon as possible”
- From 2050: **rapid reductions to achieve a balance between emissions from human activity and the amount that can be captured by “sinks”**

Burden-sharing



- **Developed countries must provide financial resources to help developing countries**
- Other countries are invited to provide support on a voluntary basis

Review mechanism

2023



- **A review every five years**
First world review: 2023
- Each review will inform countries in “updating and enhancing” their pledges

Climate damage



- **Vulnerable countries have won recognition of the need for “averting, minimising and addressing” losses suffered due to climate change**

AFP

Examples of pledge

ON THE ROAD
TO PARIS 2015

AUSTRALIA

CLIMATE PLEDGE

26%-28%
REDUCTION IN
GHG EMISSIONS BY 2030
COMPARED TO 2005 LEVELS

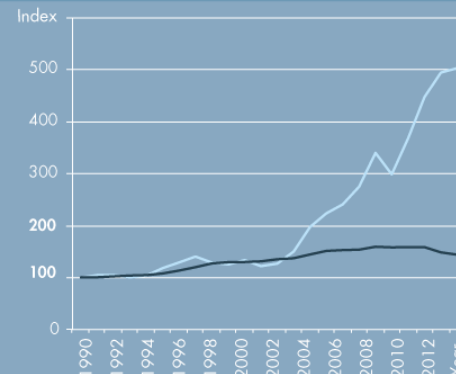
HOW TO ACHIEVE IT?

KEY MITIGATION ACTIONS:

- 1 EMISSIONS REDUCTION FUND
- 2 RENEWABLE ENERGY TARGET
- 3 ENERGY EFFICIENCY STANDARDS ON APPLIANCES, EQUIPMENT AND BUILDINGS

SHARE IN GLOBAL CO₂ EMISSIONS **1.12%**
WORLD RANK **14th**
CO₂ EMISSIONS (2013) **394 Mt**
CO₂ EMISSIONS PER CAPITA (2013) **16.9 kt/capita**
PEAKING YEAR FOR CO₂ EMISSIONS **2008**

GDP AND CO₂ EMISSIONS TRENDS



— Gross Domestic Product (GDP)
(Index: 1990=100%)
— CO₂ emissions
(Index: 1990=100%)



<https://www.unaa.org.au/divisions/western-australia/business-sustainability-forum/kisspng-sustainable-development-goals-sustainability-unite-goal-5ac89984165e04-5288370215230959400916/>

Examples of commitment

OUR 2030 PROMISE

A giant leap towards a world where a healthy mind, body, and environment is within reach for everyone, everywhere.

We live in a world where possibilities for human connectivity are all around us, and increasing day by day. To bring good health to all, we need to make the right connections, one human at a time.

Johnson & Johnson is a family of 127,000 people, in more than 60 countries, who believe in that vision. We are researchers, inventors, doctors, teachers, sisters, tios and tias, mentors and volunteers. Together, we are signing up to the 2030 UN Sustainable Development Goals—the world's road map for progress. We invite you to learn more, and join us.

Let's unite our knowledge, people and relationships to ignite ideas, mobilize minds and move hearts. Together we will forge a healthier and more equitable future. Because—for one human and all humankind—good health changes everything.

OUR VISION FOR 2030

By galvanizing partners, mobilizing employees and engaging communities, we will profoundly improve the course of human health.

Johnson & Johnson dedicates our expertise, ideas and ingenuity to ignite partnerships and catalyze efforts in five areas where we are uniquely positioned to create sustainable and scalable impact:

Environmental Health

Our aspiration: A world where the places we live, work and play are healthier for the people who share them.

Our 5-year target: The 1 billion people we touch every day inspire our action and will benefit from our improvements to the sustainability of our business, products and solutions.

Health Workforce

Our aspiration: A world where the current and future health care workforce has the necessary competencies to deliver high quality health care.

Our 5-year target: 650,000 health workers will have received training to better deliver quality health care.

Women's & Children's Health

Our aspiration: A world where every woman and child survives and has the opportunity for a healthy future.

Our 5-year target: 60 million women and children will have received support and tools to enable a healthy future.

Global Disease Challenges

Our aspiration: A world where innovations and holistic health solutions prevent, control and eliminate global disease challenges and epidemics.

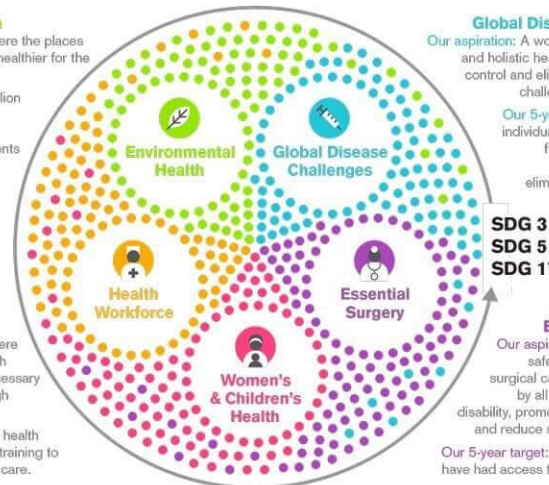
Our 5-year target: 175 million individuals will have benefited from J&J solutions that prevent, control and eliminate global diseases.

**SDG 3
SDG 5
SDG 17**









Essential Surgery

Our aspiration: A world where safe, essential and timely surgical care can be accessed by all to save lives, prevent disability, promote economic growth, and reduce social marginalization.

Our 5-year target: 50 million people will have had access to safe, essential, and timely surgical care.



Germany- Our Strategy for Sustainable Development

No.	Indicator areas Sustainability axiom	Indicators	Goals	Status	5 year trend ¹
I. Intergenerational equity					
1a	Resource conservation <i>Using resources economically and efficiently</i>	Energy productivity	To be doubled between 1990 and 2020		t
1b new		Primary energy consumption	To be reduced by 20% by 2020 and 50% by 2050 compared to 2008		t
1c		Raw material productivity	To be doubled between 1994 and 2020		t
2	Climate protection <i>Reducing greenhouse gases</i>	Greenhouse gas emissions	To be reduced by 21% by 2008/2012, 40% by 2020 and 80 to 95% by 2050, in each case compared to 1990		t
3a amended	Renewable energy sources <i>Strengthening a sustainable energy supply</i>	Share of renewable energy sources in final energy consumption	To be increased to 18% by 2020 and 60% by 2050		t
3b		Share of renewable energy sources in electricity consumption	To be increased to 12.5% by 2010, to at least 35% by 2020 and to at least 80% by 2050		t
4	Land use <i>Sustainable land use</i>	Built-up area and transport infrastructure expansion	Increase to be reduced to 30 hectares a day by 2020		t
5	Species diversity <i>Conserving species – protecting habitats</i>	Species diversity and landscape quality	Increase to the index value of 100 by 2015		t ²

1 t = Trend, nt = no trend. – 2 10 year trend.



The target value of the indicator has been achieved or the remaining 'distance' would be covered by the target year (deviation less than 5%).



The indicator is developing in the right direction, but if the annual trend continues unaltered there will still be a gap of between 5 and 20% which will need to be covered to reach the target value in the target year.



The indicator is developing in the right direction, but if the annual trend continues unaltered there will still be a gap of more than 20% which will need to be covered to reach the target value in the target year.



The indicator has developed in the wrong direction and if the annual trend continues unaltered the distance to be covered to reach the goal would become even greater.

http://www.bundesregierung.de/Content/EN/StatischeSeiten/Schwerpunkte/Nachhaltigkeit/Anlagen/2012-05-24-indikatorenbericht-2012-englisch.pdf?__blob=publicationFile&v=2

I. Intergenerational equity

Resource conservation

Using resources economically and efficiently



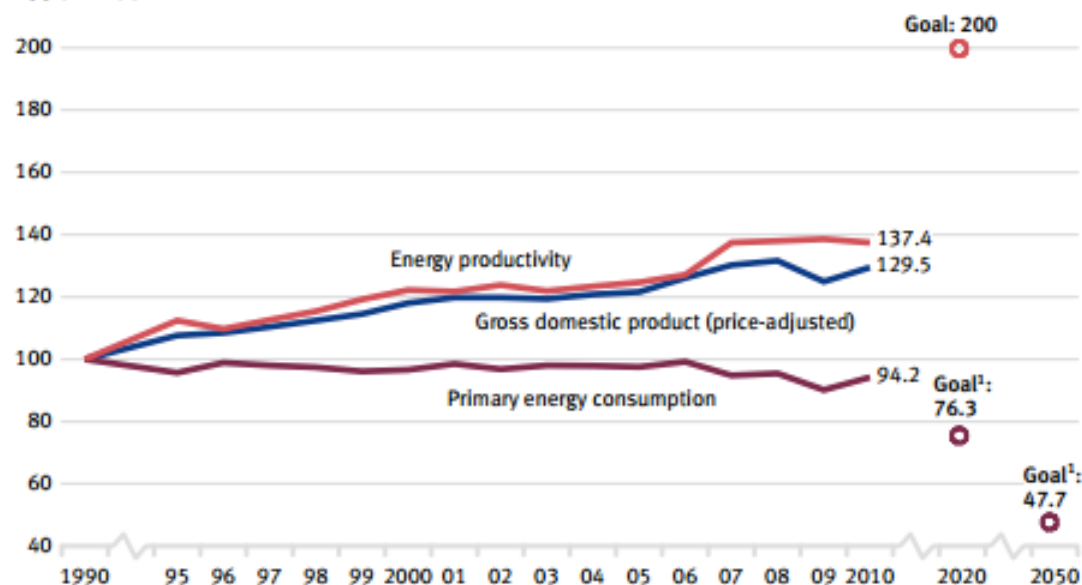
1a Energy productivity

1b Primary energy consumption

The use of energy occupies a key position in the economic process because almost every production activity is either directly or indirectly associated with the consumption of energy. Private households use energy particularly for heating their homes and providing hot water, using electrical appliances as well as to run motor vehicles. The consumption of energy has a number of environmental effects, such as a detrimental impact on landscapes, ecological systems, the soil, water bodies and ground water due to the depletion of natural energy resources, emissions of harmful substances and greenhouse gas emissions. Last but not least, the consumption of non-renewable resources is of great importance with regard to safeguarding the livelihood of future generations.

The aim of the Sustainability Strategy is to double energy productivity (price-adjusted GDP per unit of primary energy consumption) by 2020 compared to that of 1990. A new goal added to the Sustainability Strategy is to lower the primary energy consumption seen in 2008 by 20% between

Energy productivity and economic growth
1990 = 100



1 These goals correspond to a reduction of primary energy consumption from 2008 levels of 20% (76.3) in 2020 and 50% (47.7) in 2050 (Energy Concept).

Source: Federal Statistical Office, Working Group on Energy Balances

I. Intergenerational equity

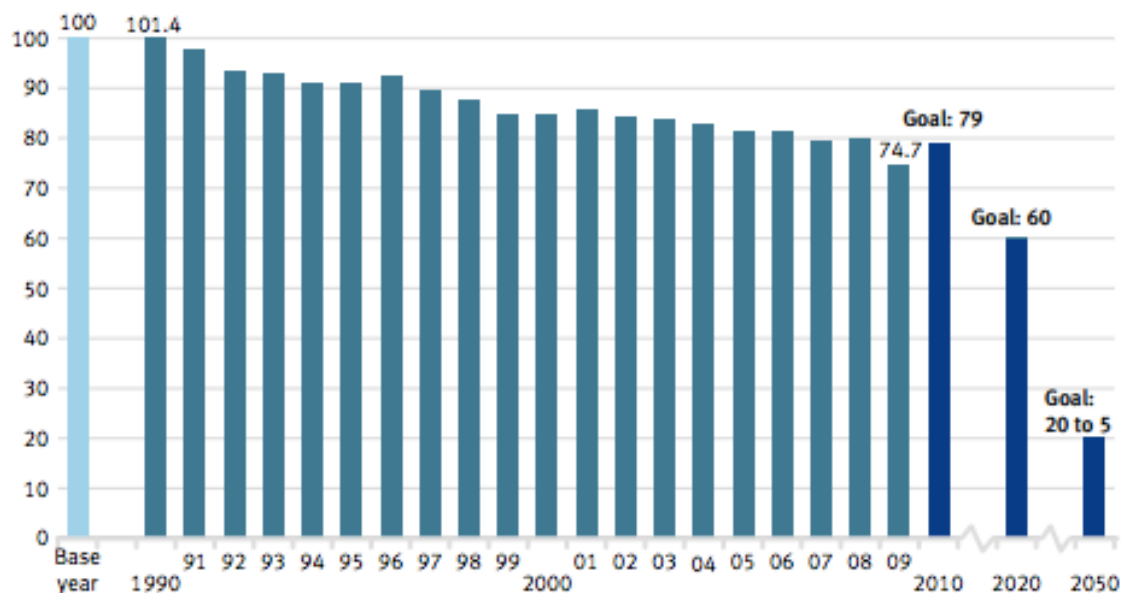
Climate protection



Reducing greenhouse gases

Greenhouse gas emissions (six Kyoto gases) in CO₂ equivalents

Base year = 100



Source: Federal Environment Agency

2 Greenhouse gas emissions

Climate change is an enormous challenge for mankind. Germany has thus committed itself to an average reduction of 21 % in its emissions of the six greenhouse gases and greenhouse gas groups referred to under the Kyoto Protocol between 2008 and 2012 compared with 1990. Beyond this, the Federal Government has set itself the goal of cutting emissions by 40 % from 1990 levels by the year 2020. Looking to the long term, the Federal Government wants to see greenhouse gases slashed by 80 to 95 % compared to 1990 by 2050 as part of the Energy Concept.

According to the Kyoto Protocol, greenhouse gases include the following substances: carbon dioxide (CO₂), methane (CH₄), nitrous oxide = laughing gas (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). In terms of quantity, these gases are emitted chiefly during the burning of fossil energy sources, such as coal, oil and natural gas. But they are also produced during other, non-energy related activities, for example in the production of iron and steel, during the application of solvents, in the

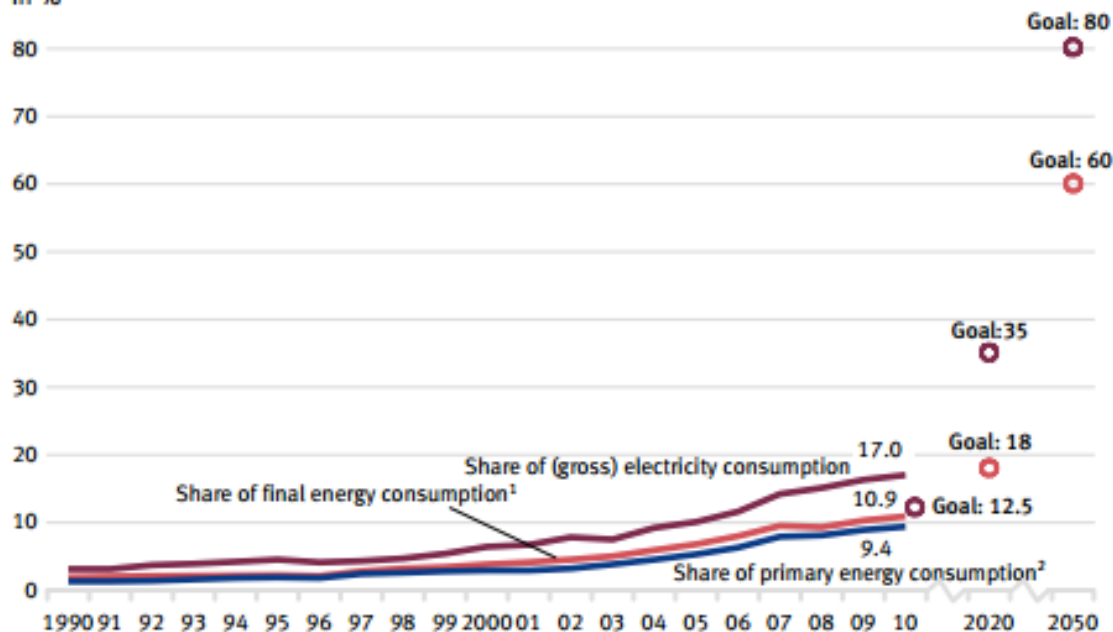
I. Intergenerational equity

Renewable energy sources

Strengthening a sustainable energy supply



Share of renewable energy sources in total energy consumption in %



1 Gross final energy consumption. 2 Based on efficiency method.

Source: Working Group on Renewable Energies - Statistics, Working Group on Energy Balances, Centre for Solar Energy and Hydrogen Research Baden-Württemberg, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, July 2011









3a Share of renewable energy sources in final energy consumption

3b Share of renewable energy sources in electricity consumption

The reserves of important fossil energy sources such as oil and gas are limited, and their use is associated with greenhouse gas emissions. Switching to renewable energies (natural energy sources that constantly regenerate) serves to reduce energy-related carbon dioxide emissions and hence the extent of climate change. It makes the economy less dependent on energy imports, reduces the consumption of resources, improves the security of supply, promotes technical innovation and leads to gains in efficiency.

The goal of the Federal Government's Sustainability Strategy is to promote the development of renewable sources of energy. Renewable energies include hydropower, wind power, solar energy and geothermal energy, but also biomass and the biodegradable portions of domestic refuse.

The development of the use of renewable energy is measured in the Sustainability Strategy by means of the indicators 'Share

No.	Indicator areas Sustainability axiom	Indicators	Goals	Status	5 year trend ¹
14a	Health and nutrition <i>Living healthy longer</i>	Premature mortality (cases of death per 100,000 residents under 65): Men	To be reduced to 190 cases per 100,000 by 2015		t
14b		Premature mortality (cases of death per 100,000 residents under 65): Women	To be reduced to 115 cases per 100,000 by 2015		t
14c		Smoking rate amongst young people (12- to 17-year-olds)	To be decreased to under 12% by 2015		nt
14d		Smoking rate amongst adults (15 years and older)	To be decreased to under 22% by 2015		nt
14e		Proportion of adults suffering from obesity (18 years and older)	To be reduced by 2020		nt
15 amended	Crime <i>Further increasing personal security</i>	Criminal offences	To be reduced in number of recorded cases per 100,000 inhabitants to under 7,000 by the year 2020		t
III. Social cohesion					
16a	Employment <i>Boosting employment levels</i>	Employment rate (total) (15- to 64-year-olds)	To be increased to 73% by 2010 and 75% by 2020		t
16b		Employment rate (older people) (55- to 64-year-olds)	To be increased to 55% by 2010 and 60% by 2020		t

¹ t = trend, nt = no trend.

Workshop

Imagine that we are holding
“SDGs (Sustainable Development Goals) Dialogue”
in this room.

You should be able to present the followings;

1. define “sustainable X” (X=country/region)
2. propose
 - a. your own vision and goals
 - b. key indicators
 - c. key policies
 - d. how your research can contribute

Workshop - Vision & Indicators

Presentation

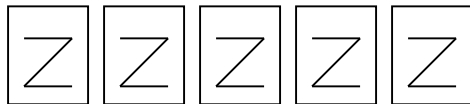
example

<Sustainability>

- Our definition is ...

<Vision – Goals>

- GHG emissions will be
- Energy mix will be...



<Indicators>

- Energy consumption per capita
- % of nuclear energy for electricity



<Policies>

- Action 1
- Action 2

<Technology>

- Tech 1
- Tech 2

Workshop - Vision & Indicators

<To start your thinking... >

1. Vision –

In 2050, we want the situations concerning energy will be like this....

When it comes to oil/nuclear energy, ...

When it comes to renewable energy, ...

The GHG emissions level is where ...

Once we achieve this vision, we will be able to ...

The implication for food is...

2. Indicator –

We recommend YY as a indicator to measure our progress toward this vision.

YY is...

It can tell us

The reason why we think YY is better than ZZ is that....

Other possible indicators are...

Keys for ISD (Indicators for Sustainable Development)

- **Systemic**
 - sources, sinks, change rates, thresholds, feedback ...
- **Integrated**
 - environmental, economic, social, individual
- **Long-term**
 - minimum one generation

by Alan Atkisson

ISD: Different at levels

Global: CO₂, Population, Food Production

National: GDP, HDI, ESI, Employment

Regional: Baltic Sea Fisheries & Industries

Local: Transit, Energy Use, Health Stats

Neighborhood: # of Abandoned Buildings

Good policies change the structure

- ❑ Change **feedback structure/information links** in the system
- ❑ Change **the content and timeliness of the data** that actors in the system have to work with
- ❑ Change **the ideas, goals, incentives, costs, and feedbacks** that motivates or constrain behavior
- ❑ In time, system with a new information structure is likely to change its social and physical structures.
- ❑ It may develop new laws, organizations, technologies, people with new skills, machines and buildings.
- ❑ Such a transformation need not be directed centrally; it can be **unplanned, natural, evolutionary, exciting, joyful.**

“Limits to Growth – The 30-Year Update”