REGIONAL CENTRE OF EXPERTISE
ON EDUCATION FOR
SUSTAINABLE DEVELOPMENT

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Education for Sustainable Development

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Introduction to Sustainable Development

Sustainability field trip to Austria – September 2013

Graz, 9 September 2013

Marlene Mader, RCE Graz-Styria, University of Graz
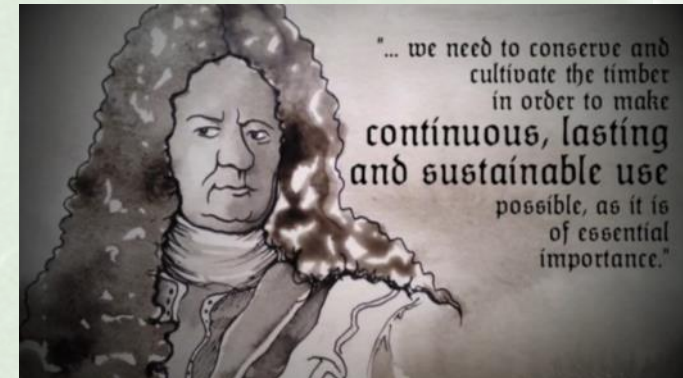
Sustainable Development

Contents

– Historical development

– Pillars of sustainable development

– Global challenges

– Working for SD
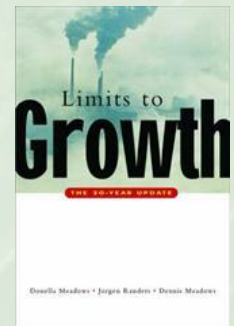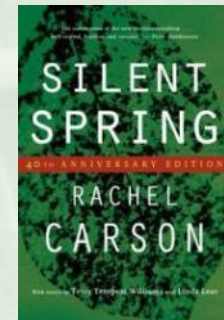
– SD in Austria / Styria / Graz

Sustainability - Historical development

– The word's etymologic roots go back to Latin **sustinere**, meaning 'to sustain' or 'to perpetuate'

– First occurrence in the English language (around 1290) →
   "Two chiefs [...] each able to sustain a nations fate"

– The term's first occurrence in German language goes back to 1713, when Hans Carl v. Carlowitz wrote in his *Sylvicultura oeconomica* about the *"kontinuierliche beständige und nachhaltende Nutzung des Waldes"* (**'continuous, lasting and sustainable use of timber'**)

"... we need to conserve and cultivate the timber in order to make continuous, lasting and sustainable use possible, as it is of essential importance."

Sustainability - Historical development

- 1980, the term "Sustainable Development" was introduced → **UN World Conservation Strategy**

- 1963: Forerunner of all publications on ecologic problems was **Silent Spring** by Rachel Carson → described DDT's fatal impact

- In 1972, Dennis and Donella Meadows and other scientists published "**Limits to Growth**", which was commissioned by the famous Club of Rome

Sustainability – Historical development

- In 1983 the World Commission on Environment and Development was set up, chaired by the Norwegian Prime Minister Gro Harlem Brundtland
- In 1987 the Commission's report *Our Common Future*, also known as the Brundtland-Report, was published

> *"Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."*
> *Source: WCED (ed.; 1987): Our Common Future. Oxford, New York*

- **UN Conference on the Environment** (1972, Stockholm), **World Summits on Sustainable Development** (1992 in Rio de Janeiro → *Agenda 21*), (2002 in Johannesburg), (2012 in Rio de Janeiro → *The future we want)*
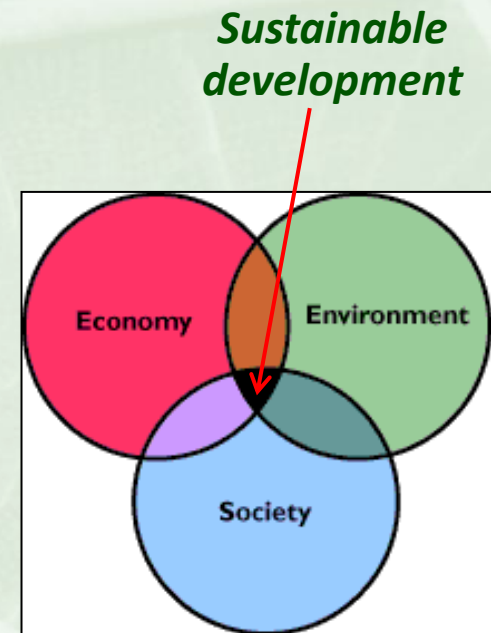
Dimensions of Sustainability

Video by Stefanie Egger (2013),
source: http://vimeo.com/60973371

Sustainable development

Holistic and integrative approach of all dimensions:

Society, Environment, Economy, (Institutional dimension, cultural dimension)

Source: Sustainable Measures (2010)

World game

Aim of the world game:

– To develop a common picture of our world
– To reflect our personal view of the distribution of the population and wealth
– To point out unfair economic processes

How to play the game:

1. The players present one group
2. They have the task to distribute the 100 tokens (= world population) on the different continents
3. The tokens are counted and the game master compares the result with the correct distribution
4. Then the players distribute the 100 chips (= world income)
5. Again the game master compares the result with the correct distribution

World game

Data chart 2011

2011	Population (millions)	Population (%)	*Tokens*	GDP (bn. $)	GDP (%)	*Chips*
Europe	739	10.8	*11*	17 658	30.7	*30*
Africa	1030	15.0	*15*	1479	2.6	*3*
Asia	4157	60.3	*60*	17 829	30.9	*31*
North America	344	5.0	*5*	15 455	26.8	*27*
Latin & South America & Caribbean States	585	8.4	*8*	4133	7.2	*7*
Oceania	37	0.5	*1*	1065	1.8	*2*
Total	**6892**	**100**	*100*	**57 619**	**100**	*100*

Global challenges - **Society**

Population growth

Urbanisation

World health
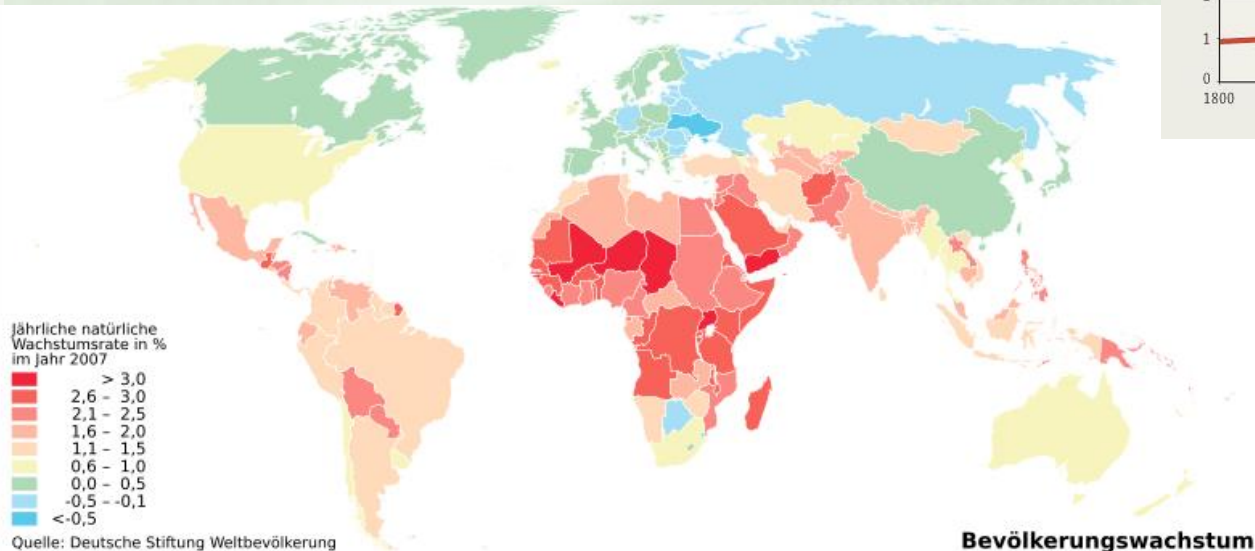

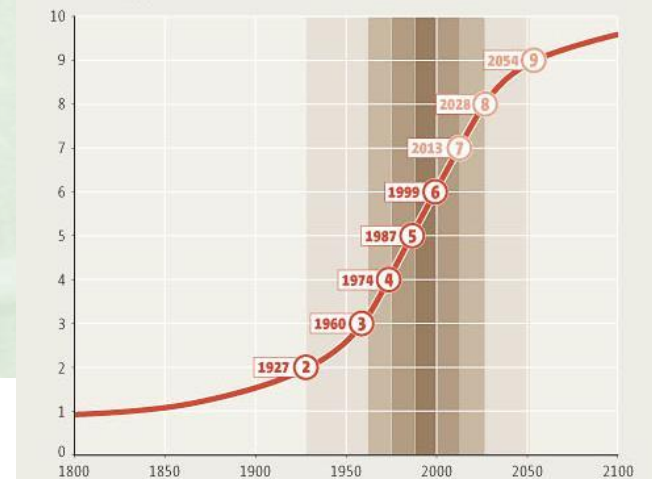**Gap between rich & poor**

Gender equity

Poverty

Population growth

- 1700: world population of 500 million
- 20th century: 'population explosion' (quadruplication to 7.1 billion in 2012)

World population (in billion)

Source: Le Monde diplomatique (2011)

Population growth (in %, in 2007)

Jährliche natürliche Wachstumsrate in % im Jahr 2007

- > 3,0
- 2,6 – 3,0
- 2,1 – 2,5
- 1,6 – 2,0
- 1,1 – 1,5
- 0,6 – 1,0
- 0,0 – 0,5
- -0,5 – -0,1
- <-0,5

Quelle: Deutsche Stiftung Weltbevölkerung

Bevölkerungswachstum

Source: Wikimedia Commons (2013)
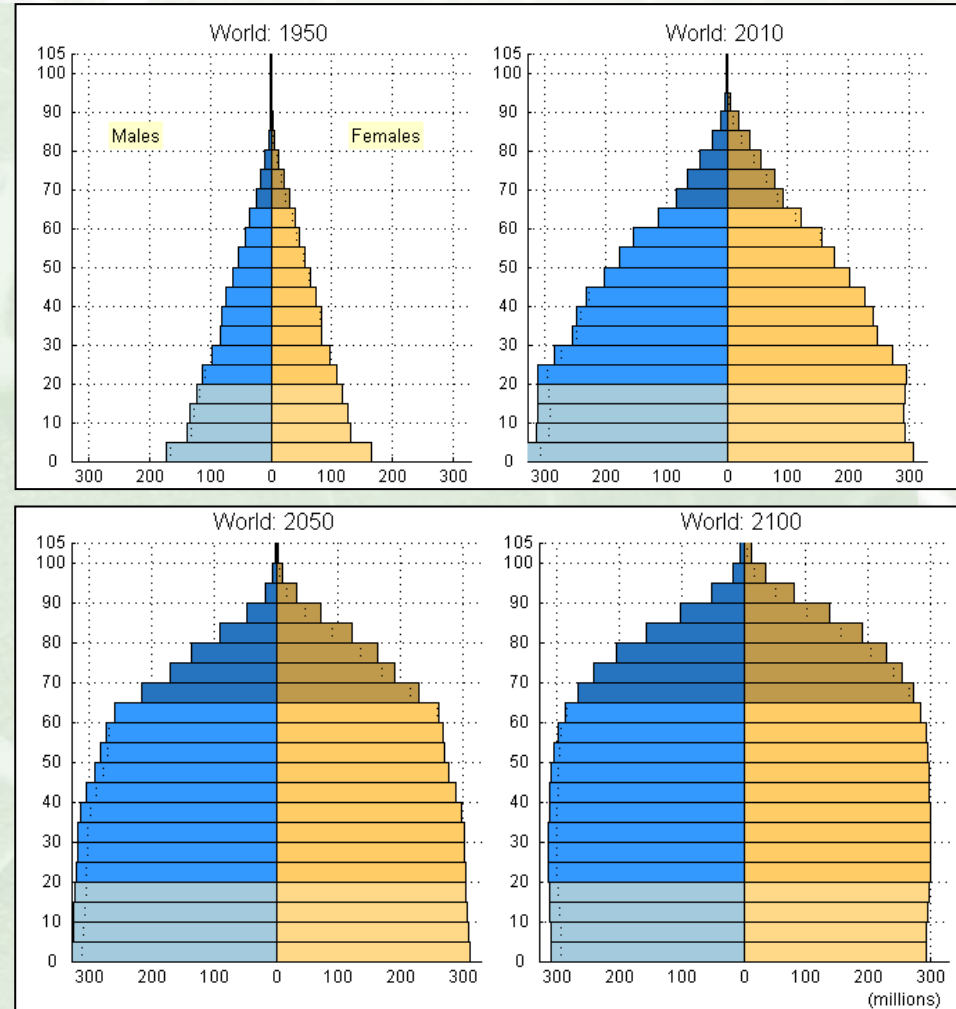
Population dynamics

Population growth: more than 2/3 in developing countries in Africa and SE-Asia; stagnation or even decrease in some developed/industrialised countries

→ *Challenge of quality of life for all people (wealth, use of resources, etc.)*

Additional challenge: aging of population

– 2050: % of people over 60 will triple; over 80 even increase fivefold

→ *Impact on economy and social systems*

Source: UN, Population Division (2011)

Global challenges - **Environment**

Climate change

Loss of biodiversity

Loss of forests

Scarcity of fresh water

Soil degradation

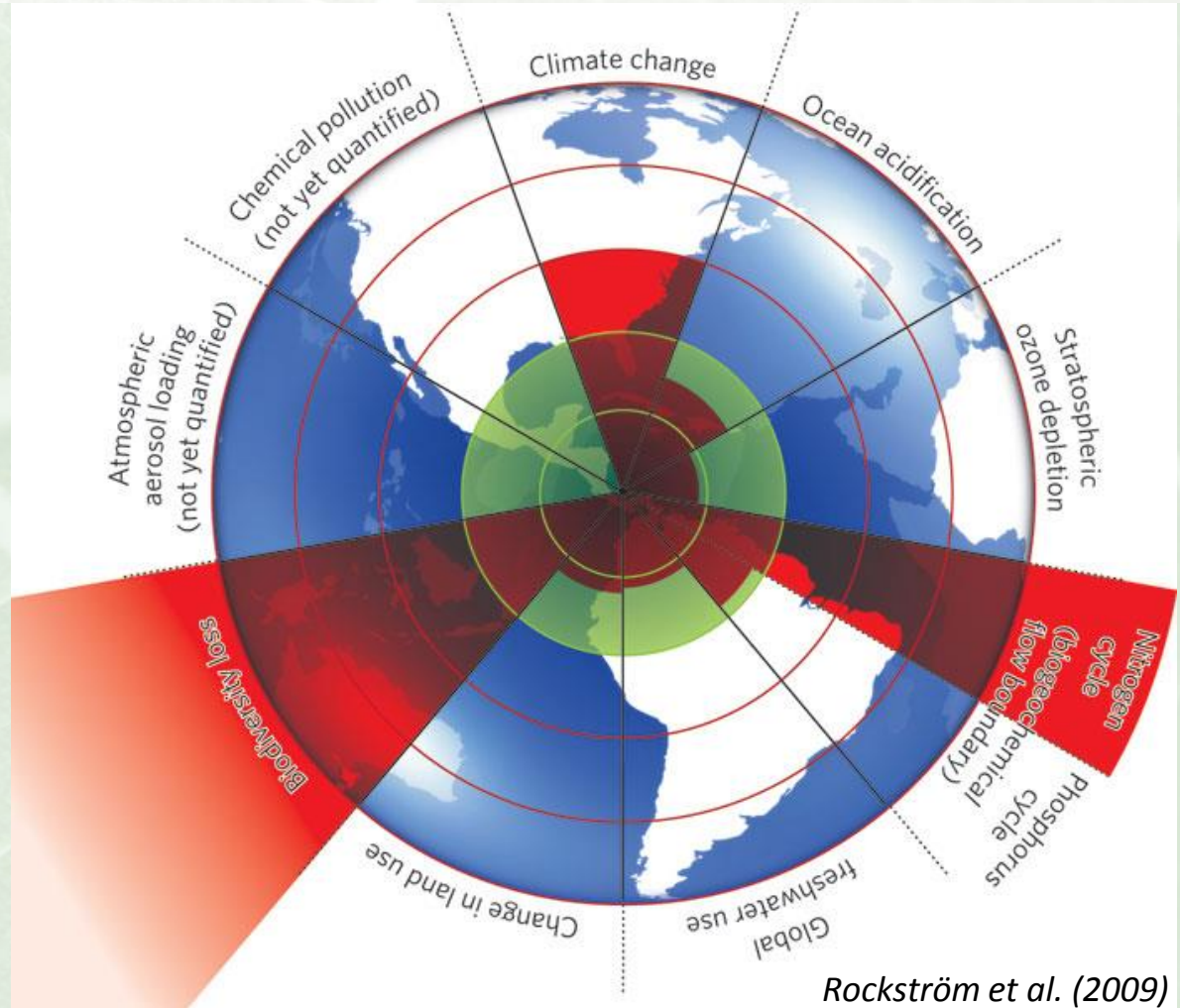**Scarcity of energy and natural resources**
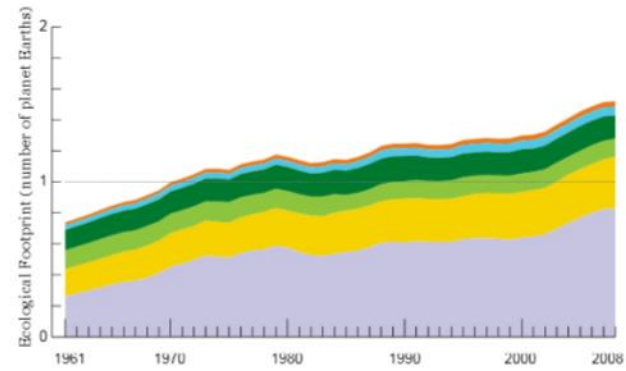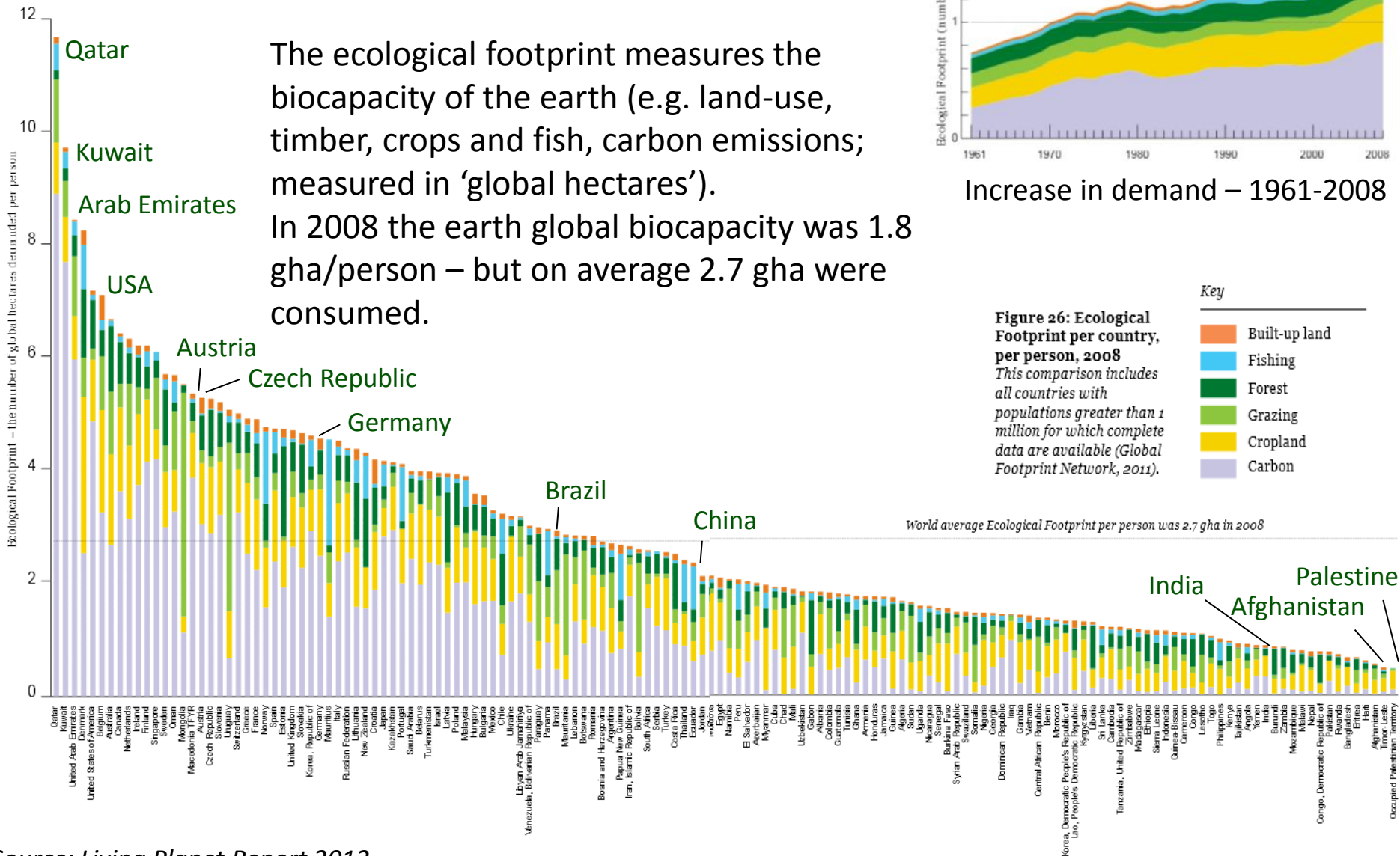
Global challenges - **Environment**

Planetary boundary of nine systems:

We are already way beyond our planetary boundaries in the fields of **biodiversity loss**, the **nitrogen cycle** and **climate change**
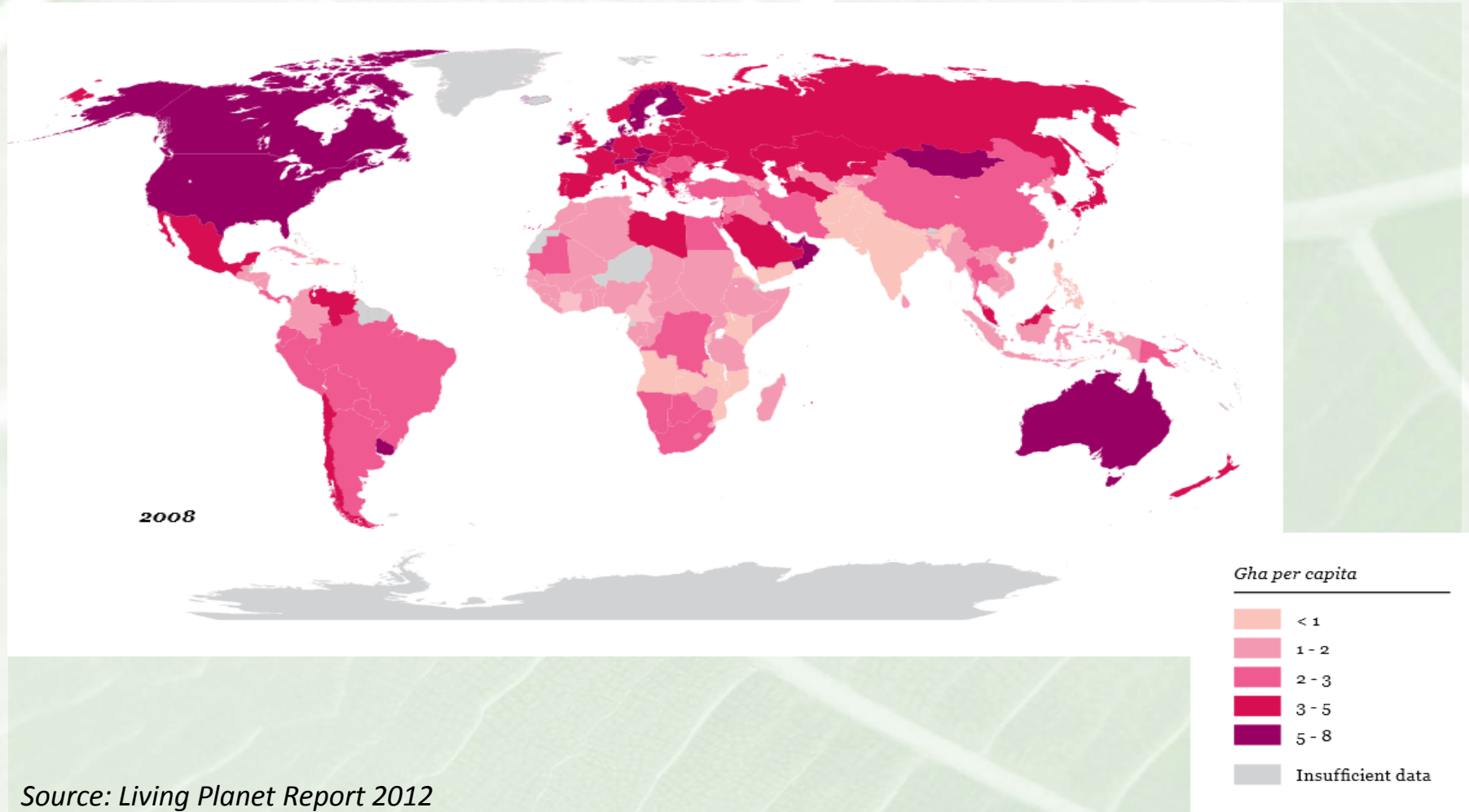

Rockström et al. (2009)

Ecological Footprint

The ecological footprint measures the biocapacity of the earth (e.g. land-use, timber, crops and fish, carbon emissions; measured in 'global hectares').
In 2008 the earth global biocapacity was 1.8 gha/person – but on average 2.7 gha were consumed.

Increase in demand – 1961-2008

Figure 26: Ecological Footprint per country, per person, 2008
This comparison includes all countries with populations greater than 1 million for which complete data are available (Global Footprint Network, 2011).

Key
- Built-up land
- Fishing
- Forest
- Grazing
- Cropland
- Carbon

World average Ecological Footprint per person was 2.7 gha in 2008

Source: Living Planet Report 2012

Ecological footprint

2008

Gha per capita

- < 1
- 1 - 2
- 2 - 3
- 3 - 5
- 5 - 8
- Insufficient data

Source: Living Planet Report 2012

Systemic game - *Avalanche*

Objectives:
– To recognize that individual success depends on the coordination among all team members
– To recognize that complex systems (such as climate change) have a counterintuitive nature
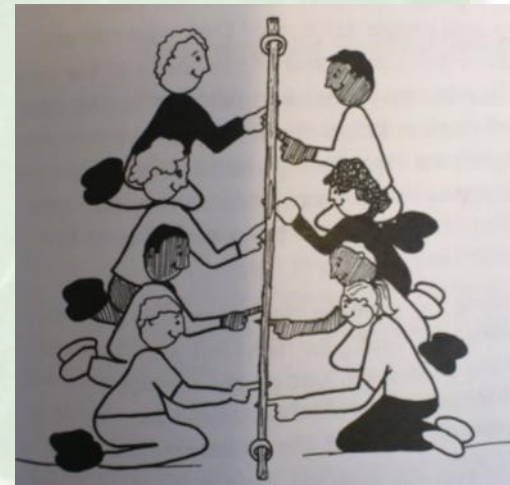
Rules of the game:
– 5-7 players; each player holds the hula hoop with one forefinger
– The goal is to lower the hula hoop smoothly to the floor, rest it there and remove your fingers.
– BUT: you absolutely must not lose contact with the hula hoop at any time!

Outcomes:
– What caused the hula hoop to rise?
– This game represents a decentralised system, where nobody is in charge, and the individuals are following simple rules. Only when the system becomes directed does the hula hoop get to the ground.
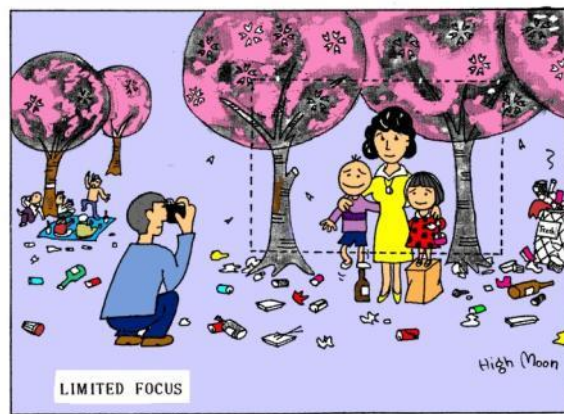
Source: Linda Booth Sweeney & Dennis Meadows (2010); according to Michael Gass

Working for Sustainable Development
What is needed?

Holistic and systemic perspective

An inter- and transdisciplinary approach – as we are facing complex and uncertain situations

Creativity and innovativeness

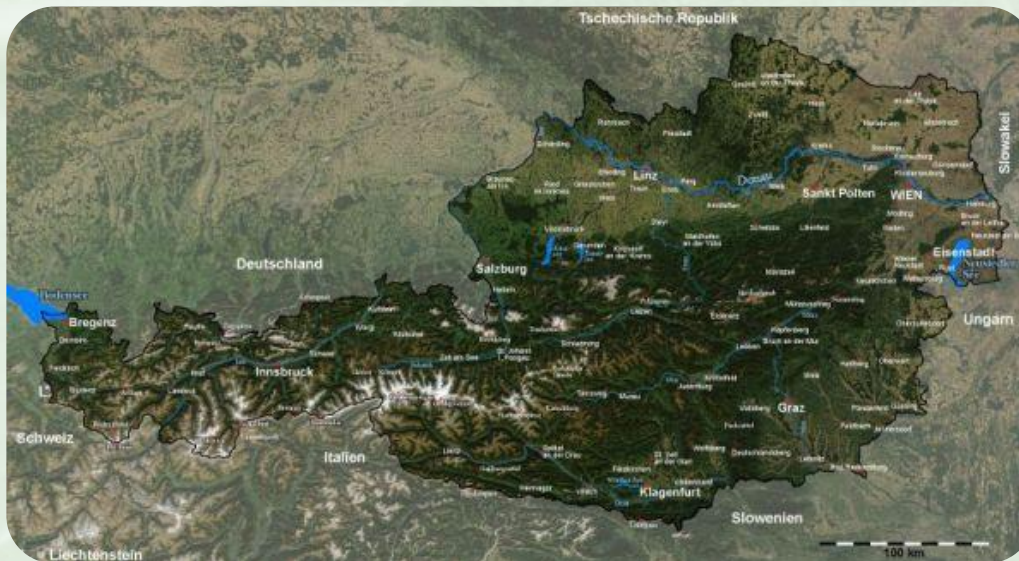**Sustainability knowledge, values and competences**

SD in **Austria**

Austria – fact sheet

- **Population**: 8.4 million
- **Area**: 83 880 km^2
- **Capital**: Vienna
- **Geography**: mountainous country (Alps), 2/3 of Austria are above 500 m

- **Economy**: Austria is the 11th richest country in the world (in terms of GDP); HDI: 19th place
- **Austria is famous for**: music & culture (Mozart, Beethoven, Strauss, Wiener Philharmoniker, Klimt, Schiele,…), nature and tourism (winter sports & culture), food (Apfelstrudel, Wiener Schnitzel, Sachertorte, Red Bull…) and Viennese coffee traditions, …
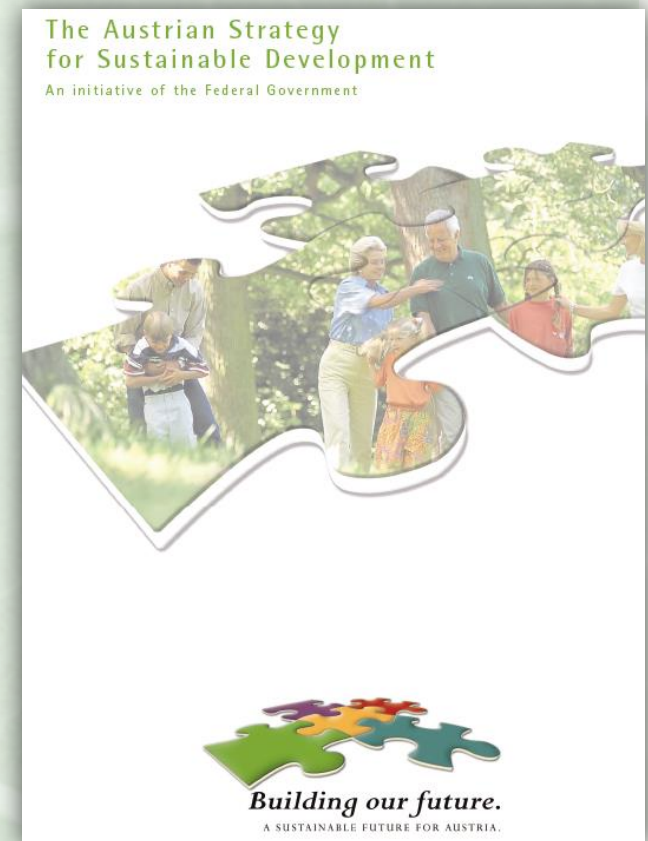

Source: Berufsfotografen Österreichs;
www.photographer.at

The Austrian Strategy for Sustainable Development

- Developed in 2002 by the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management

Sustainable development is seen as a social process

  – Besides political standards and technological change,

  – a fundamental shift in values and change of behavior of people is required

Source: Austrian Strategy for Sustaianbility, 2002

4 integrative fields of action – 20 key objectives

Quality of life in Austria

1. Sustainable Life-style
2. Opportunities for the empowerment of all generations
3. Gender equality
4. Solutions through education and research
5. A descent life for present and future generations

Austria as dynamic business location

1. Innovative Structures Promote Competitiveness
2. A new understanding of business and administration
3. Correct prices for resources and energy
4. Successful management through eco-efficiency
5. Strengthening sustainable products and services

Living spaces in Austria

1. Protection of Environmental Media und Climate
2. Preserving the Diversity of Species and Landscapes
3. Responsible Use of Land and Regional Development
4. Shaping Sustainable Mobility
5. Optimizing the Transport Systems

Austria's responsibility

1. Fighting Poverty, Creating a Social and Economic Balance
2. A Globally Sustainable Economy
3. Our World as a Living Space
4. International Cooperation and Financing
5. Sustainability Union Europe

Styria

Sustainable development in the province of Styria

Styria:

– Population: 1.21 million (2011)

– Area: 16 400 km² (→ 57% are forests)

– 13 political districts, 539 municipalities

– Economic growth: 3.9 % (2011) – above average of Austria (3.0 %)

The Styrian panther

Sources: Federal government of Styria: www.steiermark.at

Sustainable development in the province of Styria

- **Different federal strategies**:
  - Energy strategy Styria, economic strategy Styria, Styrian climate protection plan, rural development strategy, `Charta for living togehter in diversity`, …

- **Actors & partners:**
  - LA 21 network, sustainability coordination at the Styrian government, Eco World Styria network, WIN, partners for energy efficiency and waste disposal, centre for environmental education ,….
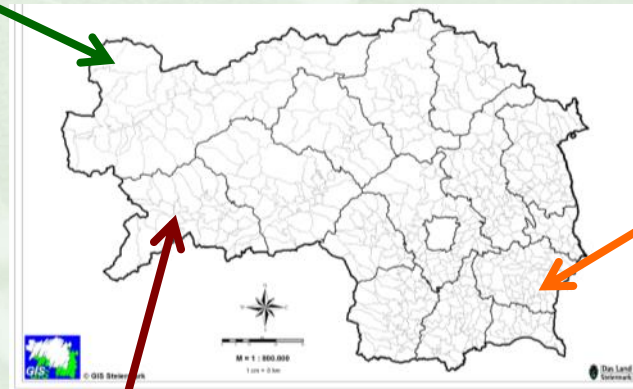
Examples of sustainability in Styrian regions

Salzkammergut / Ausseerland

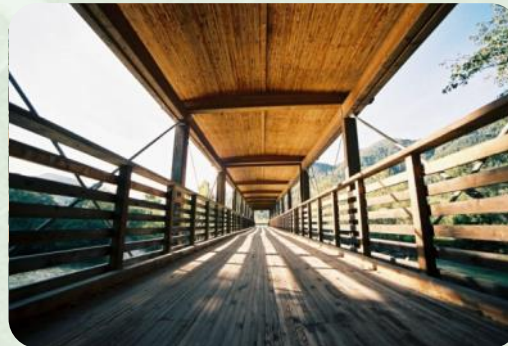traditional handcrafts (esp. traditional dresses) and customs

Steirisches Vulkanland

regional development and participation processes & high quality products (food & handcrafts)

Holzwelt Murau

handcrafts – esp. processing of wood

Graz

City of GRAZ

- Capital of the province of Styria

- **Population:** 266 000 inhabitants (2013), (forecasts for 2030: 288 000 inhabitants)

- **Area:** 127 km² (thereof 40% green spaces)

- **UNESCO World Cultural Heritage**

Historic center (1999) because of the well preserved city center and coherent roof landscape

Schloss Eggenberg (2010) – barock castle with imperical rooms and park

City of Graz – *Characteristics and economic situation*

- 40 % of the economic performance of Styria are generated in Graz.

- **Graz is known for education & research** (4 universities and 1 university of applied science), **and economy**
    - Automobile cluster (Magna Steyr, AVL,… - approx. 180 partner enterprises with 40 000 staff)
    - Energy and environmental technology (cluster Eco World Styria – approx. 200 enterprises)
    - Human technology and bioengineering (cooperation science & economy, approx. 70 partners)
    - Creative industries (City of design and several activities)
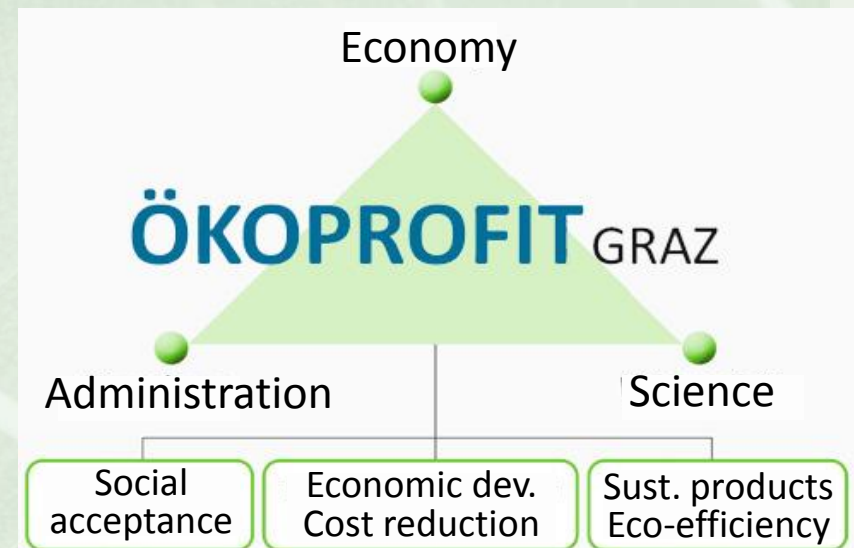
City of Graz – *City of human rights*

- **City of Human Rights – since 2001**
  - With the aim to respect human rights in all political decisions and activities.
  - The city has to fulfill certain criteria (i.e. foster the respect of human rights in all aspects of daily life, establish networks for exchange and learning, …)
  - Awareness raising campaigns and establishment of an advisory board
  - Resume of the advisory board: to some extent disappointing results (e.g. begging was forbidden,…)

Der Menschenrechtsbericht der Stadt Graz 2010

City of Graz - *Ecoprofit*

- **Ecoprofit** – **Eco**logical **Pro**ject **f**or **I**ntegrated Environmental **T**echnology

- Developed in 1991 by the Environmental Department and the Technical University Graz; for enterprises and municipalities

- **Aims:**
  - Environmental protection
  - Economic profit
  - Develop public-private-partnerships

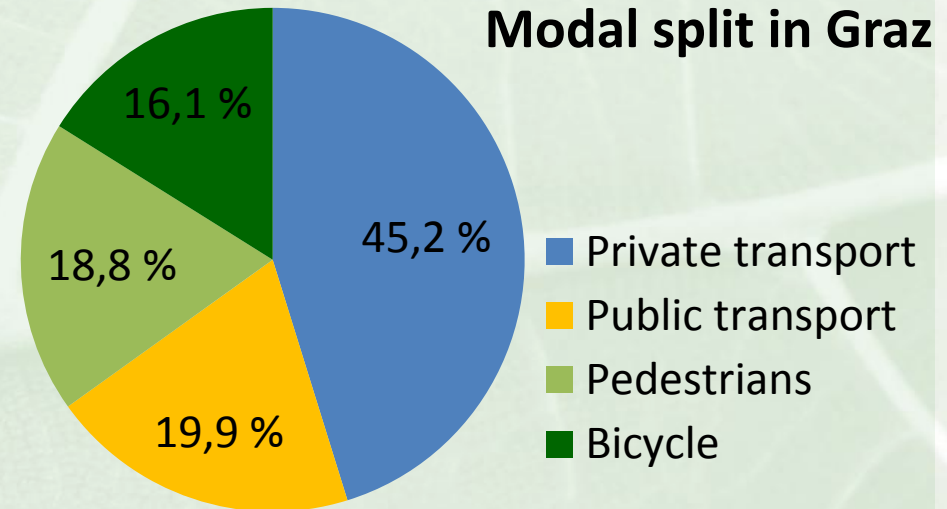 → focus on energy & resource efficiency and material flow analysis

City of Graz – *Urban planning & development*

- **Smart cities** → pilot project for energy efficiency and climate adaptation; development of demonstration projects and a roadmap for a sustainable smart city; focus on communication

- **‚Density dialogue'**→ raising awareness of the need for dense cities to guarantee quality of life (esp. in regards to population growth forecasts)

- **Revitalising of urban courtyards** → important small green spaces for inhabitants (quality of life & biodiversity)

- **Revitalising of specific city districts and streets**

City of Graz – *City of bicycles*

- Graz is one of the most popular bike cities in Austria; has around 120 km bike paths.

Modal split in Graz

16,1 %
18,8 %
19,9 %
45,2 %

- Private transport
- Public transport
- Pedestrians
- Bicycle

Comparison:

modal split in   Austria & Sytria:

	Austria	Sytria
Private transport:	*70 %*	*74 %*
Public transport:	*23 %*	*12 %*
Pedestrians:	*4 %*	*9 %*
Bicycle:	*3 %*	*6 %*

References

- Booth Sweeney, L. & Meadows, D. (2010) The Systems Thinking Playbook, Chelsea Green Publishing, USA, 252 p.

- City of Graz: www.graz.at

- Ecoprofit: www.oekostadt.graz.at/cms/ziel/1939183/DE/ (in German only)

- Federal Ministry of Agriculture, Forestry, Environment and Water Management (2002) Austrian Strategy for Sustainable Development, http://www.nachhaltigkeit.at/article/articleview/72167/1/26469/ (pdf: The Austrian strategy)

- Human rights city of Graz: www.etc-graz.at/typo3/index.php?id=1011#c2255 and www.menschenrechtsstadt.at (in German only)

- WWF (2012) Living Planet Report 2012: http://www.footprintnetwork.org/images/uploads/LPR_2012.pdf

- Styrian government: www.steiermark.at (in German only)

- Sustainicum Collection (2013) „The pillars of sustainability" (short video by Stefanie Egger): http://www.sustainicum.at/en/home; http://vimeo.com/60973371