SUSTAINABLE LEATHER MANAGEMENT® BY LANXESS

Sustainability – necessary paradigm changes

LERIG Lecture

Chennai, January 2015

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LANXESS Energizing Chemistry

The global challenge of sustainability

The atmosphere – our fragile, life saving protection shield

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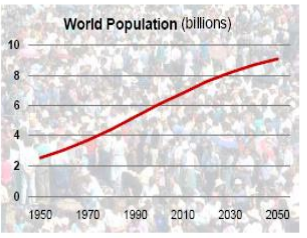
Sustainability requires a paradigm shift in all what we are doing and how we are doing things

Available resources versus global consumption

- 27th of November 2015 – a bad day
- 2050 - two to three back up planets would be required if we continue like this
- Balancing out the earth‘s resources with consumption and population growth is essential for future survival



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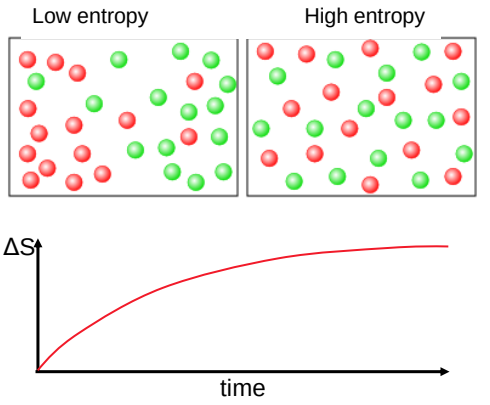
There are natural laws we cannot ignore - we have to respect and incorporate them in our thinking

2nd and 3rd law of thermodynamics

Entropy:

- There is always a natural constrain for a direction of a change.
- Big differences do always pursuit an equilibrium
- The entropy of a system always pursuits a maximum value
- This theory is immanent and can't be ignored. It is applicable for many system differences, no matter in what kind,
  - if in regard to social aspects
  - or economical aspects

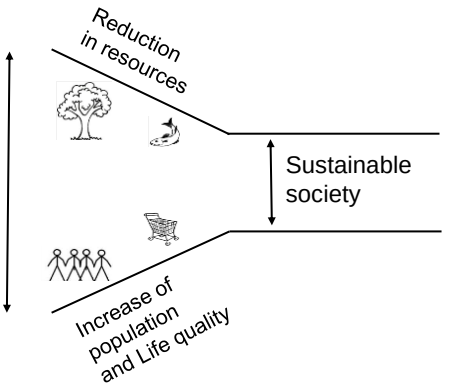


Resources and Growth have to be reduced significantly to reach a sustainable level

Sustainability funnel model*

- The worlds main problem is a resource issue
- Resources have to be minimized by recycling and switched to "sun-powered" renewables as much as possible
- Increase of population has to be reduced to a sustainable level
- Life quality has to be separated from the desire of consumption (to be or to have)

** Sustainability, Iris Pufé*



Agenda

- Introduction

- 7 Phases of the Sustainability Evolution process
- Paradigm of change for the economy, politics and all of us
- Conclusive words

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Phase I on could be called the „Sustainability Cradle“

Important milestones in the evolution of Sustainability – Phase I

- Carlowitz’s forest farming principle (Freiberg, 1713)

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Phase II needs to be named the „Sustainability Ice Age“

Important milestones in the evolution of Sustainability – Phase II

- Carlowitz’s forest farming principle (Freiberg, 1713)
- Industrial revolution was a sustainability ice age; it has frozen any sustainable development until mid of 19th

Engine fabrication August Borsig (um 1847)

Phase III started in the 60ies with many „Environmental Push“ initiatives

Important milestones in the evolution of Sustainability – Phase III

- Carlowitz’s forest farming principle (Freiberg, 1713)
- Industrial revolution was a sustainability ice age; it has frozen any sustainable development until mid of 19th
- 1960ies pollution dimension required corrective action

Bayerwerk / Leverkusen (1965)

Generations II and III of push programs followed in the 80ies

Important milestones in the evolution of Sustainability – Phase III

- Carlowitz's forest farming principle (Freiberg, 1713)
- Industrial revolution was a sustainability ice age; it has frozen any sustainable development until mid of 19th
- 1960ies pollution dimension required corrective action
- 1980ies the focus was shifted towards decentralized protection technologies
- End of 1980ies the scope even incorporated product integrated aspects

I **End of pipe technologies**
Waste Water Treatment Plants, Filter

II **Decentralized technologies**
Avoid → **R**educe → **R**euse → **R**ecycle

III **Ecological Product Concepts**
Restricted substances, safe use

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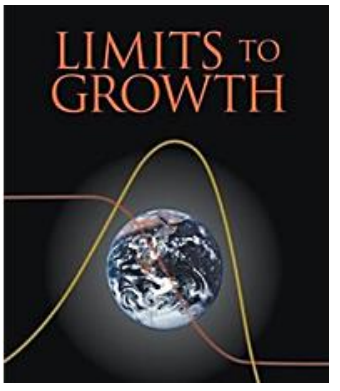
Phase IV can be called the „Rude Awaking"

Important milestones in the evolution of Sustainability –Phase IV

- 1972 Club of Rome initiated study: "Limits of Growth" hammered in like a bomb blast

THE CLUB OF ROME



Donella and Dennis Meadow's

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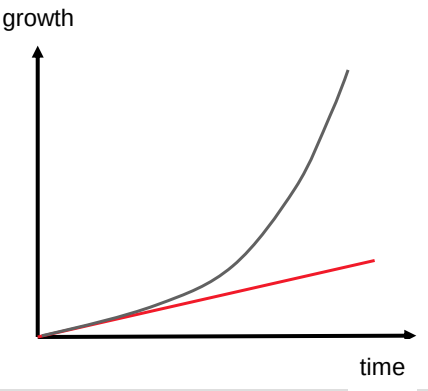

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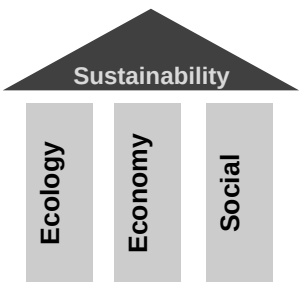
From Phase V onwards the United Nation took over the lead

Important milestones in the evolution of Sustainability – Phase V

- UN World Commission on Environment and Development (Brundtland Commission, 1983)
  - **Ecology**: e.g. global warming, deforestation, fossil resources, health threatening
  - **Economy**: e.g. unemployment, financial instability, outstanding depth
  - **Social**: e.g. poverty, child labor, violations

Sustainability … aims to meet today‘s human needs, while preserving the life of future generations



United Nations

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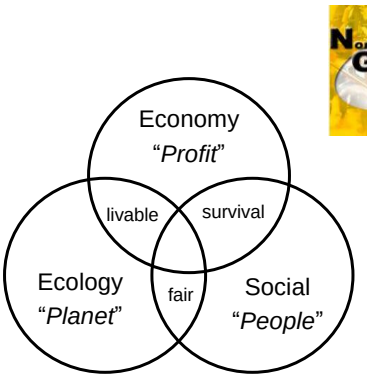
Phase VI finally achieved the Global Reach and our Planet's Climate dimension became priority

Important milestones in the evolution of Sustainability – Phase VI

- Rio summit (1992)
  - Fight of poverty should have priority,
  - 60 % reduction of CO2 emission until 2050,
  - convention for protection of bio-divisibility,
  - declaration against deforestation,
  - convention of fight against desert extension
- Kyoto protocol (UN, 1997)
- The Brundtland model was further developed into the "3P" model
- NGO's became the driving force for many initiatives



United Nations

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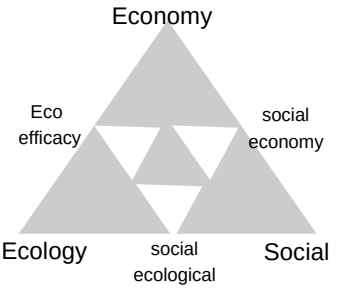
Phase VII, the Millenium phase, addressed „Social Responsibilities" as topic No 1

Important milestones in the evolution of Sustainability – Phase VII

- Formulation of Agenda 21 (UN, 1997)
- Millenium Development Goals (UN MDG, Y2K)
  - Cut down poverty by half until 2015
  - Push education and health programs
  - Eliminate social and cultural imbalances
- Again a new model – this time a triangle model - should reflect the better the composition elements of sustainability

„Peace, Security, Development go hand in hand with Prosperity and Growing Markets"

Kofi Anan



United Nations

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Binding Climate Targets for all nations are currently the ongoing debate

Where are we today?

- Driven by NGO's 2000 ff. number of conferences / projects increased
- World Climate Conference (Durban, 2012)
- World Climate Conference (Melbourne, 2014)

I **End of pipe technologies**
Waste Water Treatment Plants, Filter

II **Decentralized technologies**
Avoid → Reduce → Reuse → Recycle

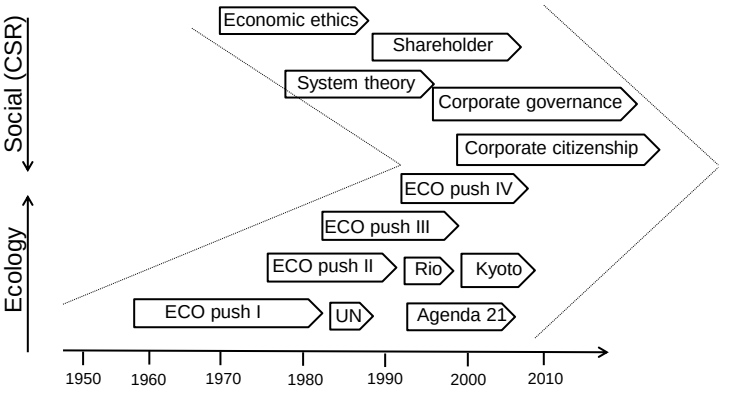
III **Ecological Product Concepts**
Restricted substances, safe use

IV **Climate Saving Materials**
Fossil free, carbon neutral

The world today has all insights and understanding to go for a megatrend in green technology

Important milestones in the evolution of Sustainability (2)

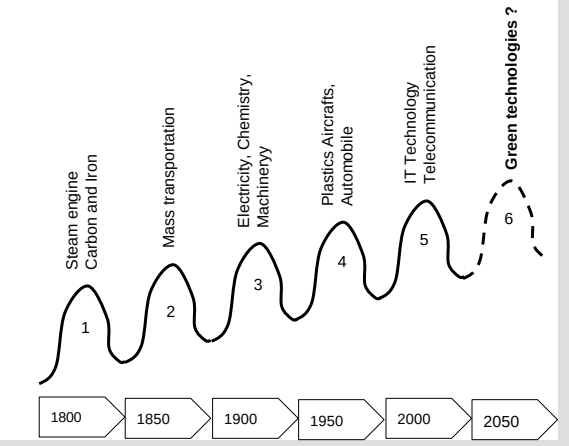
- Process started in 1950
- In the beginning focus in Ecology
- Social aspect came on the agenda later
- Today the sustainability scope has broadended



Will green technology be the mega trend cycle for the next coming 50 years?

Modelling of the future: "Kondratieff" cycles

- 1926 Nicolai Kondradieff published a model of economic cycles
- Later Joseph Schumpeter has connected these cycles with technology megatrends
- 5 cycles have been defined for the past
- According to this model today we are again at the beginning of a new 50 year cycle



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A strong sustainable economy has completely different principles

Paradigm shifts in Economy

Weak sustainability	Strong sustainability
1. "**Homo Oekonomicus**"	➢ "**Homo Sustiens**"
- Neoclassical economical of **endless growth**	➢ **Balance** with the nature / peaceful societies
- **Unlimited resource** availability	➢ **Productivity delta of resources > GDP**
	(Formula Factor 5; U.v. Weizecker)
2. **Profit / Loss optimization**	➢ **Triple Bottom Line (TBL)** and **CSR**
3. Philosophy of **repair**, working at symptoms	➢ Target even **long term** impacts

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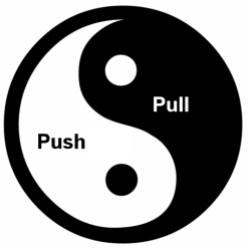
The process of change needs a strong, for all nations binding political pull

Paradigm shifts in politics

- From national to global; empower: United Nations
- From Push to Pull; set clear “guiding rails”
- From private to toal cost
  (including the non-transparent hidden cost)



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Conclusion

- Implementation of sustainability is a Catch 22
- Innovation is key
- Go for best practice “Old wine in new skins”
- Biomimetic – let’s learn from the nature
- Education of next generation; be an example

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Thank you for attention

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