



Sustainability: Vision or Fiction?

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Advisory & Research

Sustainable | W | M | Management
Business
Water
Energy
Risk and Compliance | Sustainability | Environmental | Change Programs and 2030

Telecommunication Industry

Building and Construction Industry

mobile Telecommunication & EoL: a technical Review

... the Past

- _ GSM since 1991 (2G networks)
- _ rapid and comprehensive break-through world-wide
- _ full-penetration and even replacement of fixed networks
- _ rapidly decreasing life cycles (along with sharply dropping costs)
- _ SMS: “Killer” application ↗ success
- _ ↗ 4'000 Mio GSM/UMTS subscribers (2009)

mobile Telecommunication & EoL: a technical Review

... the Past

- _ UMTS since 2000 (3G networks)
- _ significantly slower implementation
- _ failed to replace 2G, ~ 400 Mio UMTS subscriber ↘ (2009)
- _ missing “killer” application ↘
- _ emerging problems with EoL-treatment due to
 - _ missing regulations (guidelines): WEEE, RohS, etc.
 - _ missing development in technology
 - _ lack of interest (not profitable)

mobile Telecommunication & EoL: an Analyst Review

... the Past

- _ early research efforts performed in 1990ies
- _ comprehensive sustainability studies in early 2000-2005
 - _ Frischknecht et al.
 - _ Scharnhorst et al.
 - _ Huizman et al.
 - _ numerous follow-up studies
- _ development of appropriate LCA data bases

mobile Telecommunication & EoL: technical Aspects

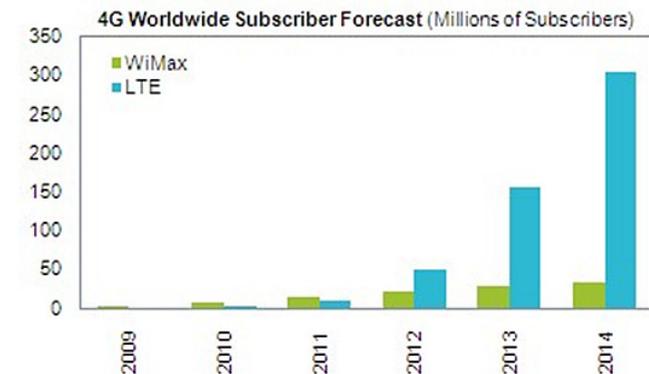
... the Past

- _ establishing appropriate recovery/recycling technologies (facilities)
- _ avoiding export of WEEE to developing countries/emerging markets
- _ improving “supply chain/web” (3rd party involvement)
- _ optimise material composition of devices according to the functionality
- _ increasing recovery rate

mobile Telecommunication & EoL: technical Aspects

... the Presence

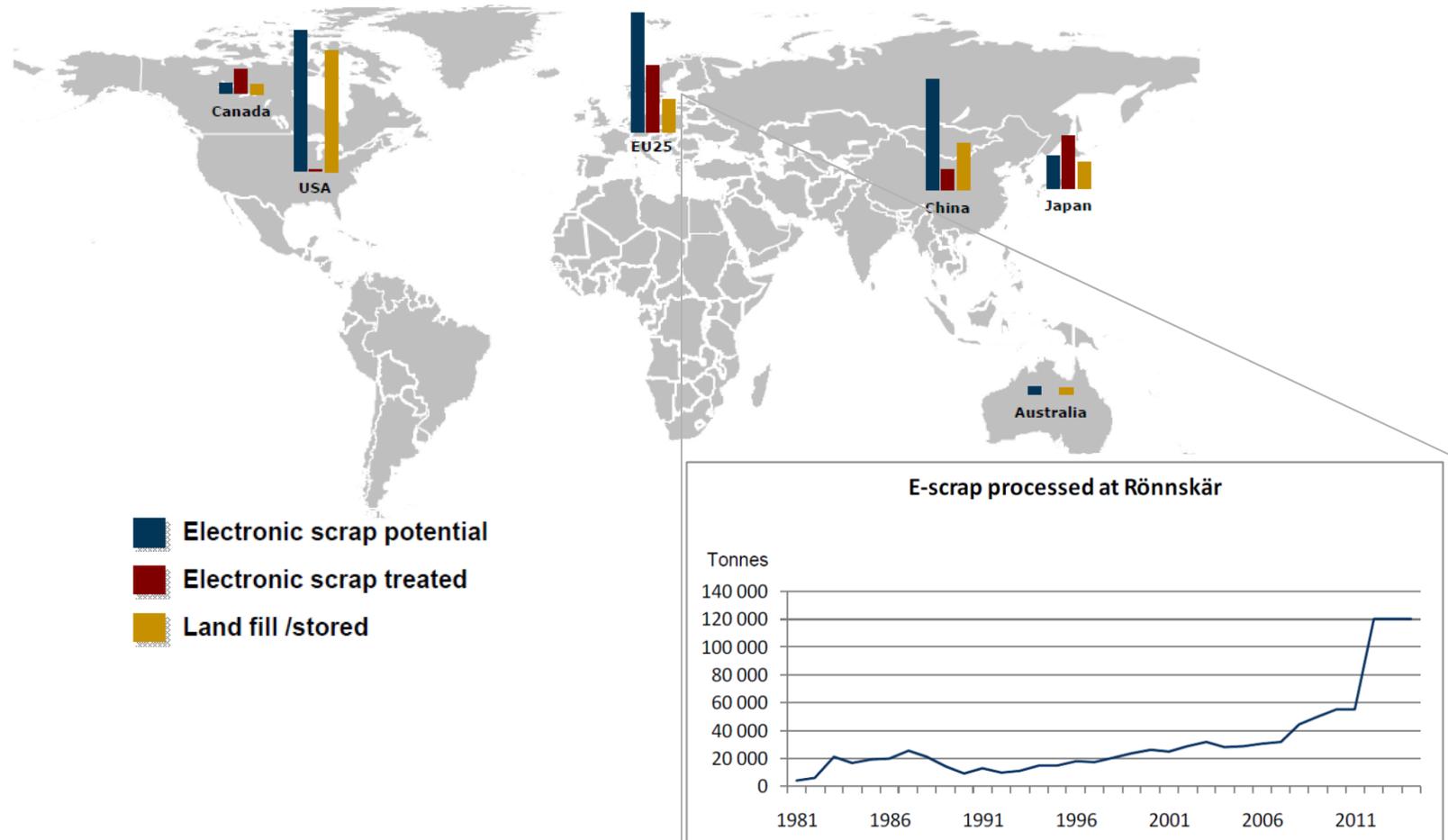
- _ GSM (2G) and UMTS (3G) about to be replaced in a comprehensive “swap-out” window 2012-2016
- _ LTE (4G) soon implemented 
- _ huge amount of secondary raw materials to be processed (recycling) at once
- _ significant capacity adjustment at smelters in Europe



Source: IHS iSuppli Research, January 2011

mobile Telecommunication & EoL: technical Aspects

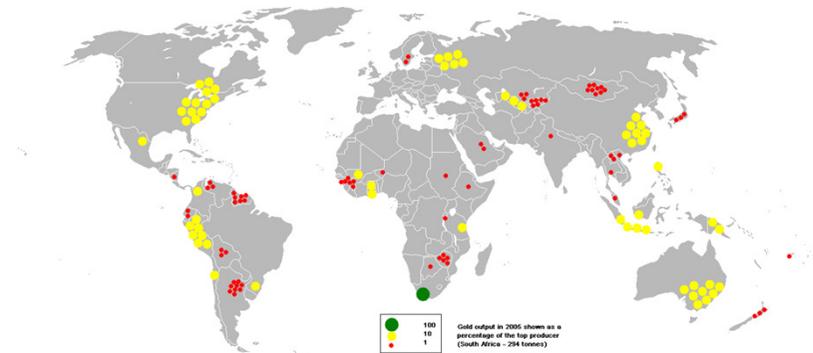
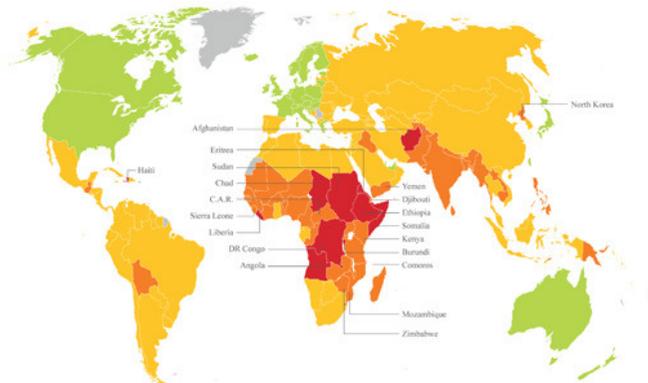
... the Presence



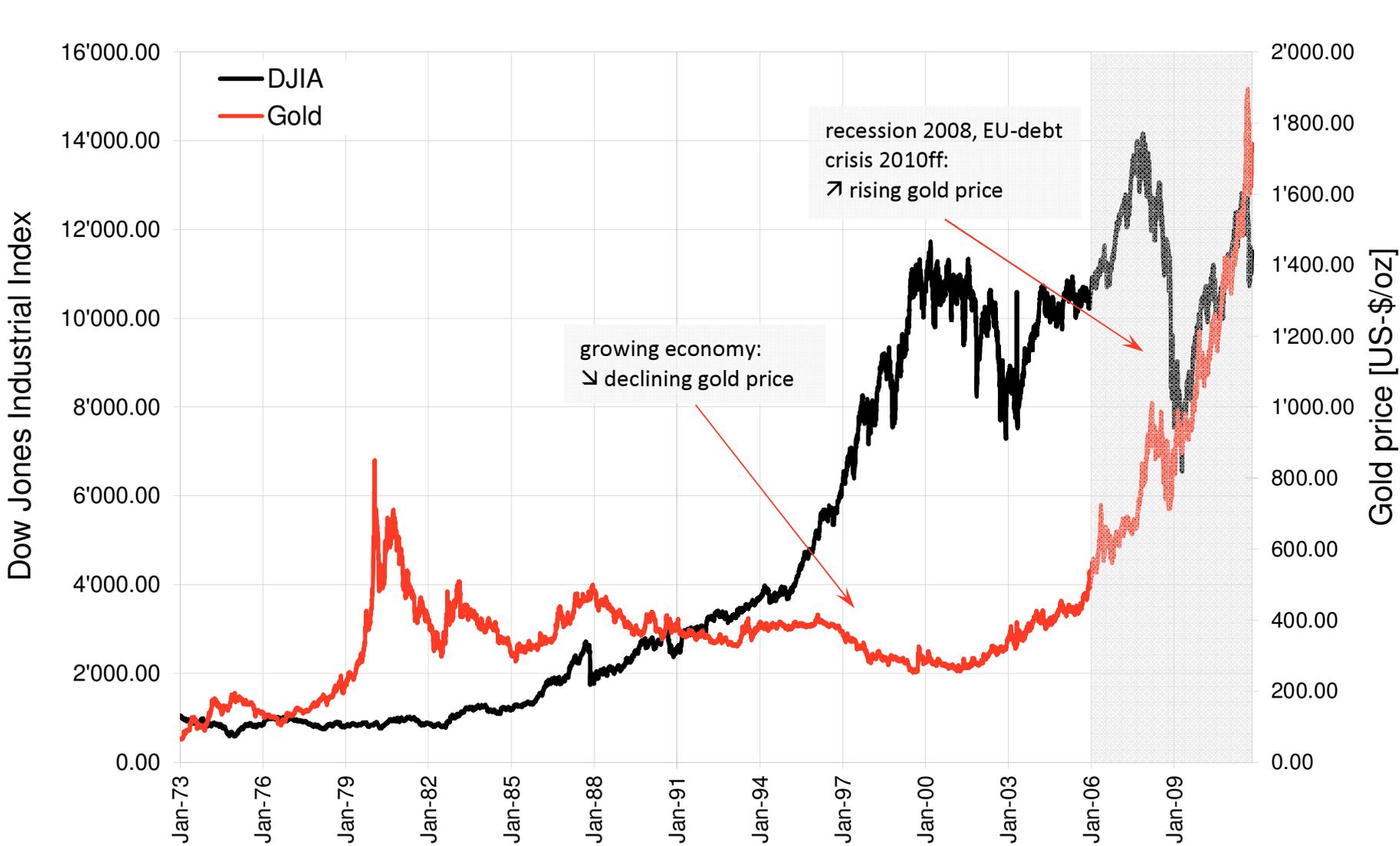
mobile Telecommunication & EoL: geopolitical Aspects

... the Presence

- _ supply of “precious” metals not safe
- _ ethical issues
- _ pricing dependent upon political decisions (cf. price development of rare-earths in 2011)
- _ instability of regions



Gold price in comparison with the Dow Jones Industrial Index



mobile Telecommunication & EoL: economic Aspects

... the Presence

- _ debt crisis contributing significantly to the price-rally of “precious” metals, in particular of gold (investment vehicle)
- _ proven economic profitability of precious metals recovery/recycling at larger scales
- _ on average: ~ 80'000 BTS swapped/year
- _ roughly: ~ 120 kg Au/BTS_{tot}, year
- _ break-even: ~ 200 – 600 BTS

mobile Telecommunication & EoL: environmental Aspects

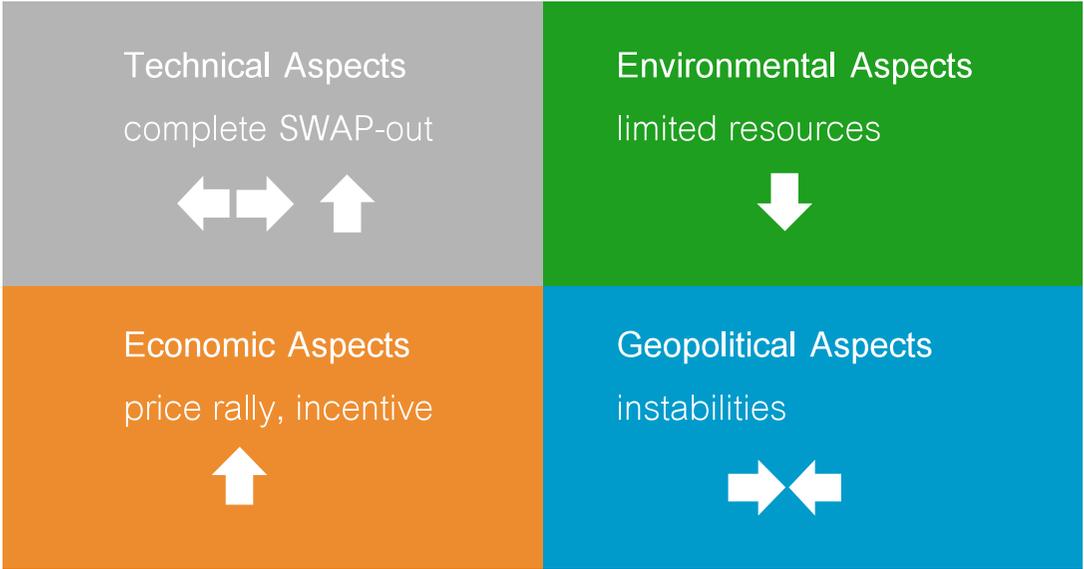
... the Presence

- _ limited availability of resources
- _ concerns regarding technical safety in emerging economies
- _ ethical aspects



mobile Telecommunication & EoL: Summary & Prospect

... the Future



mobile Telecommunication & EoL: Summary & Prospect

... the Future

Unique opportunity to truly “green”
mobile/telecommunication

Building and Construction Industry

Building & Construction: Attempt of an Overview

... the Past



Building & Construction: Attempt of an Overview

... the Past

- _ SIA 112/1, /2
- _ DIN
- _ Labels: 2000-W-Society, Minergie, FSC, BREEAM, LEED, DGNB, HQE, ...

- _ yet considered as add-on, not as integral part

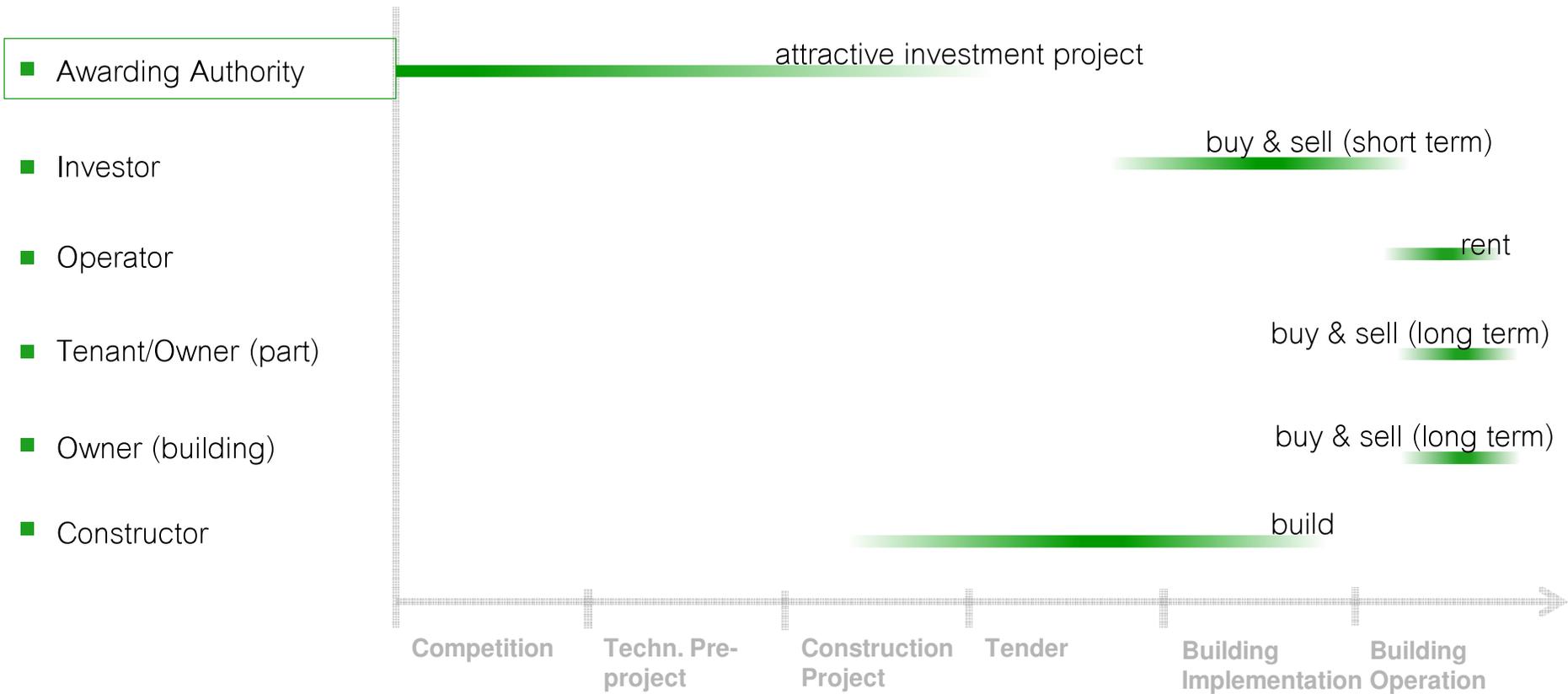
Building & Construction: Attempt of an Overview

... the Presence

- _ fragmented interests
- _ sharply divided stakeholders
- _ awareness for sustainability in a larger context just started
- _ physical complexity (dimensions, interior, etc.) may increase the challenge to implement sustainability measures
- _ truly or proven motivating forces not really existing

Building & Construction: Interests & Stakeholders

... the Presence



Building & Construction: Interests & Stakeholders

... the Presence

■ Awarding Authority

■ Investor

attractive investment project

buy & sell (short term)

rent

Common aim: economic profitability – but from different perspectives →

Conflicts

■ Constructor

buy

Competition

Techn. Pre-project

Construction Project

Tender

Building Implementation

Building Operation

Building & Construction: Awareness

... the Presence

- _ not a missing awareness but a certain helplessness
- _ in CH: early, visionary steps already in 1970ies by E. Basler (Basler&Hofmann) ↘ break-through towards comprehensive sustainability?
- _ evident gap between research and practice
- _ attempt to approach via “lighthouse projects” → singularity effect

Building & Construction: Responsibility Thinking

... the Presence

- _ Out of sight, out of mind → differing interests, lack of incentives → result of “broken” life cycle
- _ strong market pressure (espec. in densely populated areas, saturated markets)
- _ financial market instabilities (housing bubble, etc.)
- _ **major challenge** → smooth implementation of “interdisciplinary thinking” into strong and well-established “engineering thinking”

Building & Construction: Complexity/Dimensions

... the Presence

- _ sustainability of a property = complex in terms of:
 - _ interests (stakeholders)
 - _ supply chain/web → gets even complexer looking at intelligent houses (smart metering, etc.)
 - _ use, physical dimension, life time → unpredictable, uncontrollable if the goal is to “meet” a fixed sustainability image → what’s the situation in 50 years?
 - _ ...
- _ EoL = out of sight

Building & Construction: Motivating Pressure Factors

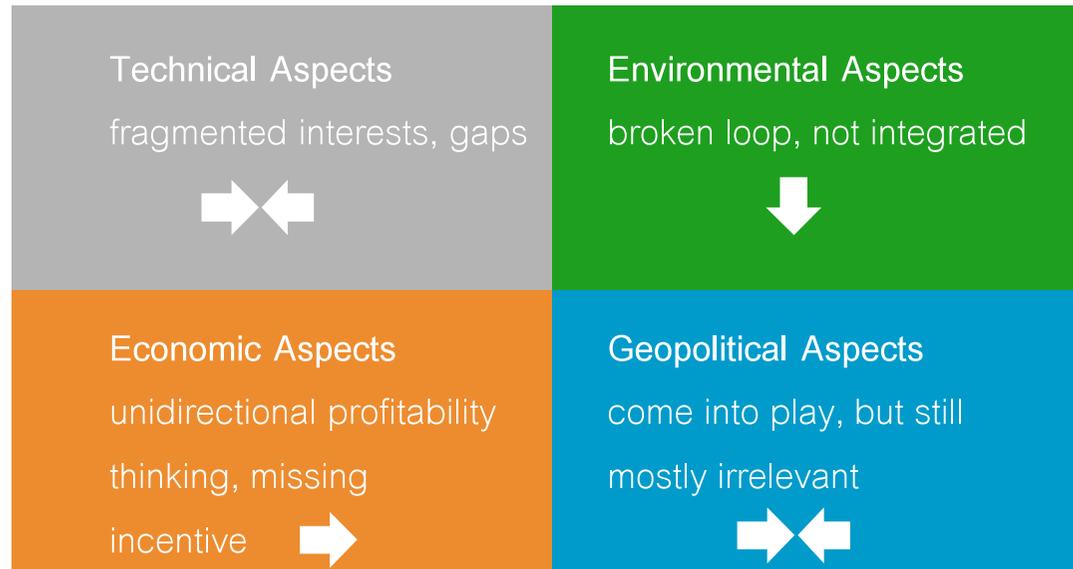
... the Presence

- _ regulations (UVP, EIA, ...): mandatory
- _ proactively motivating (market) pressure: does not exist
 - _ profit of building material recycling, re-use, ... ?
 - _ marketing benefit?
 - _ highly valuable materials?
- _ steps towards modular buildings facilitating EoL



Building & Construction: Summary & Prospect

... the Future



Building & Construction: Summary & Prospect

... the Future

Need to sensibilise for **sustainability issues** and
“creation” of motivating pressure.

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