Parallel Session on «Towards Smart Sustainable Cities – Integrated Approaches»

**Heinz J. Bernegger**, CEO of the Swiss Sustainable Building Council and Lecturer for Life Cycle Management of Buildings at ZHAW Institute of Facility Management, ZHAW Zurich University of Applied Sciences, Switzerland
UN Sustainable Development Goals (SDGs)

1. No Poverty
2. No Hunger
3. Good Health
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
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
17. Partnerships for the Goals
Session 4: «Designing Smart and Sustainable Urban Isles»
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Moderator Heinz J. Bernegger, Managing Director of the Swiss Sustainable Building Council and Lecturer for Life Cycle Management within real estate management at ZHAW Institute of Facility Management, ZHAW Zurich University of Applied Sciences, Switzerland

His research topics are certification systems, Life Cycle Management, BIM based certification and key factors of life quality in urban areas.

Panelists:

Vladimir A. Sidorovich, Institute of Energy Efficient Building Technologies, Russian Federation

Andreas Dreisiebner, Solarspar Association for Innovative PV Solutions, Switzerland

Hanna Sotnikova, ZHAW Institute of Computational Physics, Switzerland

Andrey Dodonov, Project consultant at UNDP-GEF, Russian Federation

Vicente Carabias, ZHAW Institute of Sustainable Development, Switzerland

Mehdi Bagheri, School of Engineering, NU, Kazakhstan
Sustainable development and management of urban areas

Forum on Energy for Sustainable Development, Astana, Kazakhstan, 11-14 June 2017

Towards Smart Sustainable Cities – Integrated Approaches\(^1\)
SGNI Swiss Sustainable Building Council

The WorldGBC is a network of more than 100 countries worldwide. The members of the councils represent over 28,000 companies and organizations, who all committed to sustainability. Over 1.1 billion square meters of building space have so far been certified with the international valuation systems like BREEAM, LEED or DGNB for sustainable real estate.
Meta-level Life Cycle Management

Sustainability in real estate-related life cycle management means the sustainable optimization of real estate

- on the whole range of sustainability values
- along the entire real estate life cycle
- with balanced integration of all relevant interests of all stakeholders.

The SGNI members form a value network over the life cycle.
SGNI Vision

Sustainable and responsible use of the quantity of available resources (in the sense of value created in the past)

and to ensure a long-term creation of value for the future through innovation

sustainability in equilibrium

to create a high quality of living for the present

DGNB Projects in Switzerland

DGNB Swiss System

Children’s hospital, Zurich

© Herzog & de Meuron

DGNB Projects in Switzerland

SGNI - Swiss Sustainable Building Council - ZHAW - Institute of Facility Management
Paradigm Shift: Sustainability drives the market and BIM drives the processes

**quality** (certification result)

BIM is the key to sustainable project success and in the future decisive for the survival of construction companies.

Sustainable project success is characterized by the fact that a project with the defined costs in the defined time, reaches a defined quality level (the certification).

Sustainability (quality) = building quality (replaces construction quality)

m² (range)

price (range)

sustainable quality

place (region)

plans & models
design process

3D

5D
costs
cost-effectiveness required

Scheduling: shorter planning and construction cycles

4D

time

6D
Development of certification systems

- Intelligent Buildings
- Energy Efficient Buildings
- Green Buildings
- Sustainable (Blue) Buildings
- Smart (& Blue) Buildings
- High Performance Buildings

Future certificates are focused on a sustainable performance.
Integration concept  Swiss tools

SDG’s Switzerland

Municipality
- Energy cities
- On the road to the 2000-Watt Society Energy Regions
- Energy City

Site
- Investors, developers, owners/users, town planners/authorities
- 2000-Watt Site

Building
- Contractor
- Architect/planner
- Users

Resident
- Households
- Residents

Lifestyle model

Evaluation
- Treibhausgasemissionen in CO₂
- kg/m² Energiebezugsfläche

Process
- Management-System
- Kommunikation u. Kooperation
- Mobilität
- Ver- und Entsorgung
- Gebäude Einstellung u. Betrieb

SDG’s Switzerland

1. World
2. Switzerland
3. World Target; 3500 Watt and 21 Watt per person

Q: www.2000watt.ch
SNBS A Building is sustainable, if …

- **Context and architecture**
  - es im Kontext mit dem Ort steht und sein Umfeld berücksichtigt.

- **Planning and participation**
  - die Zielgruppen in einem qualifizierten Verfahren einbezogen werden.

- **Useability and functionality**
  - es angemessene Gebrauchs- und Nutzungsqualitäten aufweist.

- **Health and well-being**
  - es einen guten Komfort und eine optimale Raumluftqualität ermöglicht.

- **Costs**
  - seine Kosten über den Lebenszyklus betrachtet optimiert sind.

- **Energy**
  - es mit einem Minimum an nicht erneuerbaren Energien auskommt.

- **Fungibility**
  - seine Handelbarkeit zu jedem Zeitpunkt gewährleistet ist.

- **Rentability**
  - sein Ertragspotential in einem guten Verhältnis zu seinen Kosten steht.

- **Careful use of ressources**
  - die Erstellung und der Betrieb ressourcen- und umweltschonend erfolgen.

- **Climat**
  - es minimale Treibhausgasemissionen verursacht.

Swiss standard for sustainability (government)
Smart City and Urban District Certification

DGNB for urban areas (city districts)

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<tr>
<th>Kriteriengruppe</th>
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<th>Description</th>
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<tr>
<td>Management</td>
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<td>Governance</td>
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<td>Q: European Smart Cities</td>
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SSC Smart and Sustainable Cities standard (European Union)

Q: Methodological Guide ESCI
From corporate social responsibility to corporate sustainability reporting

- International tenants, listed companies and larger companies with CSR reporting expect international certificates
- In Switzerland Google recognized **DGNB** in addition to **BREEAM** and **LEED** in their CSR
- The companies also want smart data of their buildings for their CSR reporting

**Corporate Social Responsibility**

**Entrepreneurial company - resp. social-responsibility** describes the voluntary contribution of companies that go beyond legal requirements.

Future definition based on GRI, IRIS, GRESB

**Corporate Sustainability Reporting**

Reporting to the internal as well as external stakeholders (customers) of a company about the economic, ecological, social enterprise performance and leadership performance.
Buildings in use with dynamic realtime labels

European Core Criteria
8-10 harmonised core criteria

The performance cockpit of the future: change of mode during the presentation of the KPI's between day, week, month and year.
User integration Smart Management

DGMB urban district, AQA Quartier, Aarau, Switzerland

Example: Optimization of new urban districts

Thank you for your attention!

Operational example: Erlenmatt West, Basel – Losinger Marazzi
Session 4: «Designing Smart and Sustainable Urban Isles»

Key Questions are:

• What guidelines on sustainable management of smart areas, buildings, infrastructures and smart services can be presented?

• What specific examples exist to showcase city-level solutions and innovations relating to energy efficiency that provide inspiration and replication models for other aspirational cities?
If you want fly high in the future, you should already look for a comprehensive sustainability today!

Thank you for your attention!

Interested in collaboration?

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