



Mobilizing Low Carbon Transition: Transnational Practice of Energy Efficiency in the Urban Building Sector

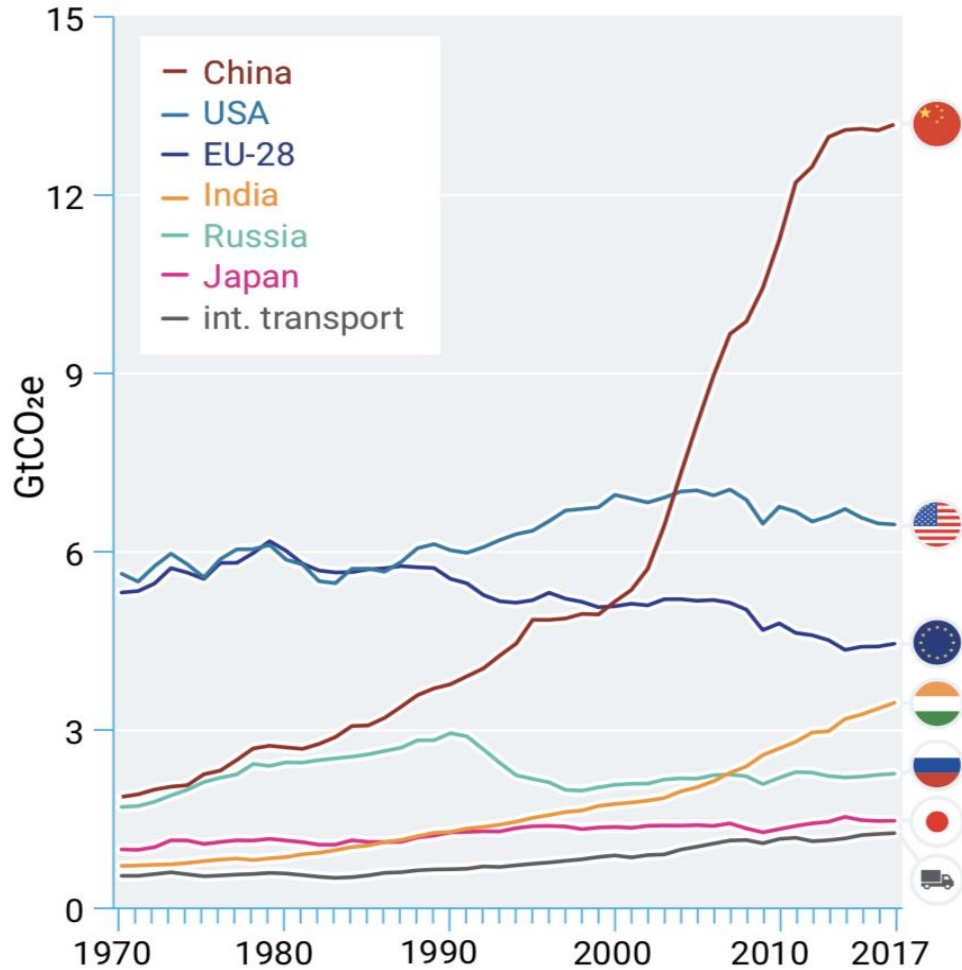
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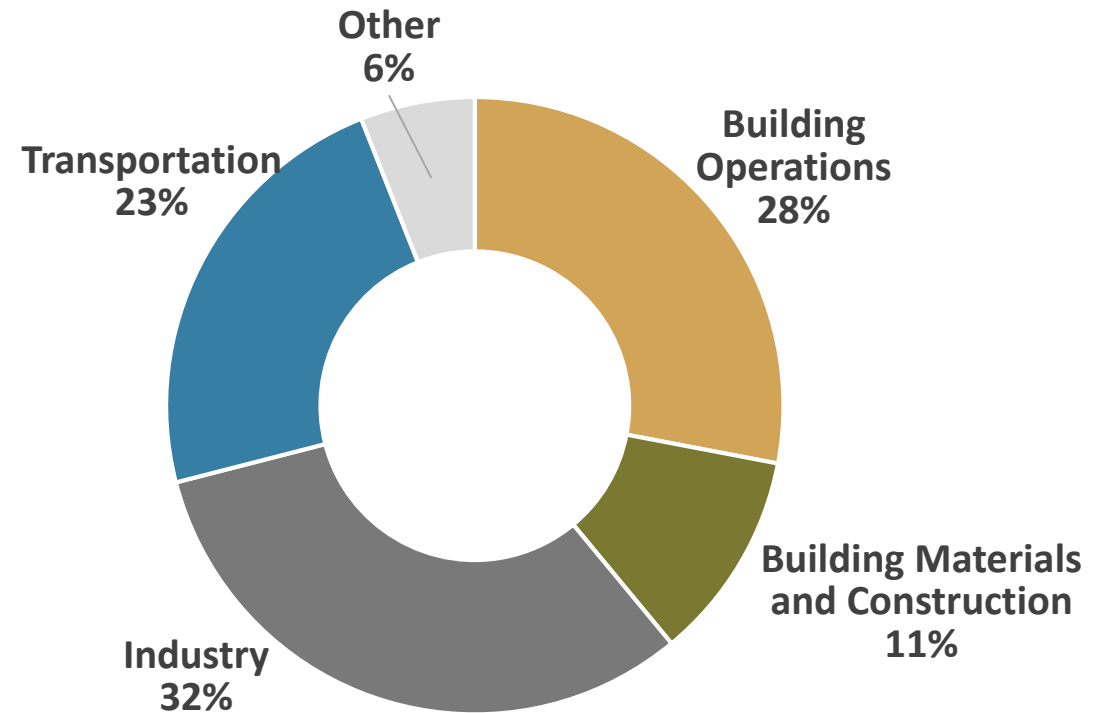
Structure

1. Introduction
2. Conceptual Framework
3. Cases
4. Discussion

Climate Change, City and Building



Global greenhouse gas emissions by country
Source: Figure 2.3 in the UNEP Emission Gap Report 2018



Global GHG Emissions by Sectors
Source: Global Alliance for Building and Construction(2018 Global Status Report)

Knowledge Mobility and Low Energy Building

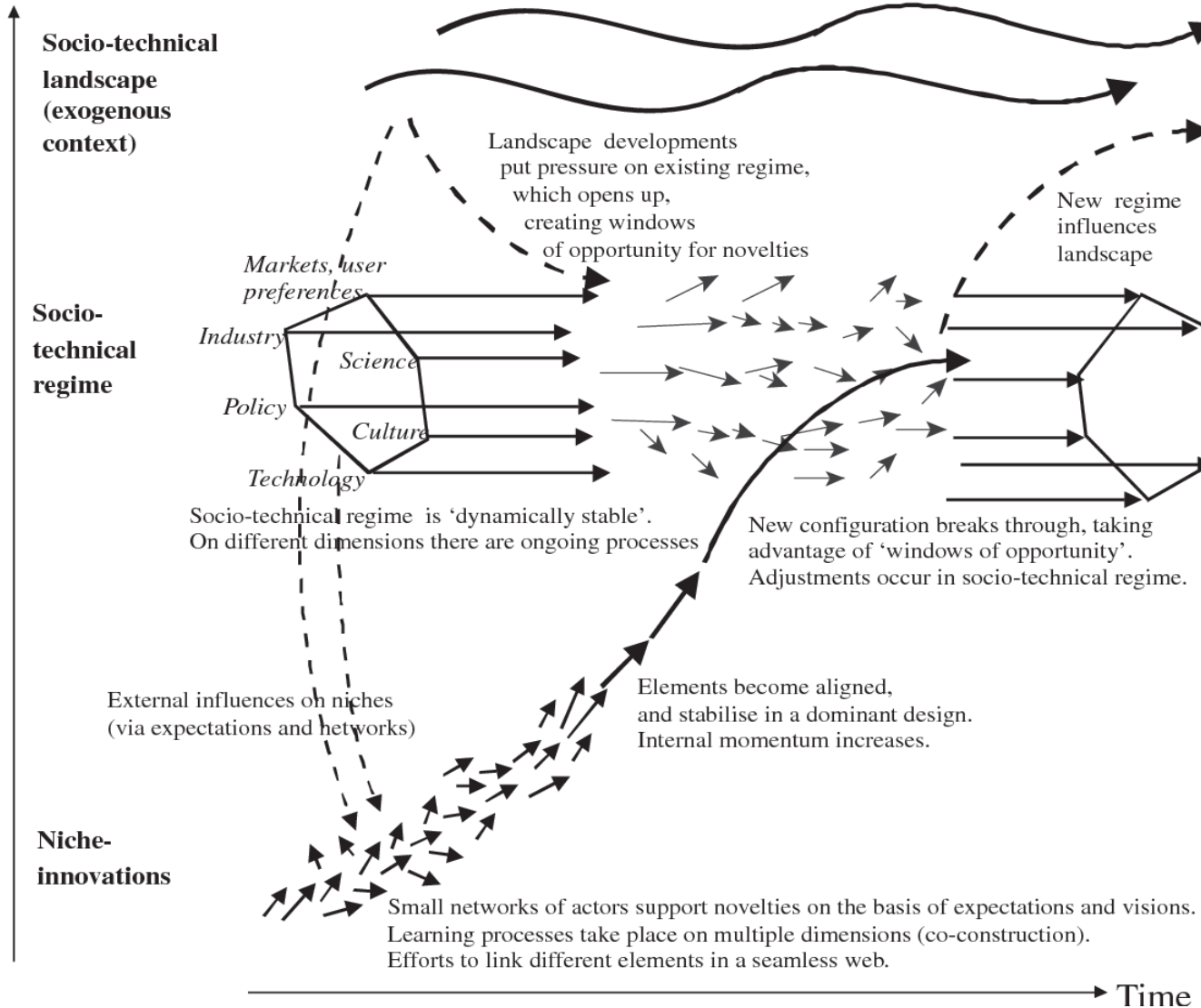
Group	Actor	Working Scope and Sample Programs
Transnational	UN-HABITAT, UNDP, UNEP, World Bank, ADB, AIIB, Cities Alliance, OECD, IPCC, WorldGBC, GBPN, ICLEI, C40, UCLG, Climate Alliance, EUROCITIES etc.	Cities networking, best practices libraries, cross-border development cooperation, Urbanization Knowledge Platform Cross-Sector Work Groups
Governmental/bilateral	USAID, GIZ, DEZA, UKDFID, DENA etc.	Nationally Appropriate Mitigation Action (NAMA) EU-China Eco-Cities Link Bilateral Development Aids
Private Sector Benefactors	Bloomberg, Bosch, Stiftung Mercator etc.	Urban Green Finance Facilities Climate Mitigation Advocacy Policy Transfer Networks
Practitioners	CDP, ARUP, SIEMENS, IBM, THINKSTEP, Passive House Institute, etc.	Smarter Cities Program Green Development Technology and Tools Development
Educational and Research Institutions	Earth Institute, Fraunhofer, Wuppertal Institute etc.	Urban-Rural Integration Innovation and Knowledge Transfer Learning Cities Case Studies

Global players in support of cross-border knowledge dissemination on the topic of Urban Development - Climate Protection - Energy

Research Questions

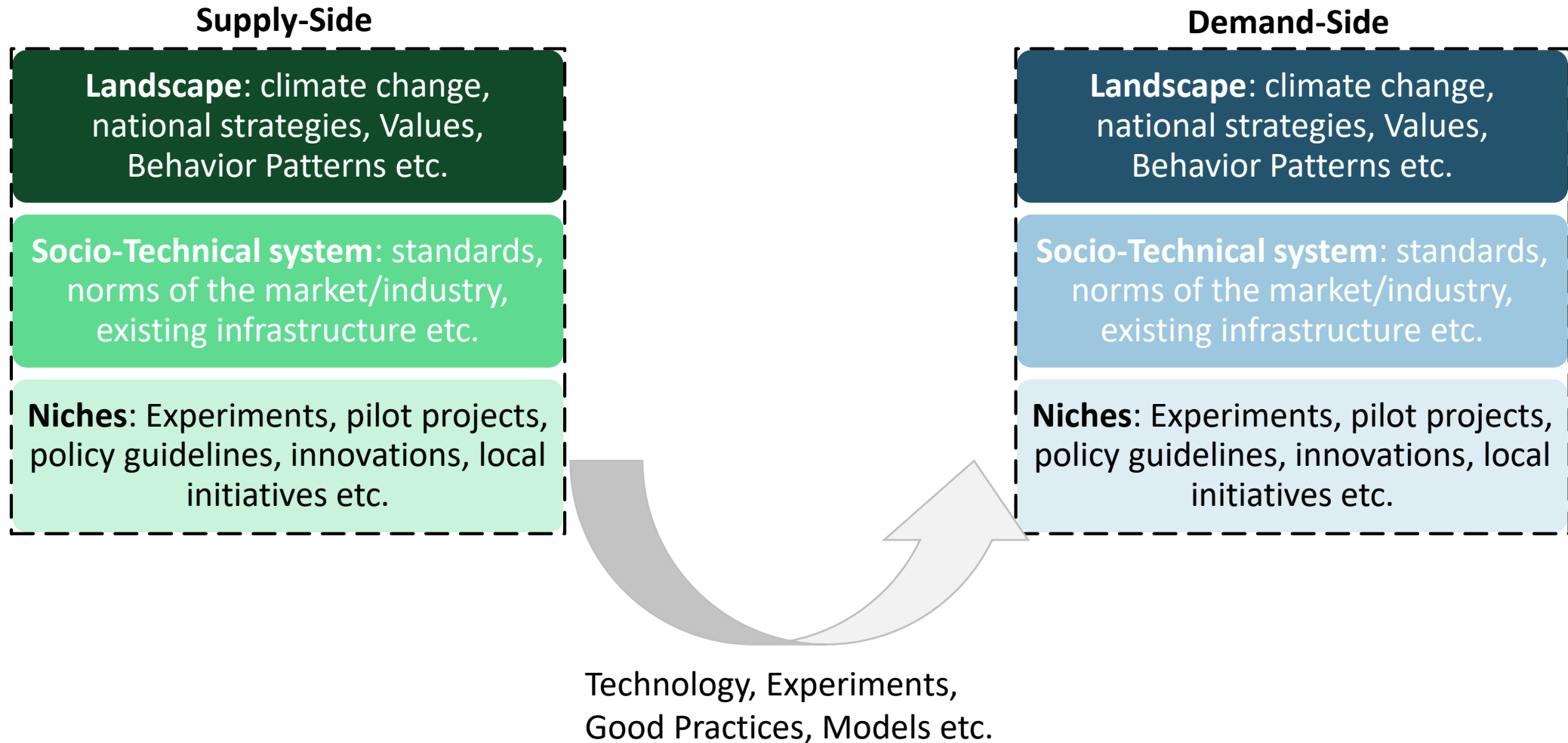
- What makes an idea of low carbon innovation globally transferable?
- How is the knowledge adapted during the process of translating from the emerged context to the adopted one?
- What makes a success/failure of transferring low carbon development model into a new geographic, social, political, economic, cultural context?

Conceptual Framework



The multi-level perspective.
Source: Geels, 2012.

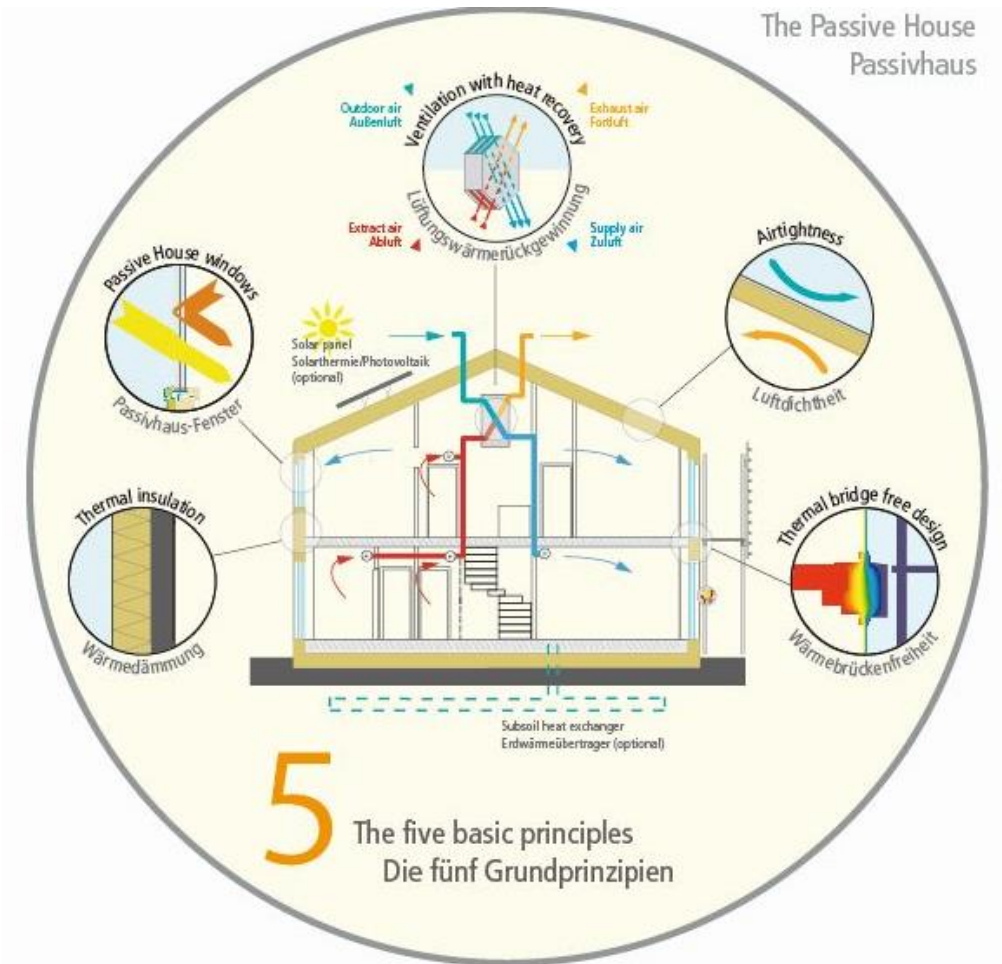
Conceptual Framework



Passive House in Germany and EU: from Experiment to Standard



The first Passive House, 1991,
Darmstadt-Kranichstein, Germany
Source: Passive House Institute

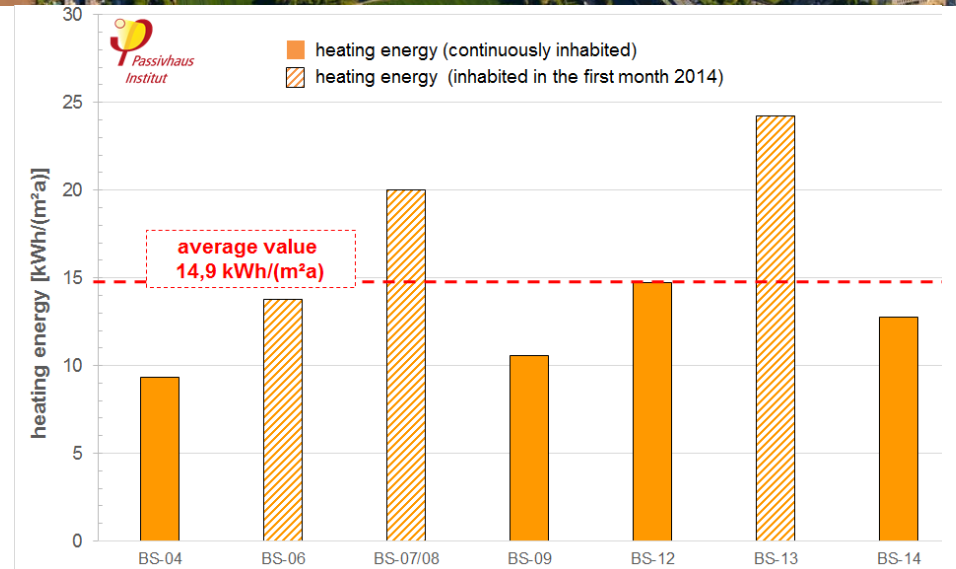
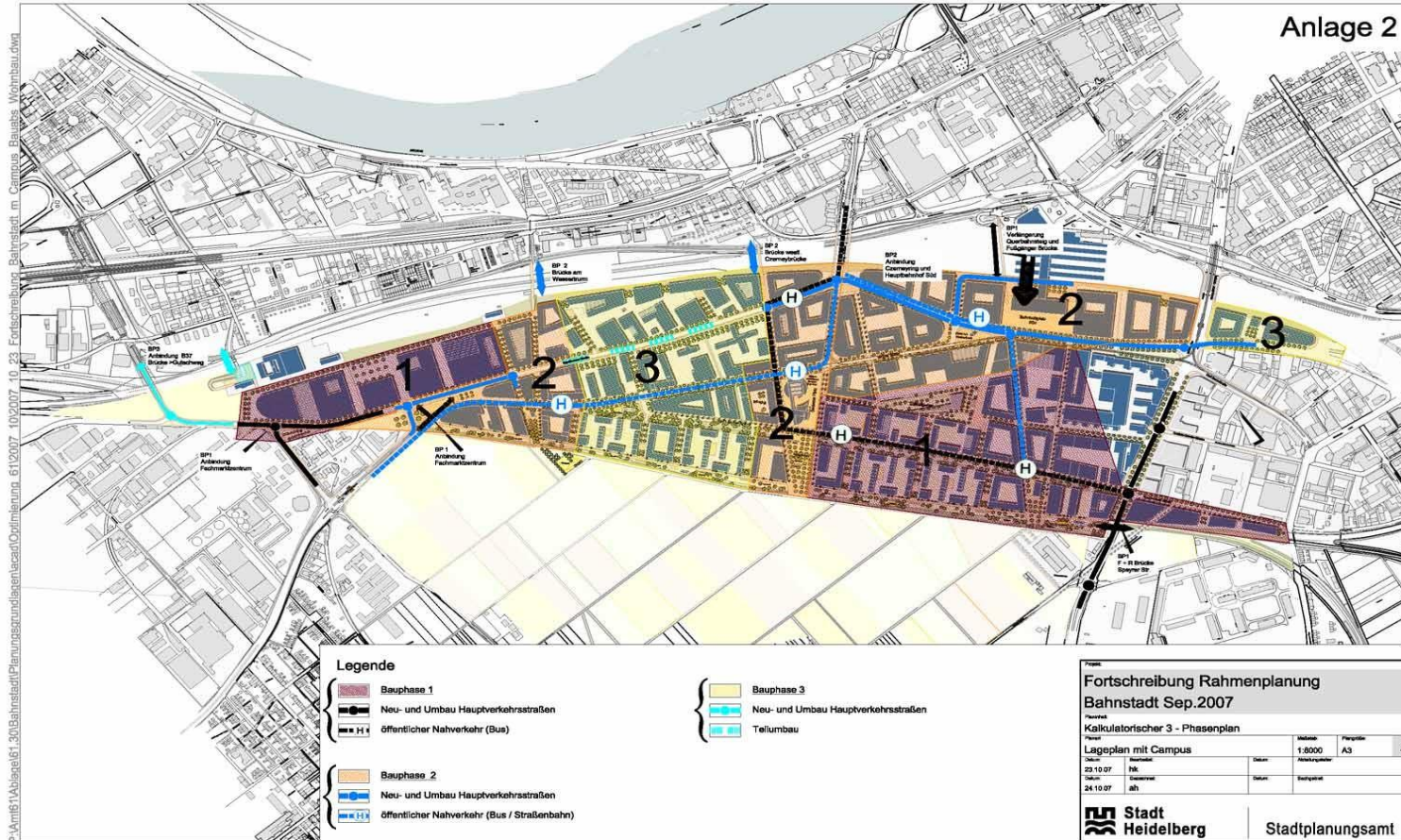


Passive House in Germany and EU: Experiment and Local Assemblage

Kalkulatorischer 3 - Phasenplan
Bahnstadt

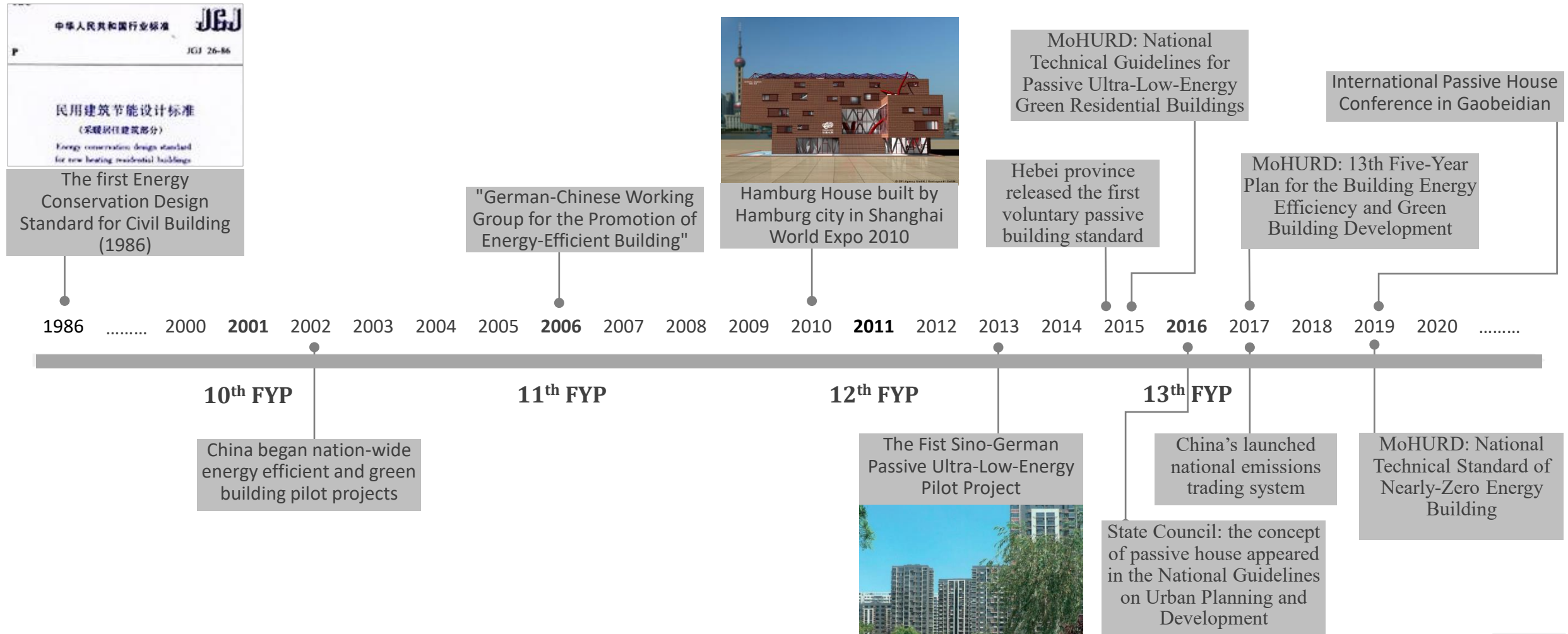
Stadt Heidelberg

Anlage 2



Passive House District in Bahnstadt, Heidelberg
Source: City of Heidelberg, Passive House Institute

Passive House in China: Disseminating, Translating and Adapting

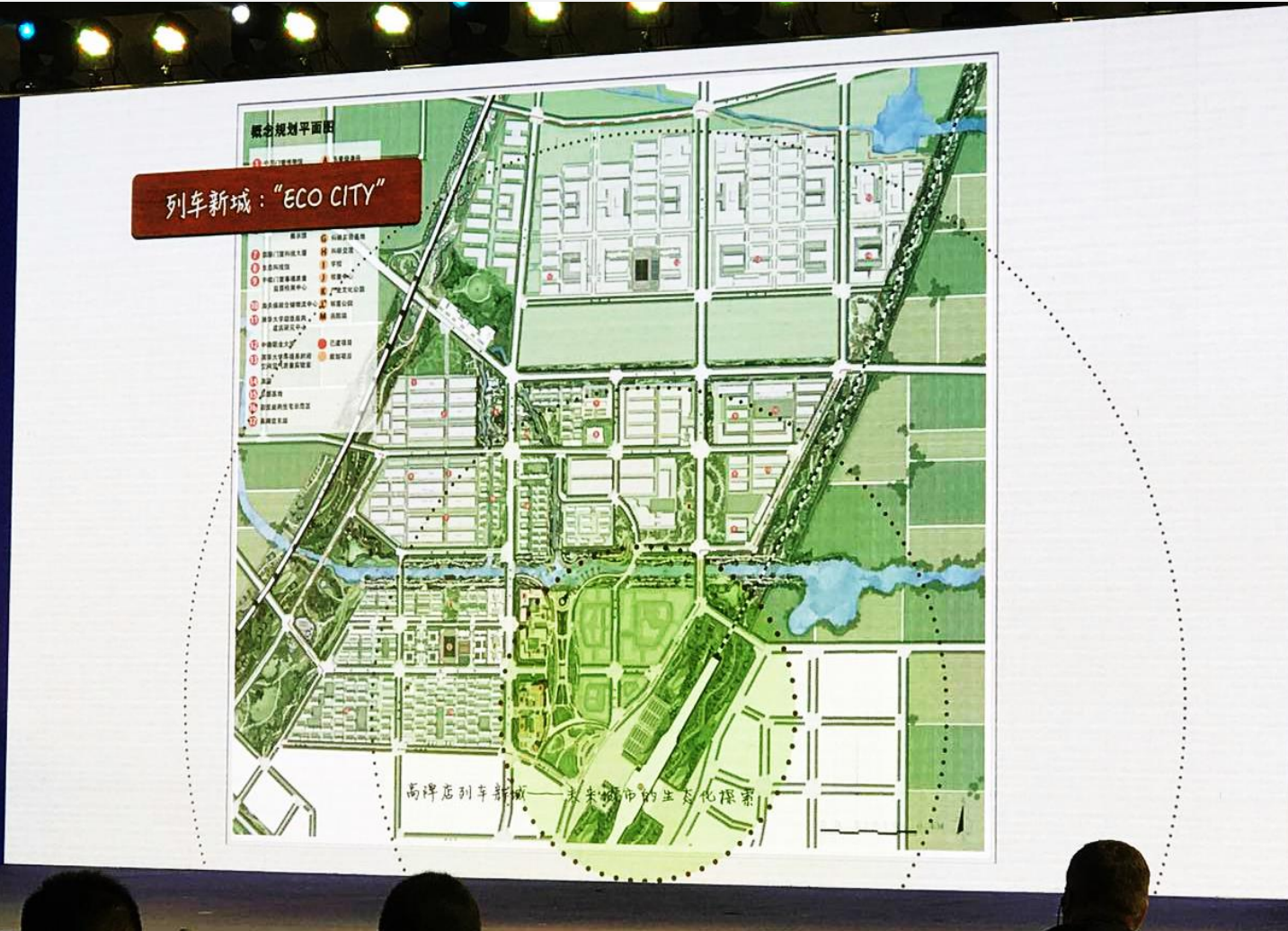


Certificated passive low energy building in China by 2017

Certification	Quantity	Awarded by	Standard	Description
Passive House Certificate	20	Passive House Institute, Germany	Passive House Standard	Category: office building, residential building, industrial building, exhibition enter, health centre, and kindergarten in China's 4 climate zones
Sino-German Energy-Efficient Buildings – Passive Low-Energy Building Quality Certificate	30	Dena and Science Technology and Industrialization Development Centre (CSTC) (affiliated to MoHURD)	Sino – German Energy Efficiency Standard	Category: office building, residential building, exhibition centre, school in China's 4 climate zones
China Passive Ultra-Low-Energy Buildings - CPBA Certificate	34	China Passive Building Alliance (affiliated to China Association of Building Energy Efficiency)	Technical Guidelines for Passive Ultra-Low-Energy Green Residential Buildings (MoHURD)	Category: office building, residential building, exhibition centres, health centre and kindergarten, covering 4 climate zones in China

Source: Passive House Database, DENA (2017), Yu and Liu (2018)

Passive House in Chinese Urban Context: Bahnstadt In Gaobeidian



Bahnstadt in Gaobeidian is the largest passive house housing development in the world, which includes about 400.00m² of residential buildings.

Source: Bahnstadt Gaobeidian, Passive House Institute

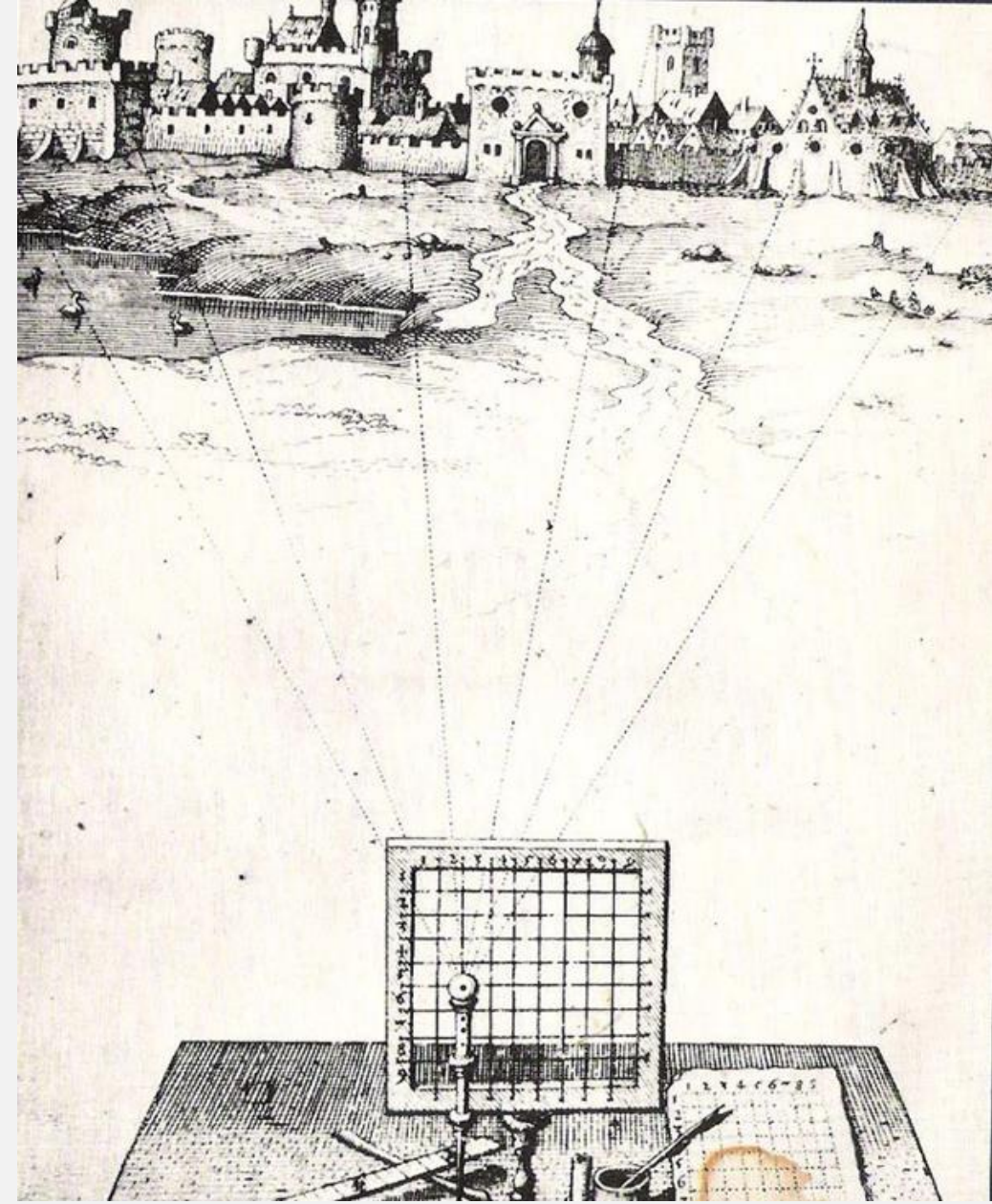
Analysis and Discussion

- Translatable knowledge distilled from an experiment needs to be clearly defined and succinct. Its form should be able to overcome the context (socio-technical regime and landscape) from which the knowledge emerged and re-align with the context into which it is translated.
- Recognize the co-evolving nature with socio-technical system throughout the translation process.
- The contexts (socio-technical regime, landscape and their driving forces) from both knowledge supplying and demanding sides should be full addressed and understood.

Learning City

If each city is like a game of chess, the day when I have learned the rules, I shall finally possess my empire, even if I shall never succeed in knowing all the cities it contains.

- Italo Calvino, *Invisible Cities*



Thank You

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