Assessment and valuation of sustainable buildings

theses, trends and tools

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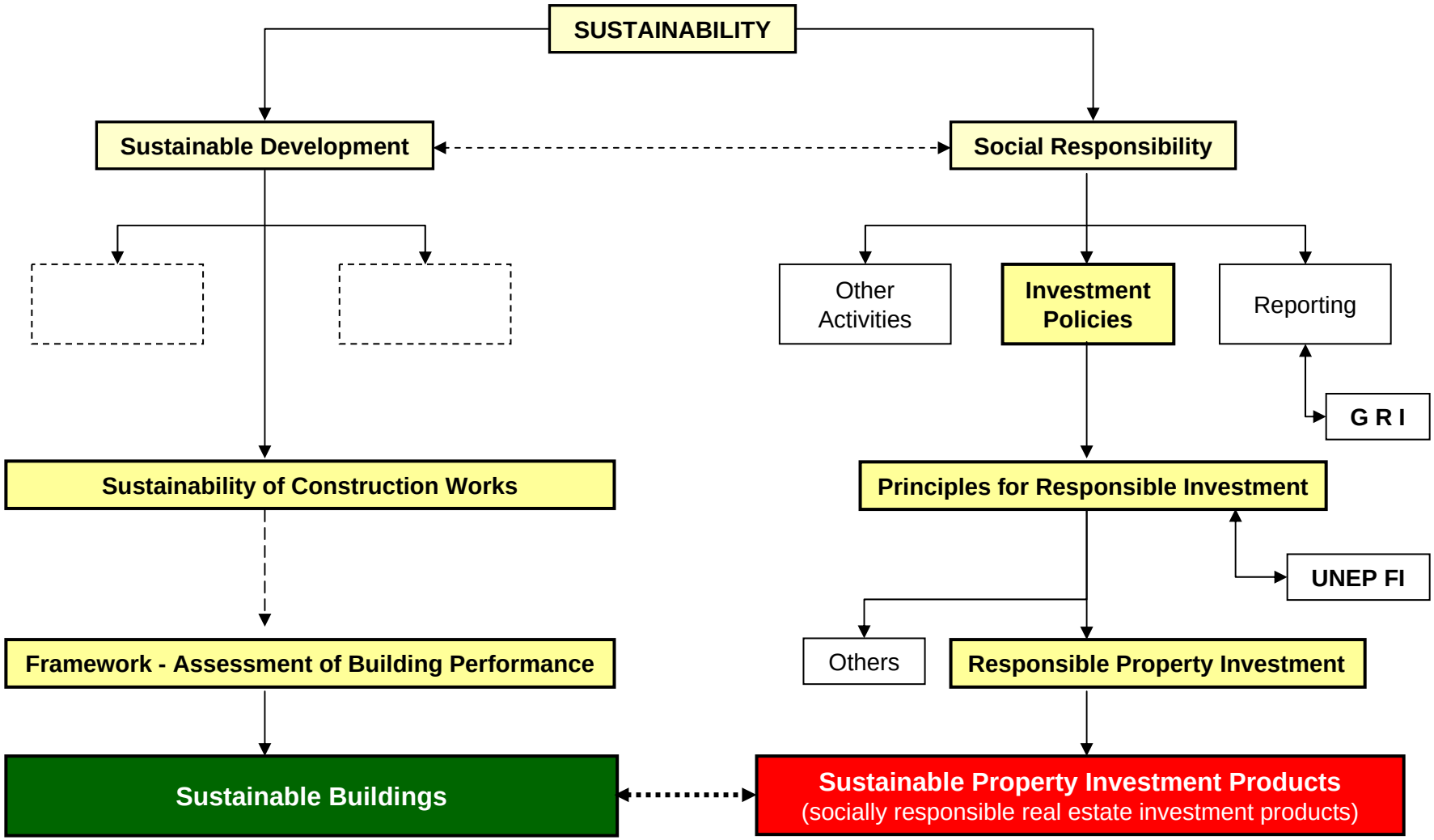
Sustainable Management of housing and real estate

Situation and Trends

- A **increasing interest** from investors, banks, insurance companies and funds managers in the environmental characteristics of buildings can be observed.
- The **demand for building related information and assessment results** differs between the various groups of actors in the property and real estate sector.
- Within “buyer’s and tenant’s markets”, marketing divisions and estate agents will have an increased interest in highly aggregated and easily communicable assessment results in order **to demonstrate building quality** (signaling).
- Within the scope of **international and European standardisation activities at ISO/CEN**, intense efforts are currently being undertaken to standardise the description and assessment of the **environmental performance of buildings**.
- In Europe the European Commission is advancing the description and assessment of buildings towards an **integrated building performance** assessment. The Commission has recently issued a **mandate to CEN** (assessment of integrated environmental performance of buildings).

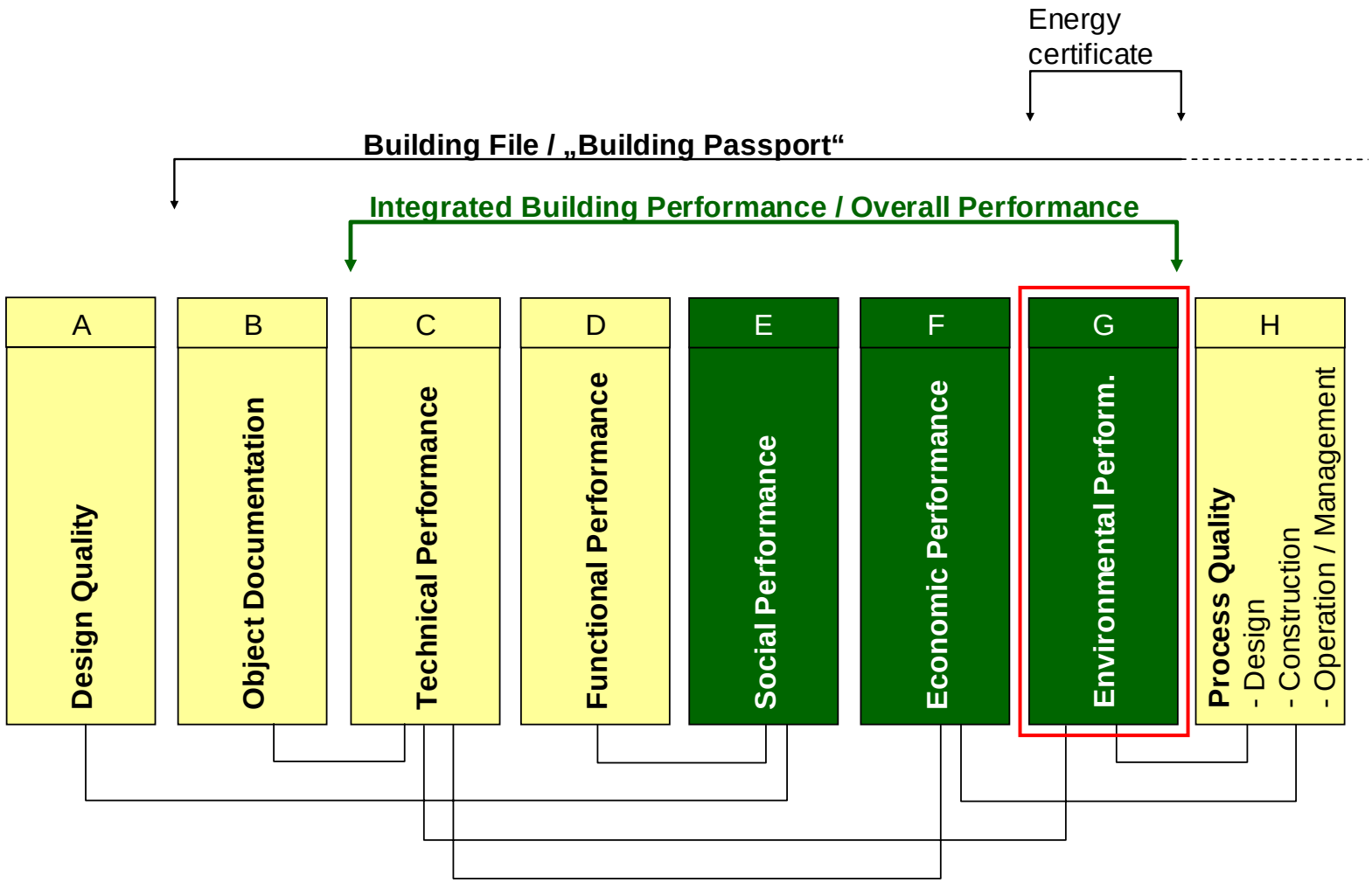
Sustainable Property Investment Products = Sustainable Buildings ?



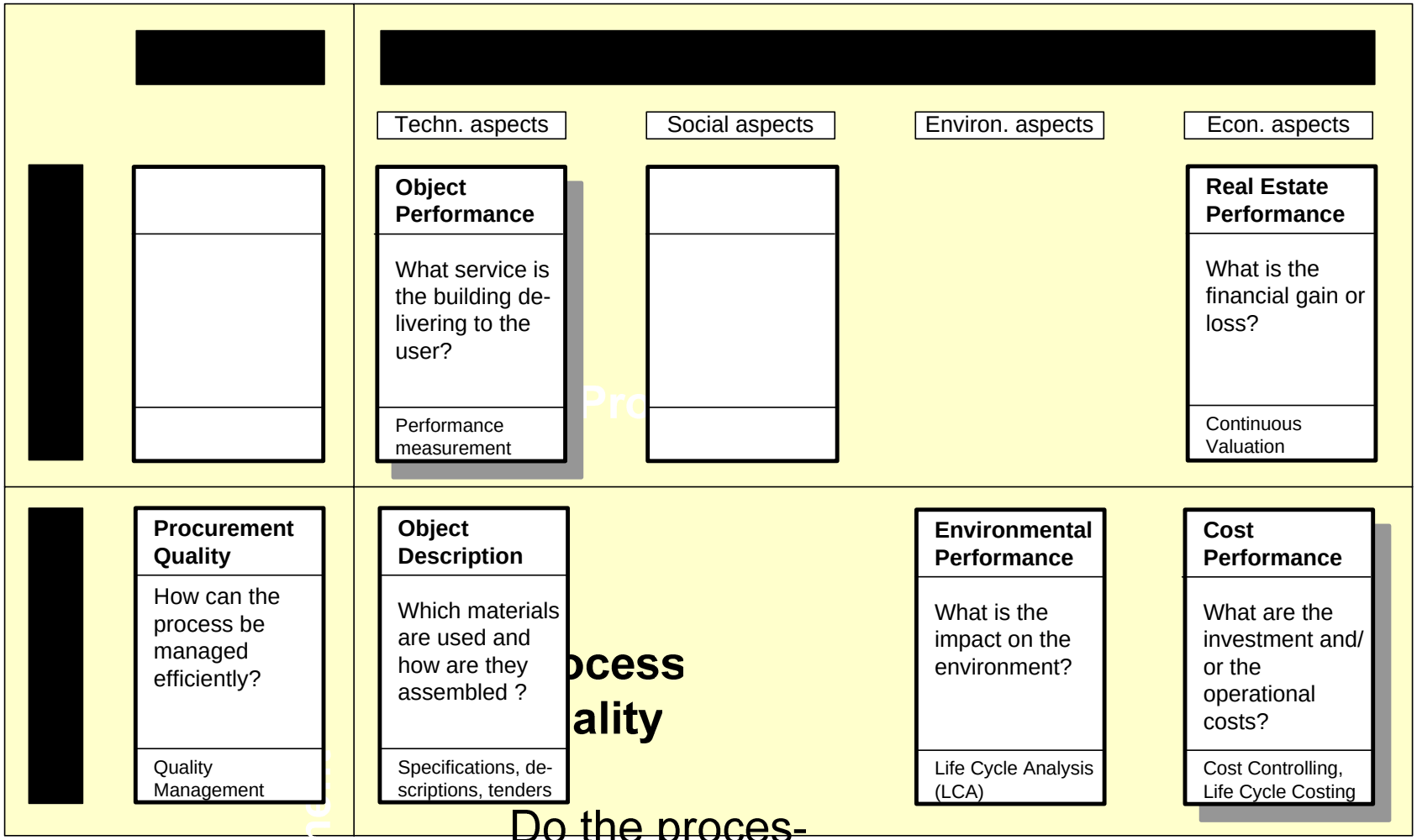
Green or sustainable buildings – what we are talking about ?

Typology \ Aspects	functionality	energy	water	comfort / health	impacts (LCA)	resources (LCA)	life cycle costs (LCC)	income / value
low energy buildings		●						
„healthy“ buildings				●				
high performance buildings	●	●	○	○				
green buildings I		●	○	○				
green buildings II		●	●	●	○	○		
sustainable buildings I	●	●	●	●	●	○		
sustainable buildings II	●	●	●	●	●	●	●	
UNEP – FI PWG	●	●	●	●	●	●	●	●

Integrating sustainability aspects into an overall framework



Building Performance



Do the processes lead to a flawless service

Activities on ISO level (examples)

ISO / TC 10 technical product documentation
ISO / TC 163 thermal performance and energy use
ISO / TC 176 quality management and quality assurance
ISO / TC 205 building environment design
ISO / TC 207 environmental management
ISO / TC 224 service activities relating to drinking water supplay systems ...

ISO / TC 59 building construction

SC 3 functional / user requirements and performance
SC 13 organization of information about construction works
SC 14 design life
SC 15 performance criteria for single family attached/detached dwellings

SC 17 sustainability in building construction

WG 1 general principles & terminology
WG 2 sustainability indicators *****
WG 3 environmental declaration of building products
WG 4 assessment of environmental performance of build.*

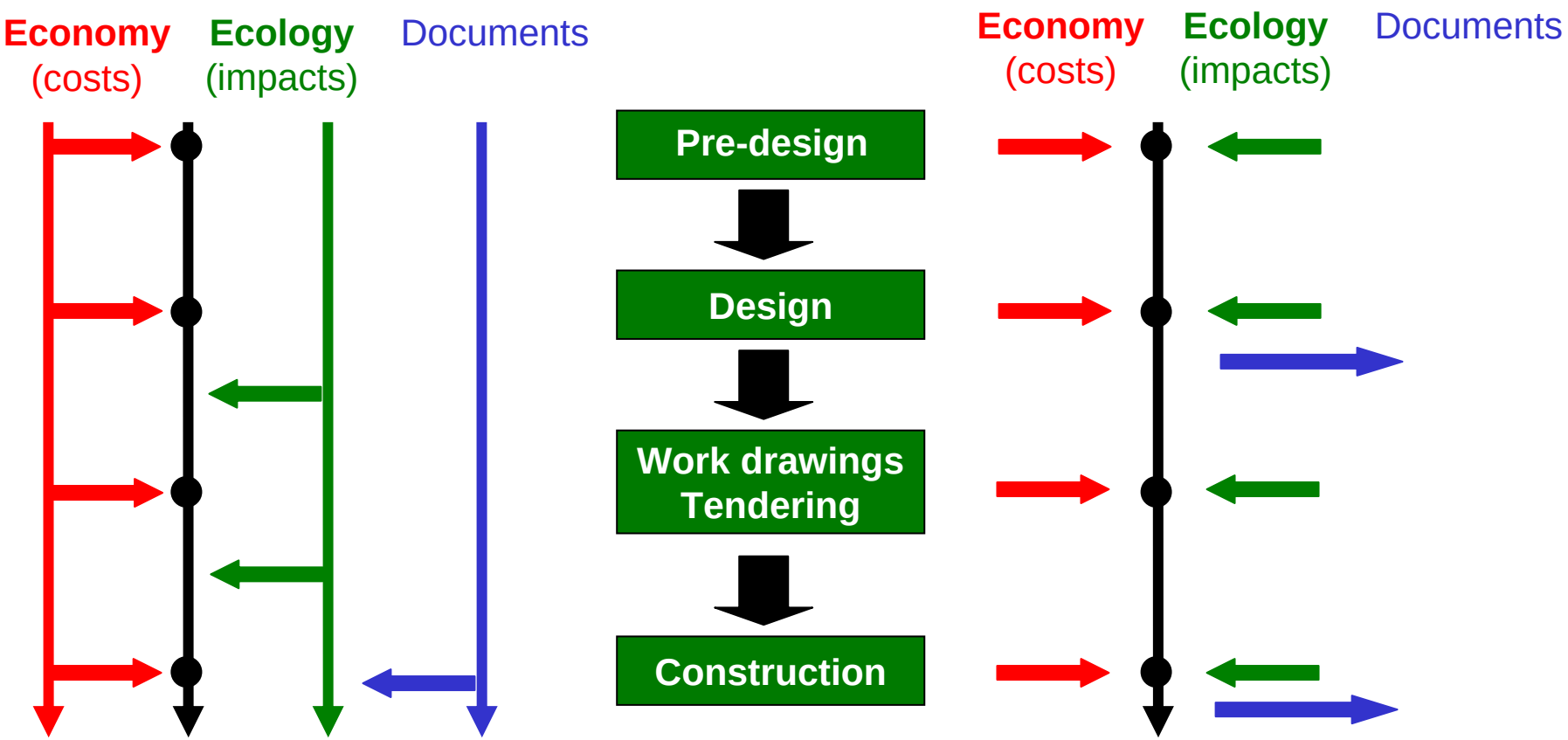
CEN – Programme of work

		Environmental	Health & Comfort	Life Cycle Cost	document	priority/step	target date	WG
Framework level		Framework for Integrated Performance of Buildings			1)TS 2)EN	1	1)2006 2)2009	TC ad hoc G
		Description of Building Life Cycle			TR	1	2007	WG2
Building level		Environmental Performance	Health & Comfort Performance	Life Cycle Cost Performance	1)TS 2)EN	2	1)2007 2)2009	WG1
		Use of EPDs			EN	2	2009	WG1
Product level	B - B ← B - C ←	Communication Format			EN	2	2008	WG3
		PCR for EPDs			EN	1	2008	WG3
		Generic data			TR	2	2007	WG3

Towards an integrated approach to support decision making

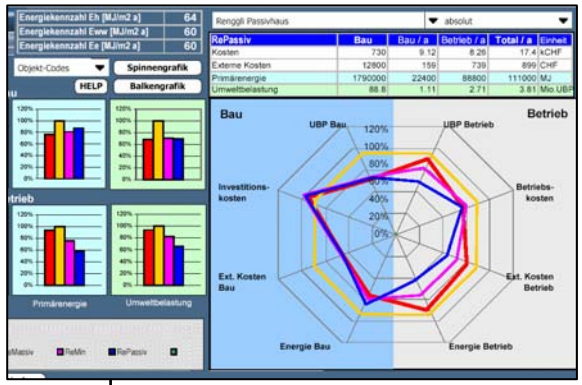
Conventional procedure

Integrated approach



Supply and demand of building assessment results

Insurance Company
Bank
Government



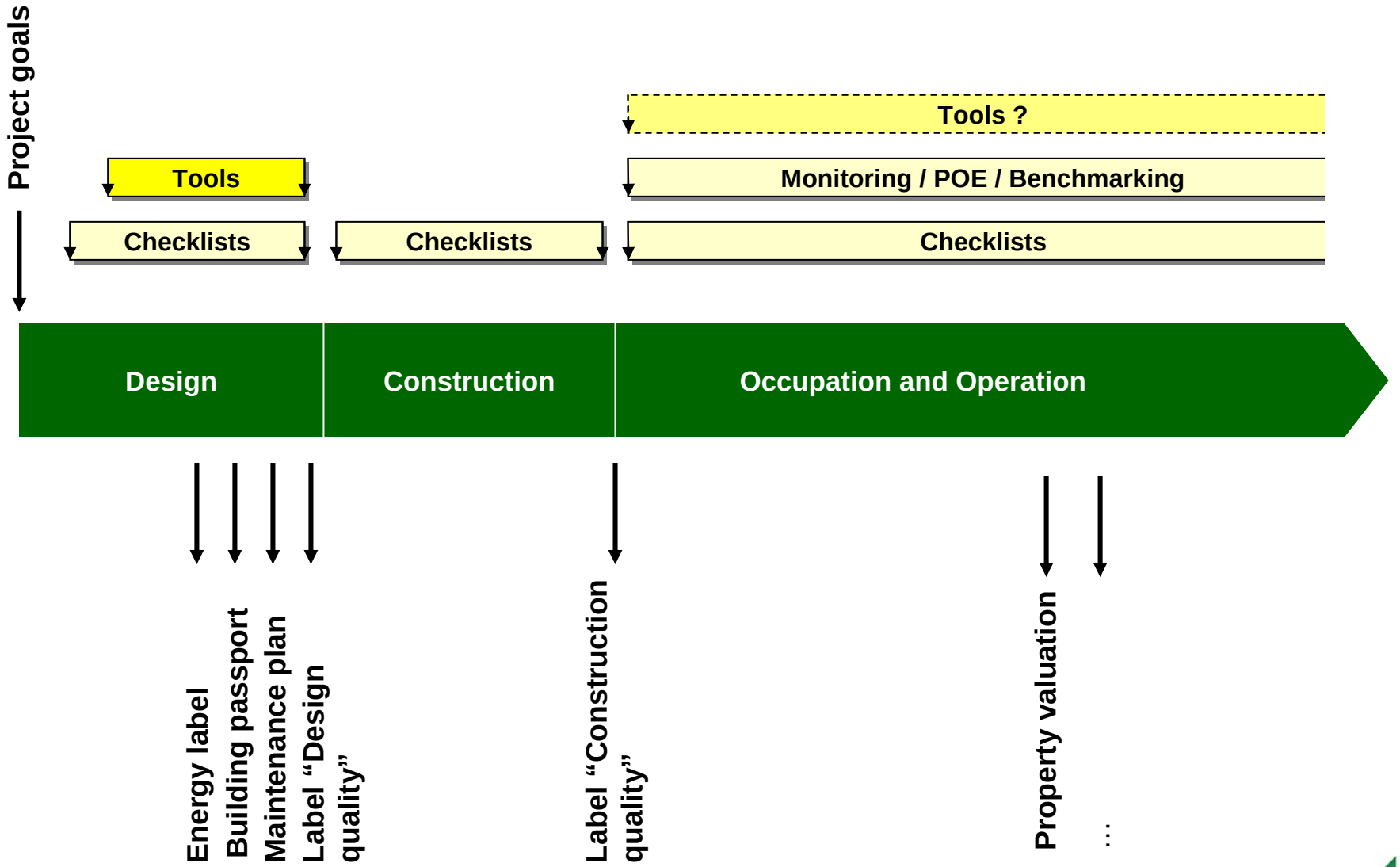
Decision maker
Investor

Designer

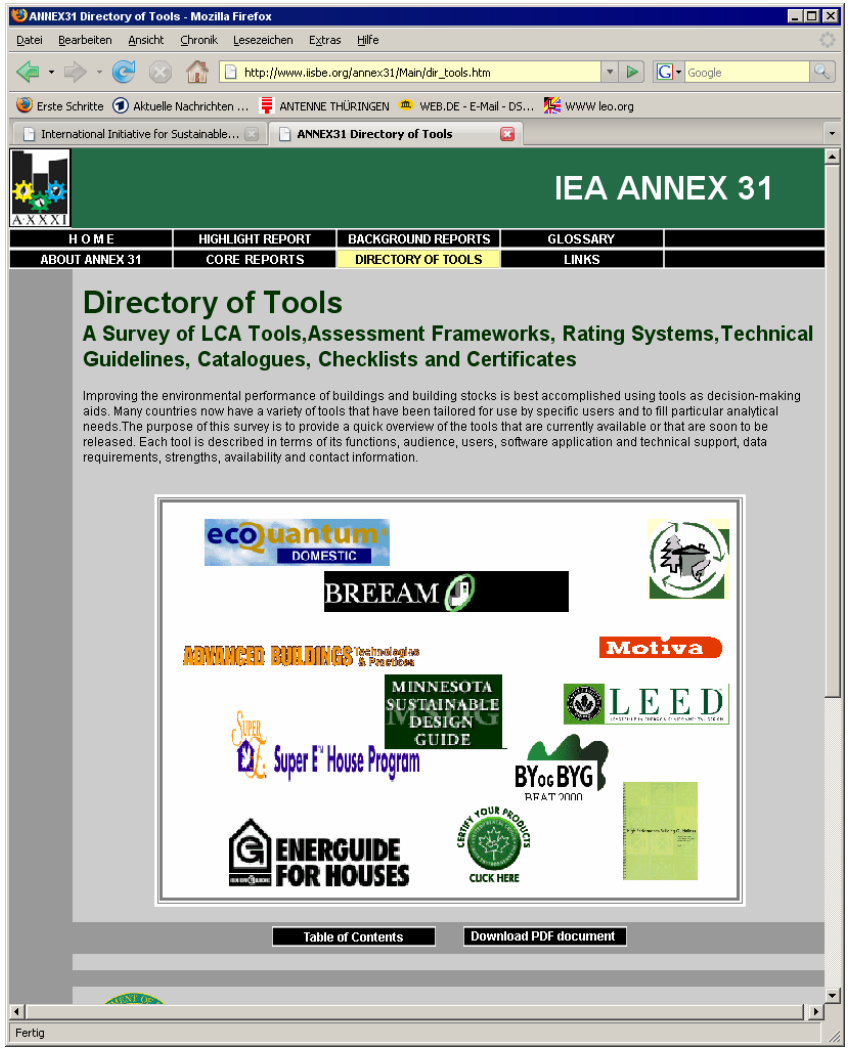
Tool developer
Tool provider

Standards (ISO / CEN)

Job-sharing between different tools, documents and instruments



Are there already to much tools ?



Quantitative / qualitative ?

LCA-based / not LCA based ?

Specific / integrated (complex) ?

International / regional ?

….

Sustainability assessment or property rating ?

Rating Results Criteria Class 'Property'

Rating Scale	Excellent	Very good	Good	Slightly above Ø	Ø	Slightly below Ø	Mediocre	Poor	Very poor	Disastrous	
Criteria Classes	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Weighting**
Architecture / type of construction					5,2						20,0%
Fitout					4,5						10,0%
Structural condition						5,8					15,0%
Plot situation					5,0						25,0%
Ecological sustainability						6,1					10,0%
Profitability of the building concept					4,8						20,0%
Result					**5,2**						100,0%

Ecological Sustainability

TEGoVA represents 42 professional real estate bodies from 26 countries including:

Albania, Austria, Bulgaria, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Latvia, Lithuania, Netherlands, Norway, Poland, Romania, Russian Federation, Spain, Sweden, Switzerland, Turkey, United Kingdom and the United States

Members include: The Royal Institution of Chartered Surveyors and the Appraisal Institute

Rating criteria, criteria classes ‘property’ and ‘quality of cash flow’

Property and Market Rating for office buildings			Weightings		
			2. Level	3. Level	4. Level
Criteria Class 3 'Property'			**20,0%**		
3.1	**Architecture / Type of construction**		**20,0%**		
	3.1.1	Design Quality *		25,0%	
	3.1.2	Illumination / Shading *		15,0%	
	3.1.3	Quality of the layout / Functionality *		60,0%	
3.2	**Fitout**		**10,0%**		
	3.2.1	Quality of the building's technical and security equipment *		25,0%	
	3.2.2	Quality of information and communication technology *		25,0%	
	3.2.3	Internal fixtures and fittings *		35,0%	
	3.2.4	Social facilities *		15,0%	
3.3	**Structural condition**		**15,0%**		
	3.3.1	Age / year of construction / construction era *		20,0%	
	3.3.2	Degree of modernisation / Revitalisation *		40,0%	
	3.3.3	Maintenance situation / Maintenance backlog *		40,0%	
3.4	**Plot situation**		**25,0%**		
	3.4.1	Plot layout / Topography *		25,0%	
	3.4.2	Geological condition and archaeological aspects *		20,0%	
	3.4.3	Contaminations *		20,0%	
	3.4.4	Internal and external accessibility / infrastructure *		20,0%	
	3.4.5	Appurtenant structures / External facilities *		15,0%	
3.5	**Ecological sustainability**		**10,0%**		
	3.5.1	Building materials *		40,0%	
	3.5.2	Energetic performance / energy demand / energy consumption *		35,0%	
	3.5.3	Emissions *		25,0%	
3.6	**Profitability of the building concept**		**20,0%**		
	3.6.1	Space efficiency (rentable floor area / gross floor space) *		30,0%	
	3.6.2	Operating costs (in € per m² of gross floor space) *		50,0%	
	3.6.3	Public burdens (planning regulations, fire safety requirements, historical interest, etc.) *		20,0%	
Criteria Class 4 'Quality of the property cash flow'			**30,0%**		
4.1	**Tenant and occupier situation**		**20,0%**		
	4.1.1	Number of tenants, tenants' solvency and image, appropriate mix of tenants *		60,0%	
	4.1.2	Duration and structure of rental contracts *		40,0%	
4.2	**Rental growth potential / Value growth potential**		**30,0%**		
	4.2.1	Rental growth potential *		50,0%	
	4.2.2	Value growth potential (estimated change of re-selling price) *		50,0%	
4.3	**Letting prospects**		**20,0%**		
4.4	**Vacancy / Letting situation**		**10,0%**		
4.5	**Recoverable and non-recoverable operating expenses**		**10,0%**		
	4.5.1	Level of operating costs *		65,0%	
	4.5.2	Possibility of attributing management and operating costs to the tenants *		35,0%	
4.6	**Usability by third parties and/or alternative use**		**10,0%**		

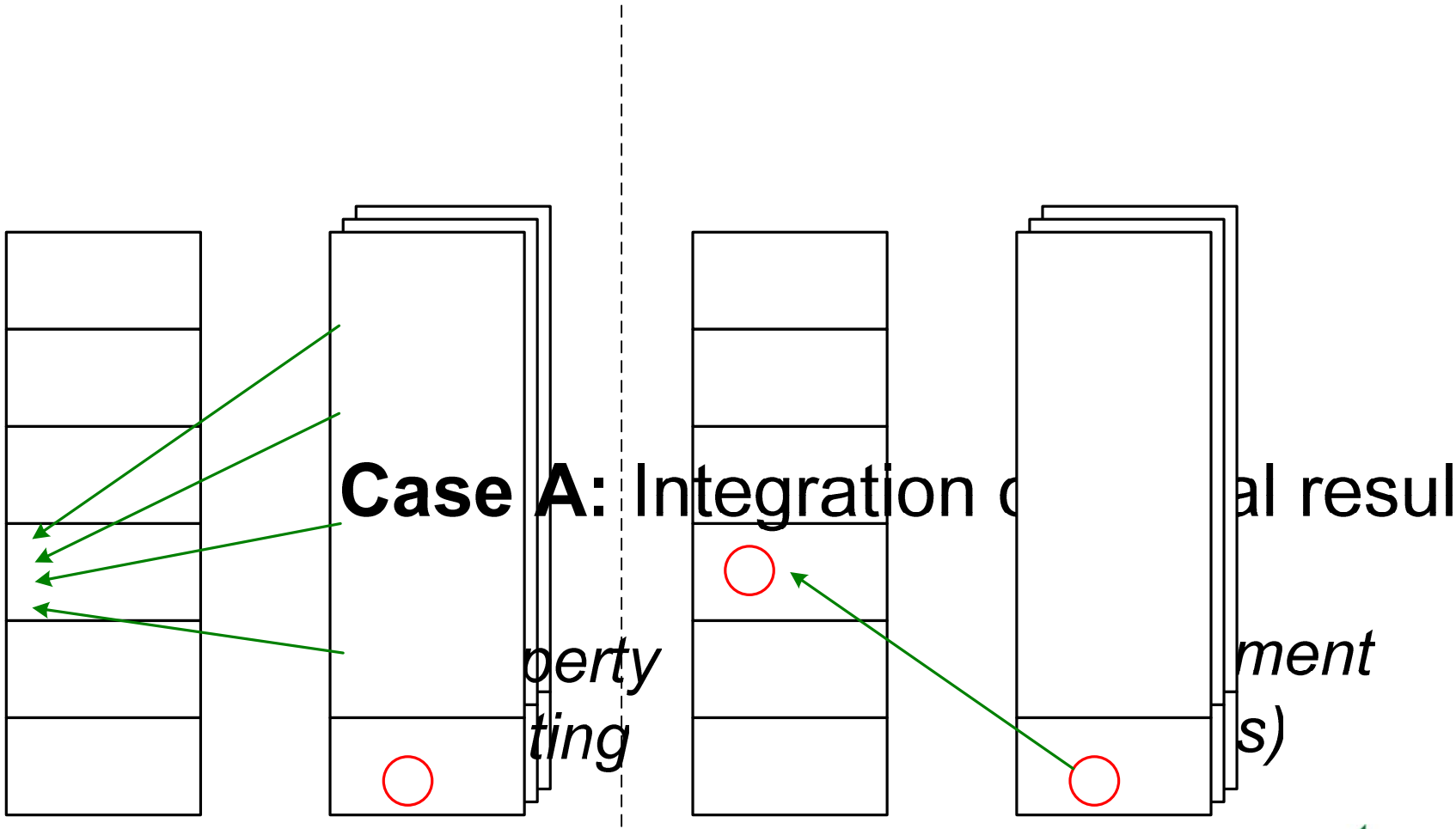
TEGoVA’s rating criteria, further specified by the German Association of Public Banks (VÖB). The rating criteria introduced by the German Association of Public Banks are marked with *

direct links to sustainability issues

indirect links to sustainability issues

Integration of building assessment results into property ratings

If results of building assessment tools are used to support the rating process, the flow of information can be organised in different ways:



Relevant EU directives and strategic documents

EU Thematic strategy on the urban environment (COM(2004)60)

"[The EU directive on the energy performance of buildings] should be **extended to include other key environmental and sustainability elements**, such as indoor air quality, accessibility, noise levels, comfort, environmental quality of the materials and the life-cycle cost of the building. It should also include the ability of the building to resist environmental risks, such as flooding, storms or earthquakes, depending on their location." (page 22)

"The common [assessment] methodology […] and the resulting evaluations and life-cycle costing should then be used to promote best practice linked to a range of incentives. For example, a **high level of sustainability** might lead to **lower tax rates**; insurance companies and lending institutions might offer **more favourable conditions**. Once the appropriate methodology is well established, the Commission will then propose further non-energy-related environmental performance requirements to complement Directive 2002/91." (page 23)

Conclusions and outlook I

- Assessing a building's environmental performance represents **only *one* aspect** of the assessment of the building's overall performance. The overall performance system needs to be described.
- The further development of environmental assessment tools should take into account the results of **international standardization activities**.
- Simultaneously and equally considering environmental and economic aspects is necessary. One method of resolution is further developing environmental assessment tools **towards complex planning and assessment tools** (CAD + LCA + LCC).
- Environmental assessment tools should be much more focused on the problems related to the **description and assessment of existing buildings**.
- A **job-sharing with further tools and instruments** is necessary; in particular between checklist that support the design process, tools that assess the results of the design process and **property rating tools**.

Conclusions and outlook II

- Further development of **property rating systems** to integrate additional aspects of sustainability
- Further development and adjustment of existing **measurement standards**
- Development of new **measurement standards**
- Clarification of job sharing between **building assessment tools** and **property rating systems**

Investigation of the interrelationships between:

- **Property characteristics / Property rating results and loss amount in the event of loan default**
- **Property characteristics / Property rating results and interest rate**