SB Method and SBTool for 2011 - overview

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Nils Larsson

iiSBE

SB Method and SBTool Generic - Basics

- The SB Method is a generic framework for rating the sustainable performance of buildings and projects. It may also be thought of as a toolkit that assists local organizations to develop SBTool rating systems;
- The system covers a wide range of sustainable building issues, not just green building concerns, but the scope of the system can be modified to be as narrow or as broad as desired, ranging from 100+ criteria to half a dozen;
- SB Method takes into account region-specific and site-specific context factors, and these are used to switch off or reduce certain weights, as well as providing background information for all parties;
- Weighting is at one level and can be partly modified by authorized third parties;
- The system is set up to allow easy insertion of local criteria and/or language;
- It includes IDP process steps;
- It handles all four major phases;
  - … new and renovation projects or a mix;
  - … up to five occupancy types generically defined and up to three in a single project;
  - … handles buildings of any height;
  - … provides relative and absolute outputs;

SB Method - Applications

- The SB Method can be used by authorized third parties to establish rating systems to suit their own regions and building types;
- It can also be used by owners and managers of large building portfolios, to express in a very detailed way their own sustainability requirements to their internal staff or as briefing material for competitions;

SB Method – Recent developments

- We concluded that we (and other developers) had not clearly separated design guidance from performance assessment;
- This probably reflects the fact that most of these systems started out as efforts to help designers to improve their designs, and that an emphasis on assessing predicted or actual performance only emerged later;
- As an example of the difference between guidelines and performance assessment, consider that daylighting performance can be measured quite simply, while there might be a dozen design guidelines that might be useful for the designer;
- In our new system, we have therefore provided a clear separation between the two aspects;
- We used our previously developed management support tool for Integrated Design Process (IDP) to provide the design and operating guidelines, and linked the two sides of the system with hyperlinks.

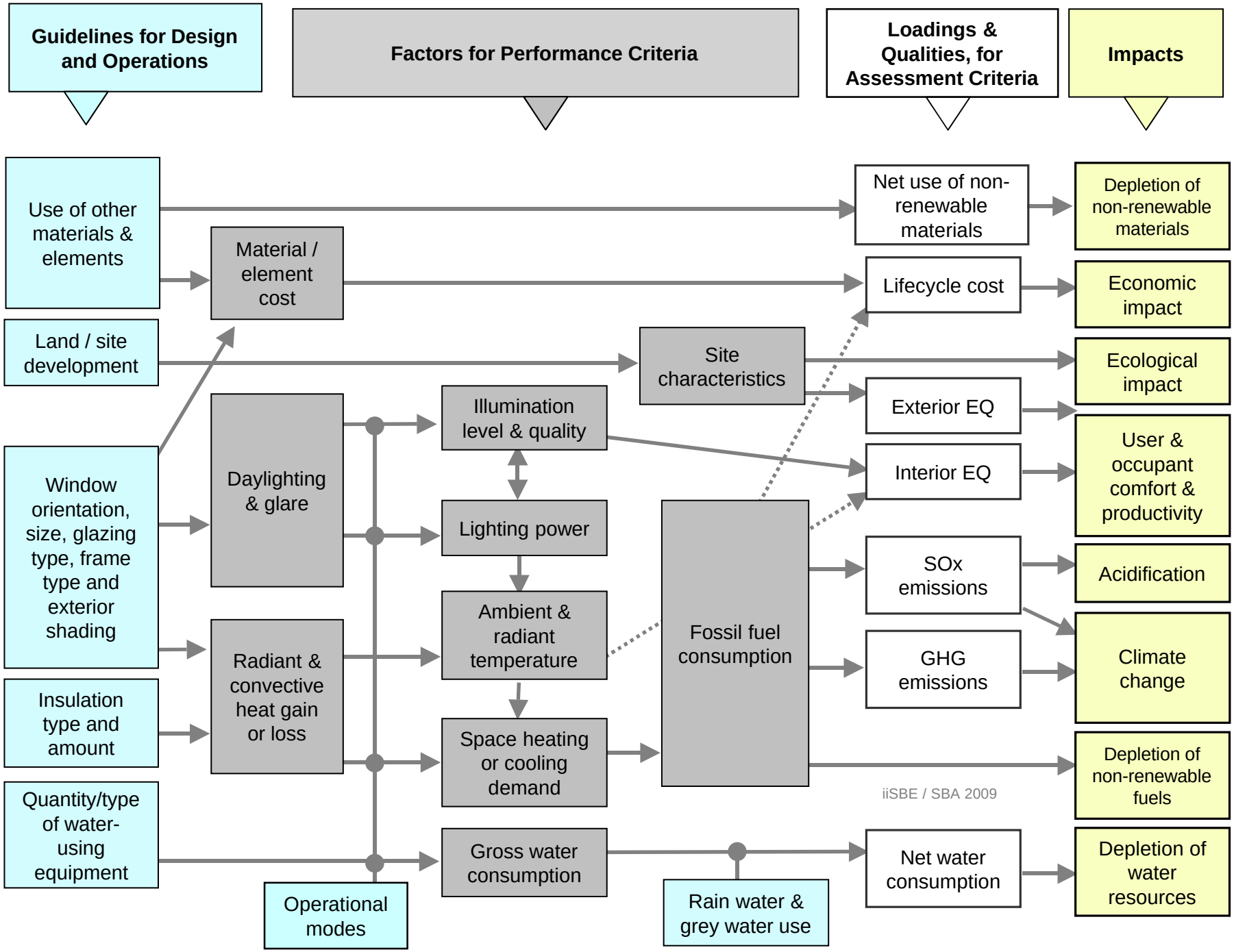
Approaches to a system: Prescriptive v. Performance

Evidence of an improvement in the energy efficiency of the building's fabric and services and therefore achieves lower building operational related CO2 emissions.
Evidence of direct sub-metering of energy uses within the building.
Evidence that sub-metering of energy consumption by tenancy/building function area is installed within the building (in high energy load and tenancy areas).
Evidence that a feasibility study considering local (on-site and/or near site) low or zero carbon (LZC) technologies has been carried out and the results implemented.
Evidence that the first credit has been achieved and there is a 10% reduction in the building's CO2 emissions as a result of the installation of a feasible local LZC technology.
Evidence that the first credit has been achieved and there is a 15% reduction in the building's CO2 emissions as a result of the installation of a feasible local LZC technology.
Up to two credits are available with evidence of the installation of energy-efficient lift(s).
Evidence that escalators reduce unnecessary operation when there is no passenger demand.

Right: A mix of prescriptive and performance criteria

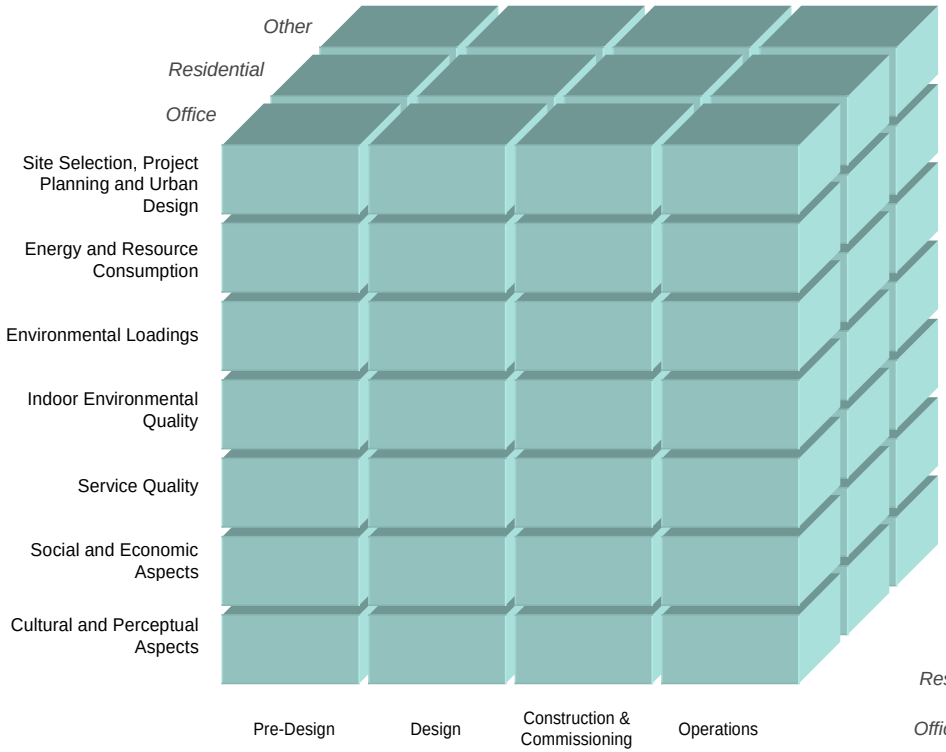
Global warming potential (GWP)
Ozone depletion potential (ODP)
Photochemical ozone creation (POCP)
Acidification potential (AP)
Primary energy demand, non-renewable (PEnr)
Primary energy demand, renewable (PEr)

Left: pure performance, but not many hints for the designers


Guidelines for Design and Operations
Factors for Performance Criteria
Loadings & Qualities, for Assessment Criteria
Impacts
Use of other materials & elements
Material / element cost
Land / site development
Site characteristics
Window orientation, size, glazing type, frame type and exterior shading
Daylighting & glare
Illumination level & quality
Lighting power
Ambient & radiant temperature
Radiant & convective heat gain or loss
Insulation type and amount
Space heating or cooling demand
Quantity/type of water-using equipment
Gross water consumption
Operational modes
Rain water & grey water use
Fossil fuel consumption
Net use of non-renewable materials
Lifecycle cost
Exterior EQ
Interior EQ
SOx emissions
GHG emissions
Net water consumption
Depletion of non-renewable materials
Economic impact
Ecological impact
User & occupant comfort & productivity
Acidification
Climate change
Depletion of non-renewable fuels
Depletion of water resources
iiSBE / SBA 2009

SB Method - Structure

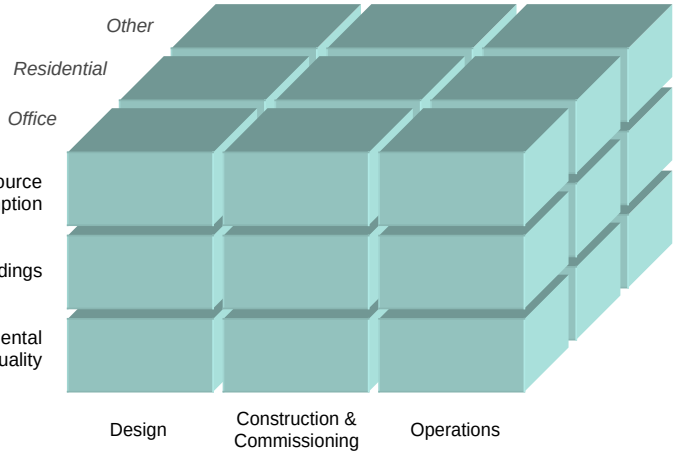
- The system consists of 2 linked Excel files and a potential third file;
- *SBT-A* is used by regional third-party organizations to set locally relevant weights, benchmarks and standards;
- These are used in two separate generic assessment modules; one for Site Assessment and the other for Building Assessments;
- *SBT-B* allows designers to provide information about a single project with up to 3 of the occupancies defined in (A), to use the IDP process steps as design guidance and to carry out self-assessments;
- *SBT-C* is used by independent assessors to carry out third party assessments, based on the data entered in the A and B files;

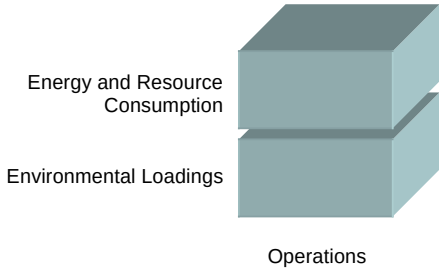


The full system

Variable scope

Green building





Core issues

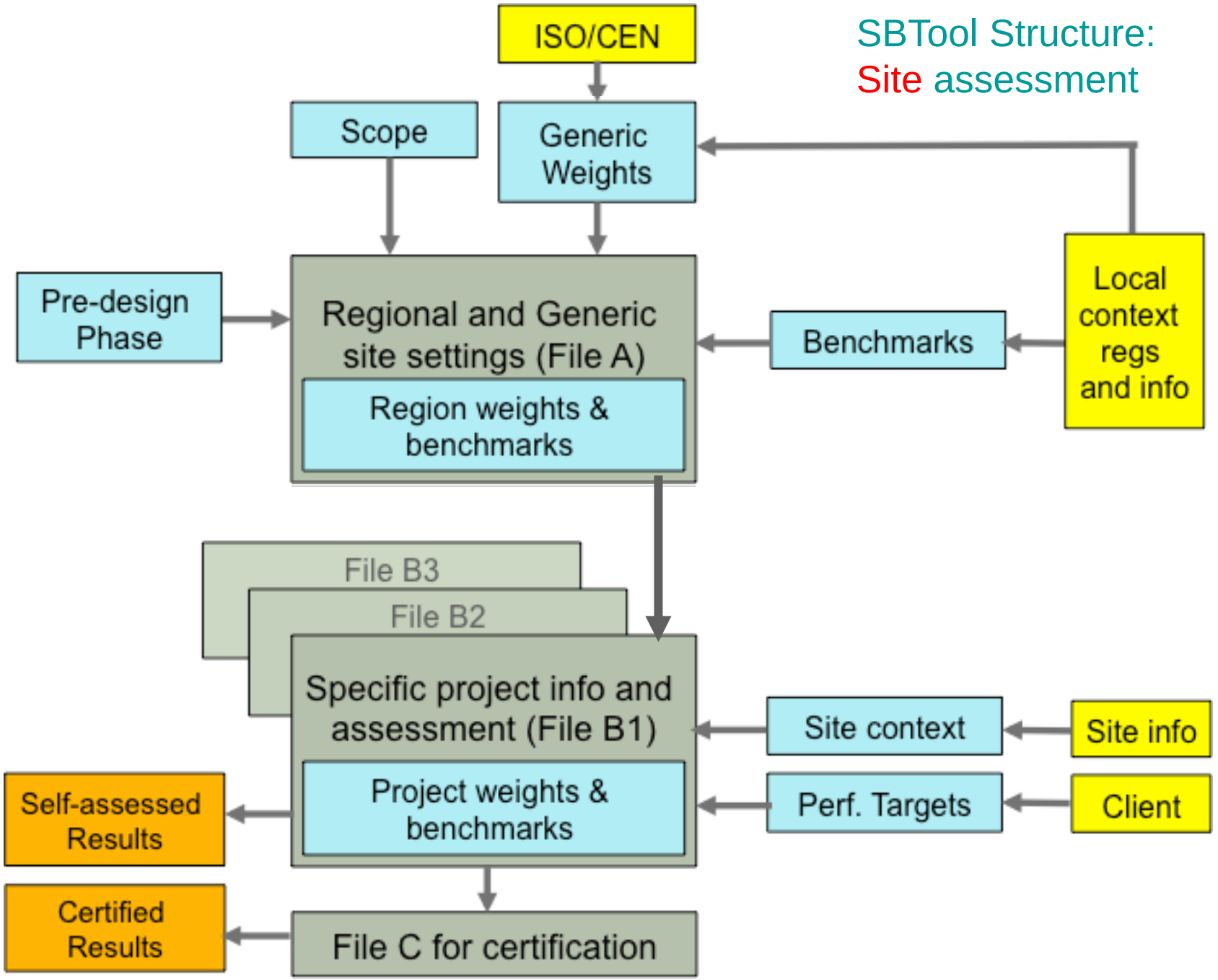
The options: Green and Sustainable Building

- Fuel consumption of non-renewable fuels
- Water consumption
- Land consumption
- Materials consumption
- Greenhouse gas emissions
- Other atmospheric emissions
- Impacts on site ecology
- Solid waste / liquid effluents
- Indoor air quality, lighting, acoustics
- Maintenance of performance
- Longevity, adaptability, flexibility
- Efficiency
- Earthquake & other forms of security
- Social and economic considerations
- Urban / planning issues

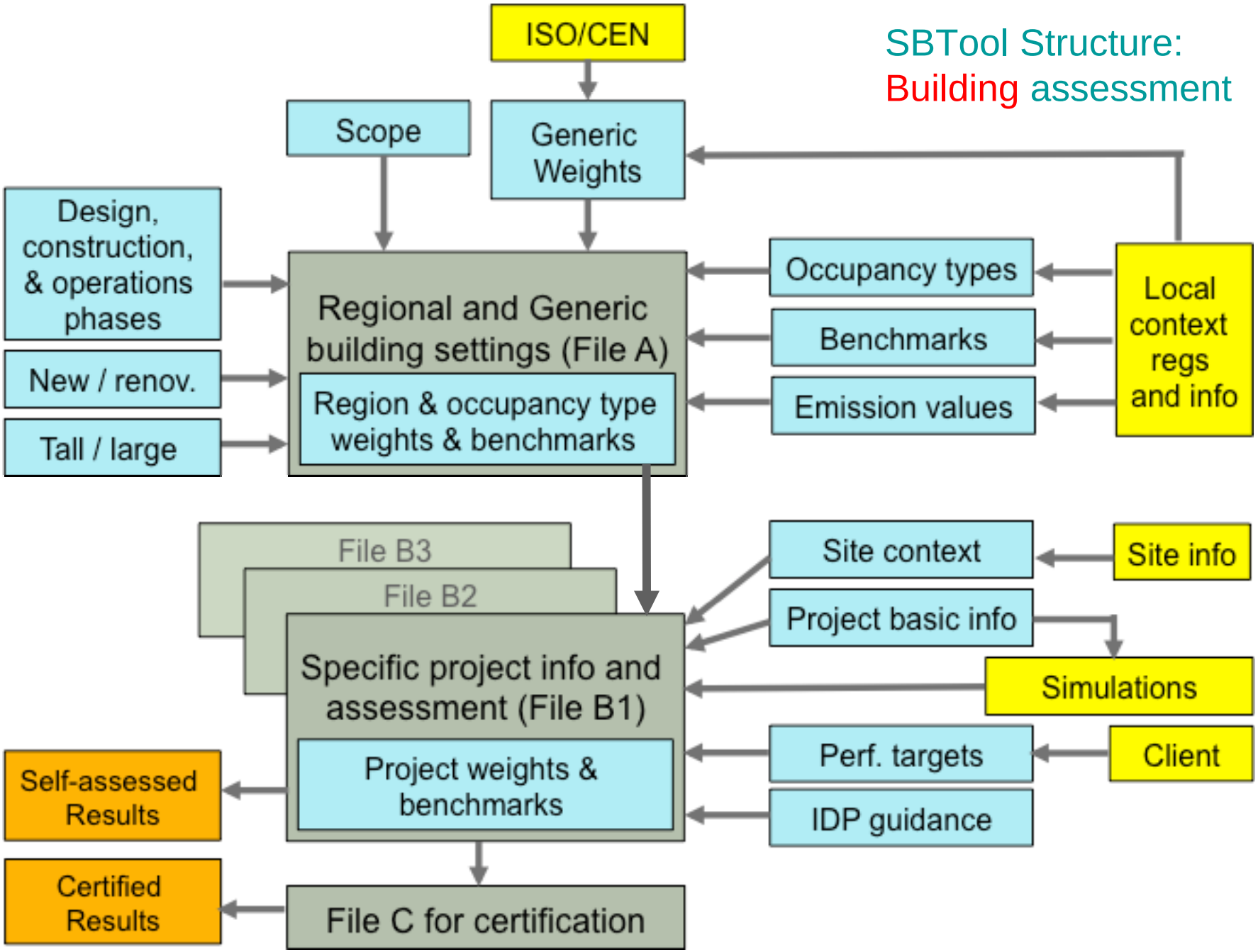
Green Building

Sustainable Building

SBTool Structure:
Site assessment



SBTool Structure: Building assessment



File A:
Calibration for Characteristics of Region, Generic Site and Generic Building Type

File A overview

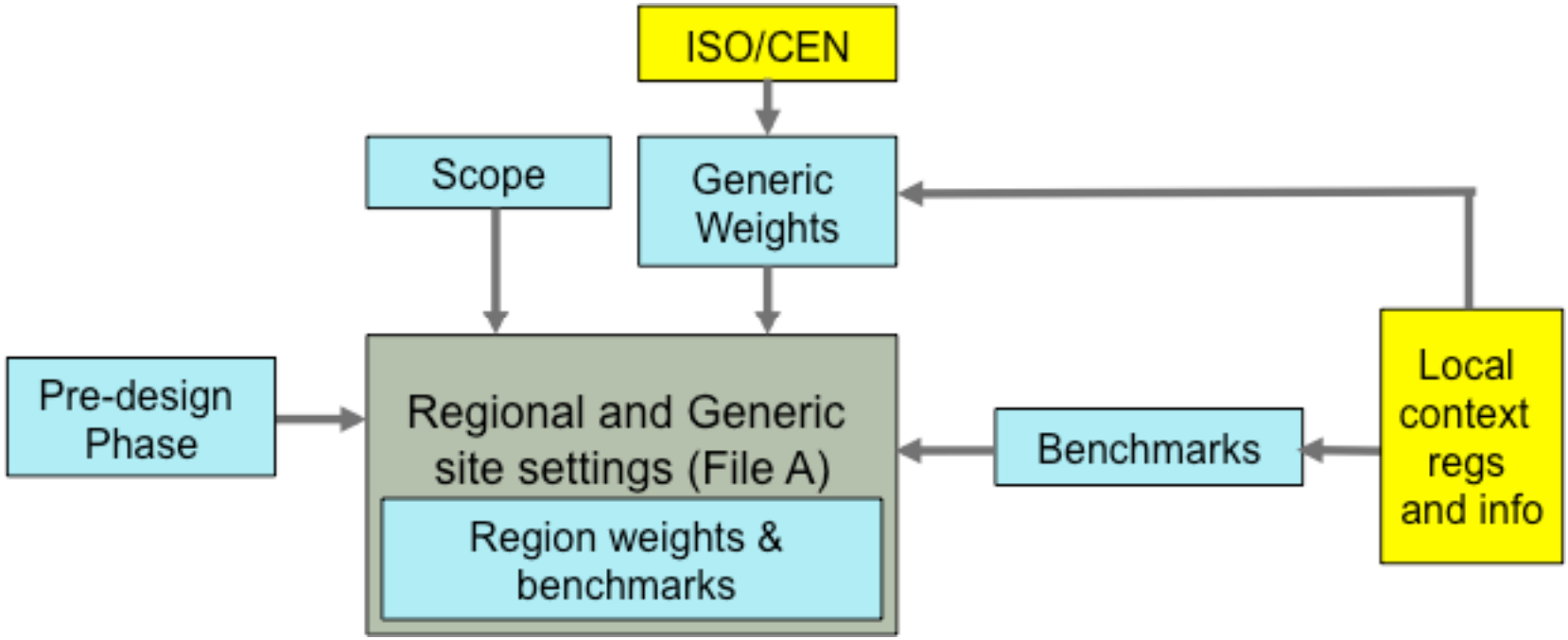
- This file is used by authorized third parties to establish context information, weights and benchmarks that is appropriate for the region;
- There are separate sections for Site Assessment and for Building Assessments;
- Site assessment is carried out in the Pre-Design phase and makes no assumptions about the building types that will be assessed later;
- Building assessments are carried out in the Design, Construction or Operations phases;
- Weights and benchmarks are established for the (up to) three generic building occupancies;
- Note that the file should be calibrated to suit a large number of specific project types within the region, and therefore weights and benchmarks must have broad validity;
- Variations in scope of the system can be selected, ranging from Minimum, Mid-size, Maximum and Developer versions;

File A

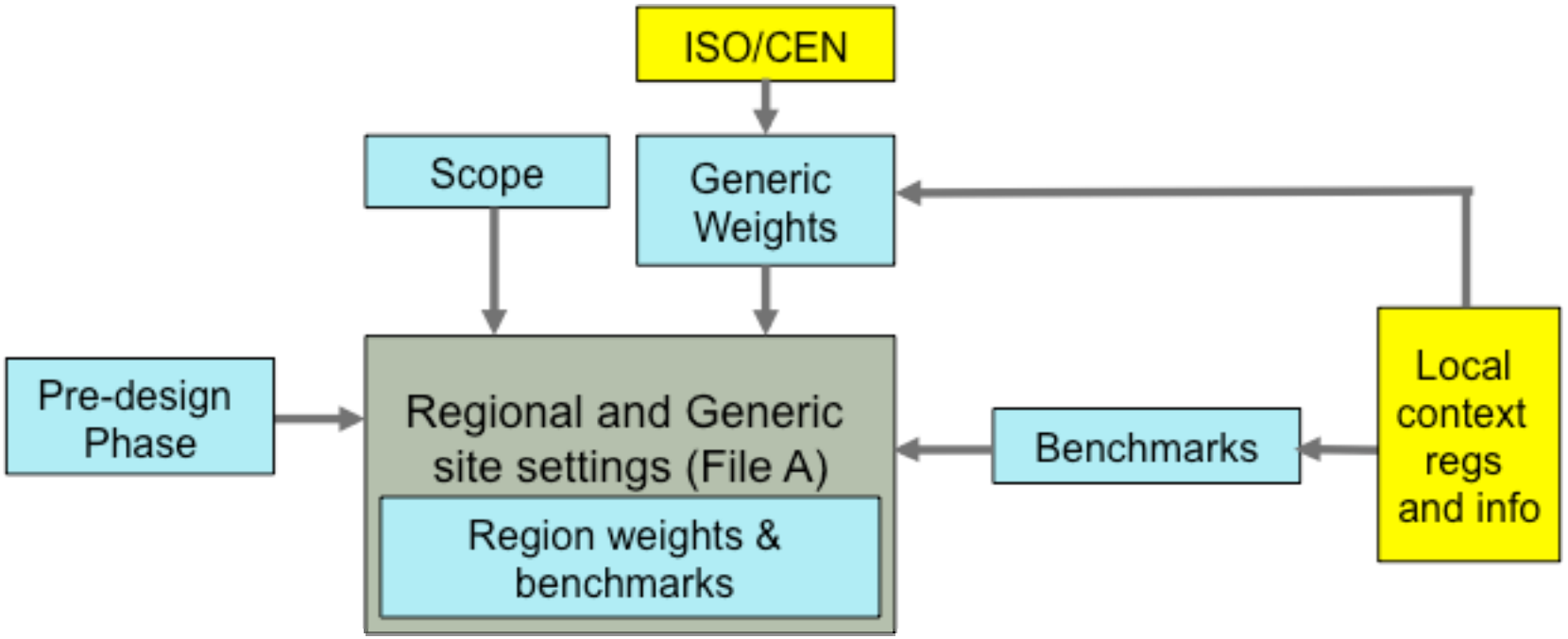
File A overview

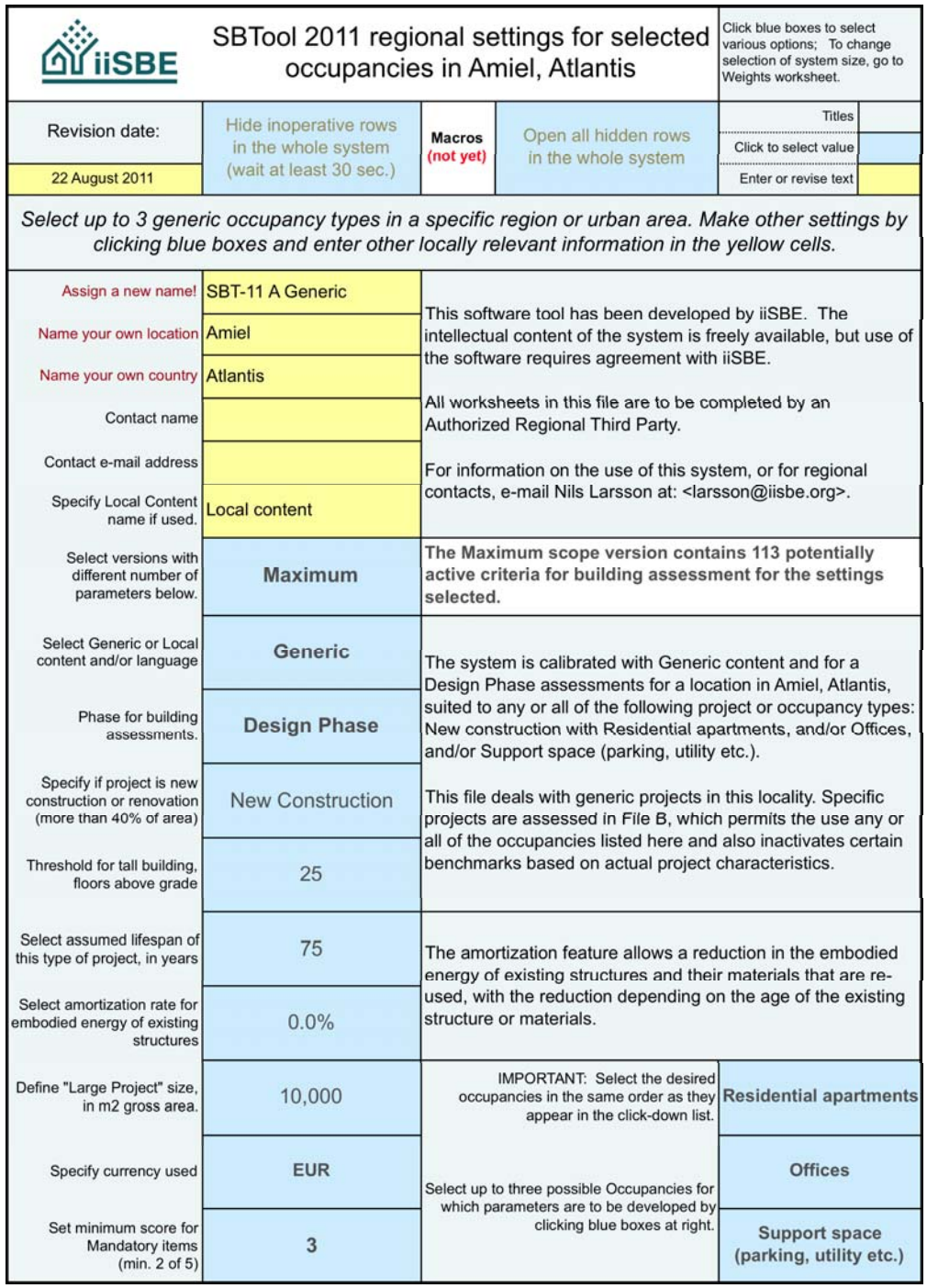
- Information in File A can be used in a large number of B Files, to suit various occupancy mixes that are defined in File A;
- These could include project B files for projects with, for example, up to 3 occupancies, such as tall apartment buildings with indoor parking, or office and retail;

SBTool File A:
Site assessment



SBTool File A:
Building assessment





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SBTool 2011 regional settings for selected occupancies in Amiel, Atlantis

Click blue boxes to select various options; To change selection of system size, go to Weights worksheet.

Revision date:	Hide inoperative rows in the whole system (wait at least 30 sec.)	Macros (not yet)	Open all hidden rows in the whole system	Titles / Click to select value / Enter or revise text
22 August 2011				

Select up to 3 generic occupancy types in a specific region or urban area. Make other settings by clicking blue boxes and enter other locally relevant information in the yellow cells.

Assign a new name!	SBT-11 A Generic	This software tool has been developed by iiSBE. The intellectual content of the system is freely available, but use of the software requires agreement with iiSBE. All worksheets in this file are to be completed by an Authorized Regional Third Party. For information on the use of this system, or for regional contacts, e-mail Nils Larsson at: <larsson@iisbe.org>.
Name your own location	Amiel	
Name your own country	Atlantis	
Contact name		
Contact e-mail address		
Specify Local Content name if used.	Local content	
Select versions with different number of parameters below.	**Maximum**	**The Maximum scope version contains 113 potentially active criteria for building assessment for the settings selected.**
Select Generic or Local content and/or language	**Generic**	The system is calibrated with Generic content and for a Design Phase assessments for a location in Amiel, Atlantis, suited to any or all of the following project or occupancy types: New construction with Residential apartments, and/or Offices, and/or Support space (parking, utility etc.). This file deals with generic projects in this locality. Specific projects are assessed in File B, which permits the use any or all of the occupancies listed here and also inactivates certain benchmarks based on actual project characteristics.
Phase for building assessments.	**Design Phase**	
Specify if project is new construction or renovation (more than 40% of area)	New Construction	
Threshold for tall building, floors above grade	25	
Select assumed lifespan of this type of project, in years	75	The amortization feature allows a reduction in the embodied energy of existing structures and their materials that are re-used, with the reduction depending on the age of the existing structure or materials.
Select amortization rate for embodied energy of existing structures	0.0%	
Define "Large Project" size, in m2 gross area.	10,000	IMPORTANT: Select the desired occupancies in the same order as they appear in the click-down list.
Specify currency used	**EUR**	Select up to three possible Occupancies for which parameters are to be developed by clicking blue boxes at right.
Set minimum score for Mandatory items (min. 2 of 5)	**3**	

Residential apartments

Offices

Support space (parking, utility etc.)

BasicA worksheet

File A

Current selectable occupancy types

Attached housing
Residential apartments
Hospitality (hotel)
Library
Offices
K to 12 school
Restaurant / cafeteria
Retail
Supermarket
Shopping Centre
Theatre - Cinema
Indoor parking
Public areas of other main occupancies

Up to 3 occupancy types are selectable for the A File, and all or any of these can be used for specific projects in the B File

File A

Regional Context for Oslo, Norway

	Click 1 or 2 at upper left to show details	*The purpose of this worksheet is to characterize aspects of urban surroundings that may support or limit the performance of the building. Go to Level 2 to see available text to make your choice, or change those choices.*
	Context Issue	Click blue boxes to select specific condition
1	2 1/2% Winter Design Temperature	
2	Climate zone	
3	Percentage of days during warm season when night temperatures are at least 10 deg. C. lower than day-time temps (free cooling potential).	
4	Average annual hours of sunshine in the region	
5	Urban area type	
6	Quality of public transportation in the area	
7	Capability of municipal potable water system to meet demand.	
8	Capability of local storm water infrastructure to meet marginal demand.	
9	Capability of local sewage infrastructure to meet marginal demand.	
10	Capability of electrical distribution infrastructure to meet marginal demand.	
11	Regional availability of materials and products that can be re-used in a new structure.	
12	Regional availability of recycled materials that are produced in an energy-efficient process.	

ContextA worksheet Blue click boxes give options (examples next page)

File A

ContextA worksheet, showing values to be selected

5	Urban area type	
		Rural setting
		Community of 1,000 to 10,000 population
		Small city of 10,000 to 50,000 population
		City of 50,000 to 250,000 in population
		City with population of more than 250,000
6	Quality of public transportation in the area	
		There is public transport service with very frequent service.
		There is public transport service with frequent service.
		There is public transport service with adequate service.
		There is public transport service with poor service.
		There is no public transport service, or the service is very poor.
7	Capability of municipal potable water system to meet demand.	
		There is a surplus of fresh and high-quality water that cannot be economically exported.
		There is sufficient water for current and anticipated uses and there is no rationing.
		There is occasional water rationing; but no water is imported from other regions.
	File A	There is frequent water rationing; but no water is imported from other regions.
		There is no public water system with water of of satisfactory quality or there is continuous water rationing and water is imported from other regions.

SB Method - weighting

- We assume that, although certain issues are of global importance, others, such as water consumption,use of agricultural land or preservation of heritage values, may vary by region;
- We are also aware that circumstances vary, and that a weighting and scoring structure should therefore take into account issues that may be relevant or irrelevant in certain circumstances;
- We therefore have established a structure that allows weights to be adjusted up or down by authorized third parties according to regional needs;
- We also make sure that the sum total of all active criteria is always 100%;
- Elements include relevance of impact categories, a factor for duration of effect and a regional adjustment factor.

SB Method – weighting and ISO TC 17

- The system uses a semi-objective weighting system;
- In reviewing the ISO TC 17 categories, we found some factors that we considered to be inapplicable, such as renewable energy;
- We found others, such as social or economic categories, to be insufficiently developed within TC 17 for our use;
- In applying impact categories in our system we pre-weighted the categories within five weighted groups (1, 2, 3, 4 and 5), reflecting our judgment of increasing importance.

SB method weighting

- Weights for each parameter is based on degrees of probable duration and intensity of effect, combined with links to key impact indicators.
- Regional authorities can modify the weighting values shown and they may also increase or reduce the resulting weights to a maximum of 10% +/-.

	Regional weight		Duration
0		0	
1	Much less important	1	Month or less
2	Less important	2	1 to 3 years
3	Same as Default	4	3 to 10 years
4	More important	8	10 to 30 years
5	Much more important	16	Building life

Intensity of Potential Effect (1 to 3 points)	
0	
1	Minor
2	Moderate
3	Major

Primary system directly affected (1 to 5 points)	
◆	
1	Servicability
1	Cost & economics
2	Human comfort & well-being
2	Non-energy resources
3	Energy resources
3	Water resources
4	Human health
4	Ecological systems
5	Life safety
5	Climate system

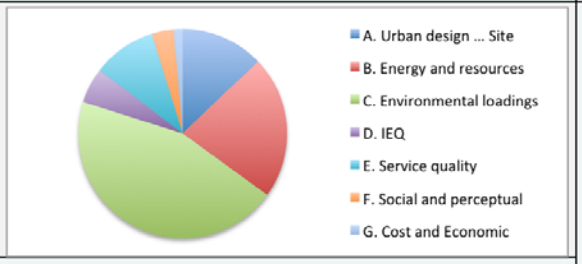
The generic SBTool weighting worksheet

Go to BasicA worksheet to select different versions of the system.

Generic weightings for occupancy types listed, in Amiel, Atlantis

Generic
Design Phase
New Construction

Maximum Version
113 active parameters
Design Phase



Weights for Criteria are established through the estimates of sustainability impacts. Some of these may be changed to suit various context conditions, or generic building characteristics, such as occupancy type, height etc. These modifiers can be seen in Columns J & K (hidden). Parameters can also be inactivated (Column A), which re-distributes their weights among remaining Criteria. Note that Category weights are the sum of Criteria weights, and Issue weights are the sum of Category weights. Default generic weights are shown but these initial weights may then modified by authorized third parties.

Weighting of Categories in percent (sum of Criteria scores)

Weighting of Criteria in percent

Weighting Factors

Regional adjustment

Blue click boxes below allow weights in this column to be adjusted by authorized third parties to reflect varying regional conditions and priorities. Grey click boxes CAN NOT be changed.

Score	A	Score	B	Score	C		D
	Extent of potential effect (1 to 5 points)		Duration of potential effect (1 to 5 points)		Intensity of Potential Effect (1 to 3 points)		Primary system directly affected (1 to 5 points)
	Change weights		Change weights		Change weights		Change weights

Note that all weights established in this worksheet are applicable to a specific building type and region, but must NOT be set to suit the characteristics of a particular project.

Parameters active in Issues A = 105																			
		.		A1	Site Regeneration and Development	4.2%													
	✔	✔	✔		A1.5	Remediation of contaminated soil, groundwater or surface water.		1.38%	3	OK	2	Site / project	5	>75 years	2	Moderate	4	Ecological systems
	✔	✔	✔		A1.6	Shading of buildings by deciduous trees.		1.24%	3	OK	2	Site / project	4	30 to 75 years	3	Major	3	Energy resources
	✔	✔	✔		A1.7	Use of vegetation to provide ambient outdoor cooling.		0.21%	3	OK	2	Site / project	3	10 to 30 years	2	Moderate	1	Servicability
	✔	✔	✔		A1.8	Reducing irrigation requirements through the use of native plantings.		0.62%	3	OK	2	Site / project	3	10 to 30 years	2	Moderate	3	Water resources
	✔	✔	✔		A1.9	Provision of public space(s).		0.10%	3	OK	2	Site / project	3	10 to 30 years	1	Minor	1	Servicability
		✔	✔		A1.10	Provision and quality of children's play area(s).		0.21%	3	OK	2	Site / project	3	10 to 30 years	2	Moderate	1	Servicability
	✔	✔	✔		A1.12	Provision and quality of bicycle pathways and parking.		0.21%	3	OK	2	Site / project	3	10 to 30 years	2	Moderate	1	Servicability
	✔	✔	✔		A1.13	Provision and quality of walkways for pedestrian use.		0.21%	3	OK	2	Site / project	3	10 to 30 years	2	Moderate	1	Servicability
		.		A2	Urban Design	3.5%													
		✔	✔		A2.1	Maximizing efficiency of land use through development density.		1.03%	3	OK	3	Neighborhood	5	>75 years	2	Moderate	2	Non-energy resources
		✔	✔		A2.2	Reducing need for commuting transport through provision of mixed uses.		0.62%	3	OK	3	Neighborhood	3	10 to 30 years	2	Moderate	2	Non-energy resources
✔	✔	✔	✔		A2.3	Impact of orientation on the passive solar potential of building(s).		0.77%	3	OK	1	Building	5	>75 years	3	Major	3	Energy resources

One of four available versions

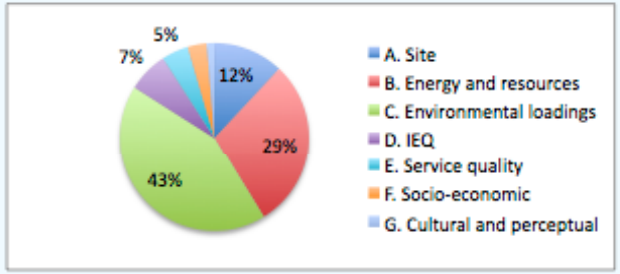
Criteria turned on or off for various versions

Mandatory for all versions

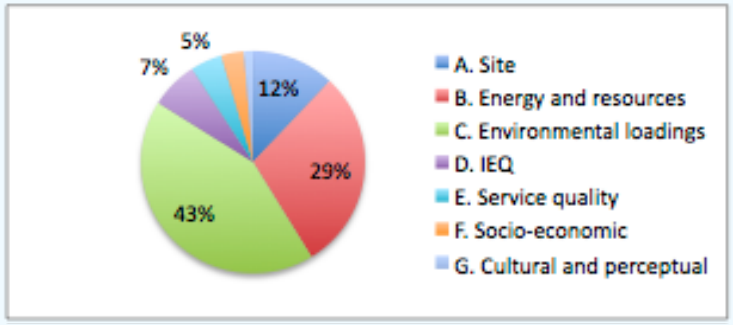
Weighting sheet of File A at summary level

Weights (percent of total)

File A

Go to BasicA worksheet to select different versions of the system.	Generic / Design Phase / Renovation	Weightings for occupancy types listed, in Atlantis, Somewhere	Any height building / Weights modifiable / Maximum	
Maximum Version			Weighting of Categories in percent (sum of Criteria scores)	Weighting of Criteria in percent
Active parameters in system: **98**		Weights for Criteria are established through the estimates of sustainability impacts. Some of these may be changed to suit various context conditions, or generic building characteristics, such as occupancy type, height etc. These modifiers can be seen in Columns H-J (hidden). Parameters can also be inactivated (Column A), which re-distributes their weights among remaining Criteria. Note that Category weights are the sum of Criteria weights, and Issue weights are the sum of Category weights. Default generic weights are shown but these initial weights may then modified by authorized third parties.		
	D2	Ventilation	**1.0%**	
✔ ✔ ✔ ✔	D2.1	Effectiveness of ventilation in naturally ventilated occupancies.		0.25%
◆ ◆ ◆ ◆	D2.2	Air quality and ventilation in mechanically ventilated occupancies.		0.38%
✔ ✔ ✔	D2.3	Air movement in mechanically ventilated occupancies.		0.19%
✔ ✔	D2.4	Effectiveness of ventilation in mechanically ventilated occupancies.		0.19%
	D3	Air Temperature and Relative Humidity	**0.9%**	
✔ ✔ ✔ ✔	D3.1	Appropriate air temperature and relative humidity in mechanically cooled occupancies.		0.38%
✔ ✔ ✔ ✔	D3.2	Appropriate air temperature in naturally ventilated occupancies.		0.50%
	D4	Daylighting and Illumination	**2.9%**	
◆ ◆ ◆ ◆	D4.1	Appropriate daylighting in primary occupancy areas.		2.68%
✔ ✔	D4.2	Glare from daylighting.		0.13%
✔ ✔	D4.3	Appropriate illumination levels and quality of lighting.		0.13%
	D5	Noise and Acoustics	**0.4%**	
✔ ✔ ✔ ✔	D5.1	Noise attenuation through the exterior envelope.		0.14%

Generic	Weightings for occupancy types listed, in Atlantis, Somewhere	Any height building	
Design Phase		Weights modifiable	
Renovation	Maximum Version with 98 active criteria	Maximum	



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			Weighting of Categories in percent (sum of Criteria scores)	Weighting of Criteria in percent
D2	Ventilation		**1.0%**	
	D2.1	Effectiveness of ventilation in naturally ventilated occupancies.		0.25%
	D2.2	Air quality and ventilation in mechanically ventilated occupancies.		0.38%
	D2.3	Air movement in mechanically ventilated occupancies.		0.19%
	D2.4	Effectiveness of ventilation in mechanically ventilated occupancies.		0.19%
D3	Air Temperature and Relative Humidity		**0.9%**	
	D3.1	Appropriate air temperature and relative humidity in mechanically cooled occupancies.		0.38%
	D3.2	Appropriate air temperature in naturally ventilated occupancies.		0.50%
D4	Daylighting and Illumination		**2.9%**	
	D4.1	Appropriate daylighting in primary occupancy areas.		2.68%

Excerpt from weighting sheet of 2011 SBTool – what the end user sees

Example benchmark, showing possibility for local content

A1.2 Use of land with previously high agricultural value.		✔	2.42%	Dsn.
Intent	*To encourage the use of land with low agricultural value prior to development and, conversely, to discourage the use of land with prior high agricultural value.*			
Indicator	Agricultural value of land used for construction, as determined by a competent authority or by existing documentation.			
Applicable project type	Any occupancy			
Information sources	TBA.			
Relevant information	The scoring arrangement indicates that it is considered desirable to use land that is of low agricultural value and, conversely, undesirable to use land of high agricultural value for development purposes.			
Assessment method	Review of site analysis report by an agronomist.			
Applicable Standards	a			
	b			
	c			
	d			
Information Submittals	e			
	f			
Total Project or Building	Total project or building			Score
Negative	Class A (best grade) agricultural land.			-1
Minimum practice	Class B agricultural land.			0
Good Practice	Class C (lowest grade) agricultural land.			3
Best Practice	Land used for the project has no agricultural value.			5

To encourage the use of land with low agricultural value prior to development and, conversely, to discourage the use of land with prior high agricultural value.	To encourage the use of land with low agricultural value prior to development and, conversely, to discourage the use of land with prior high agricultural value.	To encourage the use of land with low agricultural value prior to development and, conversely, to discourage the use of land with prior high agricultural value.
Agricultural value of land used for construction, as determined by a competent authority or by existing documentation.	Agricultural value of land used for construction, as determined by a competent authority or by existing documentation.	Agricultural value of land used for construction, as determined by a competent authority or by existing documentation.
Any occupancy	Any occupancy	Any occupancy
TBA.	TBA.	TBA.
The scoring arrangement indicates that it is considered desirable to use land that is of low agricultural value and, conversely, undesirable to use land of high agricultural value for development purposes.	The scoring arrangement indicates that it is considered desirable to use land that is of low agricultural value and, conversely, undesirable to use land of high agricultural value for development purposes.	The scoring arrangement indicates that it is considered desirable to use land that is of low agricultural value and, conversely, undesirable to use land of high agricultural value for development purposes.
Review of site analysis report by an agronomist.	Review of site analysis report by an agronomist.	Review of site analysis report by an agronomist.
a	a	a
b	b	b
c	c	c
d	d	d
e	e	e
f	f	f
Class A (best grade) agricultural land.	Class A (best grade) agricultural land.	Class A (best grade) agricultural land.
Class B agricultural land.	Class B agricultural land.	Class B agricultural land.
Class C (lowest grade) agricultural land.	Class C (lowest grade) agricultural land.	Class C (lowest grade) agricultural land.
Land used for the project has no agricultural value.	Land used for the project has no agricultural value.	Land used for the project has no agricultural value.

Visible text is based on a formula that selects appropriate text at right

Selected content

Default content

Local content

Example benchmark, showing text benchmarks for the total project

A1.2 Use of land with previously high agricultural value.		✔	2.42%	Dsn.
Intent	*To encourage the use of land with low agricultural value prior to development and, conversely, to discourage the use of land with prior high agricultural value.*			
Indicator	Agricultural value of land used for construction, as determined by a competent authority by existing documentation.			
Applicable project type	Any occupancy			
Information sources	TBA.			
Relevant information	The scoring arrangement indicates that it is considered desirable to use land that is of low agricultural value and, conversely, undesirable to use land of high agricultural value for development purposes.			
Assessment method	Review of site analysis report by an agronomist.			
Applicable Standards	a b c			
Information Submittals	d e f			
Total Project or Building	Total project or building			Score
Negative	Class A (best grade) agricultural land.			-1
Minimum practice	Class B agricultural land.			0
Good Practice	Class C (lowest grade) agricultural land.			3
Best Practice	Land used for the project has no agricultural value.			5

Weight

Phase

Scoring from -1 to +5 is standard; for subsequent assessments, values can be interpolated to half-points

File A

Example benchmark, showing data benchmarks for the total project

A1.3 Vulnerability of the site to flooding.		✔	1.88%	Dsn.
Intent	*To discourage the selection of land for building where there is a substantial risk that the site may be flooded.*			
Indicator	Height above 100-year flood plain as defined in official documentation or assessment by competent authorities.			
Applicable project type	Any occupancy			
Information sources	TBA.			
Relevant information	0			
Assessment method	Review of site analysis report.			
Applicable Standards	a b c			
Information Submittals	d e f			
Total Project or Building	Total project or building		m	Score
Negative	The height of the minimum elevation of the site above the elevation of the 100-year flood plain is :		1.0	-1
Minimum practice			1.3	0
Good Practice			2.0	3
Best Practice			2.5	5

Data values are inserted in yellow fields to establish slope

File A

File A

Example benchmark, showing data benchmarks modified for residential and non-residential occupancies

C3.2	Annual solid non-hazardous waste from facility operations sent off the site.	✔	0.61%	Dsn.
Intent	*To encourage the provision of facilities for storage of waste on each floor or each major work area, and space for the central sorting and storage of waste, with access to a truck loading area.*			
Indicator	Facilities provided in the design for the storage and sorting of solid wastes in both dispersed and central locations.			
Applicable project type	Separate criteria for residential and non-residential; NA for parking or open space			
Information sources	We specify storage areas per dwelling and per work group, and assume that the central storage area will be sized to suit.			
Relevant information	TBA			
Assessment method	Review of construction documents by an outside party with solid waste management expertise.			

Occupancy 1	Residential apartments	on	percent	Score
Negative	Each dwelling unit has been provided with space for temporary storage of solid waste and recycling, and storage for solid waste has been provided on each floor. A central sorting and storage area is located close to to a truck loading area and it is estimated that the percentage of total waste that can be sorted and stored is:		71%	-1
Minimum practice			75%	0
Good Practice			87%	3
Best Practice			95%	5
Occupancy 2	Offices	on	percent	Score
Negative	A central sorting and storage area is located close to a truck loading area, and storage has been provided sufficient for all wastes that may accumulate over a period of one week. It is estimated that the percentage of total waste that can be sorted and stored is:		70%	-1
Minimum practice			75%	0
Good Practice			90%	3
Best Practice			100%	5
Occupancy 2	Retail	on	percent	Score

B5.2 Use of potable water for occupancy needs.

Intent	*To minimize the amount of potable water imported to the site and used for occupancy needs, excluding building system uses or irrigation of exterior areas.*
Indicator	Prediction of total potable water use, in L per person per day, based on a credible water management plan for occupancy fixtures and use.
Information sources	Assumptions for daily use PP and volume per fixture: Toilet 6 L x 2 Times per Day, Urinal 1.5 L x 3 TPD, Shower 70 L x 0.8 TPD, Tub 90 L x 0.2 TPD, Lavatory 0.6 L x 4 TPD, Kitchen sink 15 L x 2 TPD, Clothes washer 40 L x 0.2.
Applicable project type	By separate occupancies, excluding irrigation water for outdoor areas.
Assessment method	Review of contract documentation by a specialist in water use.
Applicable Standards	a
	b
	c
	d
Information Submittals	e
	f

Applica (Activ

Dsn

Applicable phases (Active if green)

n. | C&C. | Ops

Occupancy 1	Apartment	on	L. pp / day.	Score
Negativ			400	-1
Acceptable practic			350	0
Good Practic			200	3
Best Practic			100	5

Based on a credible water management plan, the volume of potable water predicted to be used for occupancy needs :

Information Submittals	c
	d
	e
	f

Occupancy 1	Apartment	on	L. pp / day.	Score
Negativ			400	-1
Acceptable practic			350	0
Good Practic			200	3
Best Practic			100	5

The volume of potable water actually used for occupancy needs, as recorded on metering systems over a period of at least one year, is :

File A

SBT10-A benchmarks: examples of default text criteria tailored to suit Design and Operating phases.

Fuel Emissions Data for Oslo, Norway

Title	
Click to select value	
Enter or revise text	

Oslo, Norway

Emissions data and generation mix for :

Modify emissions data in this sheet to suit local generation mix.

Primary energy and environmental factors	Emissions from combustion in Kg. per GJ of energy produced	
	CO_2	SO_2
Fuel used for off-site gen. of electricity only		
Natural gas (BC)	131.39	0.00105
Fuel Oil (QC)	200.00	1.93889
Coal (ON)	241.11	1.16389
biomass and other	0.00	0.00
nuclear	0.00	0.00
hydro, with high-methane emission reservoir	0.00	0.00
hydro, with moderate-methane emission reservoir	0.00	0.00
hydro, with low- or no-methane emission reservoir	0.00	0.00
wind	0.00	0.00
geothermal	0.00	0.00

Gross-up factor for primary energy (incl. combustion & delivery loss)	
2.84	
3.02	
3.26	
0.00	
Composite gross-up for electrical primary energy, based on generation mix, assuming only delivery losses for nuclear or hydro	**2.12**

Electricity power generation base load mix	**Generation mix by source**
natural gas	**8.40%**
oil-fired	**0.49%**
coal-fired	**24.59%**
nuclear	**40.80%**
hydro, with high-methane emission reservoir	0.00%
hydro, with moderate-methane emission reservoir	**24.91%**
hydro, with low- or no-methane emission reservoir	0.00%
wind	0.00%
solar	0.00%
geothermal	0.00%
biomass	**0.66%**
other	**0.0016%**

Arcane calculations for electricty GHGs

Fuel type	GHG fuels as % of all GJ	kg. GHG per GJ primary
Nat. gas	8.4%	11.04
Oil	0.5%	0.98
Coal	24.6%	59.29
Biom/Oth	0.7%	0.00
kg. GHG / GJ for elec.		71.31

Note: Only emissions from non-renewables are included. Emissions for biomass and other fuels are assumed to be zero, as per IPCC.

Fuel emission values must be established for each region and are used to establish emissions for on-site fuels but also for delivered electricity

The mix of fuels used to generate electricity varies widely between regions, and that affects the resulting emissions per kWh

File A

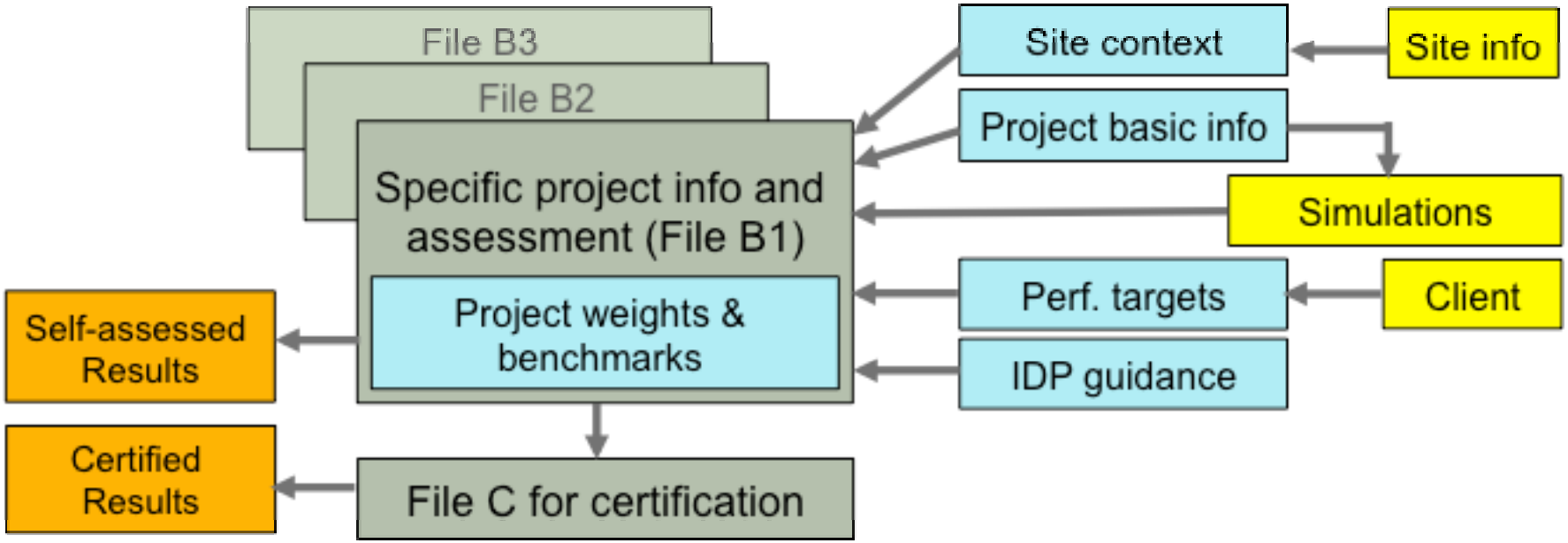
File B:
Information related to individual projects, and self-assessment

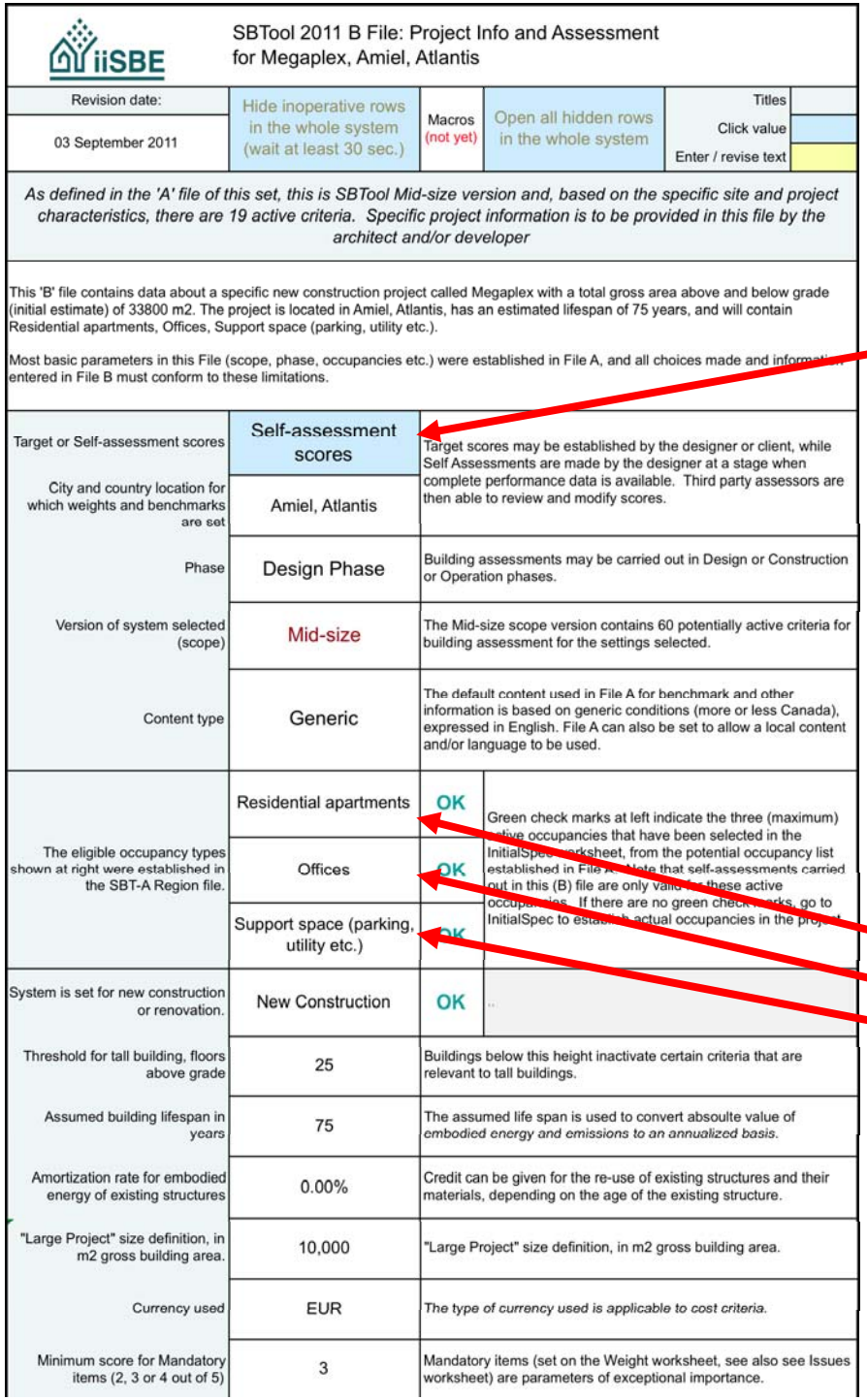
File B overview

- File B provides information on individual projects that are consistent with the parameters established in File A:
- One single File A can be linked to many File Bs;
- The proposed project may consist of any or all of the up to 3 occupancy types defined in the A File;
- The architect cannot change the regional context findings, nor the weights or benchmarks established in File A;
- File B also provides an IDP process worksheet that has hyperlinks to the assessment requirements.
- File B also allows designers to carry out self-assessments of their project;
- Finally, a third-party assessor can modify or accept the self-assessment.

File B

SBTool File B





iiSBE

SBTool 2011 B File: Project Info and Assessment for Megaplex, Amiel, Atlantis

Revision date:	Hide inoperative rows in the whole system (wait at least 30 sec.)	Macros (not yet)	Open all hidden rows in the whole system	Titles / Click value / Enter / revise text
03 September 2011				

As defined in the 'A' file of this set, this is SBTool Mid-size version and, based on the specific site and project characteristics, there are 19 active criteria. Specific project information is to be provided in this file by the architect and/or developer

This 'B' file contains data about a specific new construction project called Megaplex with a total gross area above and below grade (initial estimate) of 33800 m2. The project is located in Amiel, Atlantis, has an estimated lifespan of 75 years, and will contain Residential apartments, Offices, Support space (parking, utility etc.).

Most basic parameters in this File (scope, phase, occupancies etc.) were established in File A, and all choices made and information entered in File B must conform to these limitations.

Target or Self-assessment scores	Self-assessment scores		Target scores may be established by the designer or client, while Self Assessments are made by the designer at a stage when complete performance data is available. Third party assessors are then able to review and modify scores.
City and country location for which weights and benchmarks are set	Amiel, Atlantis		
Phase	Design Phase		Building assessments may be carried out in Design or Construction or Operation phases.
Version of system selected (scope)	Mid-size		The Mid-size scope version contains 60 potentially active criteria for building assessment for the settings selected.
Content type	Generic		The default content used in File A for benchmark and other information is based on generic conditions (more or less Canada), expressed in English. File A can also be set to allow a local content and/or language to be used.
The eligible occupancy types shown at right were established in the SBT-A Region file.	Residential apartments	OK	Green check marks at left indicate the three (maximum) active occupancies that have been selected in the InitialSpec worksheet, from the potential occupancy list established in File A. Note that self-assessments carried out in this (B) file are only valid for these active occupancies. If there are no green check marks, go to InitialSpec to establish actual occupancies in the project.
	Offices	OK	
	Support space (parking, utility etc.)	OK	
System is set for new construction or renovation.	New Construction	OK	
Threshold for tall building, floors above grade	25		Buildings below this height inactivate certain criteria that are relevant to tall buildings.
Assumed building lifespan in years	75		The assumed life span is used to convert absoulte value of *embodied energy and emissions to an annualized basis.*
Amortization rate for embodied energy of existing structures	0.00%		Credit can be given for the re-use of existing structures and their materials, depending on the age of the existing structure.
"Large Project" size definition, in m2 gross building area.	10,000		"Large Project" size definition, in m2 gross building area.
Currency used	EUR		*The type of currency used is applicable to cost criteria.*
Minimum score for Mandatory items (2, 3 or 4 out of 5)	3		Mandatory items (set on the Weight worksheet, see also see Issues worksheet) are parameters of exceptional importance.

User can select Target or Self-Assessed scores here

Basic B worksheet

for a hypothetical example

This project includes *Residential apartments, Offices* and *Indoor Parking*

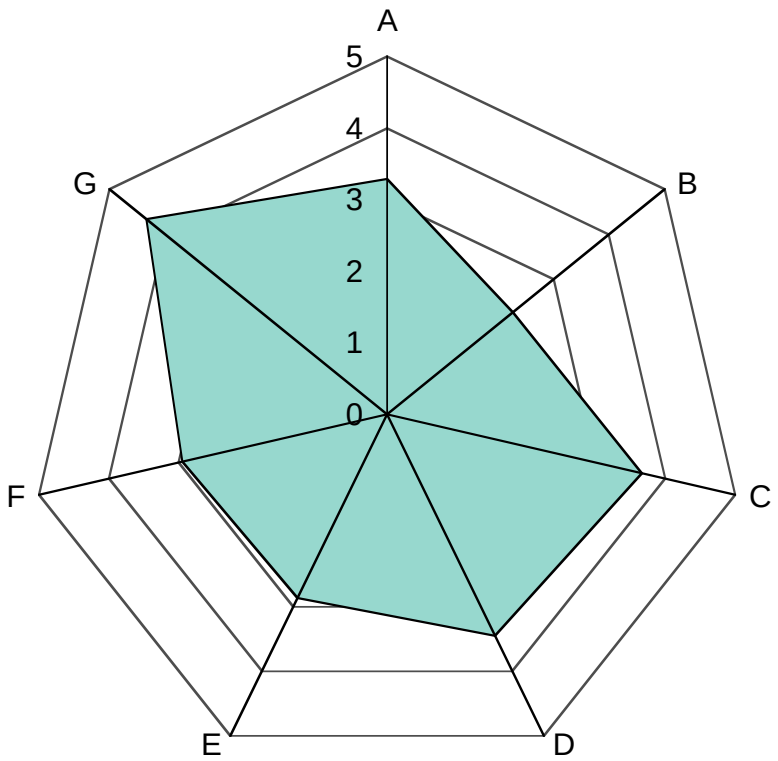
File B

Design target scores for Megaplex project, Ottawa, Canada

Predicted performance results based on information available during Design Phase	*Active Phase (set in Region file)*	**Design Phase**

Relative Performance Results

0 = Acceptable Practice; 3 = Good Practice; 5 = Best Practice



File B

Performance Issue Areas

Design Phase scores indicate Potential Performance as predicted by an assessment of building features and plans for construction and operation that are developed during the design process.

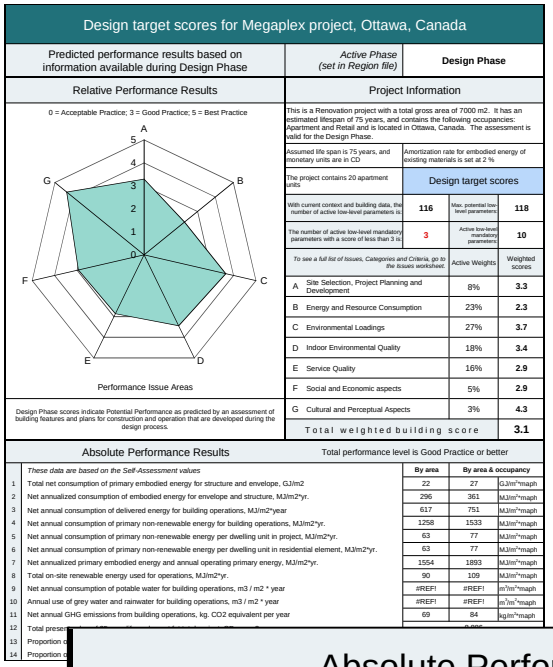
Project Information

This is a Renovation project with a total gross area of 7000 m2. It has an estimated lifespan of 75 years, and contains the following occupancies: Apartment and Retail and is located in Ottawa, Canada. The assessment is valid for the Design Phase.

Assumed life span is 75 years, and monetary units are in CD	Amortization rate for embodied energy of existing materials is set at 2 %
The project contains 20 apartment units	Design target scores

With current context and building data, the number of active low-level parameters is:	**116**	Max. potential low-level parameters:	**118**
The number of active low-level mandatory parameters with a score of less than 3 is:	**3**	Active low-level mandatory parameters:	**10**

To see a full list of Issues, Categories and Criteria, go to the Issues worksheet.		Active Weights	Weighted scores
A	Site Selection, Project Planning and Development	8%	**3.3**
B	Energy and Resource Consumption	23%	**2.3**
C	Environmental Loadings	27%	**3.7**
D	Indoor Environmental Quality	18%	**3.4**
E	Service Quality	16%	**2.9**
F	Social and Economic aspects	5%	**2.9**
G	Cultural and Perceptual Aspects	3%	**4.3**
	Total weighted building score		**3.1**



Design target scores for Megaplex project, Ottawa, Canada

Predicted performance results based on information available during Design Phase | *Active Phase (set in Region file)* | Design Phase

Relative Performance Results | Project Information

0 = Acceptable Practice; 3 = Good Practice; 5 = Best Practice

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G Cultural and Perceptual Aspects		3%	4.3
Total weighted building score			3.1

Design Phase scores indicate Potential Performance as predicted by an assessment of building features and plans for construction and operation that are developed during the design process.

Absolute Performance Results — Total performance level is Good Practice or better

	These data are based on the Self-Assessment values	By area	By area & occupancy	
1	Total net consumption of primary embodied energy for structure and envelope, GJ/m2	22	27	GJ/m2*maph
2	Net annualized consumption of embodied energy for envelope and structure, MJ/m2*yr.	296	361	MJ/m2*maph
3	Net annual consumption of delivered energy for building operations, MJ/m2*year	617	751	MJ/m2*maph
4	Net annual consumption of primary non-renewable energy for building operations, MJ/m2*yr.	1258	1533	MJ/m2*maph
5	Net annual consumption of primary non-renewable energy per dwelling unit in project, MJ/m2*yr.	63	77	MJ/m2*maph
6	Net annual consumption of primary non-renewable energy per dwelling unit in residential element, MJ/m2*yr.	63	77	MJ/m2*maph
7	Net annualized primary embodied energy and annual operating primary energy, MJ/m2*yr.	1554	1893	MJ/m2*maph
8	Total on-site renewable energy used for operations, MJ/m2*yr.	90	109	MJ/m2*maph
9	Net annual consumption of potable water for building operations, m3 / m2 * year	#REF!	#REF!	m3/m2*maph
10	Annual use of grey water and rainwater for building operations, m3 / m2 * year	#REF!	#REF!	m3/m2*maph
11	Net annual GHG emissions from building operations, kg. CO2 equivalent per year	69	84	kg/m2*maph
12	Total present			
13	Proportion o			
14	Proportion o			

Absolute results

File B

Absolute Performance Results

Total performance level is Good Practice or better

	These data are based on the Self-Assessment values	By area	By area & occupancy	
1	Total net consumption of primary embodied energy for structure and envelope, GJ/m2	22	27	GJ/m^2*maph
2	Net annualized consumption of embodied energy for envelope and structure, MJ/m2*yr.	296	361	MJ/m^2*maph
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8	Total on-site renewable energy used for operations, MJ/m2*yr.	90	109	MJ/m^2*maph
9	Net annual consumption of potable water for building operations, m3 / m2 * year	0.3	0.3	m^3/m^2*maph
10	Annual use of grey water and rainwater for building operations, m3 / m2 * year	18	22	m^3/m^2*maph
11	Net annual GHG emissions from building operations, kg. CO2 equivalent per year	69	84	kg/m^2*maph
12	Total present value of 25-year life-cycle cost fot total project, CD per m2.	8,886		
13	Proportion of gross area of existing structure(s) re-used in the new project, percent	64%		
14	Proportion of gross area of project provided by re-use of existing structure(s), percent	63%		

Applications of SBTool

Applications of SBTool

- Our SBTool work is mainly R&D and it has influenced national systems being used in Austria, Spain, Portugal, Japan and Korea;
- In 2002 ITACA, the *Federal Association of the Italian Regions*, adopted the iiSBE methodology as basis to develop an institutional assessment system for residential buildings: Protocollo ITACA, which is now the reference rating system of the regional authorities in Italy;

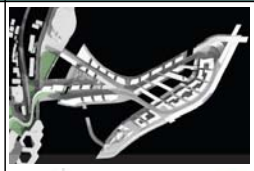
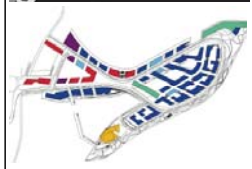
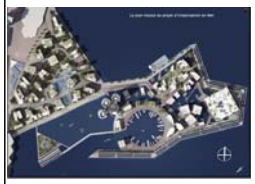
SBTool used for large development competition

Application of the SBTool framework to an invited competition for a large development in Monaco

Monaco background

- The use of SBTool as a rating system for certification of buildings requires calibration of weights and benchmarks to suit local conditions, and this involves considerable time and effort;
- But the system can also be used by a client to identify its specific performance requirements for competitions or long-term portfolio development;
- We followed this approach in a major invited competition in Monaco which involves an extension of 11 hectares into the sea in the middle of the urban area;
- This approach allowed the client to be very specific and also provides clarity for the competing teams.
- This was an invited competition for five international teams.

Principauté de Monaco *Projet d'urbanisation en mer : comparaison générale des soumissions* V18, 28 mai

			avril 2008	Equipe A	Equipe B	Equipe C	Equipe D	Equipe E
			Bilan comparatifs de l'ensemble de projets		 			
			Observations générale					
			SBTool - score autoeval	3,6	3,8	4,1	3,7	4,5
			SBTool - score finale	**3,2**	**3,5**	**2,8**	**3,3**	**3,9**
			Observations sur l'utilisation de SBTool	Le dossier réalisé de version des textes de SBTool est dans la soumission, et inclut l'information supplémentaire détaillée jusqu'à C1.2.	Ils ont utilisé l'outil correctement et ont également fourni des informations supplémentaires très étendues et détaillées pour chaque critère.	Il y a seulement une version imprimée du dossier réalisé de SBTool dans la soumission. Plusieurs points étaient plus hauts que 5.0 et ceux-ci ont été donc réduits.	SBTool a été employé comme prévu..	SBTool a été employé comme prévu.
			Critères	Case grisée (gauche) = note révisée				
A	**30.1%**	**Site, implantation, développement urbain et marin**		Deux bras entourent une île centrale carrée qui contient un parc public du marché ouvert avec des vues du Monaco. L'impression globale est très urbaine et ordonnée, avec un bon accès piétonnier le long des secteurs de bord de mer.	Deux éléments linéaires sont divisés par un canal mais liés par plusieurs éléments de logement et un pont, tous bien reliés au secteur urbain existant. Les éléments traversiers peuvent porter des mbrs importantes sur les zones inférieures.	Beaucoup d'éléments divers sont reliés au continent par une presqu'île. Les grands espaces ouverts semblent inhospitaliers et créent yn paysage urbain 'décousu'. Les résidants de la "péninsule" auront des vues faibles de la mer.	Trois sous-éléments sont reliés à la bande de terre et au grand élément assurant le lien avec le continent. Le plan urbain et dense et semble bien fonctionner mais des secteurs commerciaux sont dispersés le long de bords de mer.	Cet arrangement place plusieurs éléments séparés loin du rivage. Un de ces éléments est sans issue à ses extrémités alors que d'autres sont reliés par des ponts. Pour les marcheurs, les distances à parcourir pourraient être assez longues.
A1	21%	*Choix de l'implantation en mer et contexte marin.*			L'utilisation du rembliai comme base pour le bras externe peut réduire des écoulements de l'eau.			
A1.1	**1.9%**	Préservation de la qualité écologique des zones sensibles.	-1.0 La distance minimale entre le pied sous-marin de la fondation des ouvrages et le tombant corallien des Spélugues est de 5 m. Ces distances sont reportées sur les deux plans.. .	0.0 PF respecté… une distance supérieure à 56 m entre l'extension et les zones sensibles.	0.0 50 m.; PF respecté	0.0 PF; Voir plan masse et documents graphiques	3.0 100 m	
A1.2	**1.2%**	Préservation de la qualité écologique des fonds marins durs découverts.	3.0 Les fonds durs découverts actuellement et qui ne le seront plus après la réalisation du Projet sont localisés entre le Grimaldi Forum et les plages du Larvotto. Conformément au plan joint, la surface de fonds durs occupée par l'emprise du Projet est de 8,7%.	4.0 0% fonds durs sont occupés par l'emprise effective des fondations.	0.0 5%; oir figure 42 du document PE-CBC-520.	2.5 10%; L'étude d'impact dénombre 1,6 ha de substrats durs recouverts pour sur les 20,5 ha Monégasques soient une occupationde 7,8 %. La constitution d'enrochements (9 ha) et d'habitats artificiels vient compenser cette occupation.	4.0 0%; Ainsi que l'indiquent les plans des fondations des Cordons et du Quartier Marin, la totalité des emprises reposent sur les fonds durs actuellement recouverts de sédiments.	

Contacts & Info

- http://www.iisbe.org
- http://www.sbis.info
- Andrea Moro (President), andrea.moro@iisbeitalia.org
- Nils Larsson (XD), larsson@iisbe.org
- Manuel Macias (Chair of TC), manuel.macias@upm.es