



UNEP SBCI
Sustainable Buildings
& Climate Initiative

Building and Construction  Authority

Sustainable Buildings & Climate Initiative (SBCI)

STAKEHOLDER ROUND-TABLES

SINGAPORE, OCTOBER 26th – 27th, 2009

Meeting minutes and outcomes

Contents

Keynote Addresses.....	4
Welcome and Introduction- Arab Hoballah, UNEP DTIE	4
Vision & Goals for a Sustainable Buildings & Climate Index (SBCIndex)- Birgitte Holter, Chair SBCI Board	4
Common Metrics for Sustainable Buildings- Alfonso Ponce, Sustainable Buildings Alliance	5
Metric and Protocol for Measuring and Reporting the Global Warming Potential of Buildings- Donna McIntire & Peter Graham, UNEP-SBCI	5
Session 1: Metric and Protocol of Measurement and Reporting.....	6
Use of energy statistics and surveys to set up indicators for energy efficient buildings - Jens Laustsen, International Energy Agency.....	6
Construction and Real Estate Sustainability Reporting Guidance- Katherine Miles, GRI	6
Measurement & Reporting: A Property Company’s Perspective- Janet Kidner, Lend Lease Europe	7
GREEN UP: Canada’s Building Performance Program Enabling Every Building To Be Green - Kevin Hydes, Integral Group	7
Latest trend in the American and Chinese Building Industry to Address Climate Change- Kevin Mo, NRDC	8
The FIDIC Perspective- Ike van der Putte, International Federation of Consulting Engineers.	8
Session 2: Stakeholder Round Tables: Discussion of the Metric & Protocol	9
SBCI metric & tool issues- Nils Larsson, International Initiative for a Sustainable Built Environment (iiSBE).....	9
‘GHG-GWP Metrics’ & the SBC Index: Frameworks, Reporting & Implementation- Greg Foliente, CSIRO	9
Session 3: Stakeholder Round Tables Discussions	10
Group A- Existing data	11
Group B- Calculation methodologies	11
Group C- Implementation / Application	12

Day 2: October 27, 2009	13
The efficient building scheme- Maria Atkinson, Lend Lease	13
Feedback from the first day- Peter Graham, UNEP-SBCI	14
Workgroups Outcomes	15
The metric - Workgroup 1	15
The metric - Workgroup 2	16
The protocol - Workgroup 1	17
The protocol - Workgroup 2	18
SBCI Strategy	20
The action plan to Copenhagen	21
APPENDIX - Draft letter to delegates and COP15 participants	22

Keynote Addresses

Welcome and Introduction- *Arab Hoballah, UNEP DTIE*

The United Nations Environment Program (UNEP) has launched the Sustainable Buildings and Climate Initiative in 2006 in line with two of UNEP's key priorities: Sustainable Consumption & Production and Climate Change.

In the USA, 50% of greenhouse gas emissions can be attributed to the building sector. Addressing the buildings' impact is crucial to tackle the challenges of climate change mitigation and adaptation.

Buildings are to be considered as part of their environment: cities. If we manage to resolve the issues linked to urban consumption, we will have the answer to today's and tomorrow's problems.

UNEP-SBCI recognizes that there is no one-size-fits-all solution. The process started by the SBCI benchmarking think-tank over a year ago aims to provide a metric and protocol to measure and report on the buildings impact worldwide. Special consideration should be given to developing countries, where most of the construction is now taking place.

Stakeholders from the building sector have been brought together to contribute to this process. Taking a life cycle perspective is essential: the metric and protocol presented need to be refined according to participants' contributions.

This process does not intend to reinvent the wheel. It aims to build on existing systems, research, and partnership opportunities. UNEP-SBCI has delivered several valuable results in its first years of existence. It now needs to expand to engage more members and accelerate its delivery of outputs. We will reach success if a benchmarking system for buildings worldwide is put in place in the next years.

The work in the next two days needs to take into account the entire process involved for this metric and protocol, as well as the long-term objectives of SBCI.

Vision & Goals for a Sustainable Buildings & Climate Index (SBCIndex)- *Birgitte Holter, Chair SBCI Board*

The UNEP-SBCI expert meeting held in Paris in September brought forward several conclusions on the characteristics of the metric. This is the vision for the SBCIndex:

1. It is possible and needed to have a common metric. It should respect the diversity present worldwide. The buildings sector is a fragmented industry with specific stakeholders, local conditions and cultural heritage.
2. The metric will not be a new certification system. It will build on and support existing systems.
3. The metric will be performance-based. It will not take a prescriptive approach, but propose guidelines that can be adapted to the local context.
4. The metric should be measurable, reportable, and verifiable (MRV).
5. The metric should encourage green attitudes. It will focus on trends and provide a benchmark to identify improvement. It is not built to penalize.
6. The metric should be based on the 80:20 rule. Of course, the final aim is a comprehensive metric. However, instead of aiming for perfection, we should aim for a credible and simple scheme.
7. The metric will be based on a modular approach. Taking it one step at a time will allow the system to go far.

If the goal for this metric and protocol was to be resumed in two words, these would be: plurality & simplicity.

Common Metrics for Sustainable Buildings- *Alfonso Ponce, Sustainable Buildings Alliance*

Several methods exist to measure the environmental impact of buildings. The differences between these methods are a barrier to policy makers and organizations developing policies or sustainability measures.

An international working group set by the Sustainable Building Alliance and several Green Building Councils has been cooperating to agree on a common metric for measuring the Global Warming Potential of emissions resulting from building construction, operation and demolition. UNEP-SBCI has started a process to develop a metric and framework for monitoring and reporting the energy use in, and greenhouse gas emissions from existing buildings.

Both groups aim at informing and driving policy making, providing guidance for measurement of emissions, and instigating measures to improve the sustainability of the building sector worldwide.

Both of the framework goals are to provide a common metric to assess the global warming potential of a building in relation to a common, useful denominator. The denominator has, in both cases, been decided to be CO₂ equivalent and will be represented as the metric, kg/tonnes CO₂ equivalent/m²/year.

Both groups have decided on a modular approach, focusing first on the assessment of the operational (in-use) phase of the building's life cycle. Future developments will lead to an assessment of buildings over their entire life cycle.

The two working groups are travelling down the same path. Great opportunities will arise as these groups work together in an efficient and productive way.

Metric and Protocol for Measuring and Reporting the Global Warming Potential of Buildings- *Donna McIntire & Peter Graham, UNEP-SBCI*

The work that has been developed by the UNEP-SBCI Benchmarking Think-Tank has already benefited from the collaboration of several organizations represented here. These organizations aim to speak with one voice in Copenhagen.

The metric aims to provide baselines, not targets, for the building sector. In Paris, the necessity for this common metric has been confirmed. An outline of the metric was prepared, but needs refinement. There needs to be a clear understanding of the scope and boundaries of measurement for this metric. Terms need to be clearly defined. The draft proposed here will be refined according to the input received.

A few of the issues to be addressed include:

- Reporting: by area and/or occupants?
- Building types: residential/ non-residential and further breakdown
- Using a top-down or a bottom-up approach to the benchmarking
- Focus on 'big' emitters (single family housing, offices and retail)...

Session 1: Metric and Protocol of Measurement and Reporting

Use of energy statistics and surveys to set up indicators for energy efficient buildings - *Jens Laustsen, International Energy Agency*

The International Energy Agency has experience counseling countries in Europe, the European Union, as well as other countries (Japan, Korea...). It has adopted a top-down approach to provide data on the residential sector, and build national statistics for countries.

There are different examples of databases. In Germany, a building typology was defined, and allows adding information with new studies. In Denmark, the information is available, so research can be compared with national statistics.

Germany also conducted a study on the refurbishment of buildings and its benefits.

In order to collect the data for the benchmark, we should consider a few issues:

- Cost of the inventory and feasibility;
- Time factor and evolution – trends;
- The availability of data (from national studies, datasets, or standards);
- The variation of building types within taxonomies;
- Building codes and minimum performance benchmarks (taking enforcement into consideration).

There should be a similar level of description for top-down and bottom-up approaches.

Existing structures and available data (national and international) should be used as much as possible. We should consider that even if the data available is slightly different than the one required, it would be better to use it than go through a lot of research.

The metric should be kept simple at the beginning. A multi-step approach can be adopted, consistent with the building type.

Construction and Real Estate Sustainability Reporting Guidance- *Katherine Miles, GRI*

The GRI global framework (G3 guidelines) provides performance indicators for social, environmental and economic criteria. It provides a framework for global coherence. Indicators like EN3-7, EN16, EN17, EN18 are existing protocols within the GRI for measuring and reporting the GHG emissions from an organisation.

Organizations are encouraged to take responsibility, disclose management approaches and decisions made. Emissions, but also initiatives to address them, are highlighted in GRI reporting.

Sector supplements include more comments and detailed indicators, to complement the core indicators in the global guidelines. They are developed by a stakeholder working group. For the construction and real-estate supplement, experts from industry and stakeholders in the building industry are represented. They also represent diverse geographical regions.

GRI can draw on the SBCI process to receive input, and increase reporting.

Measurement & Reporting: A Property Company's Perspective- *Janet Kidner, Lend Lease Europe*

Lend Lease is an end-to-end property developer and manager at a global level, working with GRI for 3 years in the UK.

Lend Lease advocates for a consistent carbon metric. Measurement and reporting is important for a large company. There needs to be a consistent approach to measurement, benchmarking, decision-making and labeling.

Accurate reporting will enable the benchmarking of the current status and the modeling for potential improvement. It will also allow direct monetization of carbon.

A framework could provide optional modules. Mandatory disclosure would involve Scope 1 & 2 emissions, with a possibility to expand to scope 3.

The involvement of each of the stakeholders should be discussed. Who is responsible for collecting/ providing the data? Who is accountable for the current state and for progress? There should be a simple approach to identify responsibility and foster improvement.

GREEN UP: Canada's Building Performance Program Enabling Every Building To Be Green - *Kevin Hydes, Integral Group*

Green Up is a building performance program. It was established through pilot projects covering different building types in several climate zones in Canada. Canada is an interesting test field as it possesses different climate zones, and 80% of the population is concentrated in four cities. The pilot projects represented a large data set for Canada (1000 buildings).

The Canada Green Building council's role is to create buildings and climate change strategies. The goal is to achieve a 50% reduction of GHG emissions (on a voluntary basis) through specific actions focusing on climate neutrality.

LEED has been used as the major tool for commercial buildings. The Green Up Protocol has developed benchmarks to launch a cycle for continual improvement. In order to achieve a standardization (at a regional level), stakeholders like local and national governments, as well as utility providers, have been involved in the pilot projects. There is a span of 5-10 years in the development program.

The Building Performance Audits assess improvement, but also compare actual performance with designed performance (for newer buildings). The study showed that there is no correlation between the age of the building and its energy performance. The (anonymous) benchmark allows actors to compare their performance with other organizations, and to highlight their improvement.

Latest trends in the American and Chinese Building Industry to Address Climate Change- *Kevin Mo, NRDC*

About 40% of global construction is today happening in China. As the US Department of Energy stated, "if China and the US both invest in 21st century technologies, then we both win."

NRDC has been pushing for climate regulation, research, and promotion of green buildings. Any action regarding climate change should involve the US and China.

In order to provide a baseline, the local building requirements/ codes should be considered. This determines to a great extent the building performance.

We should use an asset value: how a building performs at standard operating conditions. The operational value (snapshot of a building operating at a certain time) might not be as accurate or effective.

The China Carbon Emissions Index (Low Carbon Communities) also considers materials manufacturing, operational and water. Should we include those, as well as a distinction between regulated and non-regulated energy (plug loads etc.)?

The FIDIC Perspective- *Ike van der Putte, International Federation of Consulting Engineers*

FIDIC issued the State of the World Report in 2009, considering the state of the infrastructure, including trends, challenges, and examples of constructive solutions.

Construction accounts for 10% of GDP. The investment now needs to consider climate change adaptations. The World Bank report estimated the cost of adapting to a rise in temperature of 2 Celsius degrees (in developing countries) in a range of US\$ 75-100 billion/ year.

Climate change and sustainability requirements can also act as drivers for the development of new concepts. The FIDIC Project Sustainability Management guidelines provide a framework and indicators to measure project sustainability.

The National Institute of Building Sciences (NIBS, USA) recommends, regarding rating and certification systems, that professionals agree on a common set of metrics, and require that certification includes data demonstrating conformance. Developing guidance for policy makers, owners, regulators and users, and for regulatory bodies adapting building certification, is also crucial.

The SBCI metric will provide a new benchmark for buildings. It is not a process to set or achieve goals and targets.

Session 2: Stakeholder Round Tables: Discussion of the Metric & Protocol

SBCI metric & tool issues- Nils Larsson, International Initiative for a Sustainable Built Environment (iiSBE)

UNEP needs a better understanding of GHG emissions and reduction potential of existing buildings of all types in most, if not all, countries.

Indirectly, participating countries and organizations may improve their own understanding of the issues and to establish very high performance targets for performance retrofits and regulations.

Furthermore, good quality data might be used for CDM / emissions trading.

The work requires the development of a metric and protocol that is usable by organizations that are engaged in performance measurement and assessment.

We can achieve this by developing a consensus-based and technically correct method for the metric and protocol, which can be turned into appropriate country-specific tools.

UNEP must build on what has already been done by countries and existing systems, as well as on the data already available. To deal with all kinds of buildings, UNEP-SBCI must provide general principles. Our 'requirements' must be simple and easily understood, as they will then be adapted to the national or regional context. Tools will be developed at a national or local level, UNEP-SBCI must provide a method. This method must be understood by policy makers, decision makers in business and industry, and non-expert audiences (e.g. building owners).

In order to motivate country participation, we should follow an incremental approach: produce preliminary results from pilot projects and then extend scope and participation.

'GHG-GWP Metrics' & the SBC Index: Frameworks, Reporting & Implementation- Greg Foliente, CSIRO

The metric and protocol is a part in a set of common metrics for assessing, reporting and monitoring the sustainability of a building stock globally. The top issues have been identified previously. Each metric is reported and monitored separately, not leading to aggregation to a single Index.

In order to ensure global applicability, the details of implementation should be decided at national level. Reporting is primarily focused on building stock by jurisdiction to guide national and local policy development & industry initiatives (but can also be used at different scales – e.g. building portfolio or individual building – for specific purposes)

Even without specific climate zones, demanding transparency and verifying the credibility of data can allow comparable results between individual buildings. There could be types of reporting based on different the quality of data used.

The metric should be divided in two parts. The first part would be for decision makers in policy, business, and industry, outlining the principles and general guidelines for data collection, measurement and reporting. The second part would deal with the operational details of the collection and the protocol for measurement and reporting.

Session 3: Stakeholder Round Tables Discussions

The metric:

- End-use energy;
- Refrigerants;
- Renewable energy (self-generated renewable energy);
- Water;
- Per capita and/ or per square meter;
- Time: 2 years basis (temporary buildings)
- Tier 1, 2 & 3 calculation methodologies.
- Mixed-use buildings;
- Cost effective design;
- Sources of energy requires clarification – listing conversion factors
- Second energy type – add ‘chilled water’ to steam and heat;
- Use electricity bill and heating bill;
- Recognise that there may be places where embodied impacts outweigh operational impacts;
- Definition of building types/ specific national building typologies;
- Discuss normalisation by climate/socio-economic situation/comfort thresholds.

Next steps:

- Start with an introduction which explains the rationale of the current approach and explaining the scope (9 points from Paris);
- Needs to be an overall statement about the impact of the building sector and why we are focussing on the operation phase in stage one;
- Although it is implicit, it should be made explicit that we are talking about an energy use and carbon metric;
- Include more than just the carbon metric: better explain the stages of implementation;
- Reflecting energy efficiency must be upgraded in the document.
- Focus on the whole building life-cycle – distinguish between major and minor refurbishment;
- Acknowledge the influence of user behaviour – how to get tenant data;
- Make clear who the actual data gatherers are;
- Measures to show the impact of new buildings are missing – therefore not covering emerging economies ;
- Tool to be used.

Group A- Existing data

1. Data providers
 - a. Power generation/ utility companies
 - b. Energy retailers
 - c. Property owners/ developers
 - d. Facility management companies/ BMS companies
 - e. Public reports
 - f. Meter data providers
2. To recognize the uniqueness of the building and have it later for analyzers: different application and metering for different buildings.
 - a. Banks
 - b. data-centers
 - c. 24x7 mission – critical access
 - d. Retail
 - e. Office areas
3. Similarly mixed but will have all:
 - a. Residential
 - b. Office
 - c. Retail
4. Data available is currently on
 - a. Electricity
 - b. Water

This is monthly data. For more efficiency, it is always recommended to have more frequent data, something which auditors can do and can be encouraged.

5. Data reporting format should be simple, easy to understand and easy to fill. Energy consumed/ type of building.
6. All data 'pertaining to the development' should be included in the project. Full development data should be concerned.

Group B- Calculation methodologies

Benefits & Barriers to Top Down & Bottom Up

1. Top Down – need to use national statistics (use existing data sources)
 - a. Relatively easy to establish
 - b. Established Methodologies already exist
 - c. Very good for national policies
2. Bottom-up – requires more data and more time – hard to establish
 - a. Very hard to do national policy

- b. This is a final goal
- c. Can use it to verify the top down model
- d. Realistic consumption for individual buildings, easier progress reporting
- e. More data available
- f. Can use it for establishing benchmarks at the building level and validation
- g. Fits with mandatory reporting requirements in some places.

A combined approach:

- Use the same basic building typology for buildings;
- Try to compare top down and bottom up – we then learn more;
- Still a process that takes some time;
- CDM does not work on average values but national policies do;
- Chinese climates are different to the Koppen classification. We need to be transparent about the classification system we are using. Heating degree days and cooling degree days can be used instead.
- Labelling and rating of buildings is important – but store the information in a national database.

Group C- *Implementation / Application*

1. Change reference to end user of reporting from *building industry* to *building industry stakeholders*. Consider the roles of the stakeholders and refer to the Buildings and Climate Change booklet – UNEP (p.55)
2. Focus on progress and trends of development when reporting, not simply on listing of performance data.
3. The reporting should include/ focus on the building components and systems, rather than the whole building data.
Be more specific on a few manageable components.
4. Don't wait for the paradigm of reporting mechanism: work with what we have and how they work for different countries and regions.
5. A good date structure of reporting should provide commentary and recommendations, not just collection and publication of data.
6. Consider reports frequency, data availability, and accessibility
Who to report to/ how detailed it should be, how easy to be understood & applied
7. The reporting scheme should encourage and provide benefit to the industry to allow them to develop and implement new technology/ systems/ materials
8. Consider incentives and motivation factor through reporting – for the industry to be actively involved (in reporting themselves).
9. The system of reports should be:
 - a. Locally relevant
 - b. Internationally comprehensible
 - c. With transferrable results.
10. In consideration of the current competing standards/ initiatives/ tools of environmental assessment, the reporting mechanism should maximize commonality & transparency to encourage future collaboration and integration.

Day 2: October 27, 2009

The efficient building scheme- *Maria Atkinson, Lend Lease*

The Australian delegation has agreed to take up buildings efficiency in the Copenhagen negotiations. Negotiators were convinced after realizing the impact of the building sector and opportunities related to it.

What we need in the building sector is:

- Benchmarking for labelling & policy development
- Monetisation of carbon
- Accurate reporting (voluntary & mandatory)

Data is required to do this: we need a common carbon metric.

In the best practices witnessed, a smart meter system allowed to collect information on emissions. The Netherlands are using ITC to have energy bills entered directly (smart metering) to collect energy data. Building owners can provide information directly to governments. This enables a low transaction cost, as well as annual auditing. In the efficient building scheme, the building owner can influence emissions.

The government can put a policy in place to enable reporting (e.g. green lease). Governments can also conduct inventories of emissions, drive policy changes, and understand the economic impacts of the policy.

In Australia, every 1 dollar spent on energy efficiency management avoids 6,60 dollars spent in investment augmentation.

There are also case studies about the benefits of sustainability management in buildings. A healthy environment has benefits in terms of productivity increase, less sick days, and improvement in human health. The creation of jobs in the sector also drives economic outcomes. Labeling tools will be useful to inform the customer/ visitor. There are a lot of opportunities for academia, not for profit, and labeling firms. By creating a market, we create opportunities, besides allowing the evaluation and reduction of greenhouse gas emissions.

Every country can have an inventory to know what the carbon intensity and energy consumption is. Every country must have a benchmark, and can normalize it to create a building code. Every country should move towards mandatory disclosure, and encourage voluntary reporting. Each country should also establish a cap & trade system for building-related emissions.

The metric should be defined:

- Energy consumption: kWh/building type/ Location/Energy Intensity/CO₂-e;
- Realise the least cost carbon abatement potential;
- Using net lettable area;
- Measuring & reporting energy & greenhouse intensity;
- Agreement on global metric to account for buildings at the street level.

Feedback from the first day- *Peter Graham, UNEP-SBCI*

The **METRIC** is our focus for Copenhagen and it needs refining

1. Improve the introduction to provide a rationale required for:
 - a. Influence of Buildings in Climate Change + Opportunities/Benefits
 - b. Why we have focussed on operation phase of building as a 1st Step
 - c. Clarify the end users
 - d. Clarify the stages of implementation & modularity
2. Reporting
 - a. Energy Performance AND GHG Emissions
 - b. Pre-Post 1960 categories need to be revisited
 - c. Climate zones not necessary but heating/cooling degree days might provide more flexibility
 - d. Clarify the building types
 - e. Occupancy might be relevant for all types/none?
3. Issues of Scope
 - a. Water (to be included post Copenhagen)
 - b. Embodied emissions (not included in the first step)
 - c. Other building types (optional)

The **PROTOCOL** needs:

- Simplification,
- Needs to integrate top down and bottom up methodologies.
- Needs to account for data availability;
- Do different target groups require different protocols;
- Needs to define who collects data;
- This needs to start now but is a longer-term process – what is the process.

On the **IMPLEMENTATION**:

- Needs examples;
- Identification of beneficiaries and benefits;
- Identify synergies with existing protocols and frameworks;
- Opportunities for capacity building;
- Implement & Learn rather than pilot projects

Workgroups Outcomes

The metric - *Workgroup 1*

The aim: to measure GHG emissions and energy consumption from residential and non residential buildings (/m²/year).

Metric	Metric	Stage
Site		1
Country		1
District		1
Suburb		1
Address		1
Site Area (built environment)	m ²	1
Time period (calendar year)		1
Emissions	CO ₂ e/m ²	1
Electricity	kWhRS/m ²	1
Gas	kWhRS/m ²	1
District Heat/Cool	kWhRS/m ²	1
On site generation	kWhRS/m ²	1
Off Site renewable	kWhRS/m ²	1
Data definitions		1
Hours of operation	Per week	2
FTE	Full time	2
Detailed climate zone		2
Building		2
System (ref Paris 280909)		3

Outline

- The pathway to the future to be stated such that all participants are engaged.
- Stage 1 needs to achieve the greatest possible engagement.
- Data robustness is a function of accuracy and availability.
- It is assumed granularity will improve over time.
- There need to be data definitions since stage 1.
- This is an energy intensity metric.

Comments:

- Occupancy levels and detailed climate zones are optional in stage 1.
- GHG coefficients should be used.

- Data is measured over a year period.
- Hierarchy in data collection: Building- Site- City- Regional- National.

To be refined:

- Does a country have to contribute?
- How do you deal with developing nations where data is not available?

Stages

Tier 1 – Base data by site (metric kWhRS and kgCO₂e/m²)

- Building type (residential & non residential)
- kWhRS
- M² gross or nett NLA
- Location

Tier 2 - Base data by building (metric kWhRS and kgCO₂e/m² normalised).

- Building type sub-groups (commercial = office, shop, etc)
- As per stage 1 +
- Hours of use
- Occupant numbers

Tier 3 – Base data by system (metric kWhRS and kgCO₂e/m² normalised)

- As per 1 + 2 +
- System data (heat, cool, light, lifts, compressed air etc)
- Normalisation factors, actual use by floor.

The metric - *Workgroup 2*

- **Climate Zone**
- **Age of Stock**
- **Building Type**
- **Occupancy**

- **Climate Zone**
 - Global using Koppen
 - National (optional)

- **Age of Stock**
 - Date of Construction (occupancy)
 - Don't use pre-stated break point (1960) as not relevant for all countries

 - Date of Major Refurbishment
 - Skin/Structure
 - Systems (HVAC/Mechanical)
 - Electrical/Lighting

- **Building Type**
 - Residential
 - Detached
 - Semi-Attached
 - Multi-Story
 - Elevator
 - Super High-rise

 - Non-Residential
 - Non-residential include mixed use residential
 - Define types for next phase

- **Occupancy required for both**
 - Use top-down (statistics) or code when actual data not available
 - Use WBCSD for definition?

The protocol - *Workgroup 1*

Every country shall provide an inventory of the extent and quality of building stock energy and emissions data available in their countries.

Participating countries shall establish a GHG/energy consumption monitoring and reporting system consistent with a protocol that incorporates the following principles;

1. Data collection strategies shall be developed in accordance with the following hierarchy of data quality:
 - a. Measured data
 - b. Calculated data
 - c. Estimated data
2. Participating countries shall prepare a national/regional sampling strategy to ensure that appropriate use is made of high-level data and monitored sample data from the field, and to ensure that key building archetypes are covered.
3. There shall be clear lines of responsibility in the data collection and reporting process
4. There shall be transparency in data analysis and verification methods;
5. Energy consumption data shall be converted to eCO₂ per year, using relevant emission factors applied to on-site fuel use and to electrical generation mix.
6. Annual energy consumption data shall be normalized on the basis of heating and cooling degree days;
7. Refrigerants will not be considered at this stage;
8. We acknowledge the importance of collecting design-stage data on embodied and predicted operating emissions, and this will be dealt with at later stages.

The protocol - *Workgroup 2*

The protocol will allow reporting in a progressive manner based on the fact that countries/regions/cities/housing-subsectors have different levels of existing data and have different capacities in obtaining data. The protocol must be flexible yet structured enough to reflect these differing reporting abilities.

The protocol in the first draft (for COP15) should outline a general framework which provides a guideline or principles for progressive reporting with a long term goal to achieve bottom up MRVable reporting.

The goal is helping the countries to start reporting now, starting from data that are available (according to IEA, almost all countries have top-down estimation of energy consumption data in each sector, it is possible to make an estimation of nation-wide average based on data collected in IEA for the building sector)

This approach will allow countries to start at currently most feasible/best possible level and gradually work up the process without being scared away by the amount of work/data collection/reporting to do from the start.

The principles for the progressive reporting protocols are:

1. Start from using best available existing data then move to collecting data
2. Start estimating from aggregated national input-output data, gradually move to sampling within the boundary region, to bottom up reporting, eventually to direct metering/measurement for individual buildings (for electricity, heating, and cooling) when it becomes possible.
Start from estimate of the “whole” within the boundary which is reporting (can be a country or a city) to sampling of divisions within the boundary, to individual building reporting.
3. Start from national level to local, to city, to districts to individual building level in terms of level of reporting/ data collection
4. Recognizing it is a learning and progressive process for countries at different capacities for data generation
5. Countries start from their best possible/feasible levels based on data availability, different subsectors could also move at different speed and report using different methods.

In some instances e.g. informal housing sector, a ‘top down’ approach might be the only way to obtain data, through energy being consumed by the informal district, whilst in other instances e.g. office/ commercial buildings, the likelihood of obtaining better quality, ‘bottom-up’ data e.g. from meters/ utility suppliers etc would be more probable.

A menu of building typology could be drawn up that would be representative of the various building types (this may need to follow the typology defined in the metric). The protocol could provide a guidance to select and “report” the level of data generation for each building type. This would provide some form of ‘standardization’ for indication of data quality when data are discussed or benchmarked across the world.

An example of best possible reporting level a technically advanced country could currently achieve is provided below. The idea is to eventually move the reporting of data to the right, i.e., where the data quality is more verifiable.

Building Type	Informal/ Broad-based Data (top down)	⇔	⇔	Formal/ Discretised Data (bottom up)
Informal Residential				
Residential				
- Individual housing type				
- Communal housing type e.g. condominiums				
- Hostel				
Commercial				
- Office				
- Retail				
- Mixed				
- Hotel + Leisure				
Etc				

SBCI could come up with a 3 or 5 year plan where the Protocol's level of data to be reported (i.e. the grey boxes above) is periodically reviewed depending on the state of technology. E.g, residential individual housing type could eventually move to full 'formal' collection through smart meters etc.

To support the Protocol, SBCI could also come up with guidance of the latest state of technology, and methodologies for data collection (e.g. estimation, sampling, averaging of reported data and reporting), to support the reporting initiatives of countries/ jurisdictions.

Note on data types (metric)

- To include electricity and gas meter readings
- To include supplied heating/ cooling
- To include site generated power (PV, Combustion, Wind, Renewables etc)

Note on reporting intervals

- Periodic reporting of maximum 3 years interval
- New building start reporting after 2 years

SBCI Strategy

The following points were addressed in discussing the new SBCI strategic direction:

- Mission/Vision
- Funding the Secretariat
- How SBCI adds value
- Membership
- Milestones & Schedule

- **Mission/Vision**
 - A Common Voice & Neutral Platform for the Building Industry?

- **Funding the Secretariat**
 - Should it be UNEP funded or continue with membership funded?
 - Should it be rotating or will there be a permanent seat in UNEP?
 - How many people: One or two staff & what level?
 - Selling products is not an option (SBCI is not incorporated).
 - Can we become a carbon offset entity?

- **How SBCI adds value**
 - It can offer global, up-to-date information on developments within the sector
 - How to capitalize on credibility of UN Brand and the unique platform for consensus?
 - How to communicate better – mass email, publications?

- **Membership**
 - Should we move to key-donors with “observers”?
 - Who are our strategic members?
 - How/ who can we reach:
 - USA, China, India;
 - Investment stakeholders;
 - Cities; and
 - Developing countries members.
 - What does UNFCCC say about our strategy?
 - What would activate our current & future members?
 - What is the ROI on membership fee?
 - Networking is a key value.

- **Milestones & Schedule**
 - Expand the Index to be inclusive of broader interest and impact.
 - Publications?
 - Meetings?

These points raised debate and will be further discussed during the strategic planning process undertaken by SBCI. A new strategy will be presented at the Members Round Tables in 2010.

The action plan to Copenhagen

Specific actions were proposed to create awareness about SBCI's message that: "The single most effective policy move to reduce GHG emissions, improve public health, decrease consumer cost & generate jobs is improve building energy efficiency." This message is to be delivered in an awareness campaign for COP participants and the general public within the next 6 weeks, through:

- A press release
- An UNEP-SBCI letter to negotiators and COP participants, highlighting the importance of the building sector in tackling climate change.
- A 4-pages fact sheet presenting the key facts and arguments for addressing the importance of the building sector in COP15 and beyond.

Examples of facts to be included in the fact sheet:

a. The state of play

- Buildings reflect the civilization that erects them.
- In urban areas we spend 90% of our lives indoor.
- Energy consumption is directly linked to GHG emissions
- Worldwide, buildings consumption is about 30% to 40% of total electric energy (without transportation energy)
- 80% of that energy in urban cities and megacities
- 50% of the world population in urban area and growing – specifically in developing countries > leads to more energy demand

b. Improvement

- New buildings are mainly in China and India. With today's technology, these building should consume less than 1/10 than their predecessors
- With simple behavior changes and small technology investment it is possible to reduce the energy consumption by 20 to 30%
- With improved technology already available we can reach 50%
- With innovative technology we can go up to 80%

c. Economics

- Energy consumption is a big part of organizations' and people's budgets.
- Reducing energy consumption generates revenue that can be reallocated for other purposes such as fight against poverty.
- Alternative energy sources generate local financial resources.
- Conservation of energy and use of natural energies with passive strategies create jobs (which range from unqualified jobs to expert skilled jobs in research, development, design, manufacturing and field actions.
- All these actions improve the GDP and commercial balance

d. Health

- Energy conservation actions in buildings improve life :
 - at home
 - in offices (consequences on productivity, reduction of absenteeism...)
 - in universities with positive consequences on grades of students.
 - in hospitals with improvement of the recovery time
- It even improves outside life quality, by improving health but also stimulating economies in several sectors including tourism

APPENDIX - Draft letter to delegates and COP15 participants.

Dear COP 15 Participant and Negotiator,

Some weeks from now you will leave for Copenhagen to participate in the COP 15 negotiations.

The topic you will be faced with is to agree on the next objectives for GHG reductions for the second period of the Kyoto protocol. Taking the present climate situation into consideration we all know that targets will have to be ambitious!

I write to you as a member of UN SBCI – the United Nations’ initiative for Sustainable Building and Climate Change (UN SBCI = UN Sustainable Building and Climate Change Initiative). Our concern is that you will hear very little – in fact FAR too little – on the role that Buildings play in the energy consumption and GHG gas emission contribution and its reduction potential.

According to the United Nations, buildings are responsible for more than 40% of global energy use and one third of global greenhouse gas emissions.

Up to 80% of greenhouse gas emissions in our cities is from the energy used by buildings

Further, the size of the building sector’s contribution to global greenhouse gas emissions is rapidly growing: the IPCC (International Panel on Climate Change) 4th assessment report noted that in the period 2001 – 2007 emissions associated with non-residential buildings grew exponentially and buildings are a major contributor to the IPCC estimate of a 25-90% increase in emissions between 2000 and 2030 for developed and developing countries.

The good news is that the building sector also provides more potential for quick, deep and cost effective greenhouse gas reduction than any other industry, through design, equipment, management systems and alternative generation solutions and they already exist today!. The industry has the skills and technologies necessary for halving greenhouse gas emissions in our cities by 2020.

There is general consensus among international authorities, including the International Panel on Climate Change (IPCC), that energy efficient buildings are the cheapest abatement solution and the building sector provides more potential for quick, deep and cost effective greenhouse gas mitigation than any other industry.

Why do we fear that you will hear so little about the importance of Building in Copenhagen? The building industry is by nature fragmented due to its local ... and the many actors that are involved before a building is constructed – and even during its operational phase the investor, caretaker and the user may not be the same! This is why the building sector has difficulty to speak with one strong voice, and the reason for UN to establish the SBCI. The fragmentation is also the major reason why the sector is also mostly absent in carbon exchange schemes and in practise hardly eligible for carbon trading.

Having said this, we see that it does not make sense to work on ambitious targets without taking into account the role of the building sector and the huge potential for GHG abatements. Not only is the potential huge, a large portion can be achieved at very low - if not even positive - cost!

OR more positively: BUILDINGS ARE KEY TO THE SOLUTION!

However, there exists no tool to register firmly the emissions from buildings, thus for authorities to set tangible targets is very difficult today - especially in a COP context where targets and reductions should be negotiated based with the same references.

This is why we need a global common language pertaining to these issues, ie common indicators and references which do not exist today.

SBCI is working on a global Metric that can be used in all kinds of indexes and building certification schemes - and also a protocol on how to implement a world wide reporting procedure.

We find that it is not so difficult to obtain robust, accurate, unassailable data on greenhouse gas emissions from buildings and it is readily accessible and developing countries have the systems and skills to get this information too:

- energy consumption (electricity and gas bills, including any on-site energy generation);
- building type (office, hotel, retail, school, etc); and
- location (climatic zone and/or economic centre).

From this data, the following straight-forward calculations can be made:

- energy intensity (kWh/m²/annum); and from this -
- carbon intensity (tCO₂e/m²/annum using official greenhouse gas emission coefficients for fuel sources).

These will be the UNEP SBCI proposal for a Global common Metric on energy consumption in and GHG gas emissions from the building sector.

On behalf of UNEP SBCI (United Nations Environment Programme - Sustainable Building and Climate Initiative) I..... would be very happy to give you a call or even meet with you before your departure to Copenhagen to inform you more about the importance of buildings when it comes to climate change and the solutions we see.