

An international survey of effective GHG mitigation measures in the buildings and construction sector

Nils Larsson
WSBE17 June 2017



Organisers:



International Co-owners:



Survey on climate change mitigation

- A pilot Excel-based survey was carried out by iiSBE in late 2015;
- The survey asks building-sector individuals to identify measures they believe are effective in mitigating climate change effects;
- We had a very high response rate and high-quality answers to this small pilot;
- The main reason for doing this work is to provide a **bottom-up and more regionally specific view** of possible measures to complement the many top-down policies developed by governments and large NGOs.
- We badly need more regionally-sensitive information on what GHG reduction measures are most effective in our sector.



Organisers:



International Co-owners:



Sustainable Buildings and Climate Initiative
Promoting Policies and Practices for Sustainability



Excerpts from the Excel version of the system

General Actions

- 1 Carbon cap-and-trade schemes.
- 2 Carbon taxes with sliding scale based on emissions and redistribution scheme to end-users.
- 3 Property taxes that incentivize efficient high-density urban development.
- 4 Taxation or regulation to limit use of fuels and energy from high-carbon sources.
- 5 Green financing programs to facilitate financing of high-performance buildings.
- 6 Public procurement of low-carbon sources of energy.
- 7 Incentives for local procurement of renewable energy and low-carbon materials.
- 8 Emission tariffs to reduce outsourcing of emissions by producers of materials and products.
- 9 Regulations to reduce fossil fuel and electrical peak power requirements in industrial processes.
- 10 Design competitions and awards with a strong performance focus.
- 11 High-performance demonstrations and pilot projects.
- 12 Education programs focused on built environment sustainability issues in secondary schools and university undergraduate programs.
- 13 Education and other measures to reduce resource waste in construction.
- 14 Education and promotion to reduce consumption levels by Individuals and households.
- 15 Performance education programs for occupants and users of key building types.
- 16 Live and on-line training programs focused on tools and built environment sustainability issues for designers, builders and real estate professionals.

Excerpts from the Excel version of the system

Actions applicable to urban areas

- | | |
|----|---|
| 17 | Inclusion of solar rights in zoning regulations. |
| 18 | Property taxes or regulations that discourage or cap excessive dwelling unit areas. |
| 19 | Property taxes or regulations that encourage full-time occupancy of urban housing. |
| 20 | Regulations to ensure that vacant urban land will be developed for urban agriculture, green areas with intensive tree planting or with new buildings conforming to high-performance regulations. |
| 21 | Performance requirements in small urban zones for energy, GHG emissions, water, use of on-site renewables etc. |
| 22 | Planning priority within small urban zones for local public transportation systems over private vehicular traffic. |
| 23 | Adoption of synergy zones as modular elements in new urban development; defined as small urban areas that have transit hubs, are pedestrian-oriented, contain medium-density and mixed-use buildings and make use of building system synergies. |
| 24 | Selective dismantling of existing buildings that do not meet minimum green performance standards and where high-performance retrofits are not technically feasible. |
| 25 | Dedicated pedestrian sidewalks and walkways in urban areas. |
| 26 | Dedicated bicycle lanes, with bicycle parking facilities close to public transport stops and key community facilities, to reduce use of motorized vehicles. |

Excerpts from the Excel version of the system

Actions applicable to buildings and construction

- 27 Building regulations that include performance requirements for energy, emissions, water, and indoor environmental quality.
- 28 Inclusion in building regulations of provisions to minimize use of materials and components that are difficult to reuse or recycle, in order to maximize durability of the building envelope and structure, and to facilitate adaptability of the building to new functions.
- 29 Adoption of passive solar design principles, including appropriate orientation, window size/location, solar shades, and use of thermal mass.
- 30 In areas with temperate summer conditions, building regulations to minimize unnecessary mechanical cooling.
- 31 Requirements for green roofs and other building-related measures to capture rainwater, to control storm water flows and to reduce urban heat island effect.
- 32 Use of whole-building high performance design guidelines adapted to location and including issues covering Site regeneration and development, Energy and resource consumption, Environmental loadings, IEQ, Service quality, Social, cultural and perceptual aspects, Cost and economic aspects.
- 33 Use of Integrated Design Process (IDP) guidelines, adapted to location and building types, to support high-performance design.
- 34 Grey-water storage and distribution systems in multi-unit housing projects for irrigation and toilets.
- 35 Regulations to ensure use of water-efficient equipment and fixtures.



Organisers:



International Co-owners:



Sustainable Buildings and Climate Initiative
Promoting Policies and Practices for Sustainability



Global Alliance
for Buildings and
Construction

Excerpts from the Excel version of the system

Actions applicable to buildings and construction

- | | |
|----|---|
| 36 | Provision of reliable public potable water and electrical supply to buildings. |
| 37 | Measures to support the use of building-integrated photovoltaics (BIPV). |
| 38 | Use of power quality management systems and protocols.. |
| 39 | Energy storage systems, including DC and other forms, suitable for use in buildings and small urban zones; |
| 40 | Adoption of DC low-voltage power distribution systems in commercial and residential buildings. |
| 41 | Adoption of Environmental Product Declarations (EPD) and Product Environmental Footprints (PEF) for materials and products. |
| 42 | Energy and emission retrofits in public, commercial and residential buildings. |
| 43 | Energy performance contracting including target values for emissions. |
| 44 | Establishment of public and standardized multi-variable performance datasets including data on embodied energy and operational energy and emissions. |
| 45 | Use of compact and affordable multi-variable building performance rating systems adapted to location and cover Site regeneration and development, Energy and resources, Environmental loadings, IEQ, Service quality, Social, cultural and perceptual aspects, Cost and economic aspects. |



Organisers:



International Co-owners:



Sustainable Buildings and Climate Initiative
Promoting Policies and Practices for Sustainability



The 2016/17 web-based survey

- A web-based version is sponsored by the five SBE partners, Global Alliance for Buildings and Construction, CIB, iiSBE, UNEP-SBCI and FIDIC;
- The web survey was launched in English and French early this year.
- The response rate over the last three months has been poor, and we will have to consider the causes over the summer:
 - Too many surveys?
 - Too long?
 - Content requires modification?
 - Format not suitable?
- In any case, we need the information and we will work hard to get the responses we need.



Organisers:



International Co-owners:



Thank you



Organisers:



International Co-owners:

