Asia-Pacific Economic Cooperation

New and Existing APEC Work on Green Building

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APEC Sub-Committee on Standards and Conformance (SCSC)

- Reports to the Committee on Trade and Investment
- Composition: All 21 APEC economies with representation from trade agencies, regulators and national standards bodies
- General Goals of the SCSC:
  - Increase Member alignment to **international standards**;
  - Encourage **regulatory cooperation** and good regulatory practices;
  - **Engage business** in its activities;
  - Increase acceptance and understanding of **conformity assessment and international mechanisms as a tool to facilitate trade.**

Objectives for SCSC Work on Green Building

- Encourage consistent, transparent, and appropriate green building standards-related measures to facilitate trade.

- Identify best practices in standards and code development, and testing and rating of building products that yield energy and other resources savings for APEC economies.

2011 Green Building Work

SCSC Project: Sustainability in Building Construction (Commercial Buildings) Efficiency and Conservation

- Survey: Sustainability in Building Construction
- Two workshops in Washington, D.C. and Singapore
  - In partnership with ASEAN ACCSQ
- Two case studies:
  - **Trade Impact of Green Building Rating Systems** in the Asia-Pacific
  - **Trade Impact of Life Cycle Assessment** in Multi-Attribute Certification Programs for Flooring and Plumbing Products

Green Building Work 2012-2015

SCSC Multi Year Project: The Role of Standards and Conformity Assessment in Enhancing the Performance and Energy Efficiency of the Commercial Building Sector

- Greater transparency
- Consensus that voluntary initiatives, market-driven programs and government-led efforts all have roles in promoting greater sustainability in the built environment
- Standards and conformity assessment provide consensus solutions
- Enhanced policy coordination (APEC-ASEAN and other)

With a commitment to:

- Respond to the APEC Leaders Statements

  *"**Promote energy efficiency** by taking specific steps related to transport, **buildings**, power grids, jobs, knowledge sharing, and education in support of energy-smart, low-carbon communities; and*

  *"Pursue common objectives to **prevent technical barriers to trade** related to emerging green technologies, including smart grid interoperability standards, **green buildings**, and solar technologies."*

- Partner with, and build on the work of, the APEC Energy Working Group, Expert Group on Energy Efficiency and Conservation (EGEEC)
- Continue cooperation with the ASEAN Consultative Committee on Standards and Quality (ACCSQ)

Green Building Work 2012-2015

Multi-Year project focal areas: tools to increase building performance

- Building codes and green building codes
- Building Information Modeling (BIM)
- Metrics

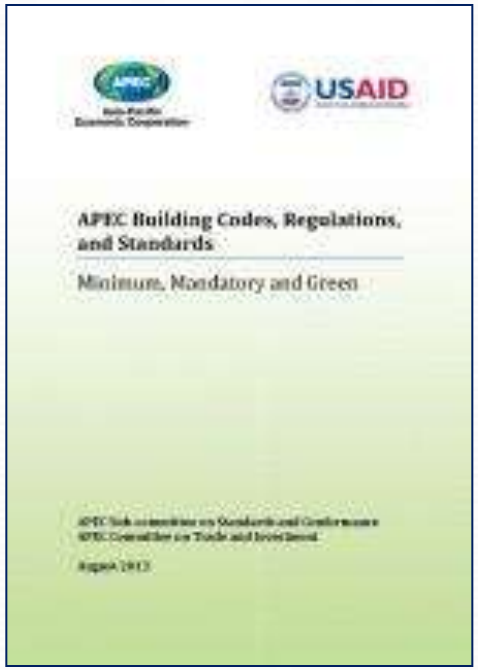
Workshop 1	Lima, Peru March 2013	**Sharing Experiences in the Design & Implementation of Green Building Codes**
Workshop 2	Medan, Indonesia June 2013	**How Building Information Modeling Standards Can Help Increase Building Performance**
Workshop 3	Beijing, China August 7-8, 2014	**Utilizing Building Information Modeling to Increase Building Performance**
Workshop 4	New Orleans, USA October 20-21, 2014	**Utilizing Green Building Codes to Increase Building Performance**

Building Codes

- Peru Workshop: Sharing Experiences in the Design and Implementation of Green Building Codes (March 2013)
- Sharing of information, experiences, and best practices among APEC and ASEAN economy representatives
- Informed by:
  - Peru survey - "Sharing Experiences in the Design and Implementation of Green Building Codes in the APEC Economies"
    - http://mddb.apec.org/Documents/2013/SCSC/WKSP1/13_scsc_wksp1_009.pdf
  - U.S. study – "Building Codes and Green Codes in the APEC Economies"

Study: APEC Building Codes, Regulations, and Standards

Objective: Understand how APEC member economies utilize building codes to increase building performance.



For each of the 21 APEC economies, the study provides in-depth information about:

- Approach to building regulation
  - Development, adoption, administration, enforcement
- Roles of government and private sector
- Existing building codes
  - Minimums for key elements
  - Referenced standards
- Green elements of existing codes
- Stand-alone green codes
- Protocols for monitoring, review, and assessment

Available at: http://publications.apec.org/publication-detail.php?pub_id=1442

Building Codes

- New Orleans Workshop: Utilizing Green Building Codes to Increase Building Performance
- Emphasis on resource savings in support of APEC goals to reduce energy intensity by 25% by 2030
- Aim for green codes to meet their objectives

Building Information Modeling (BIM)

- Two Workshops:
  - Current status of BIM standards development;
  - Benefits of BIM to policymakers, architects and designers, construction industry actors, building owners, and others;
  - Case study success stories showing the practical implementation of BIM projects;
  - Benefits of using BIM to improve building performance.

Major Themes: BIM and Green Building

- Building Information Modeling (BIM) is a technology that is **transforming the design and construction industry**, with a specific relevance to Green Building.
  - BIM can be utilized to drive Green Building by delivering concrete benefits in the planning, design, construction and operation of buildings.
- BIM provides a **powerful tool to reach higher performance** outcomes economies seek for the built environment, for individual buildings and more broadly in urban planning.
- **Standards play a crucial role in maximizing the benefits** that can be achieved through BIM.
  - At its core, BIM is an approach that facilitates communication, collaboration, and improved decision-making. BIM allows stakeholders to share, model, test and refine ideas and options early in a building's design life.
  - BIM also enables decisions to be carried through efficiently and effectively into building operation. Standards provide a facilitating foundation for economies to pursue BIM in accordance with their specific objectives and the technologies in use.
- **Standards used in BIM** should be developed using the World Trade Organization Technical Barriers to Trade (WTO TBT) **principles for what constitutes an international standard.**
  - This includes transparency, openness, impartiality and consensus, relevance and effectiveness, coherence and developing economy interests.

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START-UP GUIDE
Building Information Modeling (BIM)

Where is your economy on the BIM adoption timeline?

STATUS QUO	PILOTING	POLICY	INDUSTRY	INNOVATION
⇨ Minimal BIM adoption, no government policies or support	⇨ Exploring value and implications of implementation for the economy	⇨ Developing support, incentives, and requirements for BIM by Government or Industry Leaders	⇨ Wide adoption of BIM and ready to spread best practices and benefits	⇨ Leading development of new capabilities and extending the value of BIM

ACTIONS SUPPORTING BIM ADVANCEMENT

Performance—Track impact and progress

Action	Benefit
Tie BIM success metrics to broader economic priorities such as Energy and Resource Savings, Sustainability, Productivity, Safety, Environment, and Health	Measurable, reportable, and relevant indicators of the benefits BIM brings to the economy help motivate investment
Engage stakeholders to choose and implement metrics	Increases buy-in, applicability, and relevance to goals
Identify, publish, and use success targets for established BIM goals	Shared understanding of the value proposition, evaluation criteria, and documented success confirm and inspire accomplishments
Measure and report progress openly and frequently	Transparent, equitable, and reliable reporting to inform timely and effective management decisions
Benchmark progress to global achievements	Realistic capability comparison with other economies; evaluate status in relation to possible collaborators and competitors

Planning—Establish objectives and protocols

Actions	Benefits
Review effective BIM pathways	Draw benefits of international best practices, consensus standards, and other economies' accomplishments
Connect BIM to economy-specific priorities	Enables integration with regional priorities and desired results such as energy and resource savings, sustainability, productivity, environment, and health outcomes
Set specific goals for BIM development to drive BIM pilot projects, policy making, and metrics	Publicize rationale behind BIM projects, establish basis for metrics and targets, track and demonstrate progress
Identify and engage core stakeholders • Assess current state of BIM awareness and adoption • Communicate benefits of BIM • Identify requirements for increased BIM uptake	Engagement increases buy-in, helps establish accurate basis from which to measure improvement, engagement with local industry encourages participation and promotes development of relevant programs and policies

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Conduct case studies and pilots to inform policy-making	Develops knowledge and capabilities appropriate to aspirations. Demonstrates viability of strategies and tactics
Design stimulus, incentive, support and education to encourage rapid BIM uptake and BIM expansion	Encourages action, reduces risk to practitioners, leverages knowledge gained from research, case studies, and pilots

Adoption—Find the right people and processes

Actions	Benefits
Establish policies promoting breadth and depth of BIM capability development: • Define role of government • Identify supporting standards • Identify supporting technologies	Fosters BIM uptake across all project types and sizes, types of enterprises, and modes of project delivery. Clear supportive action by government can legitimize, influence, and support industry efforts for BIM adoption
Engage Stakeholder Communities: Green Building, Architecture, Construction, Engineering, Education institutions, Finance	Ensures key stakeholder awareness of policy measures and educational opportunities. Recognizes celebrates, and further motivates leaders and champions
Provide BIM education opportunities	Develops capabilities and localized best practice knowledge
Consider readiness catalyst policies such as encouraging or requiring BIM for public projects	Motivates meaningful capability development. Reveals education and technology requirements. Participating firms are in a position to become BIM champions

Technology—Provide the right tools

Action	Benefit
Review international consensus standards, adopt and improve as appropriate to economy-specific needs	Reflects best practices and industry expertise of international BIM community
Develop comprehensive process guidelines and performance specifications	Supports local economy evaluation of BIM software and hardware
Leverage mature and proven technology to support economy-specific BIM goals	Allows local customization while realizing expected value gain in short time (vs. developing from scratch)
Improve functionality and interoperability of existing standards and applications (e.g. IFC format, version interoperability), adopt industry-wide attribute standards	Overcome existing roadblocks and open new opportunities for growth and return on BIM investments

TOP ACTIONS AT EACH STAGE OF BIM ADOPTION

STATUS QUO	PILOTING	POLICY	INDUSTRY	INNOVATION
⇨ Benchmark current productivity to other economies ⇨ Compare the cost of BIM enablement to the cost of maintaining status quo	⇨ Invest in case studies and pilot projects ⇨ Align pilot project targets to strategic goals ⇨ Assess each approach and benefit	⇨ Formalize realistic and enforceable policies at agency and economy-wide levels ⇨ Support repeatable and measurable gains	⇨ Harmonize leadership and grassroots efforts ⇨ Encourage with support, rewards, and mandates ⇨ Identify and adopt BIM standards and technologies	⇨ Consider both evolutionary and revolutionary transformation ⇨ Establish global strategic partnerships

Developed by bimSCORE www.bimSCORE.com

Expected Deliverables from 2014 Work

- BIM Metrics Guide
  - Provides concise best practice approaches to identifying measurable targets and outcomes associated with utilizing BIM to advance green building.
  - Will include approaches to defining relevant metrics to demonstrate BIM for green building's contribution to broader economy-level objectives, such as energy, water, and other resource savings, as well as other sustainable construction goals.
  - Ready in 2015

Expected Deliverables from 2014 Work

- U.S. Self-funded Deliverable: Green Code Infrastructure Guide
  - Best practice guidance on building code-related readiness elements that form an infrastructure supporting the successful development, implementation, enforcement, and evolution of a green building code
  - Economy Points of Contacts, survey, best practices
  - Ready in 2015

Recognition

- ….We also applaud the concrete measures taken to green the commercial building sector through the use of green codes and building information modeling, and the guidance developed on policies and practices in these areas that will yield energy and other key resource savings.

- Connectivity with green building activities in other regions

For more information

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2011 Deliverables Available at APEC Website

- **Survey** - Sustainability in Building Construction (Commercial Buildings) - Efficiency and Conservation (March 2011)
  - APEC Publication: http://publications.apec.org/publication-detail.php?pub_id=1144
- **Meeting Outcomes** - Green Buildings and Green Growth: The Enabling Role of Standards and Trade (March 2011, Washington, DC)
  - APEC Publication: http://publications.apec.org/publication-detail.php?pub_id=1146
- **Meeting Outcomes** - Green Building and Green Growth: Approaches to Encouraging a Positive Green Building Climate (September 2011, Singapore)
  - Available through APEC
- **Case Study - Trade Impacts of Life Cycle Assessment for Flooring and Plumbing**
  - APEC Publication: http://publications.apec.org/publication-detail.php?pub_id=1256
- **Case Study - Trade Impacts of Green Buildings Rating Systems in Asia-Pacific**
  - APEC Publication: http://aimp.apec.org/Documents/2011/SCSC/WKSP2/11_scsc_wksp2_009.pdf

2013 Deliverables Available at APEC Website

- **Peru Green Codes Workshop meeting documents**

http://mddb.apec.org/Pages/search.aspx?setting=ListMeetingGroup&DateRange=2013/03/01%2C2013/03/end&Name=Workshop%20on%20Sharing%20Experiences%20in%20the%20Design%20and%20Implementation%20of%20Green%20Building%20Codes%202013&APECGroup=%22Sub-Committee%20on%20Standards%20and%20Conformance%20%28SCSC%29%22

- **APEC Building Codes, Regulations, and Standards- Minimum, Mandatory, and Green,** has been published on the APEC web site and can be found at the link:

http://publications.apec.org/publication-detail.php?pub_id=1442

- **Building Information Modeling meeting documents**

http://mddb.apec.org/Pages/search.aspx?setting=ListMeeting&DateRange=2013/06/01%2C2013/06/end&Name=Joint%20APEC-ASEAN%20Workshop%20-%20How%20Building%20Information%20Modeling%20Standards%20Can%20Improve%20Building%20Performance%202013

2014 Deliverables Available at APEC Website

- **Start Up Guide, Building Information Modeling**

http://publications.apec.org/publication-detail.php?pub_id=1510

- **Meeting documents from workshop - Utilizing Building Information Modeling to Increase Building Performance**

http://mddb.apec.org/Pages/search.aspx?setting=ListMeetingGroup&DateRange=2014/08/01%2C2014/08/end&Name=Joint%20APEC-ASEAN%20Workshop%20on%20Utilizing%20Building%20Information%20Modeling%20to%20Increase%20Building%20Performance%202014&APECGroup=%22Sub-Committee%20on%20Standards%20and%20Conformance%20%28SCSC%29%22