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APEC Cool Roof Study (Interim Update)

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APEC COOL ROOF STUDY (INTERIM UPDATE)

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OBJECTIVES OF STUDY

- Compile information on experience of APEC economies with cool roofs (Background/technical study)
- Characterise the energy, GHG and air quality benefits (Modelling)
- Build capacity to implement cool roof technologies and policies in developing APEC economies (Policy context)

WORK SCOPE/STRUCTURE

- Background/desktop research

(scientific evidence, case studies, cool roof council/institutions, key suppliers/manufacturers, key researchers and experts)

- Modelling of potential benefits throughout APEC

(consolidate available methodologies and data, select modelling scenarios, parameters, analysis of energy/cost savings)

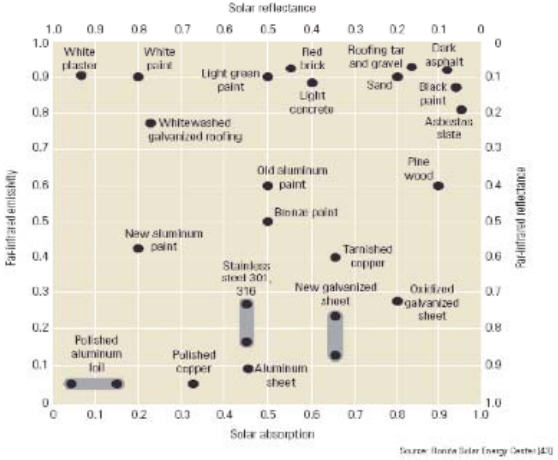
- Policy evaluation and recommendation

(barriers to implementation, analysis of local energy efficiency policy, gap analysis)

TYPE OF ROOF PRODUCTS

- Low sloped roof - single ply membranes, bitumen, metal decking
- Steep sloped roof - conventional tiles
- Other types - coatings, paints

TYPES OF ROOF MATERIAL



EXPERT PANEL

- Objective: to facilitate implementation of cool roofs across APEC developing economies
- Three categories:
  - Technical experts (research, academia)
  - Product experts (manufacturers, roofing industry)
  - Policy experts (government agencies, Green Building Councils)

Focus on APEC Asian region but also international experts.

TECHNICAL EXPERTS

- US — Lawrence Berkley, Oakridge, National Center for Atmospheric Research
- EU — Mediterranean institutions (University of Athens, Technological institute of Crete)
- Asia — Japan (University of Tokyo, Meiji, Musashi Univiersity, Tokyo Metropolitan Government)
  National University of Singapore, University Malaya, Universiti Tecknologi Malaysia
  Asian Institute of Technology

PRODUCT EXPERTS

- Manufacturers
- Akzo Nobel
- BASF
- GAF Materials Corporation (USA)
- Centre for Environmental Innovation in Roofing(USA)

POLICY EXPERTS

- Intergovernmental Agencies (UNEP, UN SBCI, World Bank, APEC, Asian Development Bank)
- National government agencies (US Department of Energy, Singapore Building Construction Authority, various national energy and environment ministries)
- Green building councils, Cool Roof Councils
- Academic experts

SURVEY/QUESTIONNAIRE

- Ascertain views on cool roof industry in APEC developing economies.
- Questions to seek opinion on national policy initiatives (are they sufficient? What needs to be done?), what are the drivers and barriers for implementation of cool roofs.
- Survey academics, institutions, industry, government

Survey Status

- Web-based survey sent to numerous participants.
- 18% response to date.
- Recurring issue is lack of available data, in particular long-term data on Cool Roof performance compared to other roof forms and payback periods.
- Most agree governments should do more to promote use of Cool Roofs, e.g. through tax incentives/subsidies
- Need for regionally specific modelling also cited

Modelling

- High level analyses
- Identify existing cool roof calculators/models (analyse their parameters, assumptions)

- ***Objective of modelling is to quantify the potential benefits (energy, costs, pollution) of implementing cool roofs in APEC developing economies through high level analysis.***

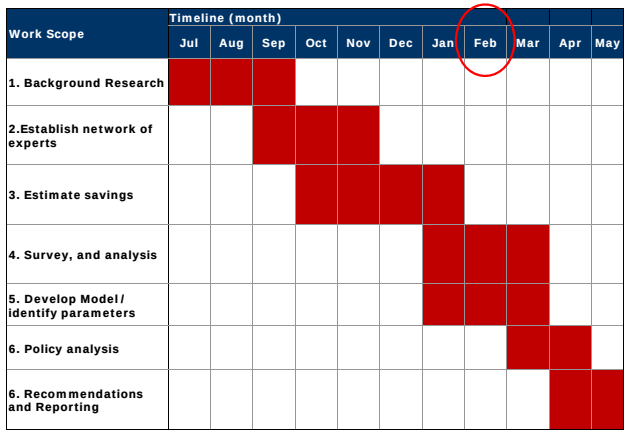
MODELLING APPROACH

- Case study of Singapore.
- Simulate performance of cool roofs on building.
  - Key variables
    - Building type
      - typical landed residential
      - typical high rise residential
      - typical industrial/warehouse
    - Roof albedo
      - high
      - medium
      - low
- Output: energy savings

NEXT STEPS

- Analyse results of Survey
- Complete Model simulations
- Analyse results of Modelling

TIMELINE (8-10 MONTHS)



THANK YOU

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