

International Workshop on Countermeasures to Urban Heat Islands (UHI)

## The Workshop's Reviews and Next Actions

Tokyo, 4<sup>th</sup> August 2006

Review 1: **Recognition** of the seriousness of UHI Phenomenon (day & night) world-wide

- Definition, framework and stakeholders of UHI issues (Global Warming↔UHI↔Indoor Air Quality)
- UHI is one of the major barriers for pursuing sustainable society in terms of quality of life & public health (heat-related illness), environmental impacts, power reliability (related to Air-Conditioner), social security, material degradation and all the related costs.



Review 2: State-of-the-art technologies for UHI **analysis**

- What and how to measure? (Measuring methods & technologies according to scale, to be shared world-wide)
- What and how to simulate? (More accurate prediction of the effects is now possible through computational simulation analysis in macro/regional, meso/local and micro/building & human scale.)
- New integrated index of human physiological model should be developed beyond current ones.)



Review 3: Traditional and state-of-the-art design & building **technologies** for urban cooling at micro-, urban- and global-climate levels.

- Diverse design techniques have been intensively developed to date, in terms of urban and architectural solutions.
- Those include compact city, albedo changes, greening & landscaping, provision of shades and wind canals, structural & surface innovations such as cool-roof & cool-pavement, anthropogenic heat-waste release, evaporation of water, etc.
- Efforts should be yet made to evaluate the both private and public benefits (as well as the Life Cycle Cost) of the above and to provide people with the related objective information



Review 4: Design and Implementation of effective **policies** regarding UHI mitigation

- UHI became one of the major governmental issues to be tackled in collaboration with industry and academia.
- It is required to encourage effective UHI mitigation countermeasures through regulations & guidelines, labeling systems (e.g. CASBEE-HI), incentives (i.e. taxes, subsidies, and other financial measures), etc.



Action 1: **Immediate dissemination of the UHI mitigation countermeasures world-wide**

- Provision of the relevant information (publications, website, etc.) towards actions (*Meier*)
- International Workshop on UHI to be regularly (i.e. annually) held in a major city in the world

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Action 2: **Active promotion of further international collaborations**

- Project-based collaborations of experts according to the Plan-Do-Check-Action cycle (e.g. Intensive research regarding the quantitative benefits of cool-roof at macro scale: *Murakami*)
- Creation of a long-term platform in the near future, including officials of 100 cities of more than 3million population as members (*Akbari*)

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**Statement of the 1<sup>st</sup> Workshop**

Tokyo, 4<sup>th</sup> August 2006

Drafted by S. Murakami, Chair of the Workshop

**1. Recognition**

- 1-1. Progressive seriousness of UHI impacts on environmental, social and economical aspects
- 1-2. Necessity of the development of effective countermeasures to UHI impacts through collaborations of government, industry and academia
- 1.3. Necessity and value of the promotion of international collaborations

**2. Targets to be pursued**

- 2-1. Technologies and design methods
  - 1) Analysis of the impacts to human health
  - 2) Collaboration and integration of measurements and computational simulation
  - 3) UHI mitigation by means of:
    - a) Albedo changes through:
      - Material innovation
      - Building and urban design methods
    - b) Greening and landscaping
    - c) Modification of anthropogenic heat-waste release
  - 4) Quantitative evaluation methods of UHI impacts
  - 5) Life Cycle Assessment methods of UHI effects, and others
- 2-2. Policy instruments
  - 1) Evaluation of various countermeasures from the policy perspective
  - 2) Dissemination of rating system of UHI impacts for building and material design (e.g. CASBEE-HI in Japan, CRRC in USA, etc.)
  - 3) International collaborations among developed and developing countries, and others
- 2-3. Recommendations to governments (local + national)

They are urged to

  - 1) Assess UHI severity & impacts, and
  - 2) Consider developing UHI countermeasures

**3. Immediate issues for the future actions**

- 3-1. Establishment of a platform for the future actions of international collaborations:
  - How, where, when, and by whom?
- 3-2. Preparation of the second workshop:
  - The 2<sup>nd</sup> workshop will be held in United States organized by the American team, represented by Dr. Alan Meier.
- 3-3. Establishment of a steering committee for the above