



World Meteorological Organization

Weather • Climate • Water

Strategy for Urban Service Delivery Adapting to Changing Climate and Environment *-- Building Resilient and Climate Smart Cities*

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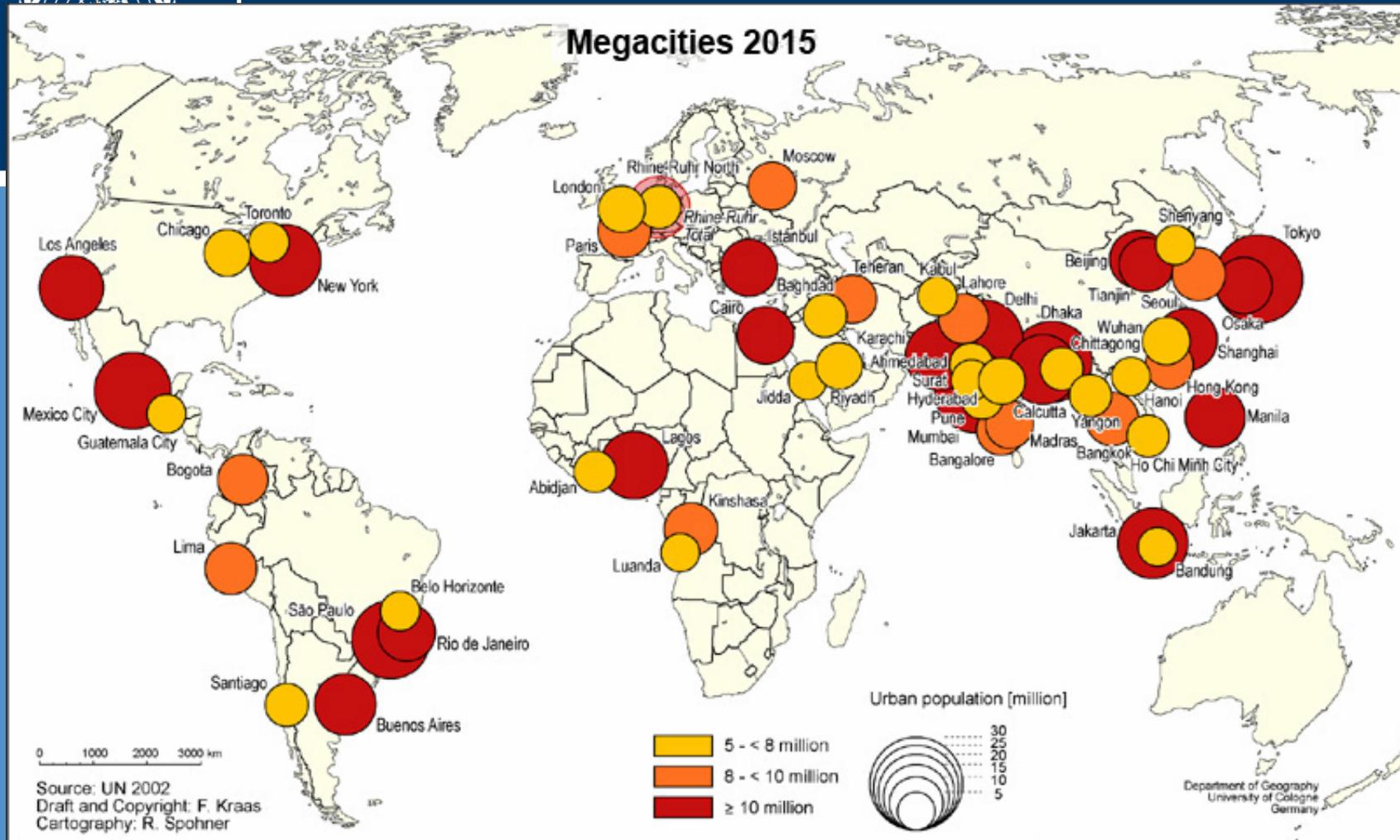
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- Building urban resilience: fundamental base for sustainable urbanization – Risk Reduction
- People centered: key issue for sustainable cities – Healthy Cities Design and development
- Integrated urban service delivery: Climate and Environment smart cities, Implementation Strategies: Science in service to society, Building Resilient Society, Integration and Seamless Approaches
- Government long-term promising, investment and consistent leadership



Megacities 2015



Megacities - according to various definitions cities with more than 5, 8 or 10 million inhabitants - are particularly important in the global urbanization processes.

Impacts of Disasters since the 1992 Rio de Janeiro Earth Summit

In 1992, the United Nations organized a conference on environment and development in Rio de Janeiro, called the Earth Summit. The purpose of the conference was to rethink economic growth, advance social equity and ensure environmental protection.

Twenty years later, the UN is organizing Rio+20, a chance to move away from business-as-usual and to end poverty, address environmental destruction and build a bridge to the future. Disaster risk reduction (DRR) plays an important part in this future of sustainable development.

Here's a look at the impact of disasters since the Earth Summit (1992-2012).



The United Nations Office for Disaster Risk Reduction

<http://www.unisdr.org>

Created on 11 June 2012

DATA SOURCES

EM-DAT - <http://www.emdat.be/>: The OFDA/CRED International Disaster Database; Data version: 11 June 2012 - v12.07; Disasters: Natural Disasters as categorized in EM-DAT; Affected: The sum of injured, homeless, and people requiring immediate assistance during a period of emergency - it can also include displaced or evacuated people from disasters; Damage: Estimated figures; Killed: Persons confirmed as dead and persons missing and presumed dead.

¹ UN Stats - <http://unstats.un.org>: Estimated mid-year world population for 2010 is 6.9 billion.

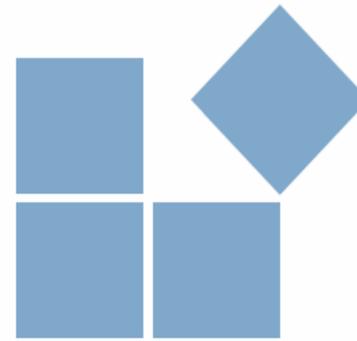
² OECD - <http://stats.oecd.org>: ODA from 1986-2010 totals approximately US\$1.7 trillion.

³ Airbus - <http://www.airbus.com>: A380 maximum capacity is 853.



4.4
BILLION
AFFECTED

Roughly 64% of the world's population¹.



\$2.0
TRILLION
DAMAGE (USD)

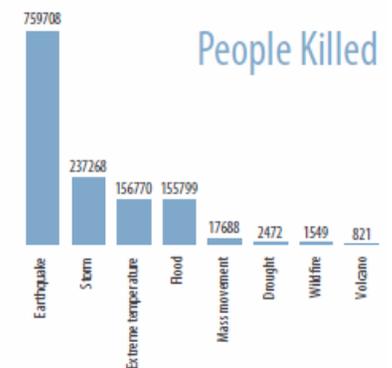
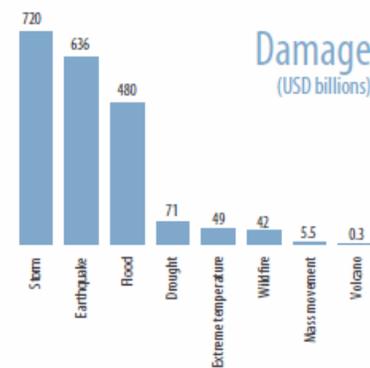
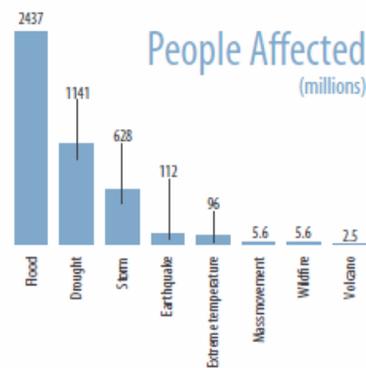
Approximately 25 years of total Overseas Development Aid².



1.3
MILLION
KILLED

Comparable to over 1500 airplane³ crashes.

Impact by disasters



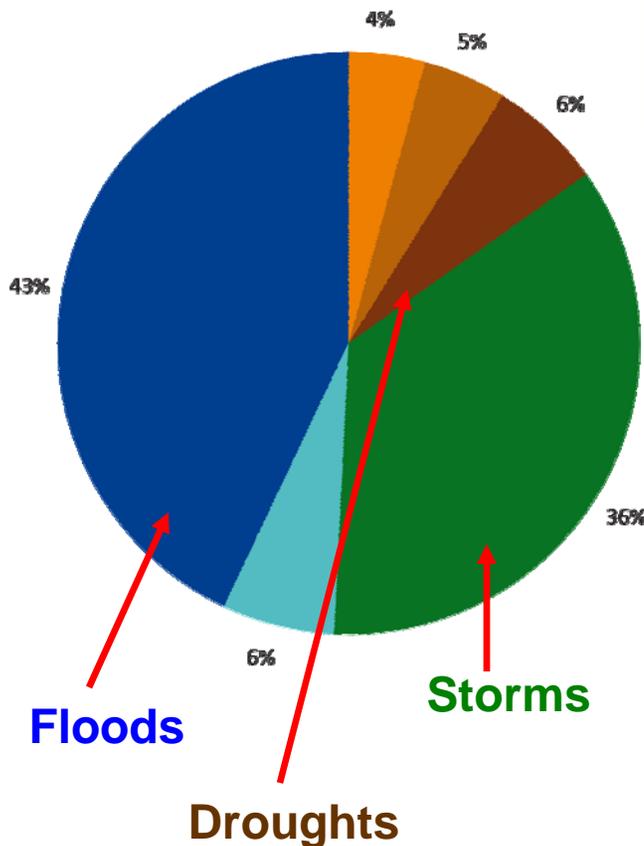
Impact by top 10 countries



Global Distribution of Reported Disasters Caused by Weather Extremes(1970-2009)

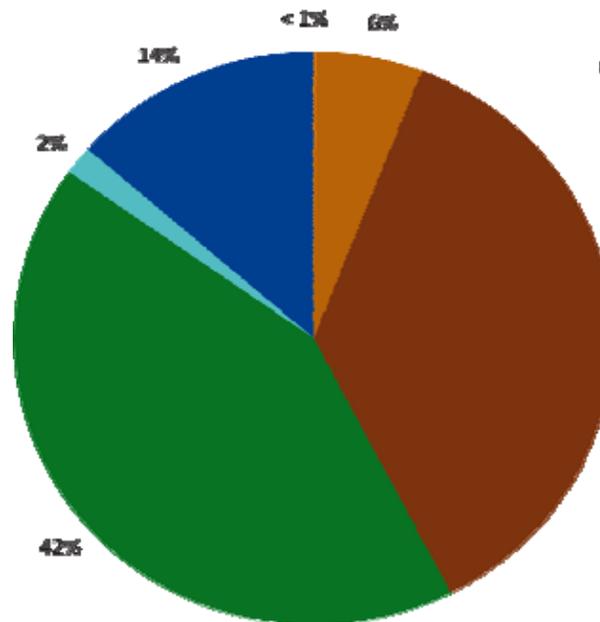
Events

Global Distribution of Disasters per Hazard type (1970-2009, Total = 7870 disasters)



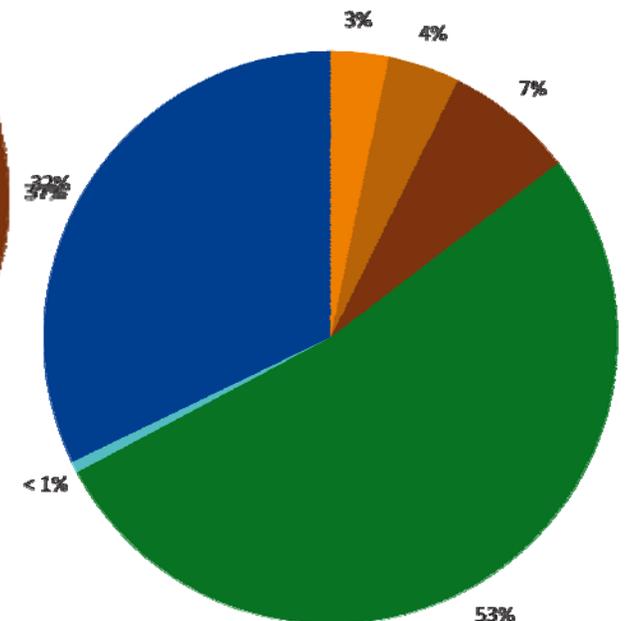
Deaths

Global Distribution of Deaths per Hazard type (1970-2009, Total = 1.86 mio deaths)



Economic Losses

Global Distribution of Economic Losses per Hazard type (1970-2009, Total = \$US 1.9 trillion)



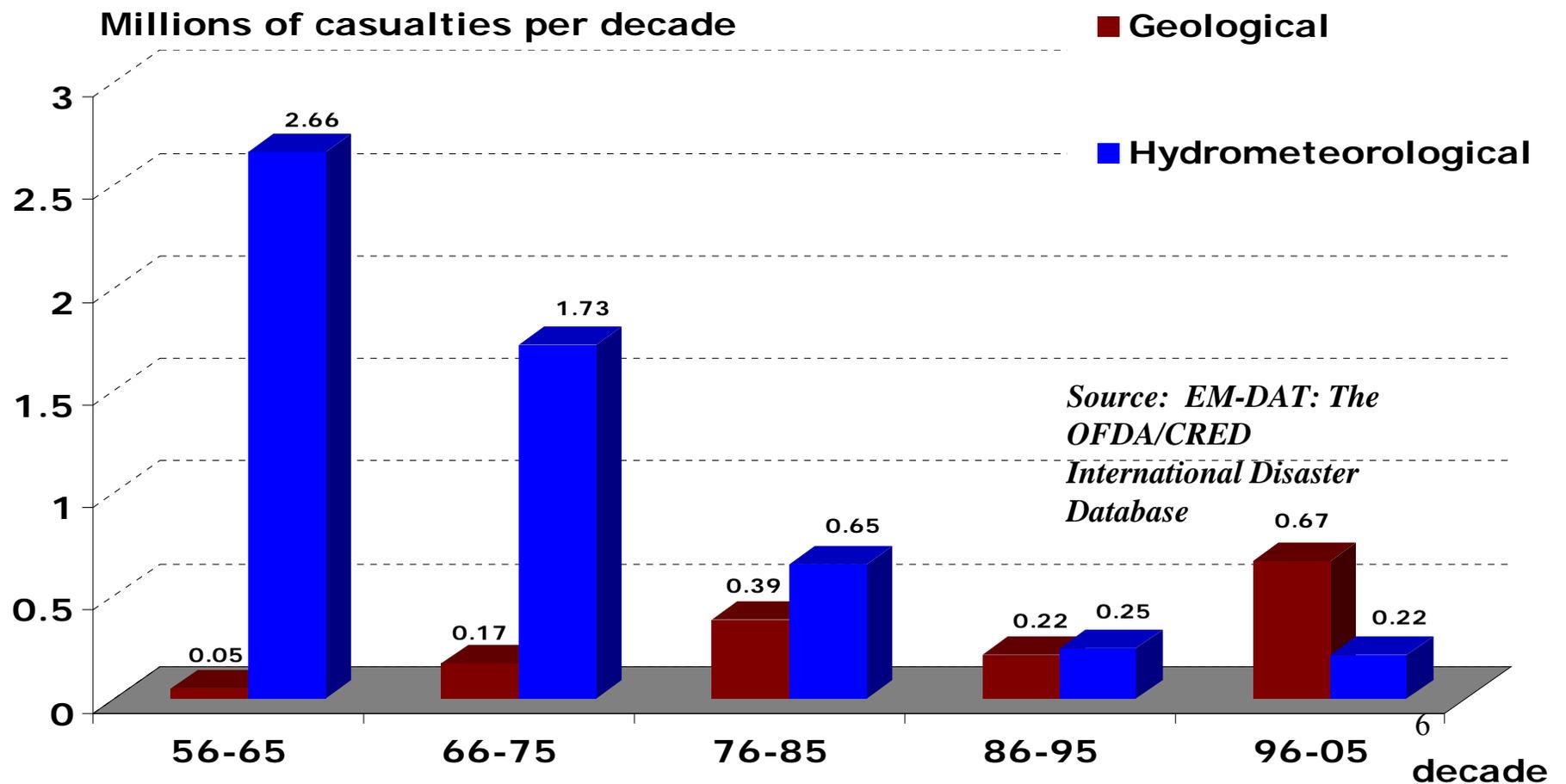
■ Floods ■ Mass Movement Wet ■ Storms ■ Droughts ■ Extreme Temperature ■ Wildfires

Source: WMO/CRED 2013

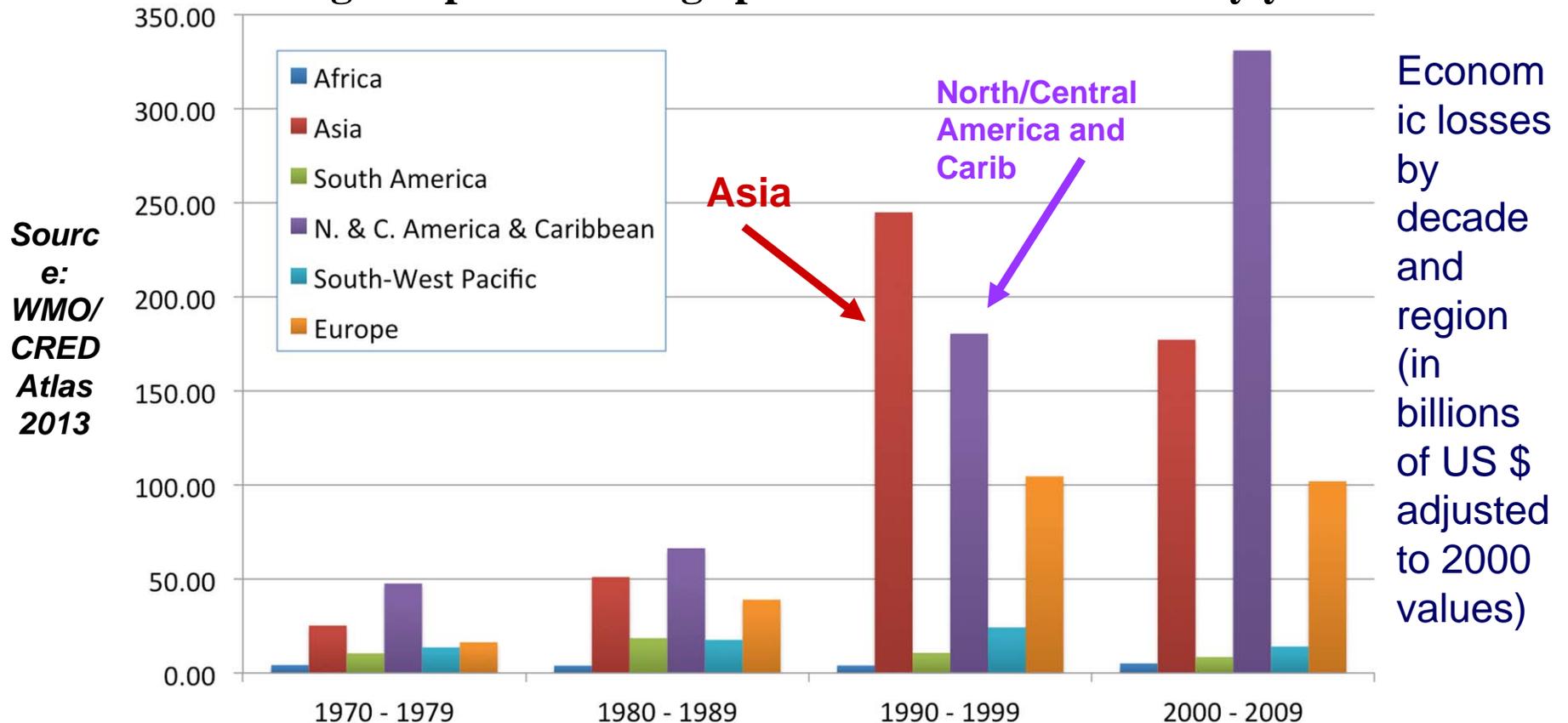
Better resilience to climate variability and change is a key element of a broader sustainable development and green growth agenda.

First the good news.....

Loss of life related to hydro-meteorological hazards generally falling linked to improvement in weather forecasting and improved emergency planning!



Concerns: Economic losses related to hydro-meteorological disasters are on the rise! E.g. the **transportation infrastructure** is crucial to bringing Africa out of poverty, but **flooding incapacitates large parts of this network every year.**



Weather extremes also increase the vulnerability of people – **particularly the poorest** – when development needs trigger investment and human settlement in coastal zones, flood plain, arid areas, and other high risk environments.

Challenges for the urban service delivery



Magnification Effect:

Due to rapid urban economic and social development, higher concentration of industry, business, and higher population density, **severe weather induced hazards can trigger secondary impacts (disasters) on the population and the economy.**

Domino Effect:

Natural hazards can lead to accidents, economic losses and social security problems. **Secondary and tertiary effects of weather and climate induced disasters can have severe short and LONG TERM consequences.**

Even minor weather events like light snow can have serious impacts in cities when it is overlapped with serious vulnerable and exposure condition like during rush hours or big social events .

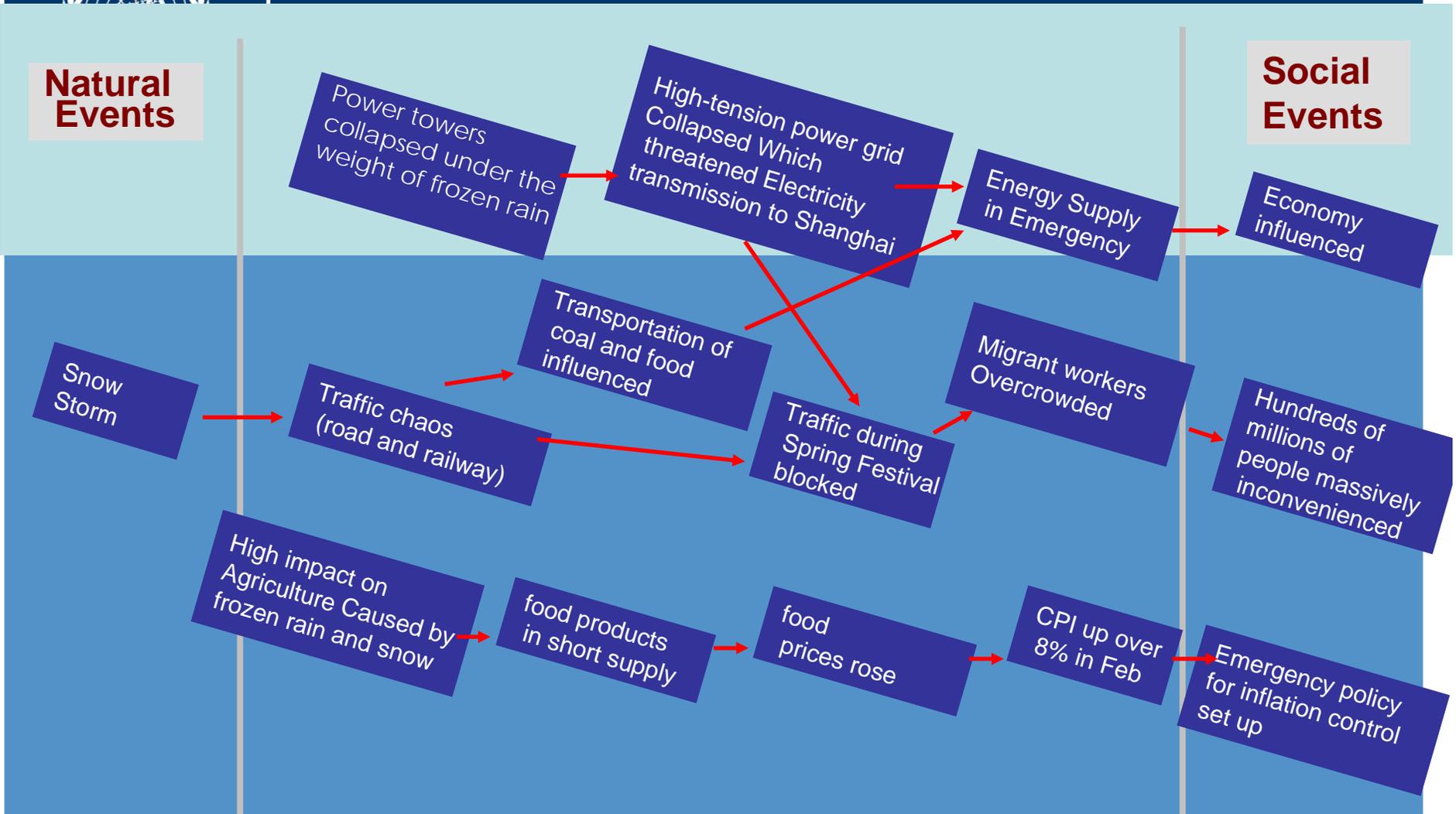
The consequence of High Urban Density + Large Population + Large Number of Buildings + bigger consumption and emission + Poor urban Ecosystem **need to be systematically, quantitatively estimated. All effects induced in urban areas should be identified .**

Do we know all main chains of Hazard domino effect in urban areas?



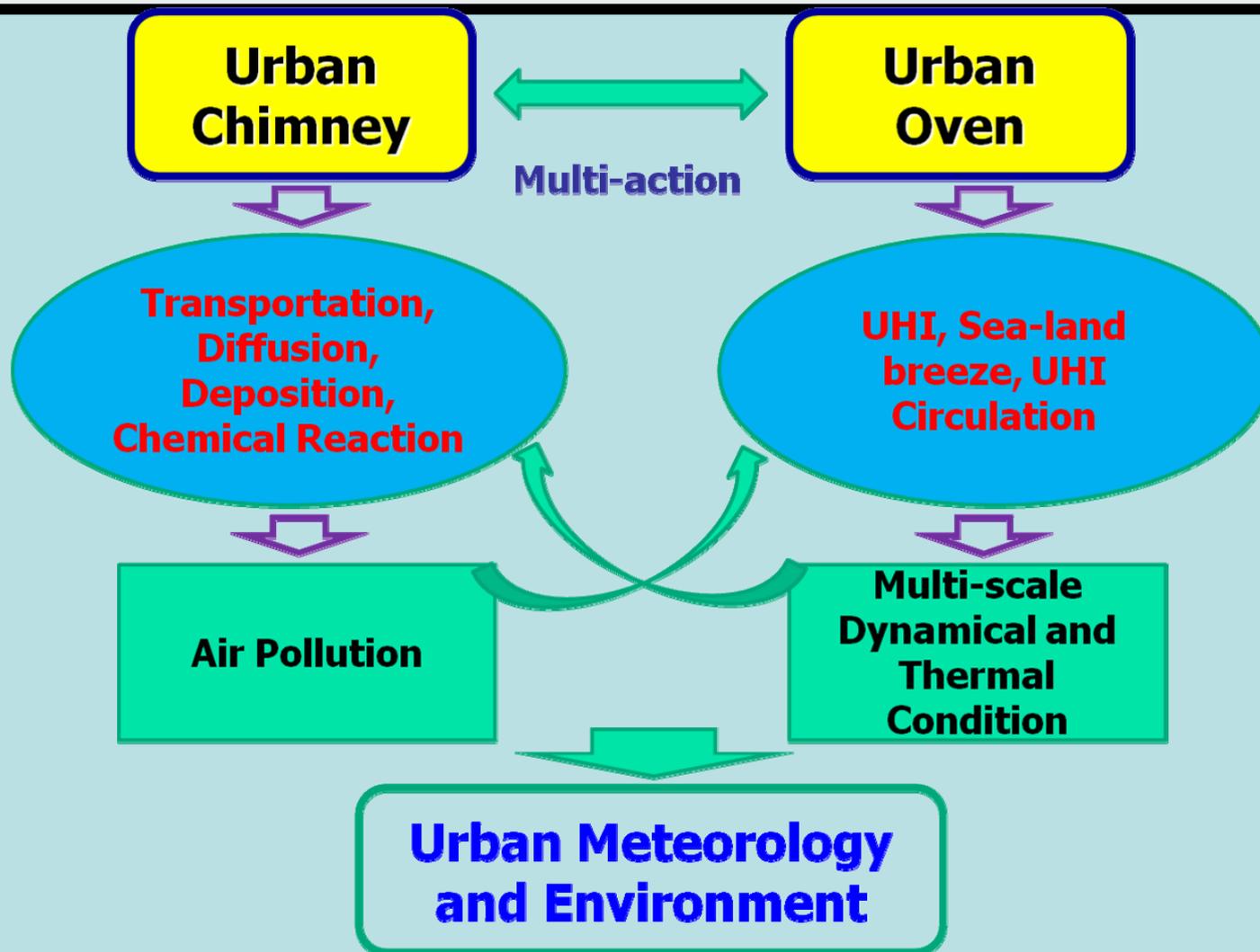
Natural Events

Social Events



Severe weather hazards may bring many other disasters, which further threaten city safety. Weather factor resembles the first piece of domino, and will impact other aspects of social activities.

To understand characters and trends of interactions between the two effects and provide relative products which show the integrated impacts from the two effects to the public are the new challenges for urban service delivery.

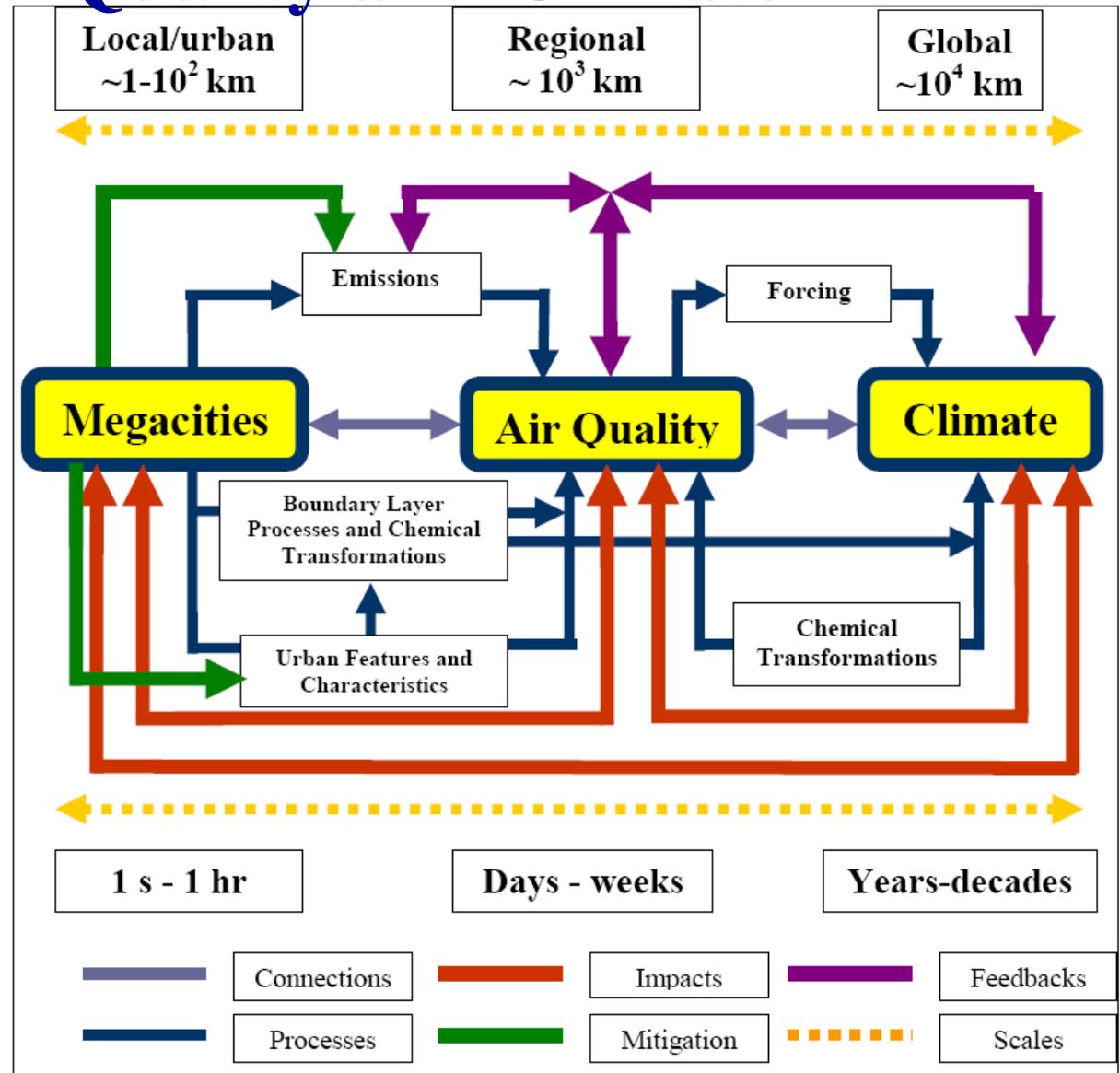




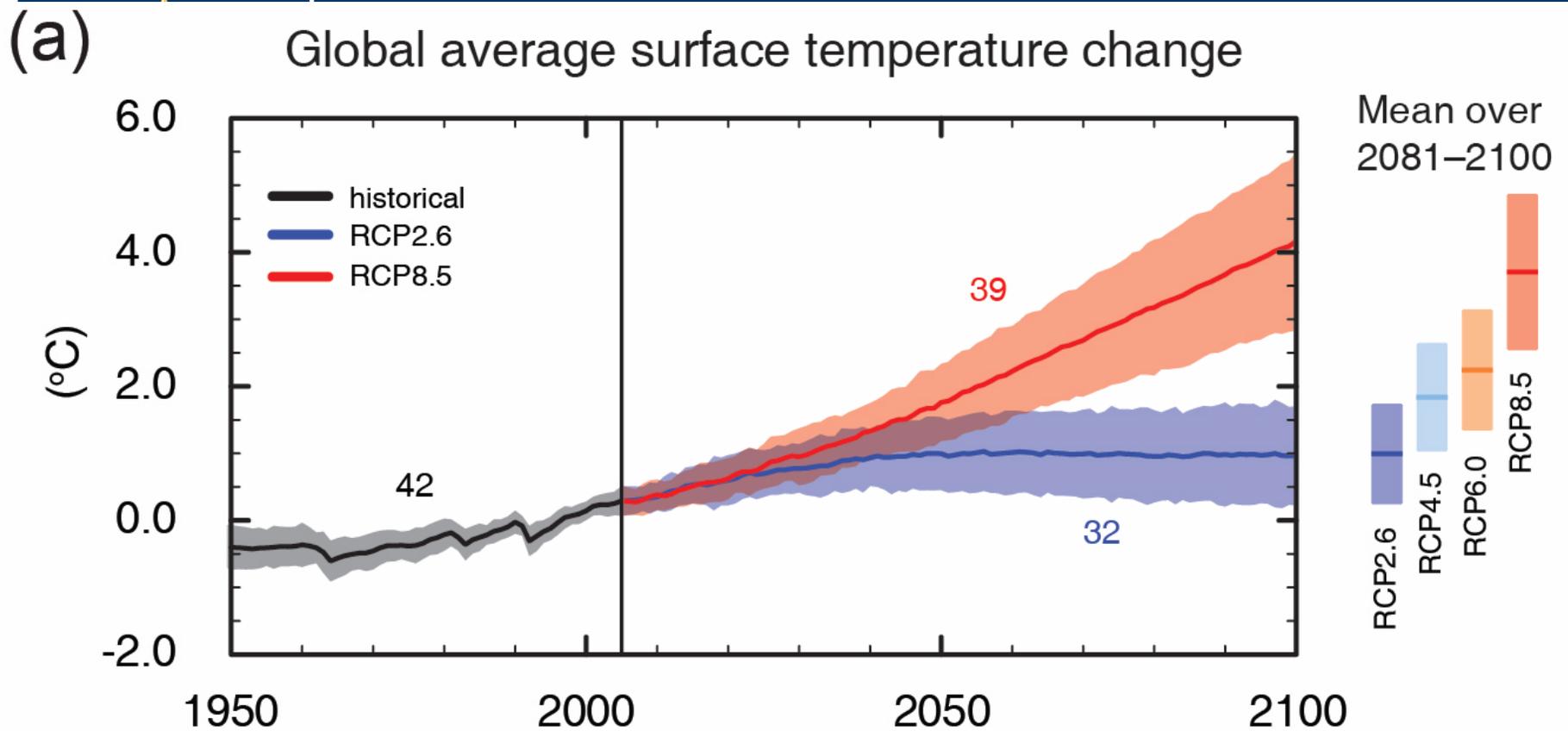
Connections between Megacities,

Air Quality and Climate

- Science - nonlinear interactions and feedbacks between emissions, chemistry, meteorology and climate
- Multiple spatial and temporal scales
- Complex mixture of pollutants from large sources
- Interacting effects of urban features and emissions
- New generation integrated modelling systems are needed
- FUMAPEX Integrated UAQIFS: in 6 EU cities



see: *Nature*, 455, 142-143 (2008)

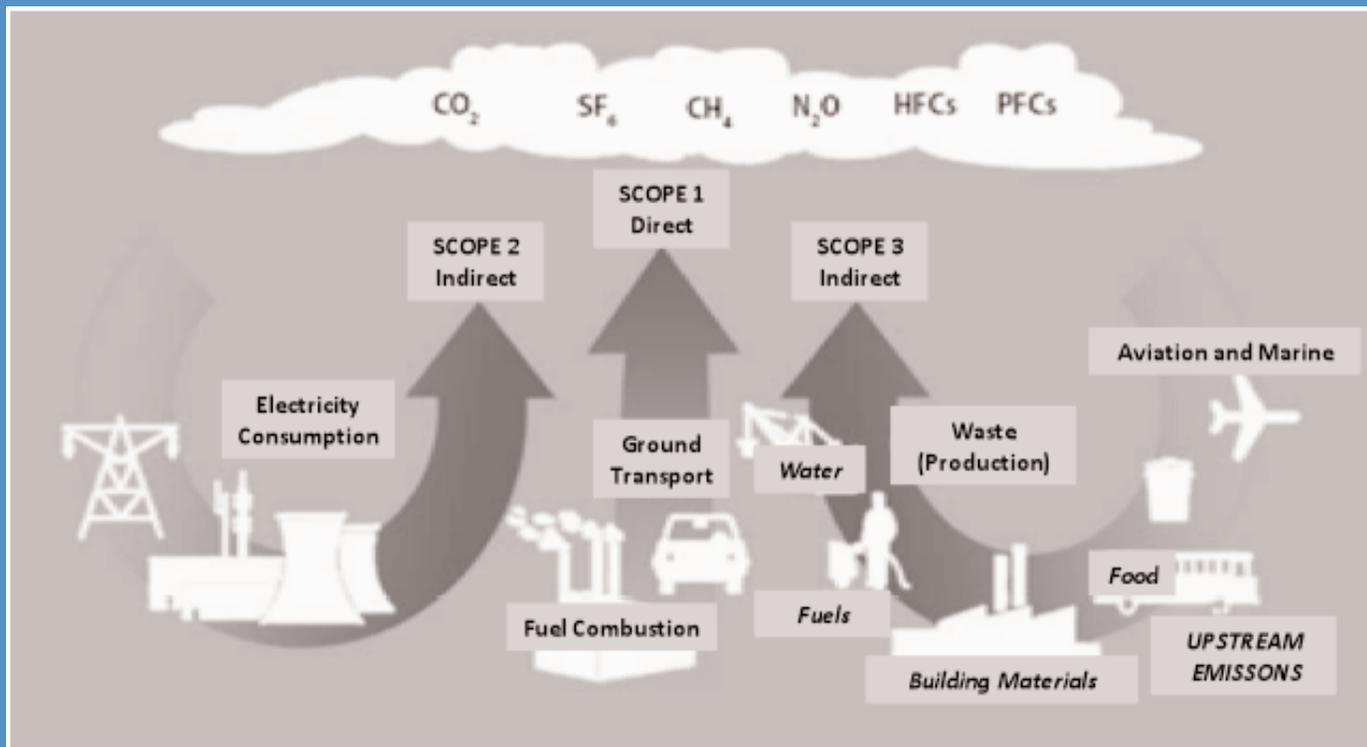


Global surface temperature change for the end of the 21st century is *likely* to exceed 1.5°C relative to 1850–1900 for all scenarios except RCP2.6.

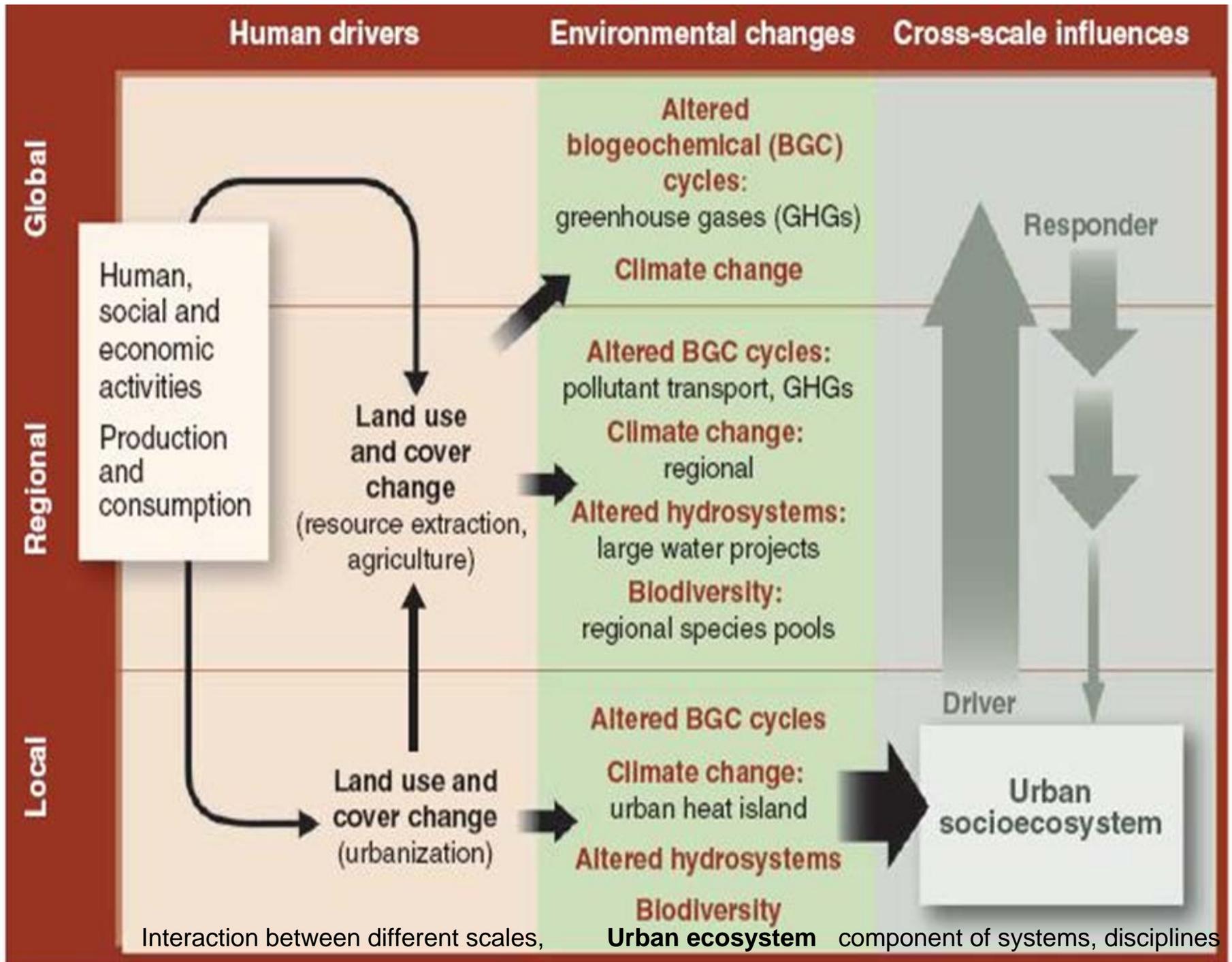
Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions

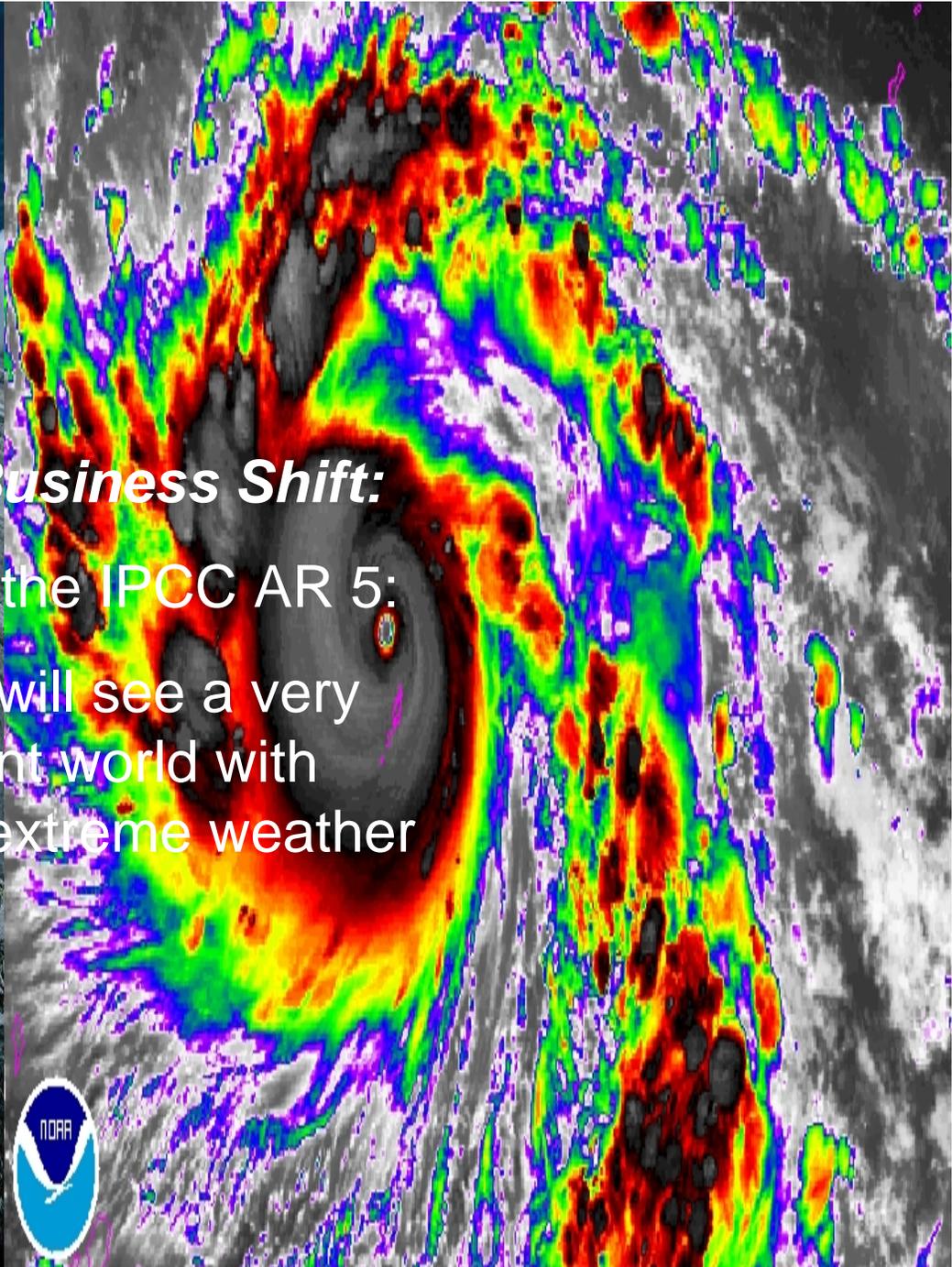
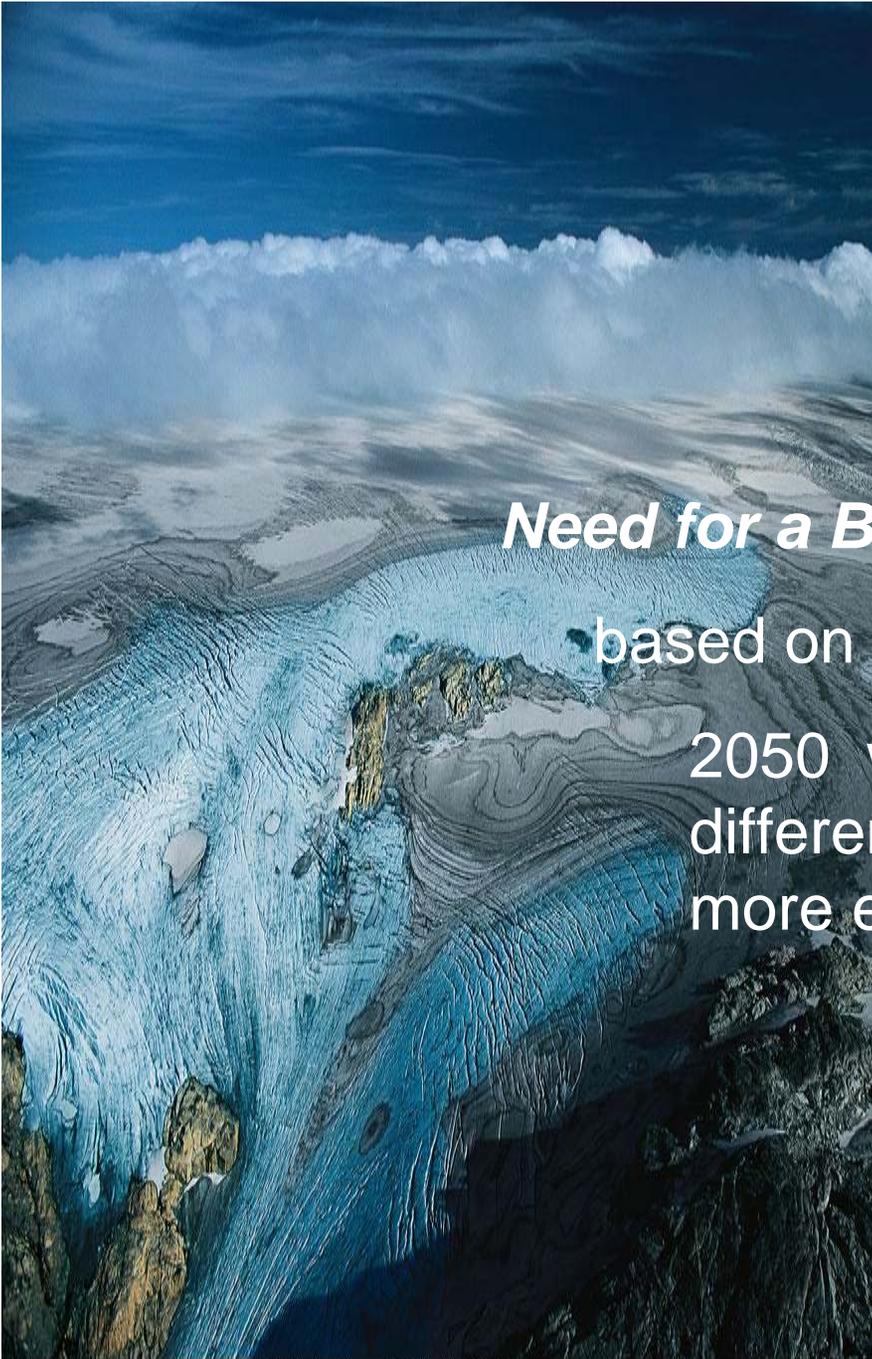
Scope of Urban Greenhouse Gas Emissions

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Source: Adapted from UNEP and UNEP SBCI 2009.





Need for a Business Shift:

based on the IPCC AR 5:

2050 will see a very different world with more extreme weather



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Urbanization is not only provide opportunities for jobs, provide engines for Urbana's economic growth, but also increase vulnerability and exposures of the cities. A big worry is not only that the growth of disasters and population affected, themselves but also the number of people killed will increase **if city's government fail to intervene.**

However, the developing countries will continue to be exposed to frequent and extreme weather, while more people and assets are now limited structural protection, inadequate city wide drainage system and weak non structural mitigation measures.



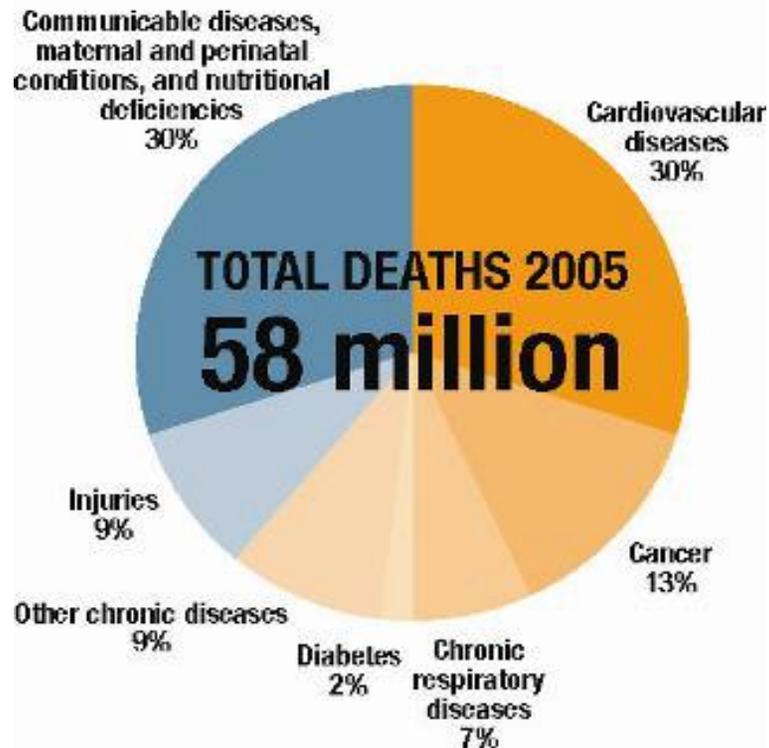
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Enormous burden of Non Communicable Diseases (NCDs)

Projected main causes of death, worldwide, all ages, 2005

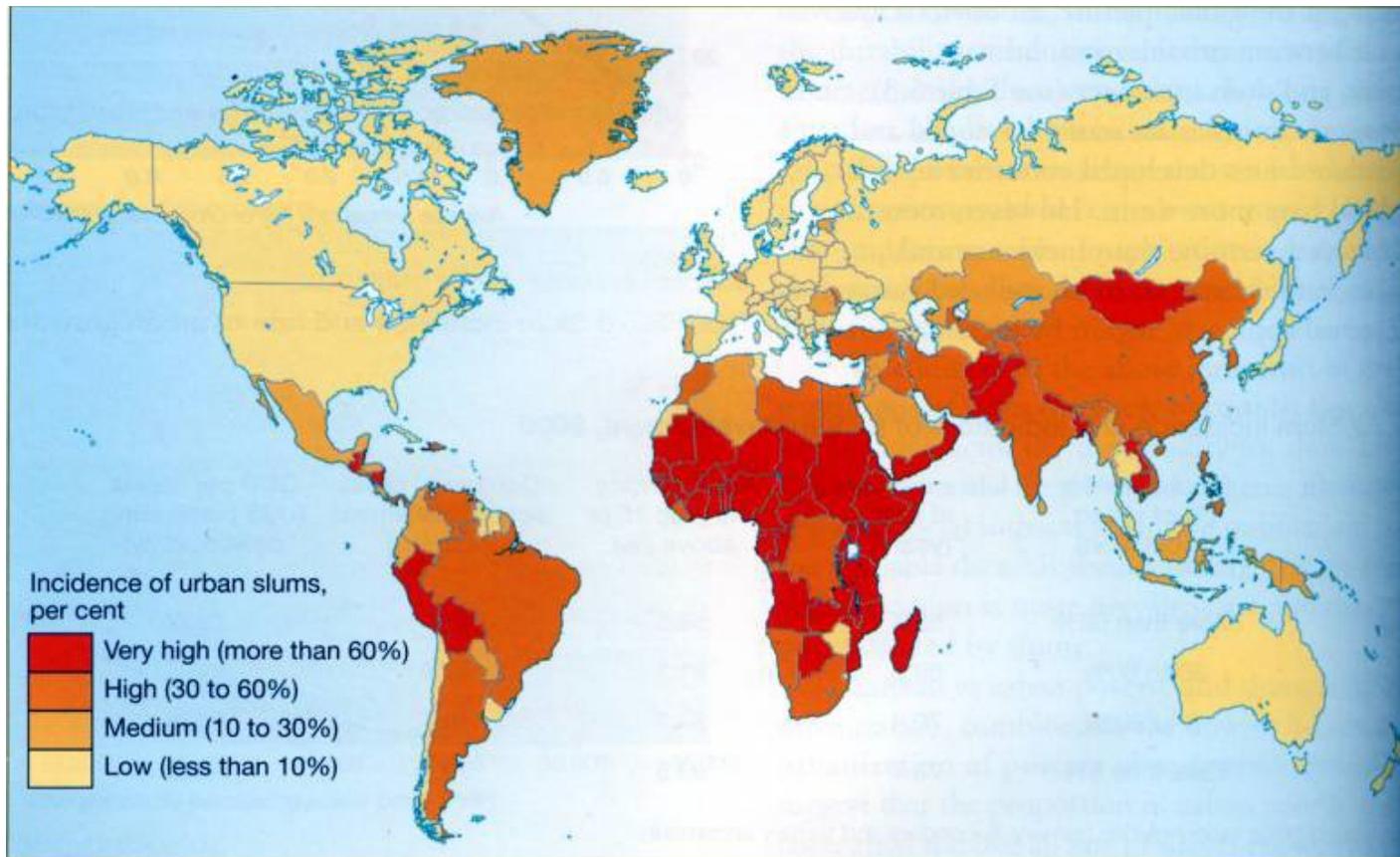


2 in 3 deaths are from NCDs

- Cardiovascular disease (心血管疾病), mainly heart disease, stroke
- Cancer
- Chronic respiratory diseases (慢性呼吸道疾病)
- Diabetes (糖尿病)
- Injuries

Costs: Trillions of US dollars

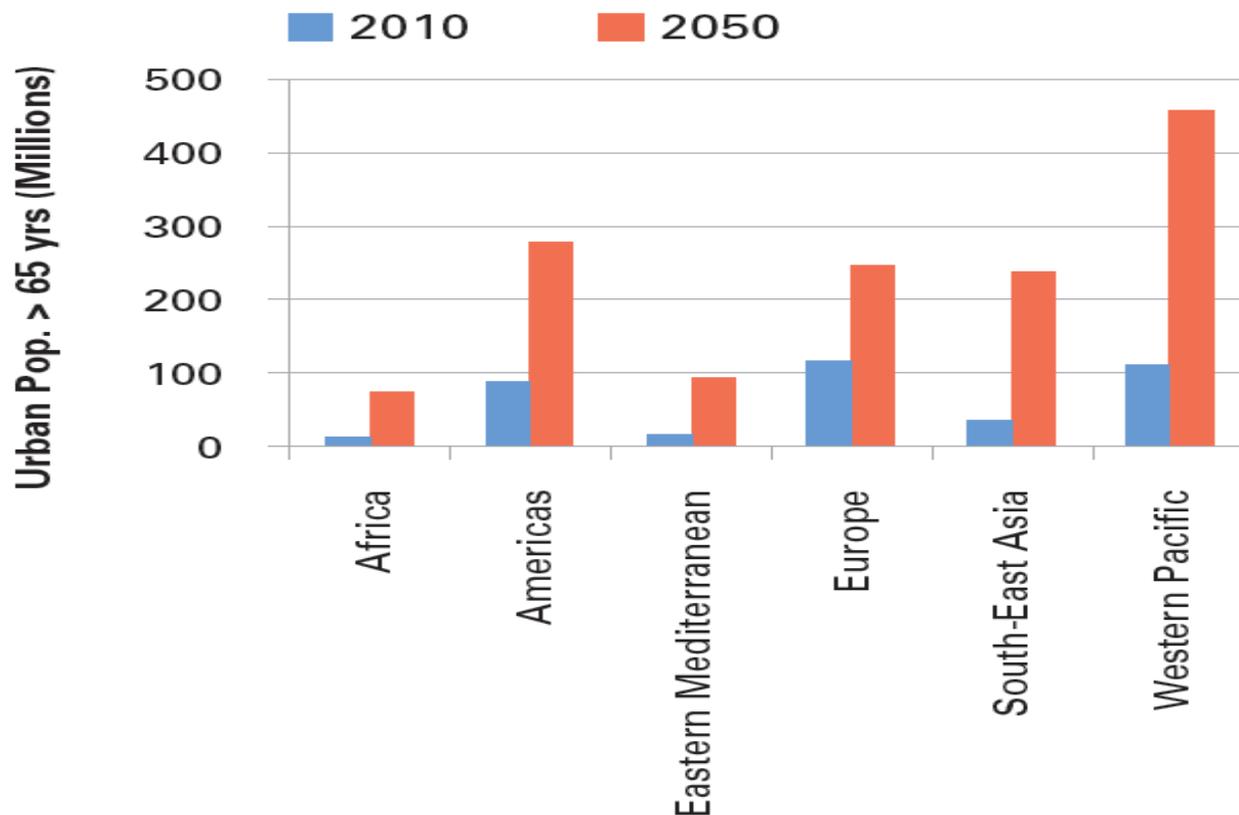
One third of urban populations live in slums



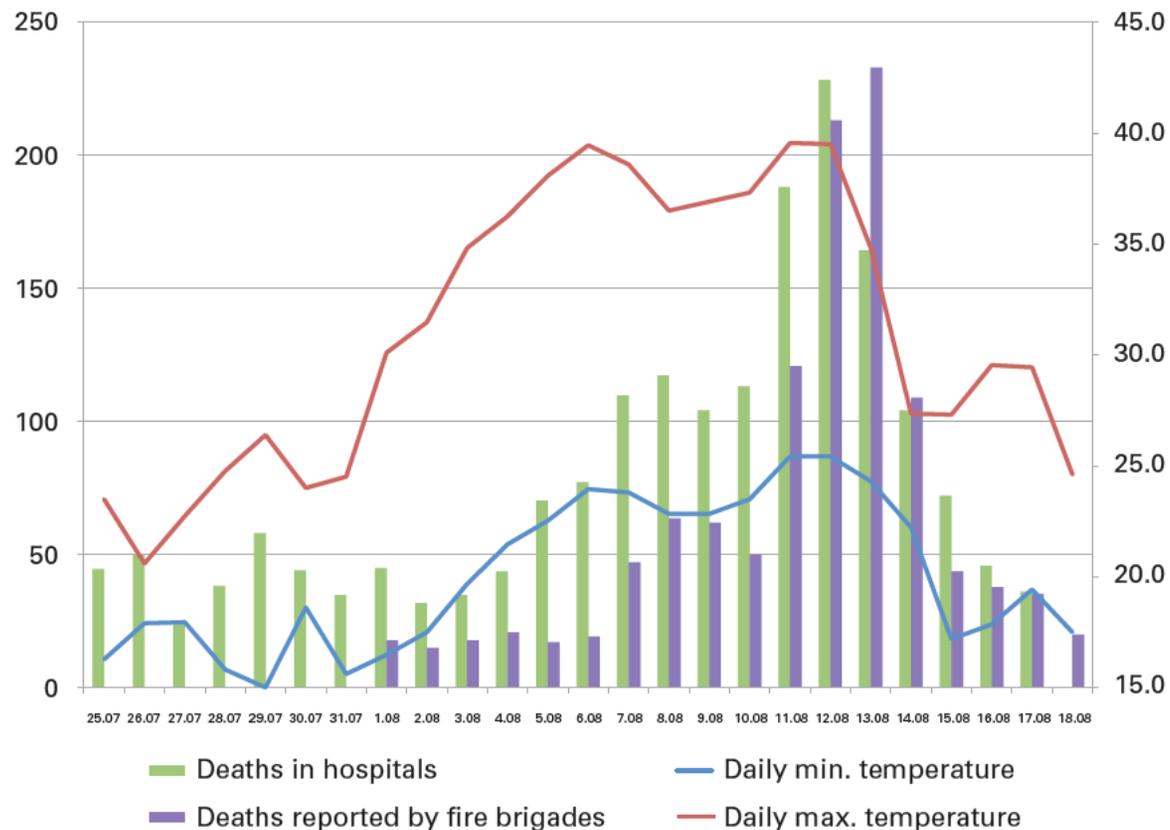
Source: UN-Habitat, 2003b.

MAP 5.1 Urban slum incidence, 2001

Vulnerable (urban, older) populations are growing rapidly



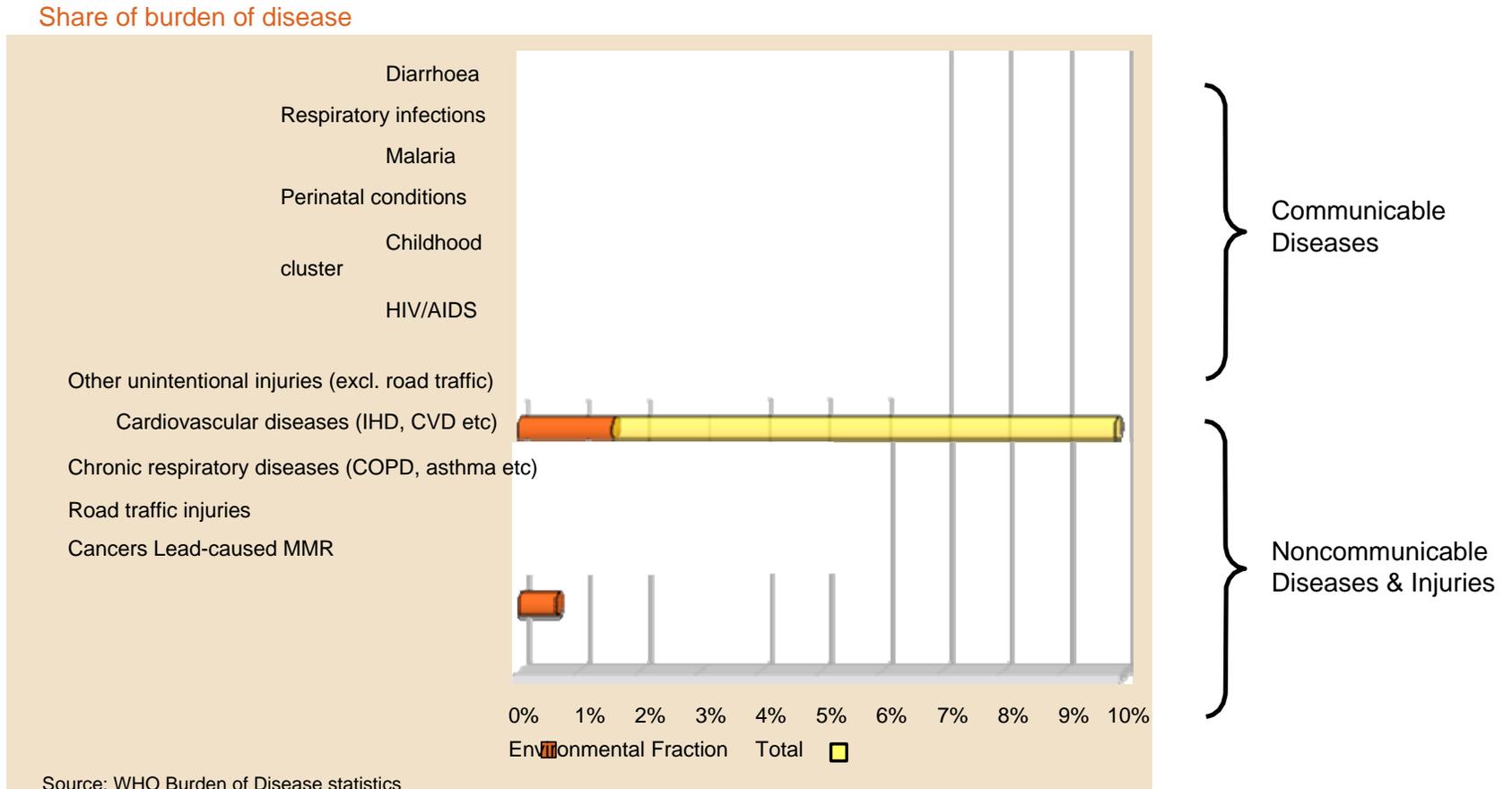
Extreme heat is associated with increased mortality

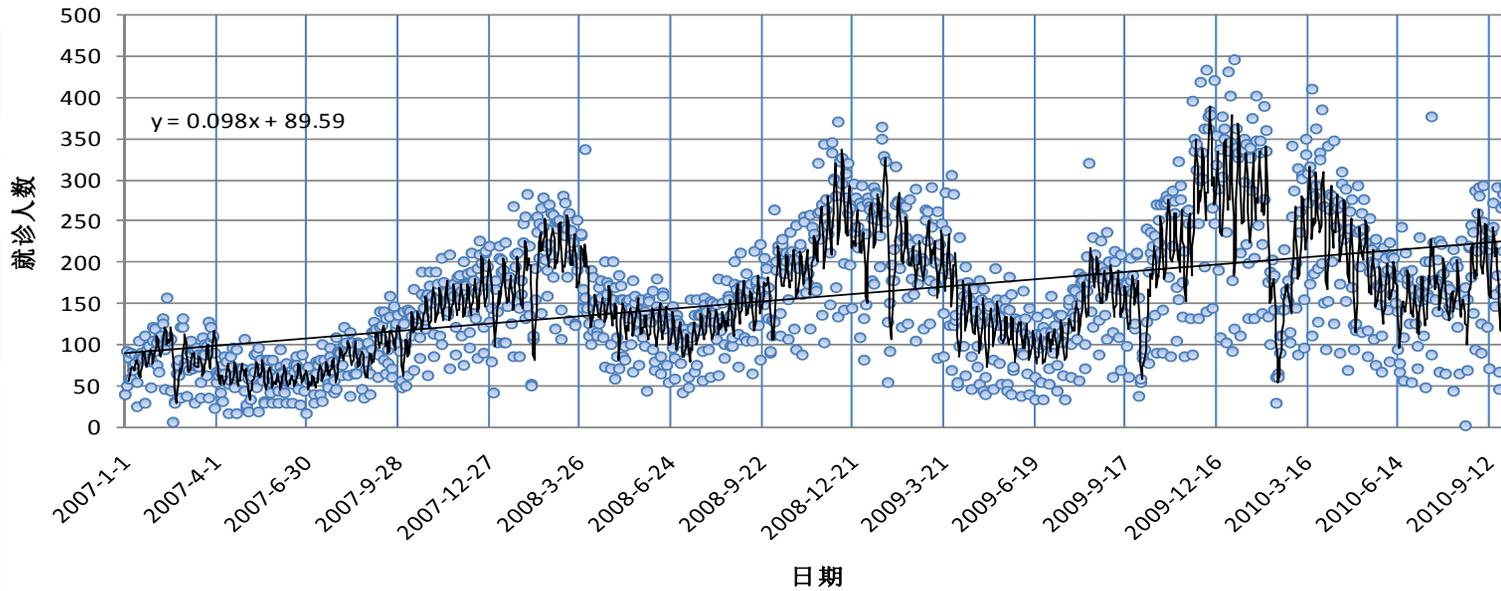


Extreme heat is lethal in developed and developing countries: Daily maximum and minimum temperatures, and number of deaths: Paris, Summer 2003⁹

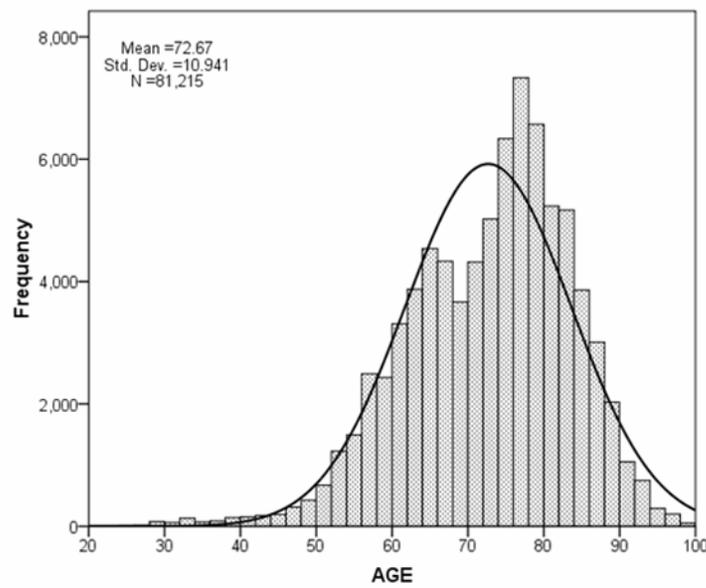
Environmental factors already cause over 25% of global burden of disease

– world's least resilient populations most affected

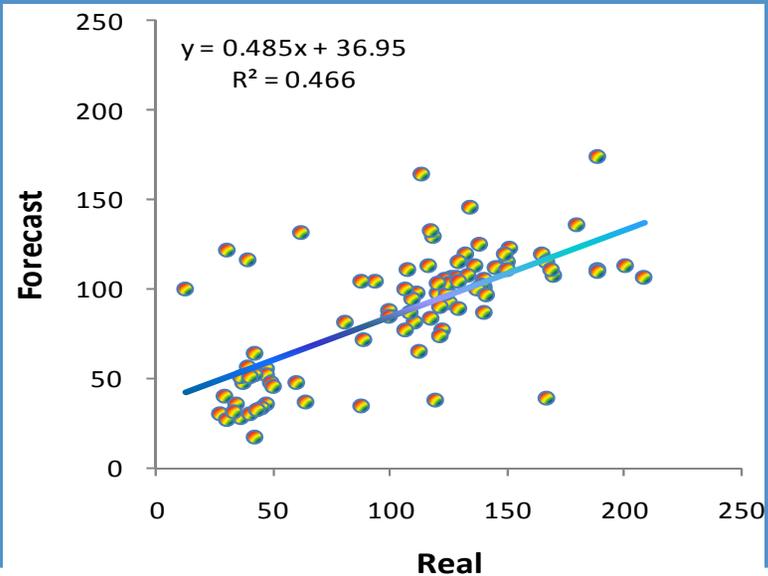




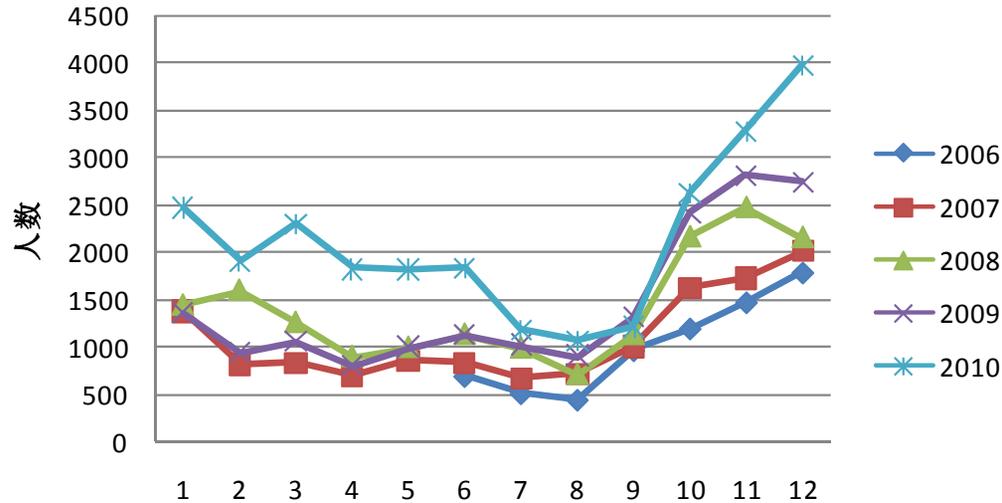
Hospital admission of COPD from 2007 to 2010, higher in winter and autumn, lower in summer



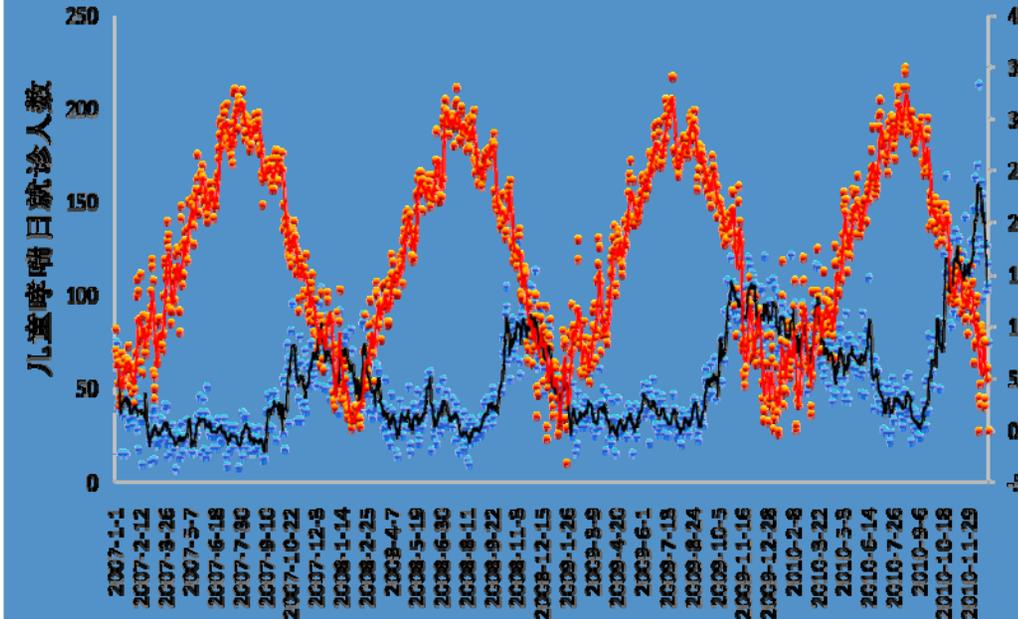
People of 65-80 years old is most sensitive to COPD



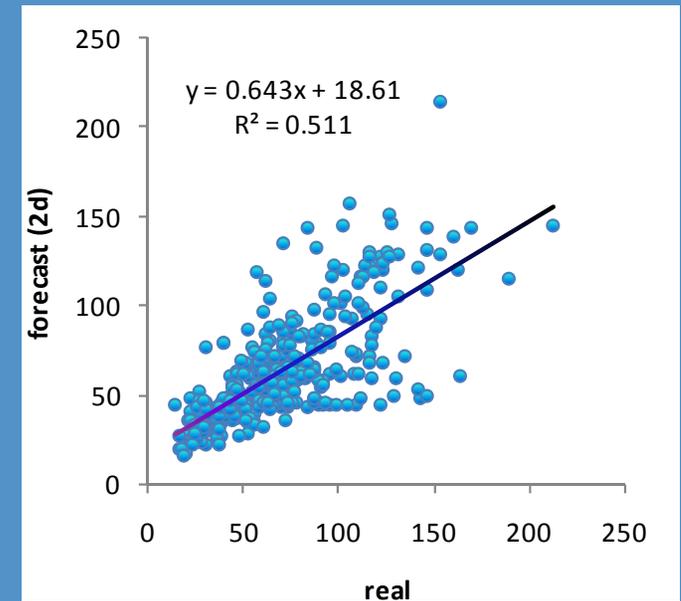
SVM forecasting model evaluation by 3-mon samples, R=0.68
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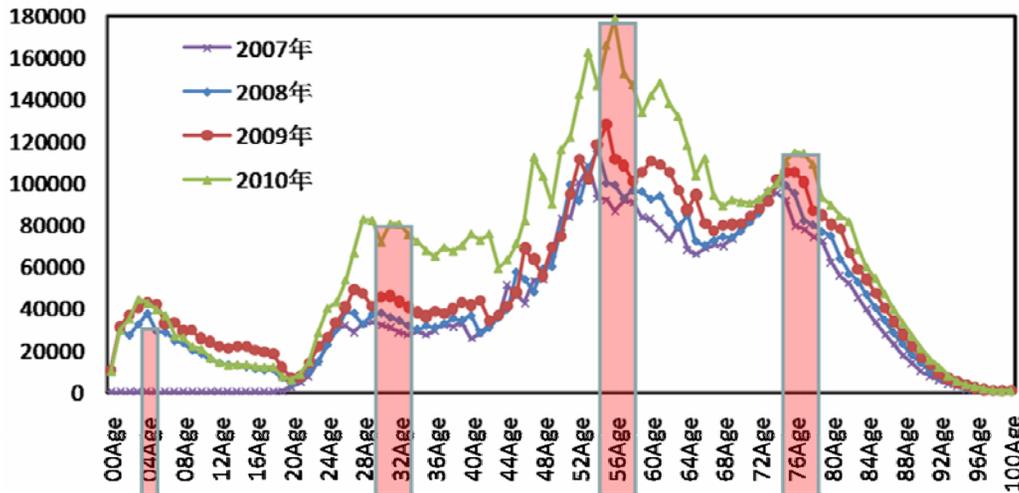
Hospital admission of child asthma from 2006 to 2010, especially higher during the seasonal transmission period



Hospital admission of child asthma & temperature



Evaluation of SVM forecasting model by 1 year samples, $R=0.7$



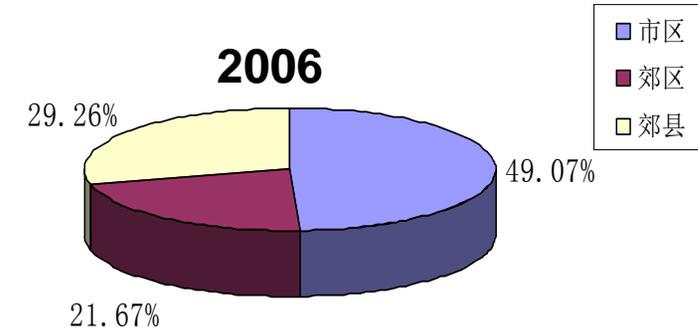
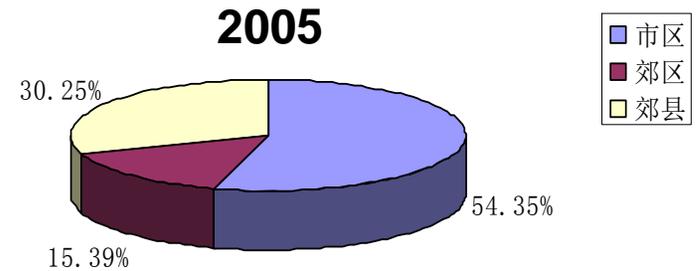
Peak 1:
3-4 age

Peak 2:
26-27 age

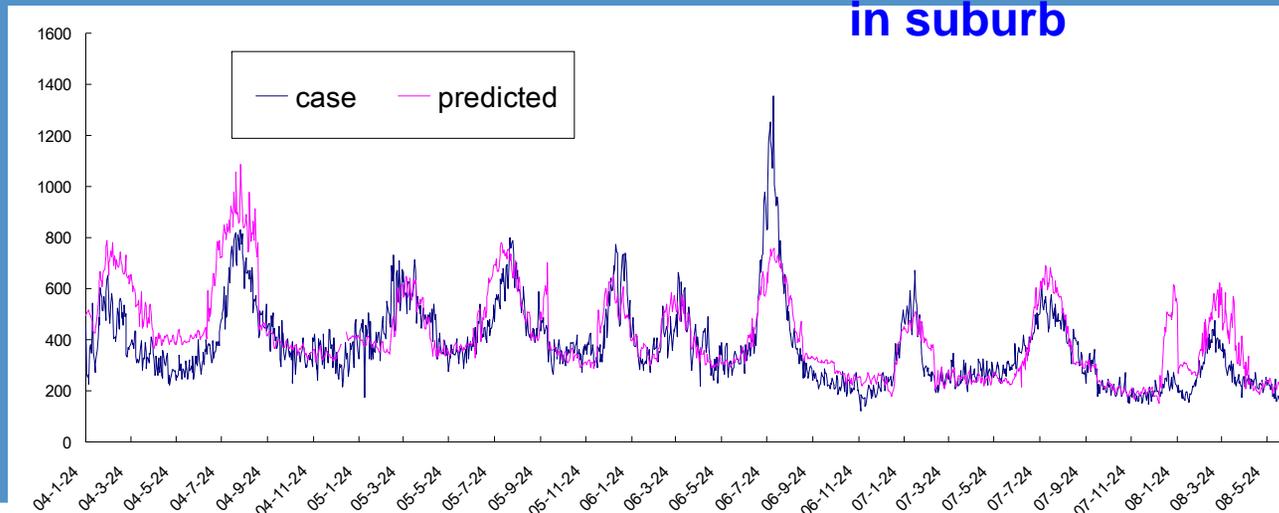
Peak 3:
56-57 age

Peak 4:
76-77 age

Four peaks of hospital admission of influenza distributed with age



Hospital admission of influenza in urban area is higher than that in suburb



Influenza forecasting in Shanghai based on statistical model

Poor Air Quality

The Car

Traffic

Remain Indoors

Social Isolation

Reduced Access
to Green Space



Chronic Stress 精神压力

Sedentary 久坐不运动

Mitochondrial Damage 导致细胞线粒体“细胞动力工厂”作用的损伤

Place safety, environ. friendly, ecological balance, low carbon approach, livable, healthy

People open, communicable, friendly community and families, good relation to colleagues and friends



Purpose

Always seeking, having valuable life
Having a meaningful work, willing to dedicate to the society



Wellbeing happiness and harmonies



慢性影响、长期压力

Chronic Stress

Inactivity



Obesity



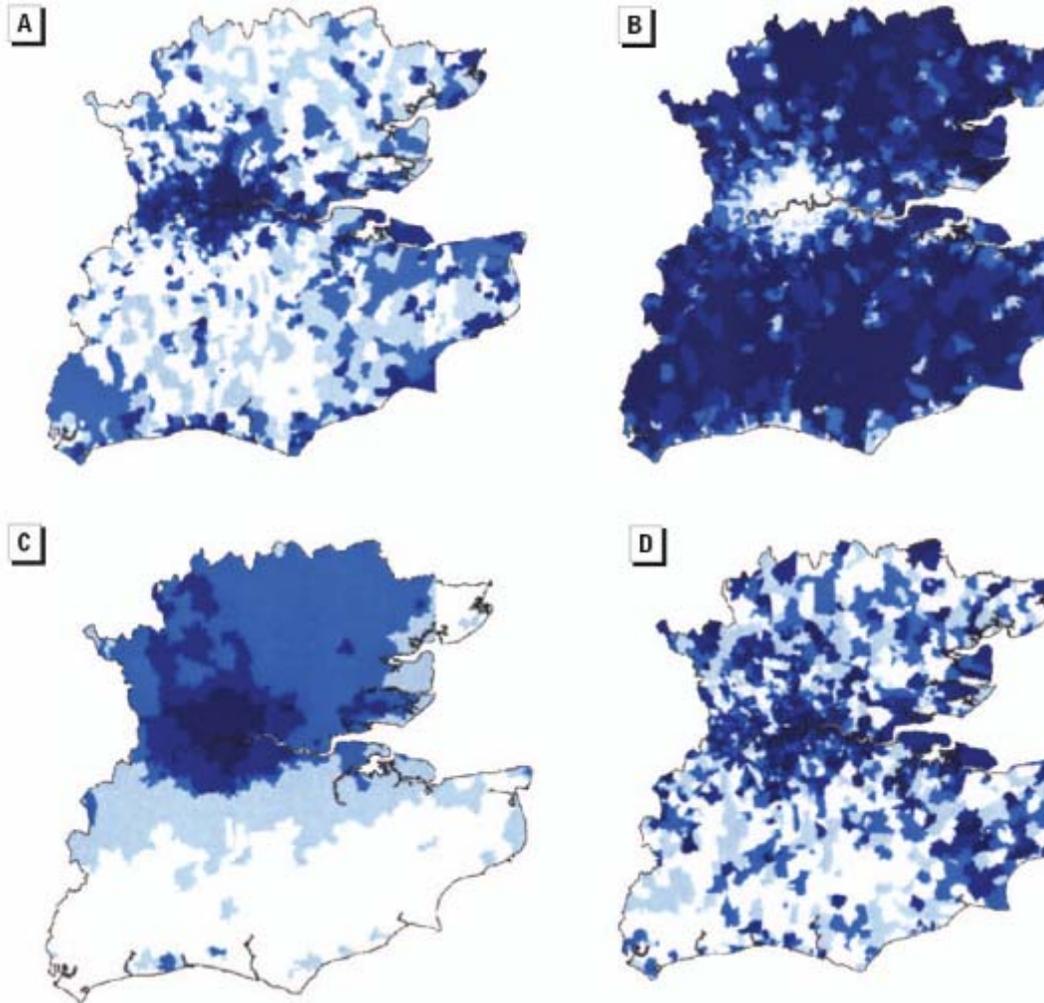
Smoking



Alcohol



Case Study: relation of car ownership, Nox concentration, and Respiratory Mortality



A= Deprivation Index

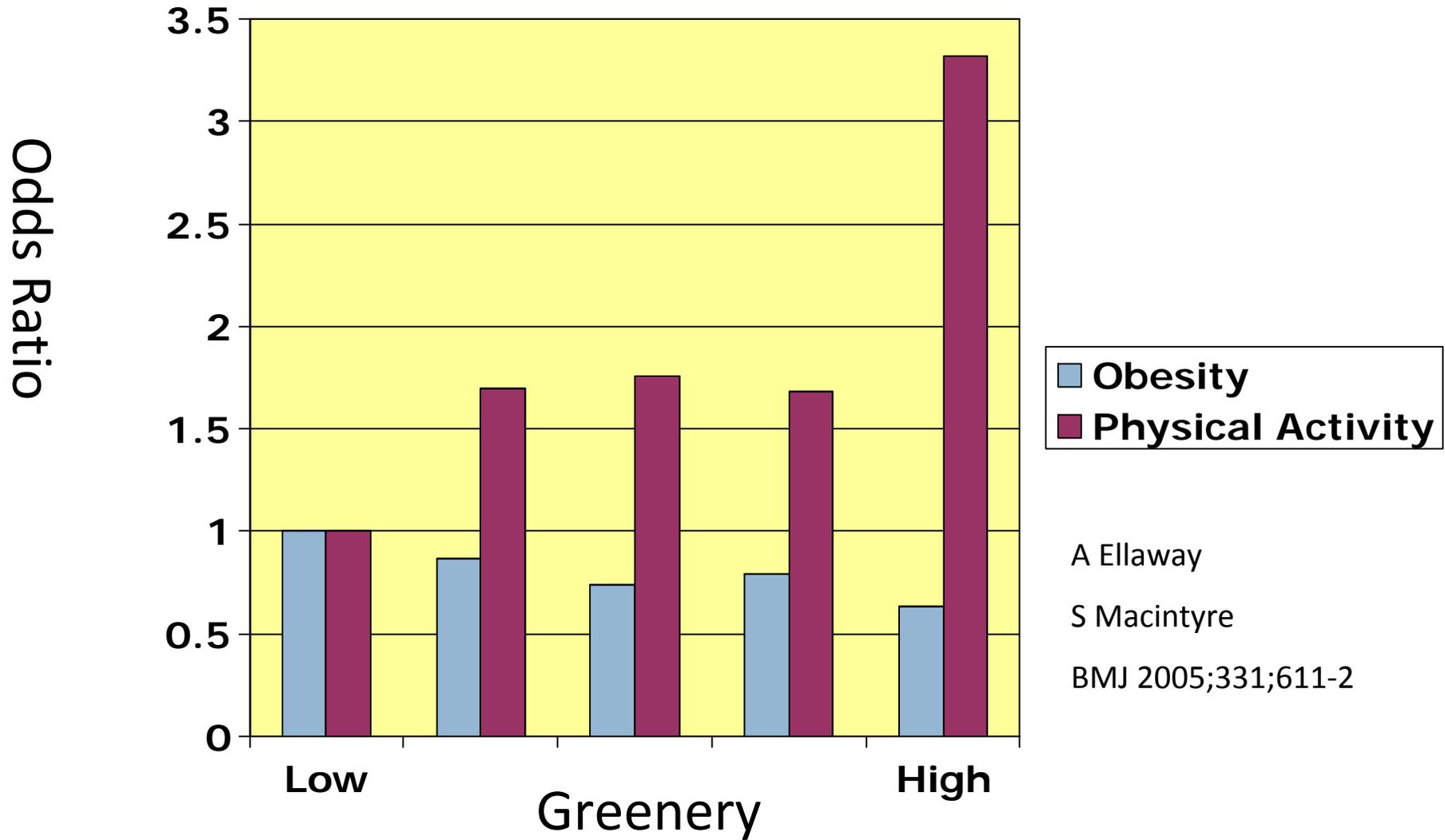
B= Car ownership

C= NOx

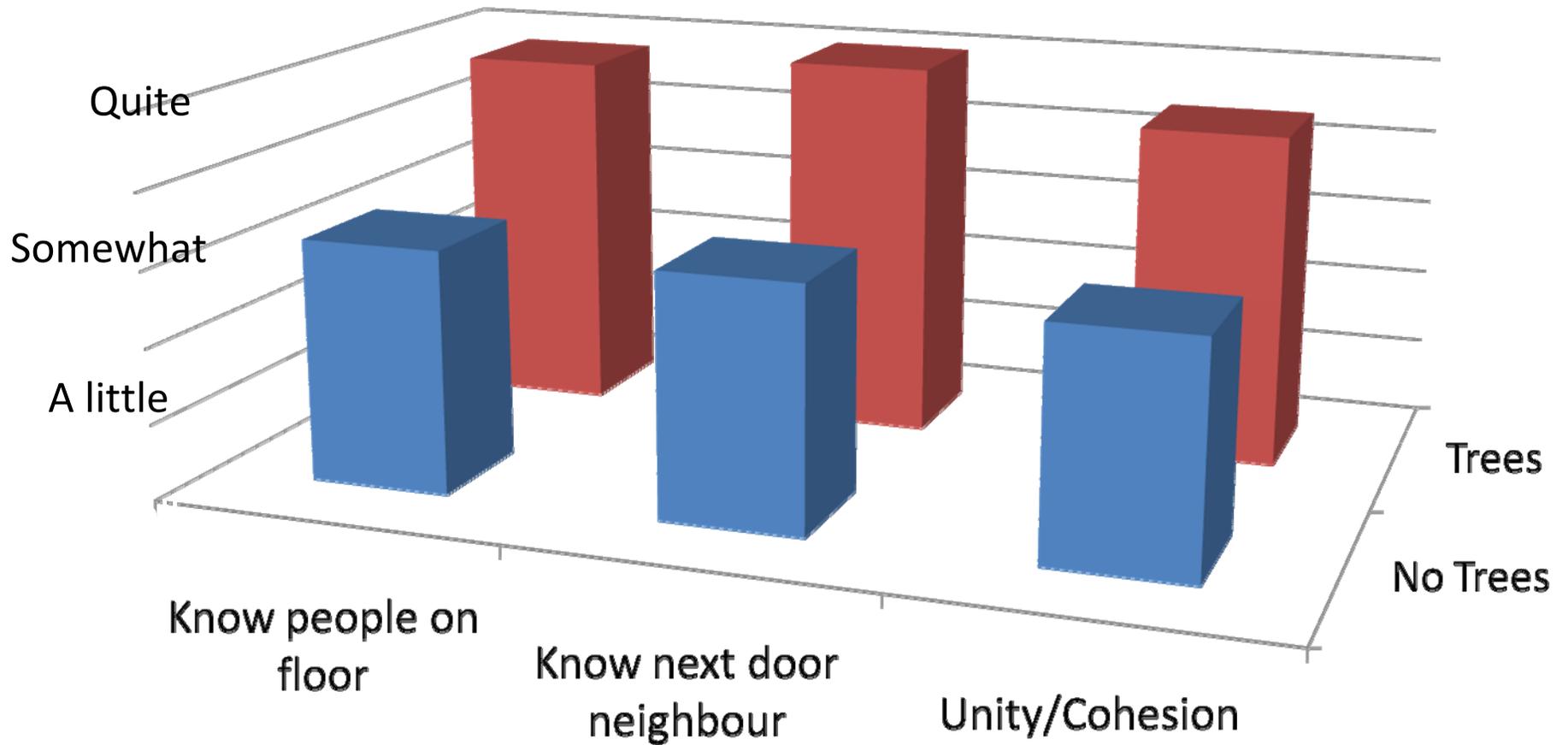
D= Respiratory Mortality
呼吸系统疾病死亡率

Place: Is Green Space associated with obesity?

N = 6919H



Place: Community Cohesion (社区凝聚力) and Nearby Green Space



More nearby green spaces link to more cohesion of the community

Health co-benefits from green and climate friendly policies – Transport

Findings:

- We are missing major health and mitigation co-benefit from cycling/walking/transit & compact urban land use.



Evidence: Health outcomes directly linked to type of urban *infrastructure investment*

<i>Infrastructure for different travel modes (including presence and proximity of infrastructure)</i>		
More infrastructure facilitating walking (including general assessments of "walkability" of well as presence of reported health status ²²⁴ problems ^{222,224} Lower mortality / higher life expectancy ⁴⁷)	Increased walking, cycling or active transport ^{94,133,138,144,146,147,154,175,223-229} Increased physical activity ^{104,154,155,160,176,184,223,228,230-239} Reduced BMI or neighbourhoods as Reduced air pollution-related effects ²³⁴ pavements)	Less active transport ¹⁷⁰ obesity ^{111,118,119,165,224,234,238-240} specific features, e.g. Improved Reductions in specific health
More infrastructure	Increased walking, cycling or active transport ^{94,136-139,141,144,171,175,241-243}	facilitating cycling
Increased physical activity ^{27,104,157,159,161,184,244}		
More infrastructure facilitating public transport use	Increased walking, cycling or active transport ^{44,133,140,146,89,94,150,152,179,245}	Less walking, cycling or active transport
Increased physical activity ^{103,140,157,159,182} (including parking, motorways) Reduced air pollution-related effects ²⁴⁶	Reduced BMI or obesity ^{113,117} Reduced BMI or obesity ⁷³	
Less infrastructure	Increased walking, cycling or active transport ^{245,247}	facilitating car travel

Review of studies on infrastructure investment, physical activity and health –

WHO/Health in Green Economy (forthcoming)



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- People centered: key issue for sustainable cities –
 - Healthy Cities Design and urban infrastructure development
- Safety in drinking water, food and to build resilience on disaster risk, environment friendly,
 - Convenient transportation, ecological balance, low carbon footprint, having livable place, -- Open, communicable, friendly community and families, good relation with colleagues and friends, having a healthy life style
 - Having pursuit, being valuable, Having a meaningful work, willing to dedicate to the society
 - Healthy urban cluster design and healthy housing community development



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Requirement & Opportunities

- **Escalating demands** for urban resources, sustainability and safety
From concept to action. Better city, better life, better service delivery; *Healthy city, healthy life, healthy living environment; Smart city, Resilience Ready City, Low carbon and sustainable city.*
- **To build an integrated Urban Service Delivery System of the multiple discipline systems for delivering the right information to the right people at right time.**
- **Taking advantage of the achievements** in science and technology can substantially improve the accuracy and utility of weather, climate, water and environment information in urban decision processes. **Implementing “Science in service to society”**;
Application of the Impact-based, Risk-based methodology and technology in user orientated service, and taking advantage of IT technology achievement to build a information Smart delivery approach.

Urban Community Responses to Air-borne Hazards, Weather, and Climate Events

Urban Ecosystem & Healthy Community Planning

Smart City/Info Dissemination / Business Cont. Planning

Security of infrastructure & Interaction

DRR & Risk Management

Public Health and Safety

Tourism & Recreation

Transportation

Urban Observing System

Severe Weather

Risk Mapping

Air Quality

Climate Extreme

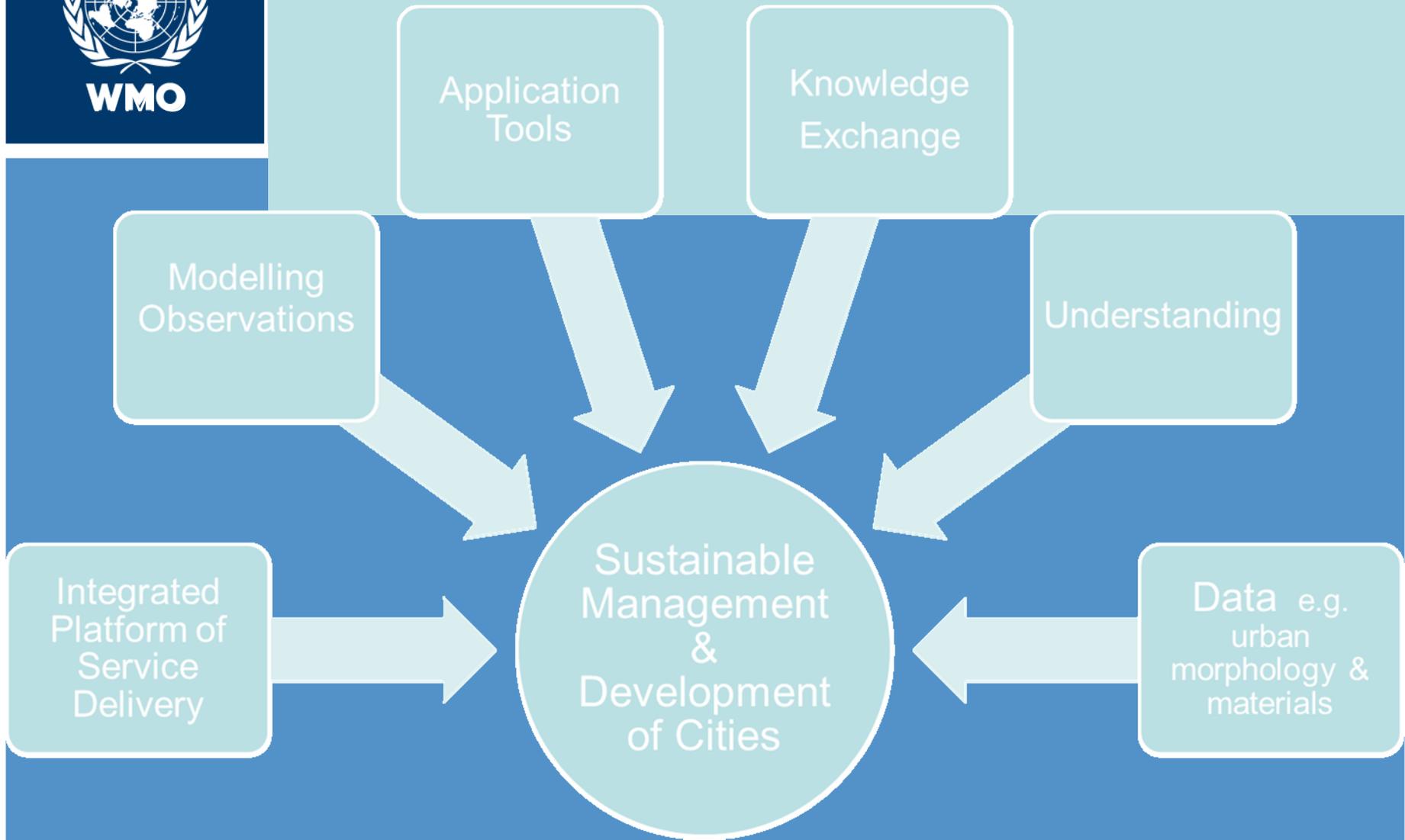
Water Quality

Food Security

Integrated Urban Weather and Climate Service delivery including User Interface for Urban Climate Service



Needs to go through integrating and crosscutting ways



Global Framework for Climate Services

- Goal:
 - Enable better management of the risks of climate variability and change and adaptation to climate change at all levels, through development and incorporation of science-based climate information and prediction into planning, policy and practice.



WMO will work with UN and Regional partners during 2014 to 2020 to address these issues in SIDs. The primary focus will be to facilitate the development of the Regional Climate Center and National Climate Services through: (1) infrastructure development,

(2) increasing the range of products and services delivered to stakeholders, (3) enhancement of human and technical capacities at Regional Climate Centers and in NMHSs in SIDs and (4) improvement of service delivery mechanisms to national, regional and international stakeholders.



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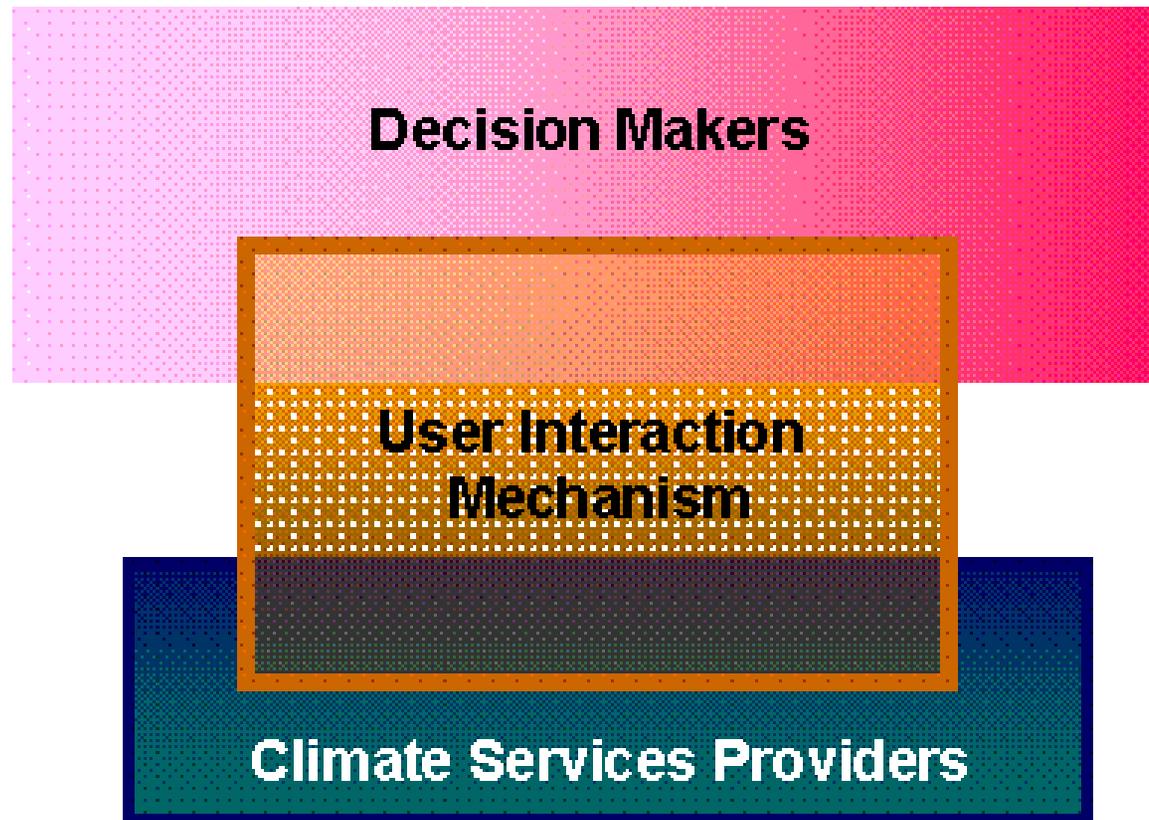


GFCS: Objectives

- **Provide a cooperative framework** in which all nations, International organizations, scientists and sectors will work together to operationally provide climate information to meet the needs of users;
- **Enable users to benefit** from improved user driven climate information and prediction;
- **Mobilize climate science globally** to advance the skills of seasonal-to-interannual and multi-decadal climate predictions to generate and provide future climate information on an operational basis;
- **Cooperative global infrastructure** to foster sharing new advances in science and information.



Bridging the gap between providers and users of climate information



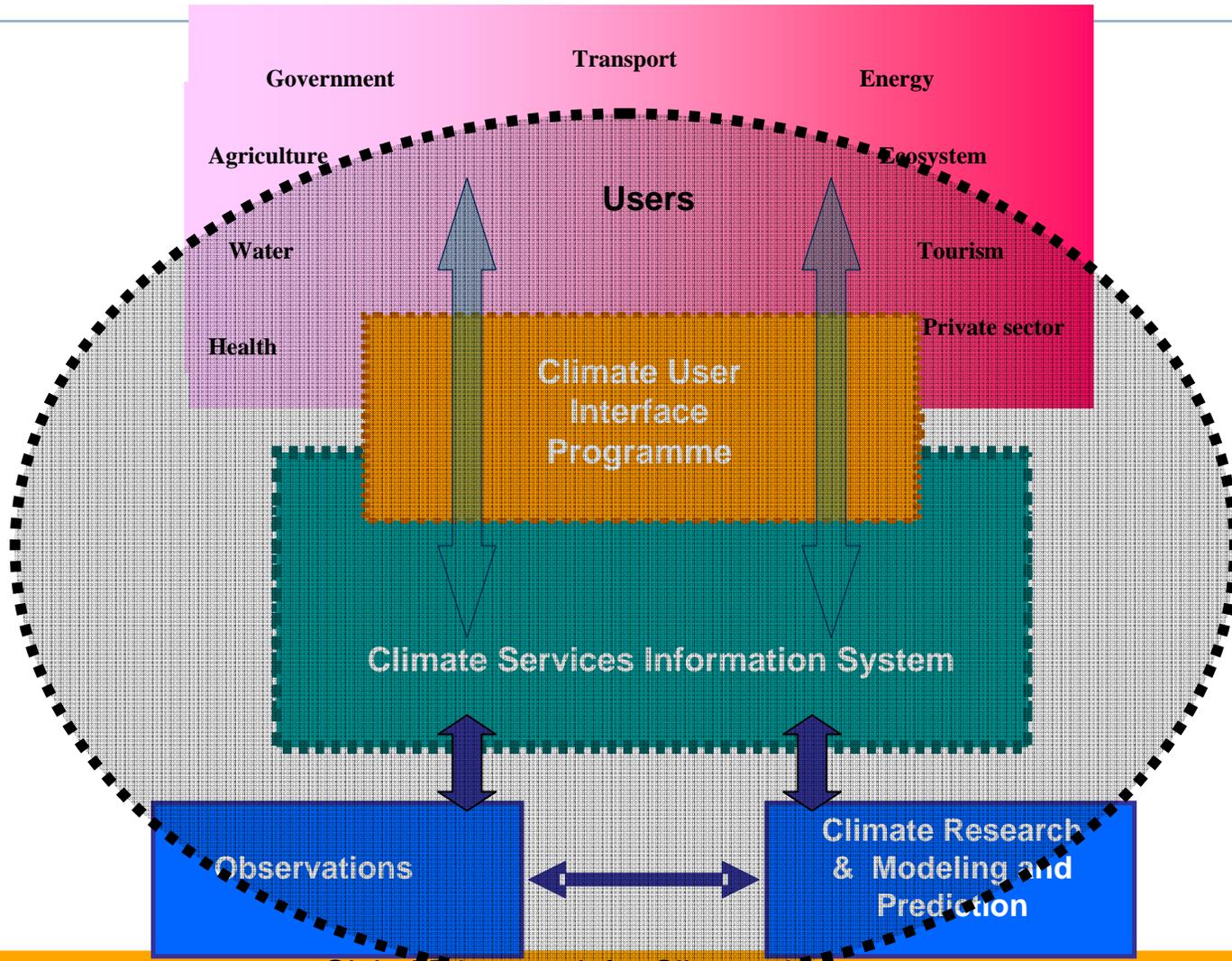


User Interface Platform





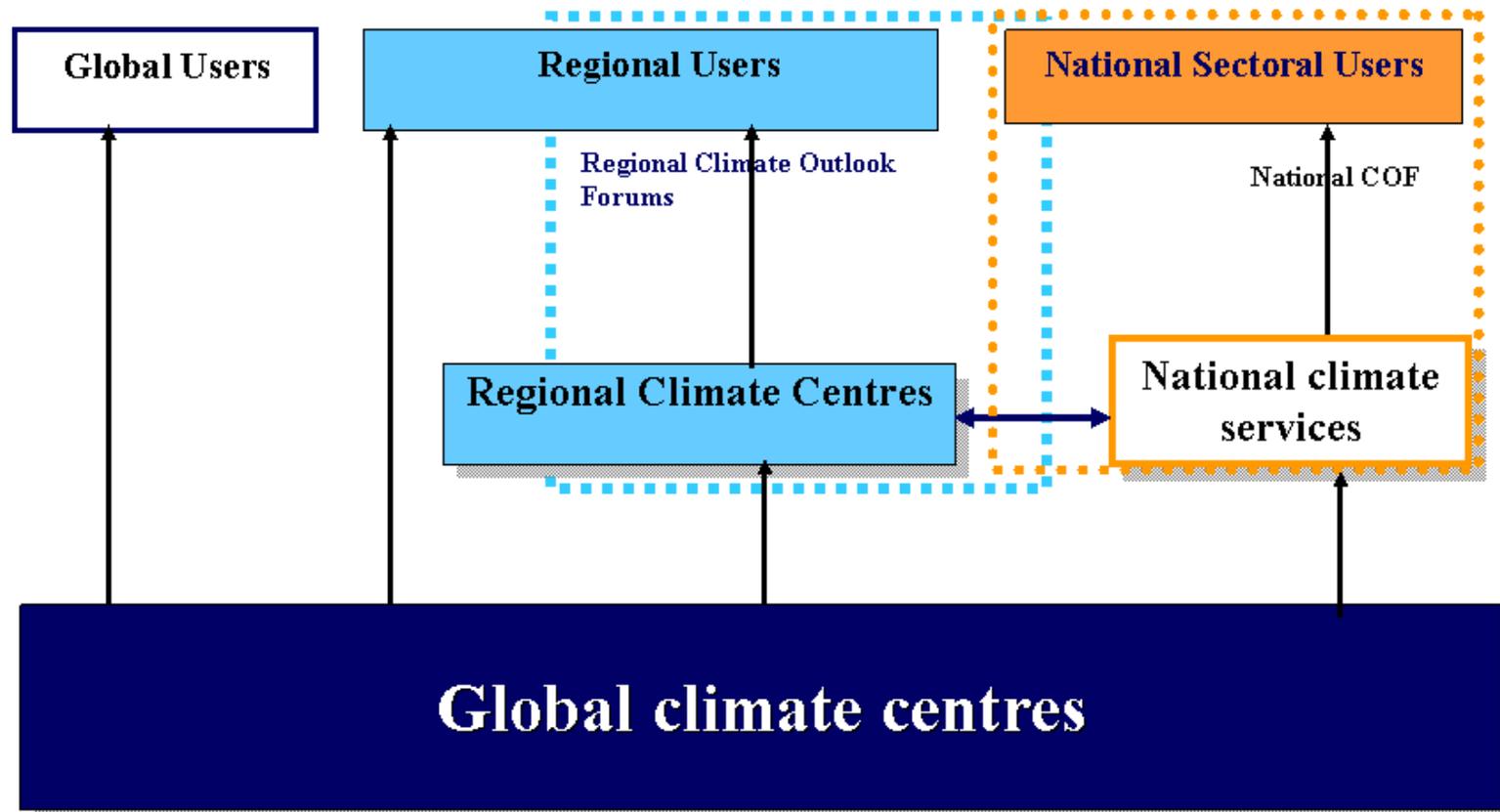
GFCS Overview



Global Framework for Climate
Services
Capacity building

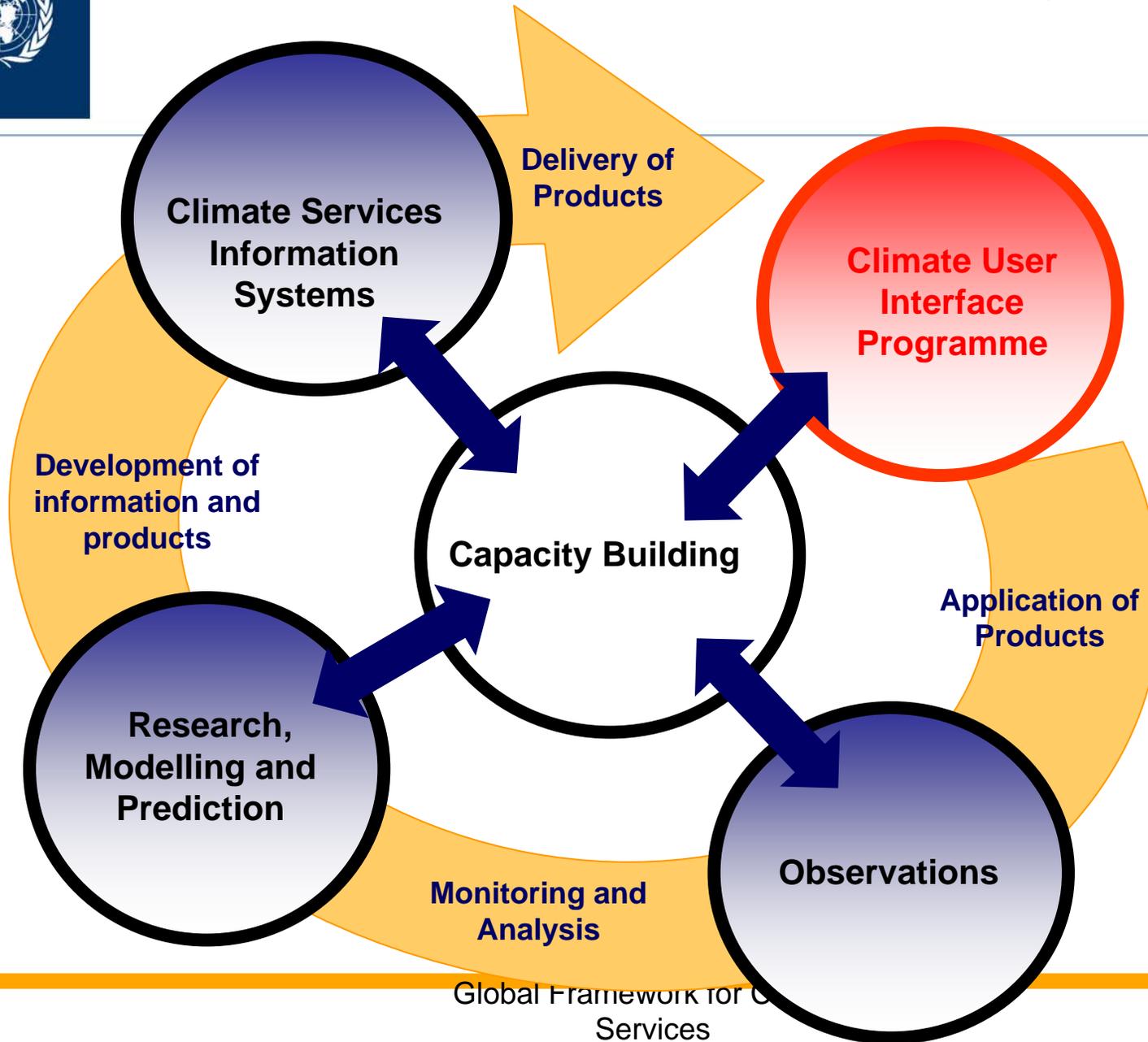


Elements of Climate Services Information System





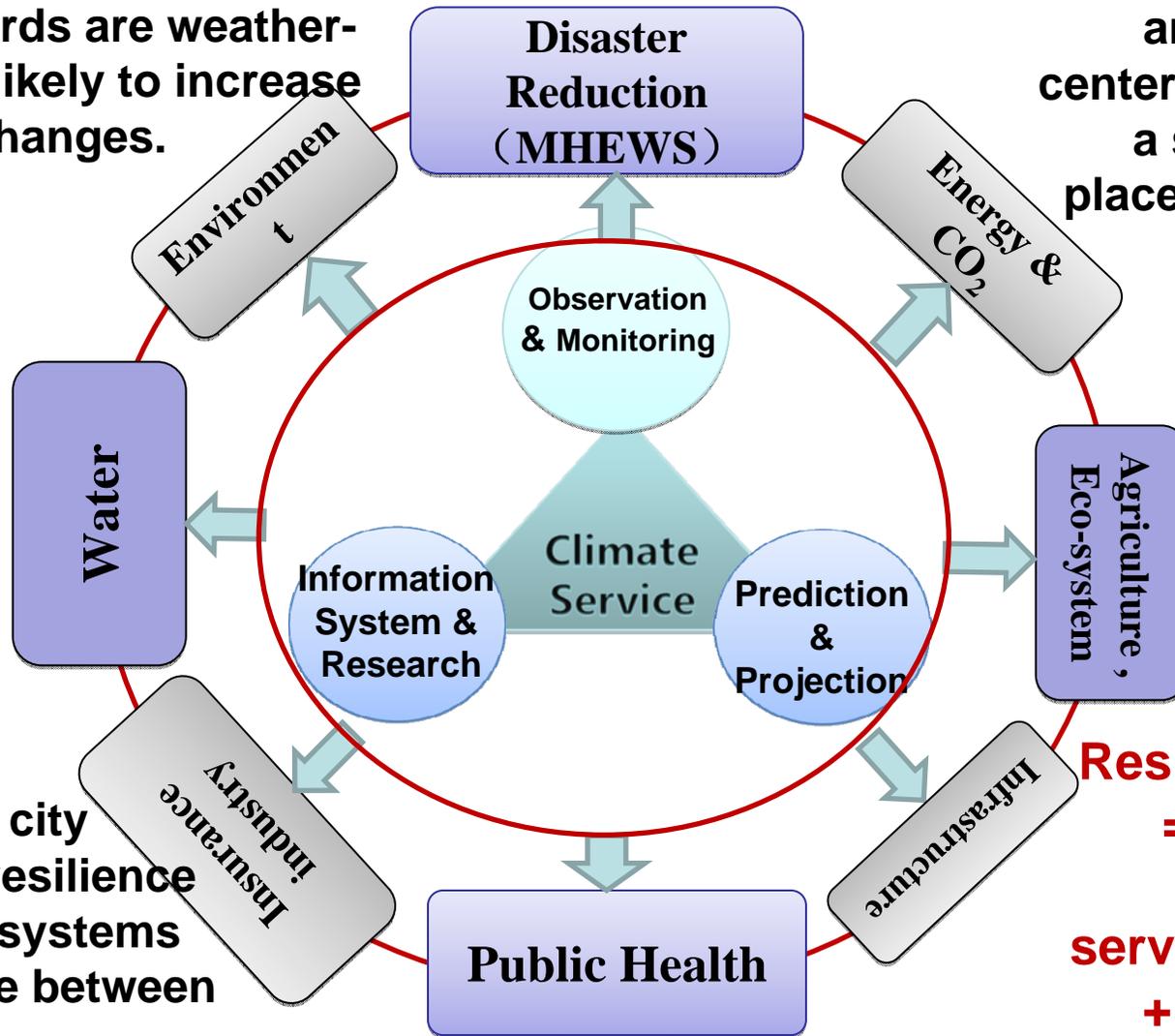
Climate Services Cycle



Urban Framework for Climate Service (UFCS) in Shanghai

Almost all of Shanghai's natural hazards are weather-related and likely to increase as climate changes.

For Shanghai to be an int'l economic center it must provide a safe and secure place to do business



Resilience of city depends on resilience of individual systems and resilience between the systems.

Resilience of city = engineering resilience + service resilience + coordination resilience

Including transportation, utility, Recreation/ tourism, **Energy, Climate, Water**

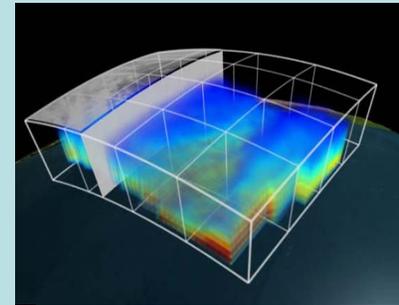
Real World



Digital World



Visual World

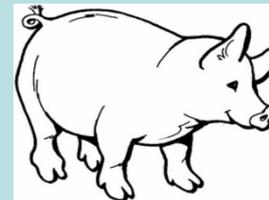
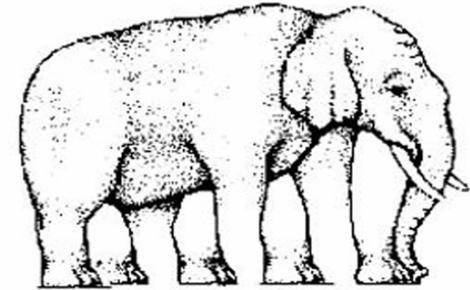


Sensor system

Good Observation/Analysis

assimilation

Poor Observation/Analysis





An integrated observation system for the urban atmosphere

On the other hand, the urban atmosphere is measured in a discrete and deficient way though many variables can be collected including various dynamic, thermodynamic, and chemical variables. Using those information in which may have a deficit or inaccessibility to assess the state of the urban environment is more or less like the story of the **blind men and an elephant**, i.e., incomplete or even wrong.

An urban observing system will

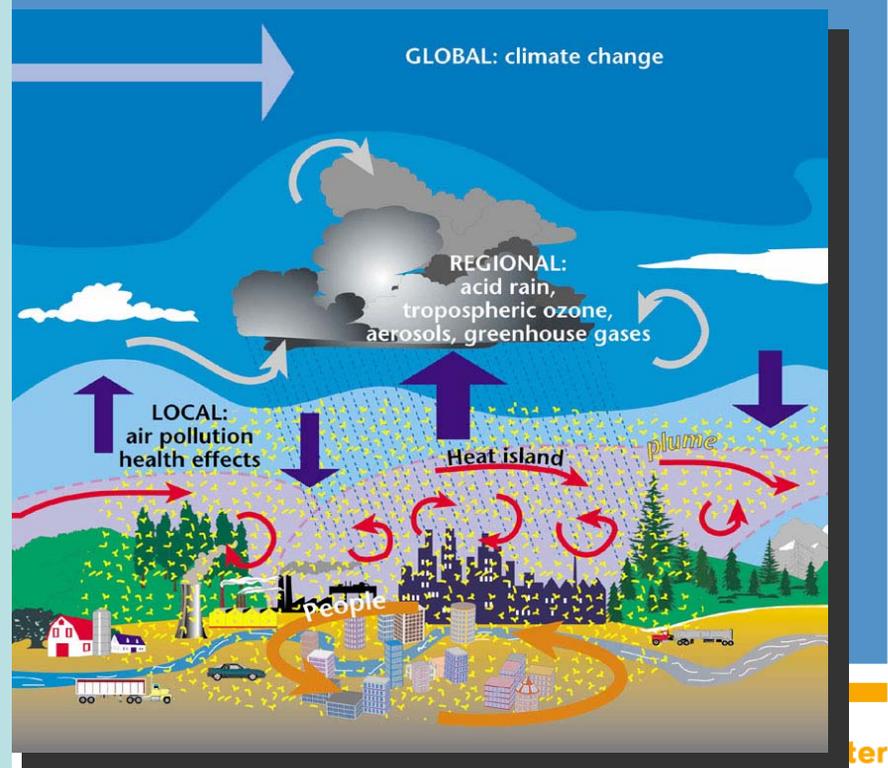
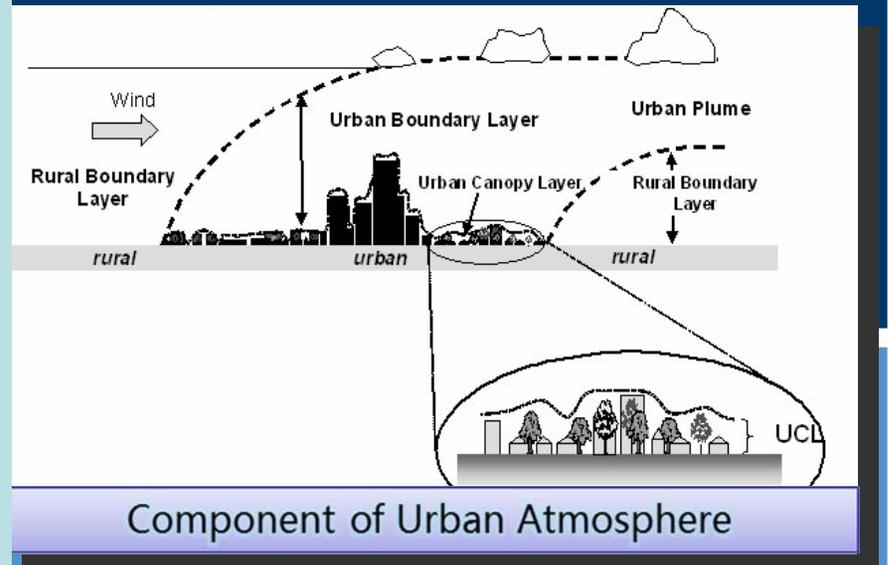
Modeling defined and service need driven design and deployment



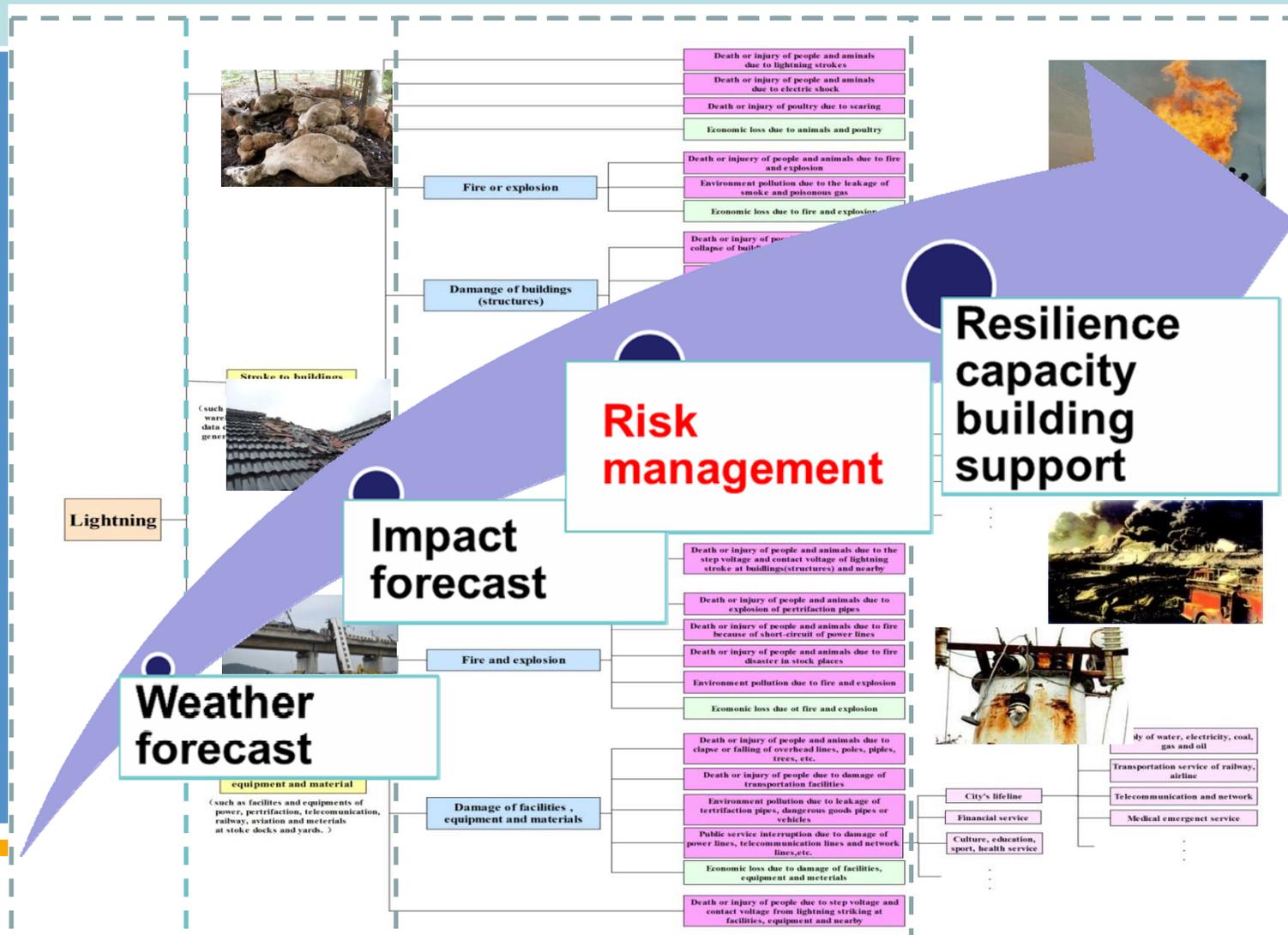
AN INTEGRATED OBSERVATION SYSTEM



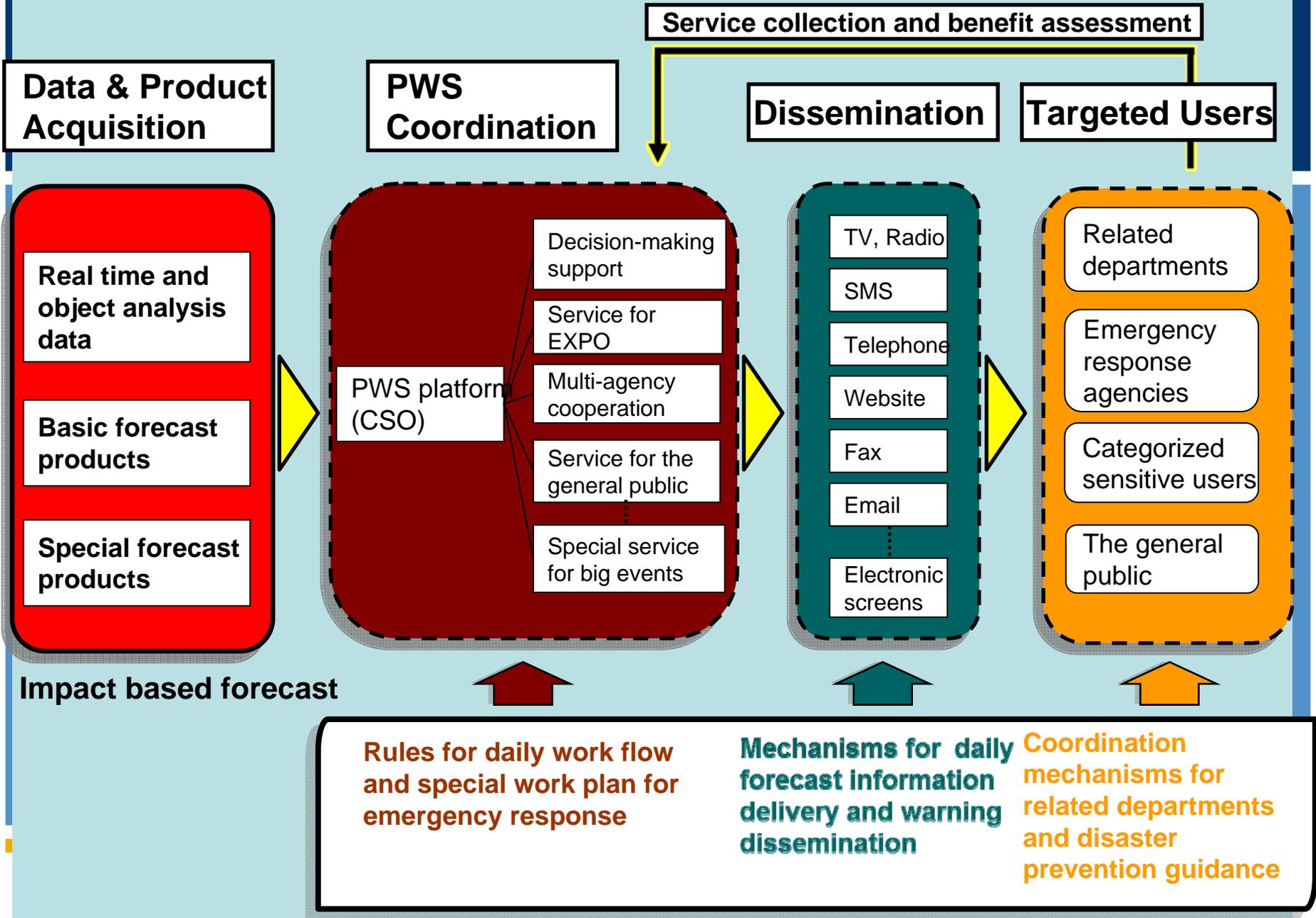
Our goal is to provide the measurements for all the processes that influence urban environments with **multi-scales** in terms of time and space. These measurements on **multi-processes** including those from the boundary layer, free atmosphere and chemistry are linked and impacted one another, therefore, the urban atmosphere should be **an integrated system.**



To support the disaster reduction based decision making process on disaster prevention and mitigation, **tailored risk analysis products** are needed.



Work Flow and Standard Operation Procedure





Risk based forecast and service are being developed.

- The warning based on vulnerability and impact forecasts based on ensemble forecast are needed, and those products help to reduce the impacts of disastrous weather events.
- Furthermore, risk mapping results can be obtained through the integration of vulnerability, exposure and hazard events. **Based on the risk mapping results, actions can be taken to increase the city's resilience.**

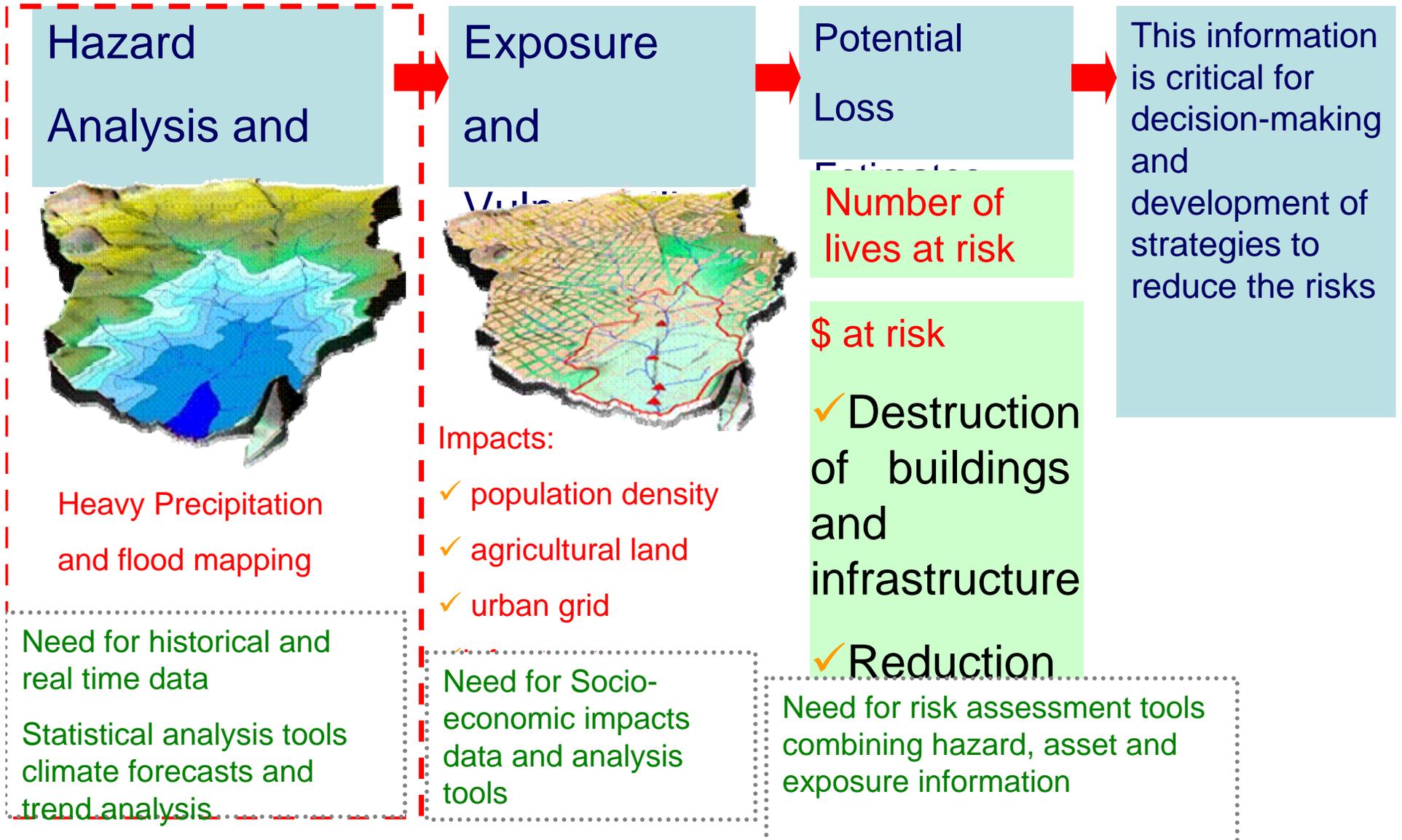
Early Warning operation based on high impact weather forecast and Vulnerability analyses



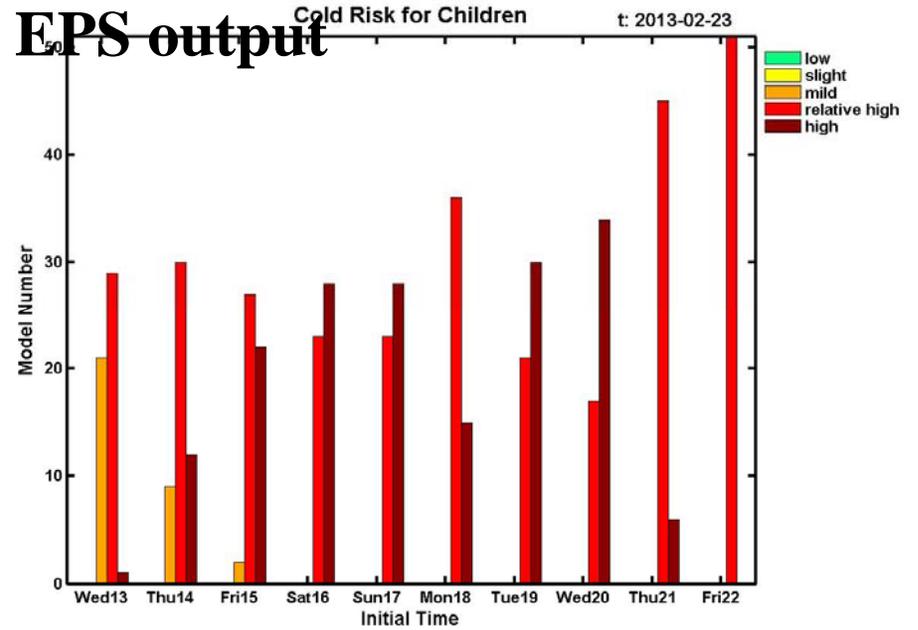
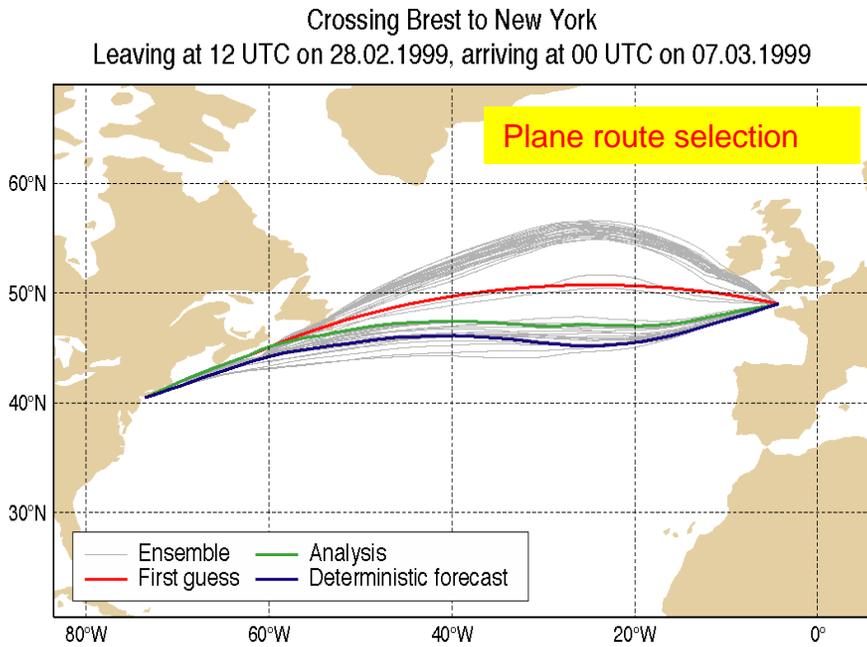
Impact Forecast Based on Ensemble NWP and impact analysis



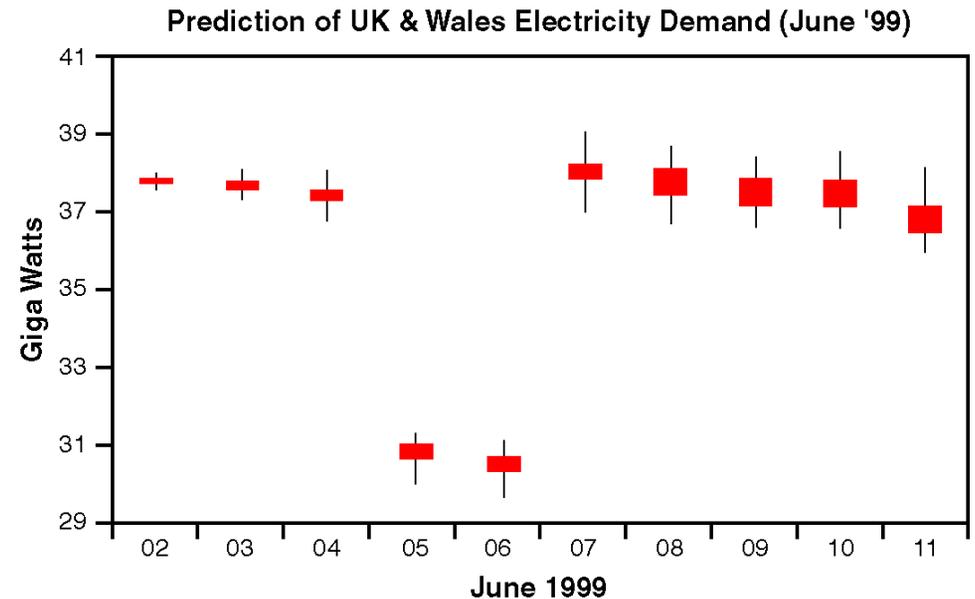
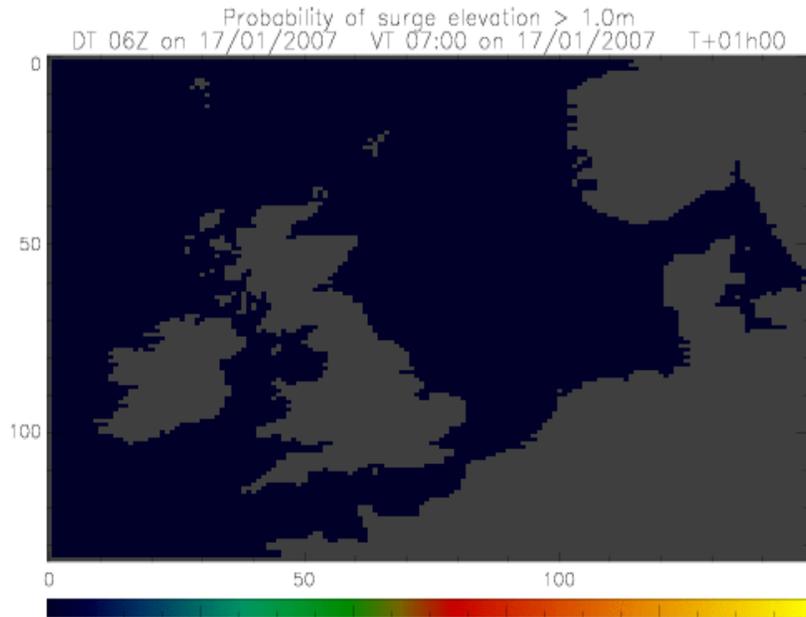
Understanding the Risks Provides Evidence for Preventing Disaster Risks!



Impact based forecasts driven by EPS output



Probability variation of common cold risk at different forecasting time



Climate Services in Risk Reduction



WMO DRR/ Service Delivery Strategic Foundation

**Hyogo Framework
for Action**

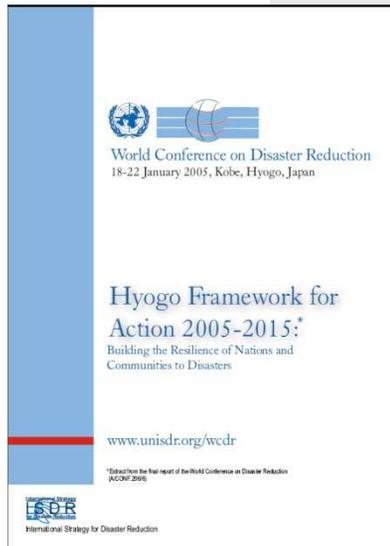
2005-2015

**(World Conference on
Disaster Reduction)**

**WMO
Strategic Plan**

2008-2015

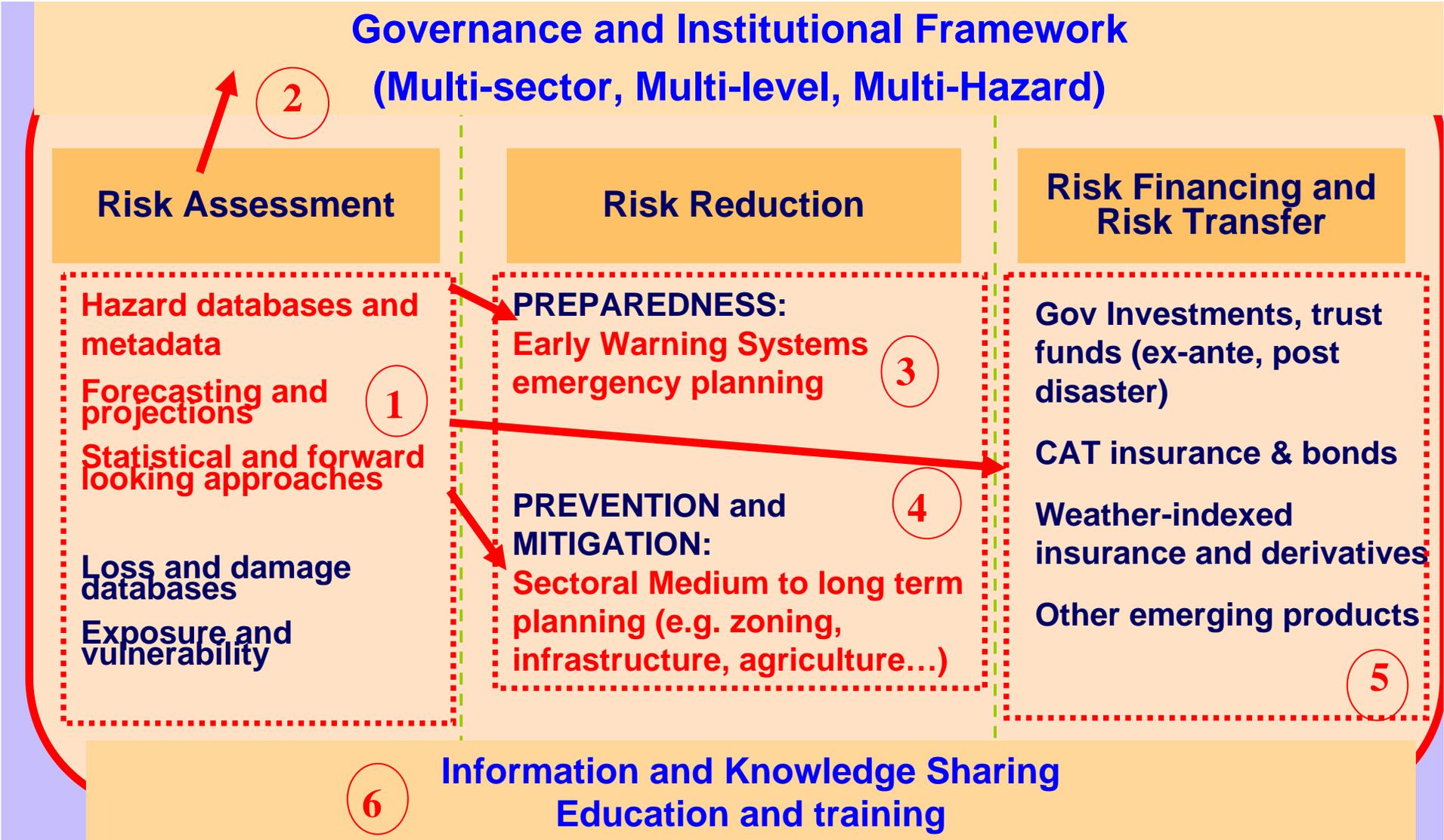
**(Top Level Objectives and
Five Strategic Thrusts)**



**Consultations with WMO governing
bodies, Regional and National
network and partners**

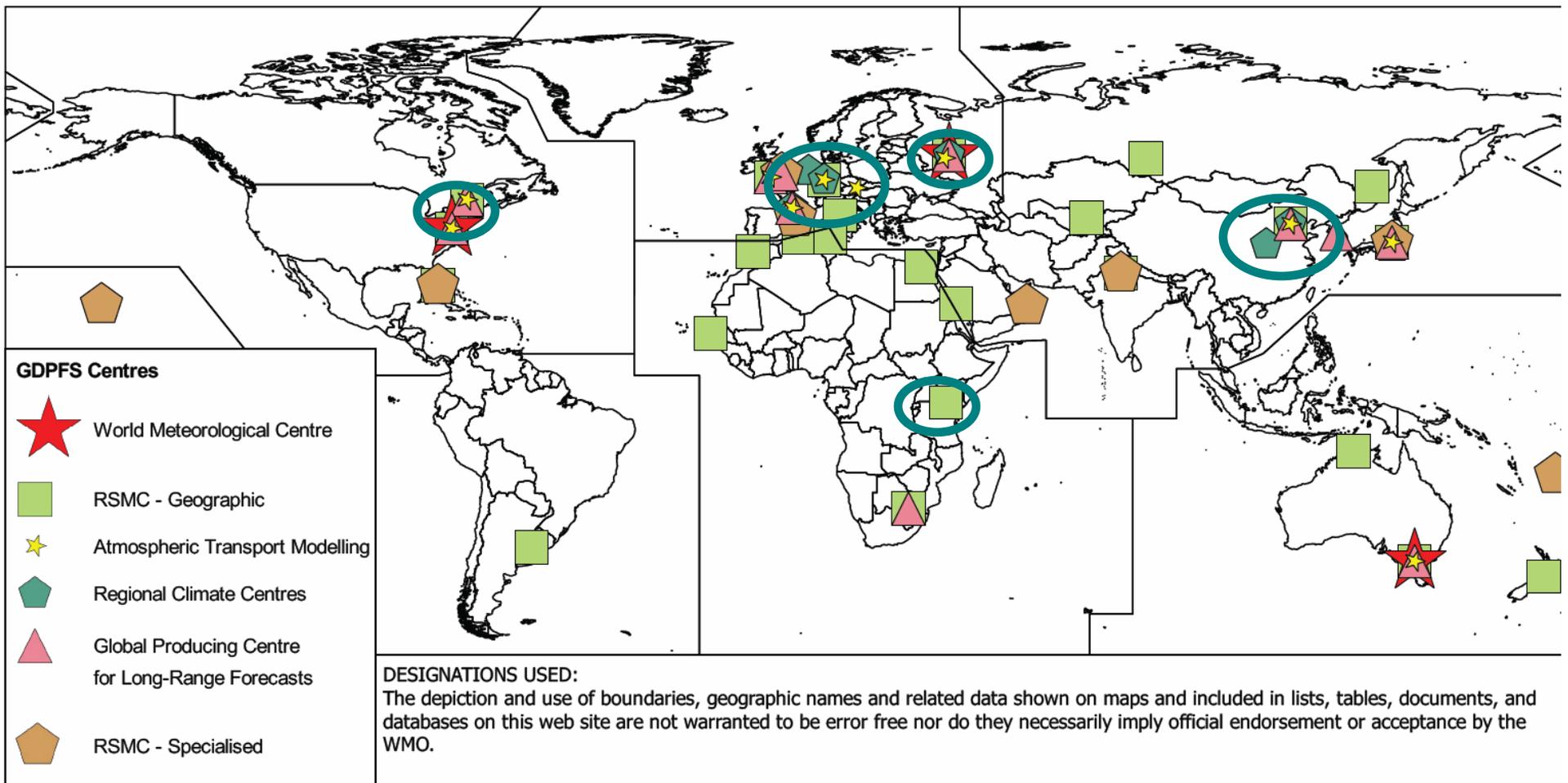
**WMO strategic priorities
in Service Delivery/DRR: MHEWS at Global,
Regional, Country levels, and Urban Areas**

Weather, Climate, Water, and Environment related Service Delivery to support DRR Priority of WMO in the MHEWS Approach at 3 levels and Urban areas including LDC and SIDs



WMO Actions with Members

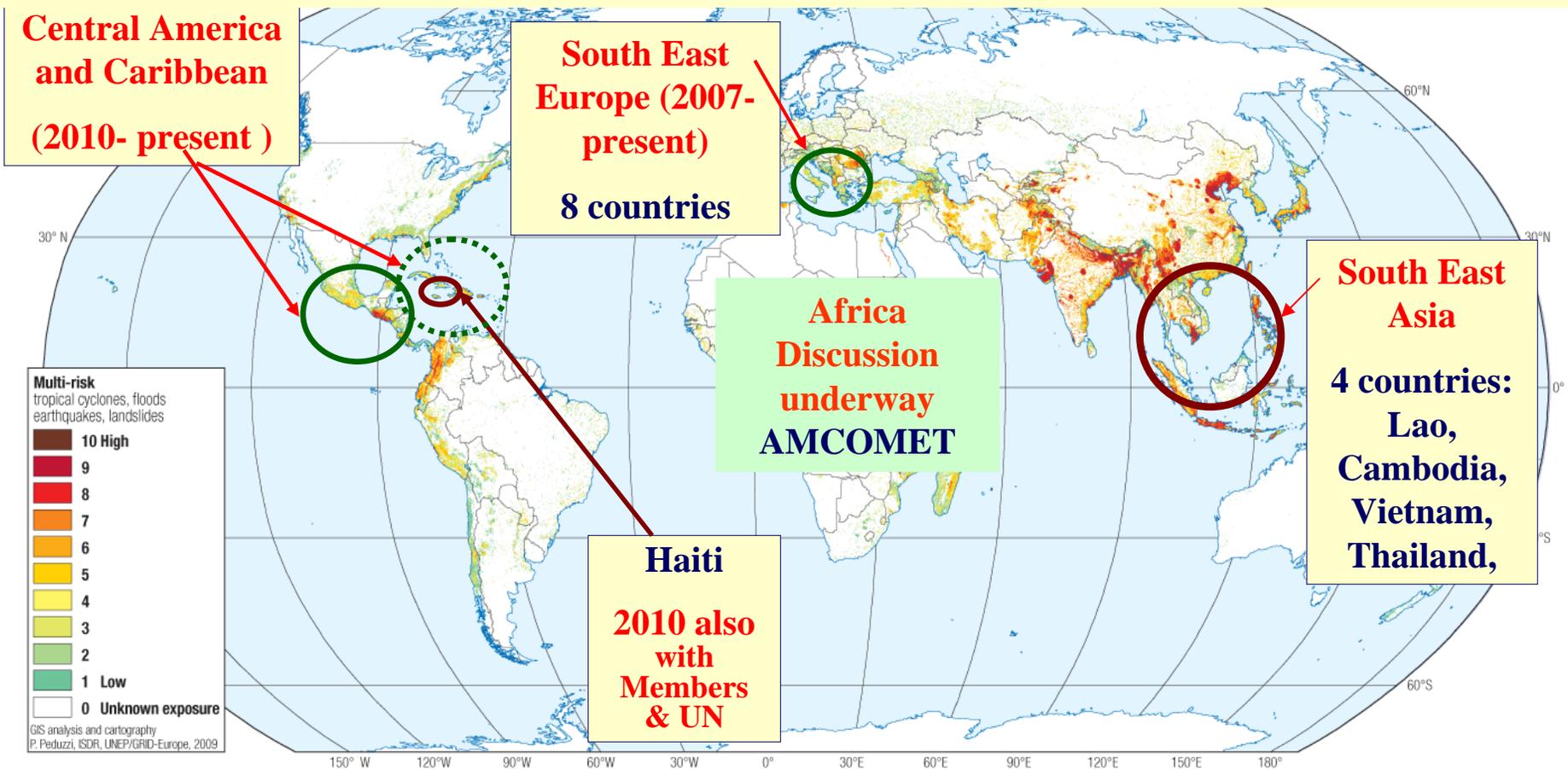
WMO Regional Climate Centers are being established to provide guidance and service in the regions. The Cascading process has been used to assist members, especially those LDC and SIDs.



WMO Actions within UN Structure

Comprehensive National Capacity Development Projects

Partners: WMO, World Bank, UN-ISDR, UNDP, Regional Socio-economic Groupings, Regional Centers, integration of Technical Programmes and Projects including SWFDP, CIFDP, MHEWS, Tropical Cyclone Programme, Storm Surge warning, and Flood Warning Project



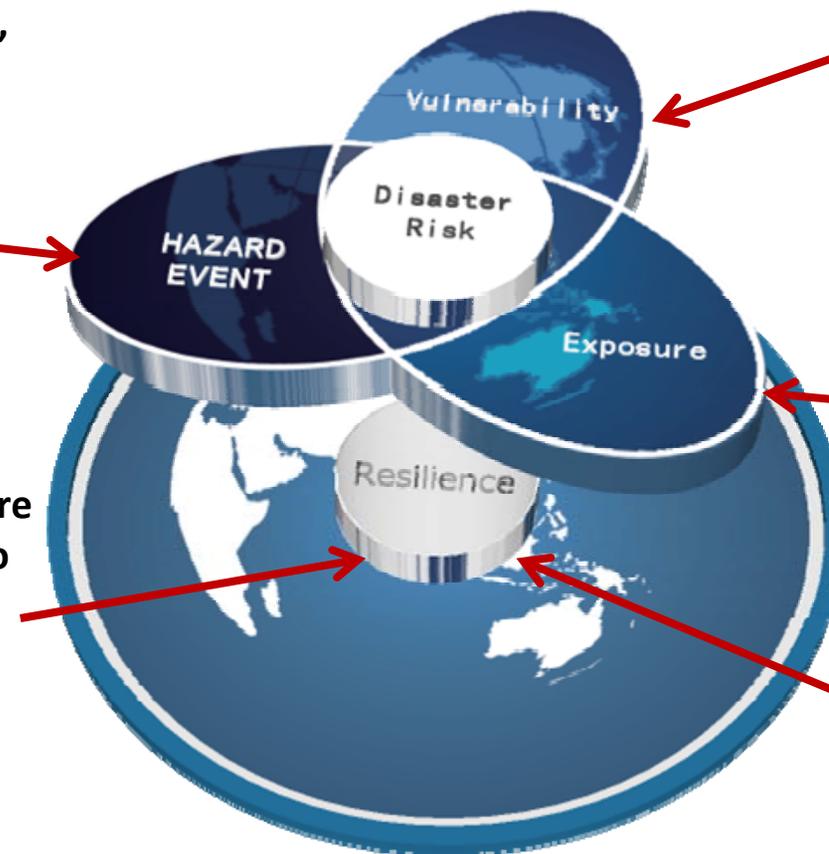


Multi-Hazard Risk Analysis and Reduction Support

Hazard event: lightning, heavy rain, typhoon, gale, haze

Vulnerability: geographic condition, infrastructure, industry

Resilience : intrinsic feature of the system, resilience to external impetus



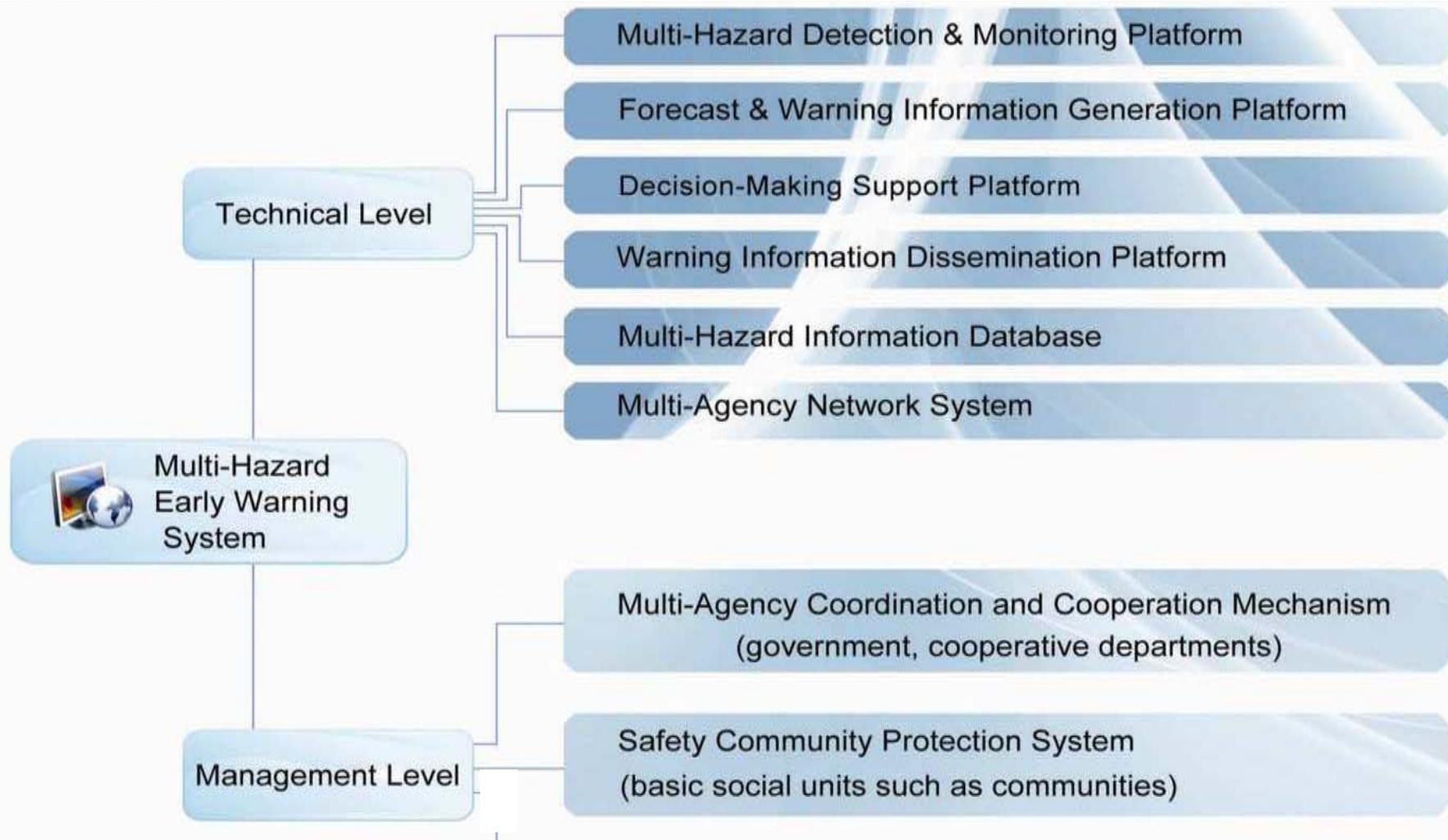
Exposure: Human life, property, healthy, important activities

Resilience capacity includes: Infrastructure, Non-constructional solutions (monitoring, warning, risk management, governance), constructional solutions

Multi-Hazard Risk Analysis and Reduction Support



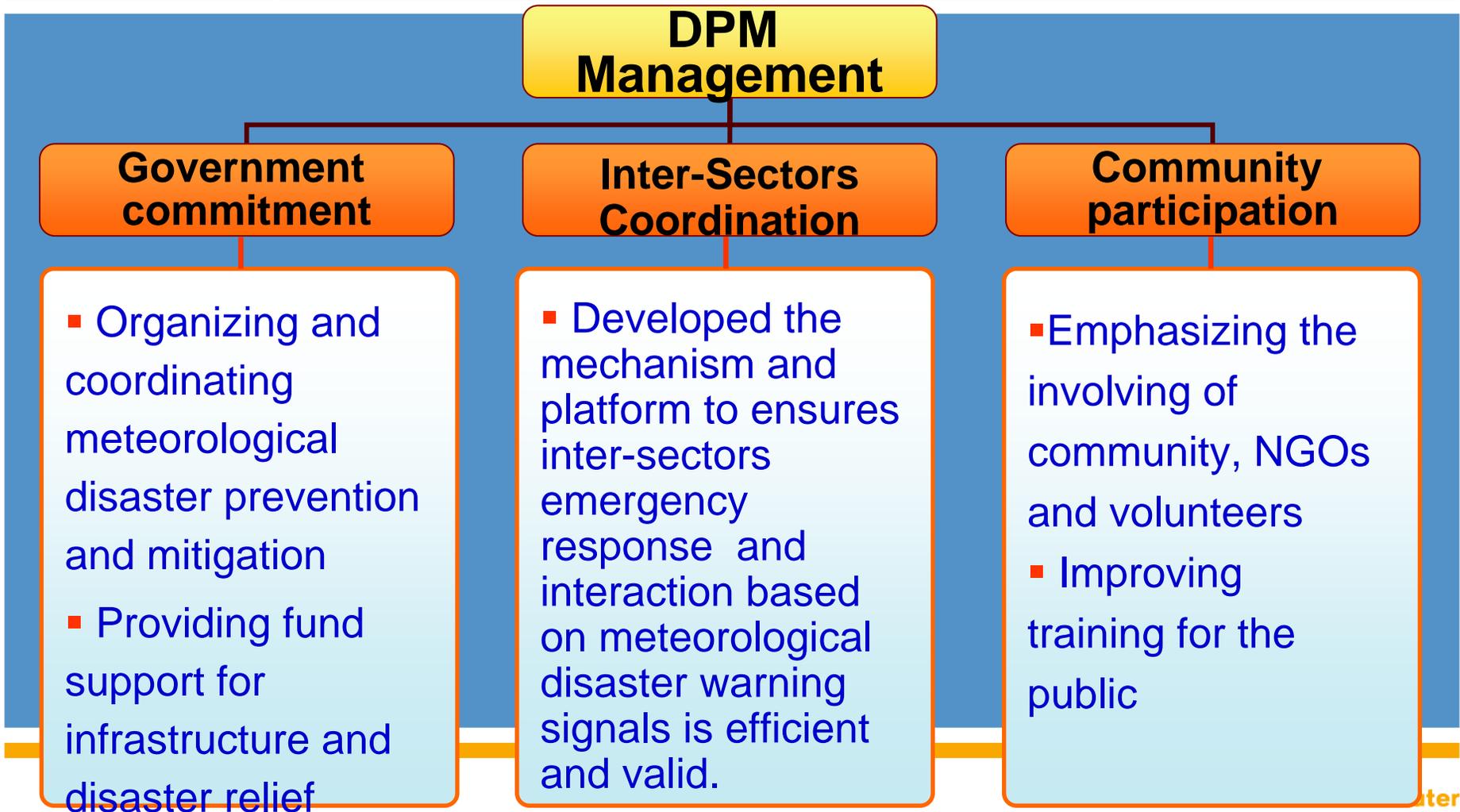
Shanghai Multi-hazard Early Warning System (UNEP/WB DRR and Service Delivery Demonstration)



(1) System of sensor systems for measurements, (2) Risk mapping and assessment, (3) Impact based forecast, (4) Risk based warning and Standards for multi-agency response, (5) Smart and interactive service network and platform.



Government commitment, Multi-agency Coordination and Community Participation are key factors to achieve effective disaster prevention and mitigation





Multi-agency Cooperation -- 32 agencies

- 1) Establish integrated database of meteorological information and public health data;
- 2) Develop forecast model of heat wave and heatstroke, COPD and asthma.



Health

- 1) Early briefing on rainy season and continuous high temperature;
- 2) Co-issue bacterial food poisoning early warning



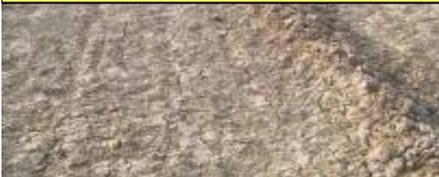
Food Security

- 1) Disaster information sharing;
- 2) Establishment of safe community standard

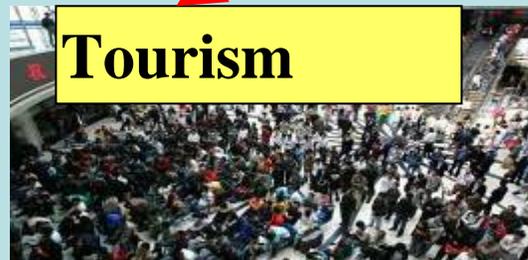


Civil Affair

Agriculture



- 1) Sharing and joint establishment of country information service stations;
- 2) Sharing of the rural volunteers;
- 3) Agriculture meteorological disaster early warning



Tourism

- 1) Forecast of weather conditions impact on visitors number;
- 2) Severe weather events early warning for various attractions.

Power Grid



- 1) Electrical load prediction model for 1-3 days;
- 2) Wind farm output forecast
- 3) High impact weather early warning

Communication



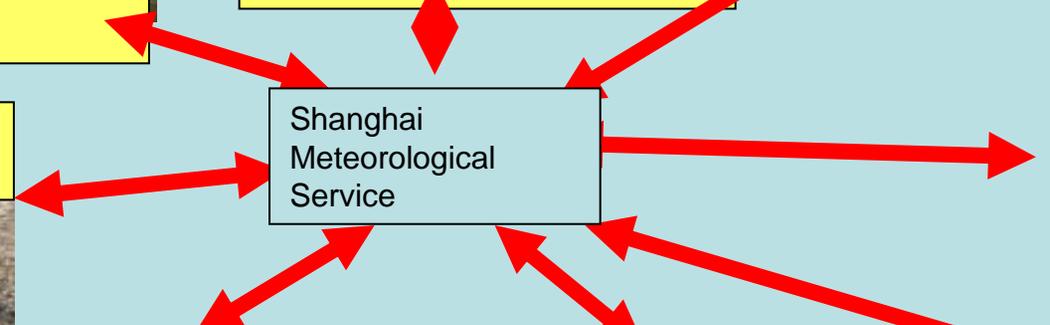
Green channel for meteorological related warning dissemination

School



Establishment of special warning information dissemination system for student

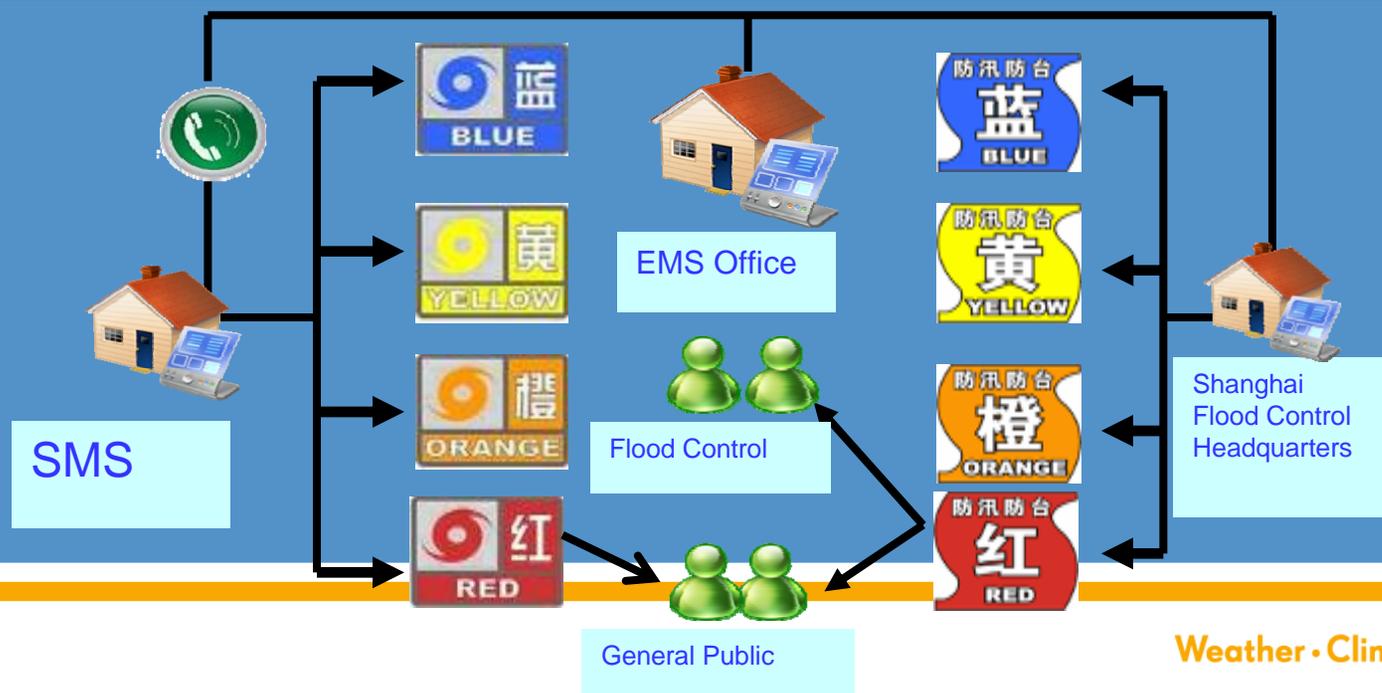
Shanghai Meteorological Service



The operational structure and mechanism including CSO and SOPs is critical to standard the interaction with partner stakeholders.

In order to develop dependable and reliable weather service delivery to meet various requirements from decision makers, stake-holders and public, SOPs for multi-sector coordination across all levels need to be established.

Furthermore, by establishing a CSO-centred mechanism of service planning and organizing, weather service delivery can be more efficient.





World Meteorological Organization

Weather • Climate • Water



Part of the new Shanghai Meteorological Service multi-hazard warning center



One of example of Warning signals -- Chemical Weather Alarm

上海市人民政府文件

沪府发〔2007〕36号

上海市人民政府批转市气象局关于贯彻中国气象局《气象灾害预警信号发布与传播办法》实施意见的通知

各区、县人民政府，市政府各委、办、局：
市政府同意市气象局《关于贯彻中国气象局〈气象灾害预警信号发布与传播办法〉的实施意见》，现转发给你们，请认真按照执行。《上海市人民政府批转市气象局关于贯彻中国气象局〈突发气象灾害预警信号发布试行办法〉实施意见的通知》（沪府发〔2006〕8号）同时废止。



	<p>Hourly maximum >100 ppb In next 24 hours</p>	<p>Guidance: Close window and door advisably; The following groups should avoid prolonged outdoor exertion: People with lung disease, such as asthma ;Children and older adults ;People who are active outdoors; Everyone else should limit prolonged outdoor exertion; Reduce traffic in certain street;</p>
	<p>Hourly maximum >120 ppb in 24 hours</p>	<p>Guidance: Close window and door; Stop outdoor activities; Pedestrian in protection; Reduce traffic in certain area;</p>

SMB
EPB



Agriculture Committee

Emergency Response Centre

Health Bureau

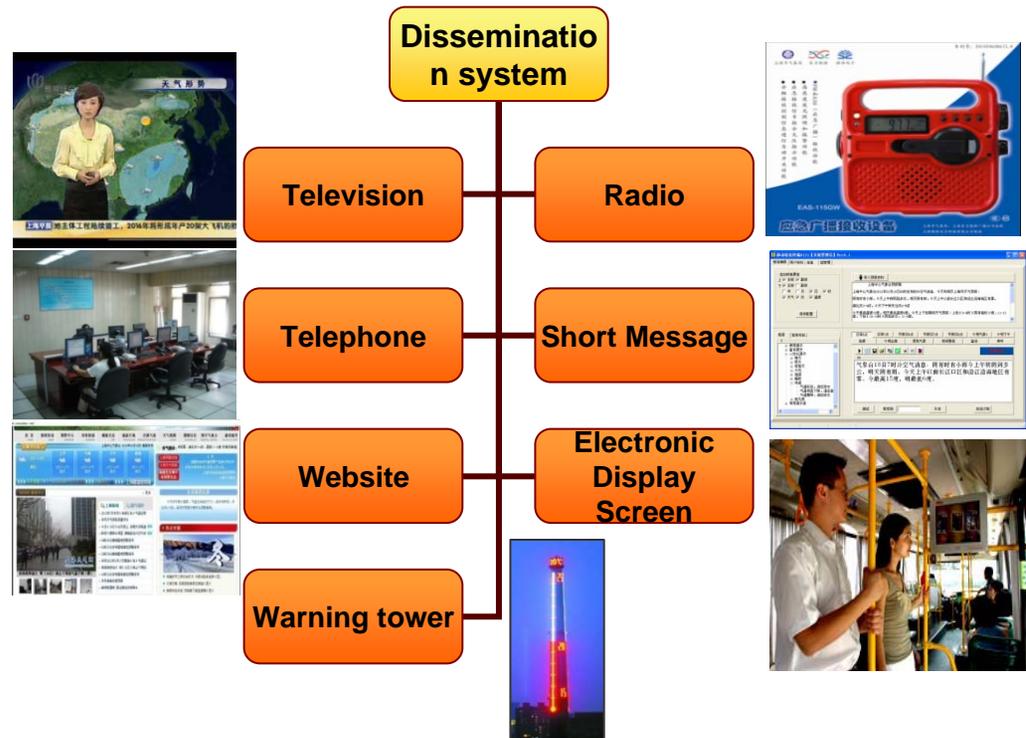


Widen warning coverage

Dissemination system

a. City level platform reaching all emergency personnel. The Municipal Emergency Response Office issues emergency management information to **17000 staff in 76 different departments** through the dissemination platform of SMS.

b. Department level platform Almost reaching most sensitive users. The cell phone message platform of SMS has already sent warnings concerning water affairs, flood prevention, sunstroke and community management. The Information dissemination system covers more than **8000 residential areas, 1780 junior and primary schools, and 300 agricultural units.**



c. Public platform information becomes first choice.
—SMS whole net dissemination mechanism for serious disasters has been established.
—Establishment of public warning dissemination network including **22000 public electronic screens, 2000 billboard TV screens, and 1000 electronic road signs.**



World Meteorological Organization

Weather • Climate • Water

- Building urban resilience: fundamental base for sustainable urbanization – Risk Reduction
- People centered: key issue for sustainable cities – Healthy Cities Design and Development
- Integrated urban service delivery: Climate and Environment smart cities, Implementation Strategies: Science in service to society, Building Resilient Society, Integration and Seamless Approaches
- Government long-term promising, investment and consistent leadership

UN actions: New Urban Agenda

- The General Assembly, in its resolution 66/207, decided to convene a 3th UNs conference on housing and sustainable urban development (Habitat III) in 2016
- Global commitment to sustainable urbanization; focusing on the implementation of a “**New Urban Agenda**”
- The overarching topic of **7th session of the World Urban Forum**, which will held in Medellin, Colombia, 5-11 April 2014, will be: *Urban Equality in Development – Cities for Life. The focus on urban equality is to ensure that public goods and basic services are available to everyone, according to needs.*
- *WUF7 is particularly important given the concurrence of the Post 2015 Development Agenda, and will also contribute significantly to the review of **the global urban agenda in 2016***



UN Agencies supporting **Climate Smart Cities** – UN Side Event on UNFCCC, COP-19, Warsaw, Poland

Main theme of the side event: Integrating cities into national efforts to address climate change is a pressing challenge. UN agencies are helping cities to mitigate and adapt.

Main efforts: A cross-agencies TT has begun to map tools and formulate a “one UN approach to build urban resilience and foster climate smart cities” – a concerted effort of UN agencies delivering as one in pilot cities.



UN Agencies supporting **Climate Smart Cities** – UN Side Event on UNFCCC, COP-19, Warsaw, Poland

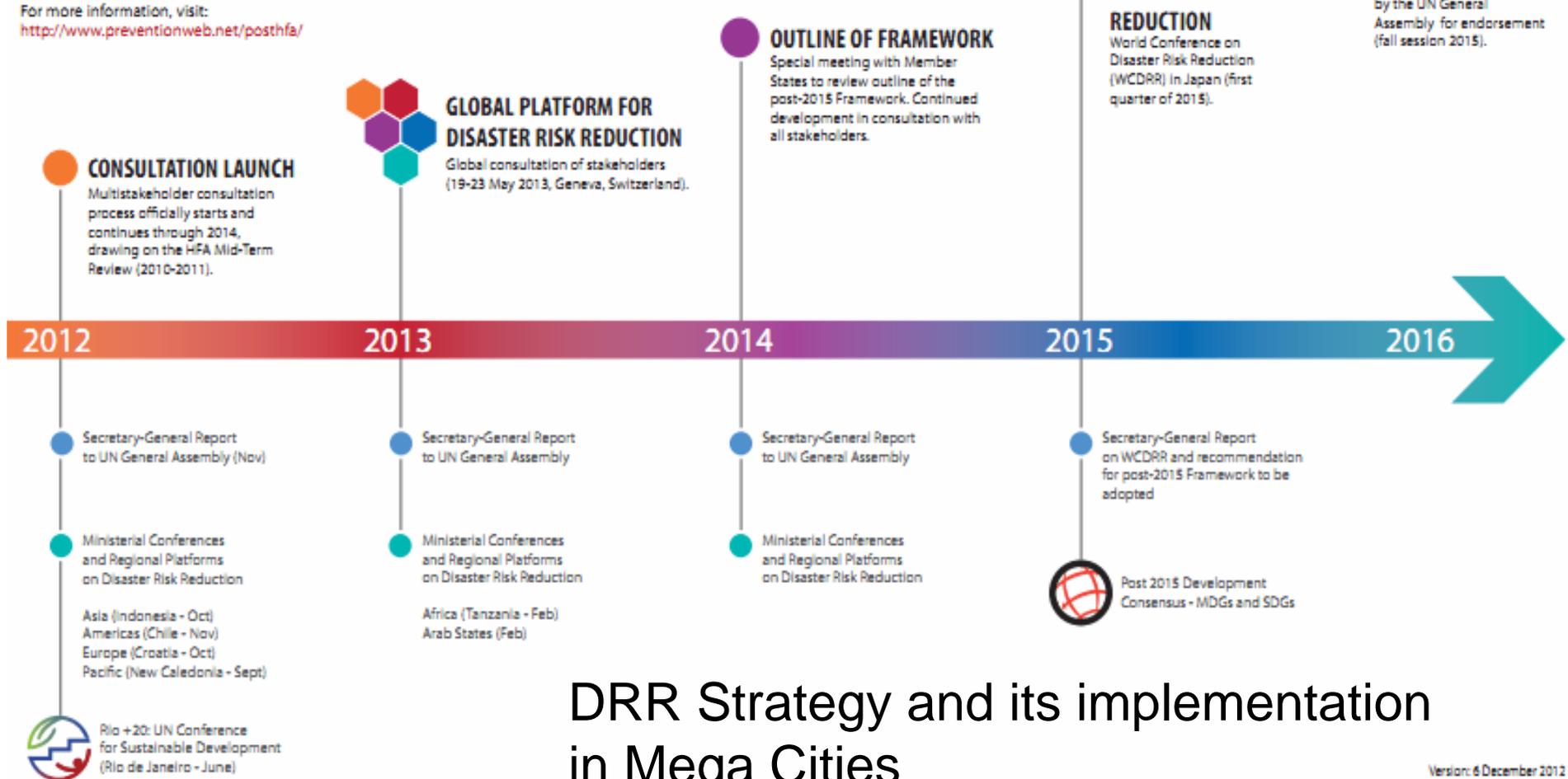
The joint programming of interagency climate projects and initiative in cities in the Global South are being promoted by the TT on “**Urban Risk Management and Climate Smart Cities**”, which was developed by the High Level Committee on Programmes’ Working Group on Climate Change, with around 10 agencies jointed to date

The role of cities, building resilience, emerging findings, nationally appropriate mitigation actions, optimizing systems improving energy efficiency for industries , tools for building urban resilience, etc were the main components of the efforts

Towards a post-2015 DRR Framework

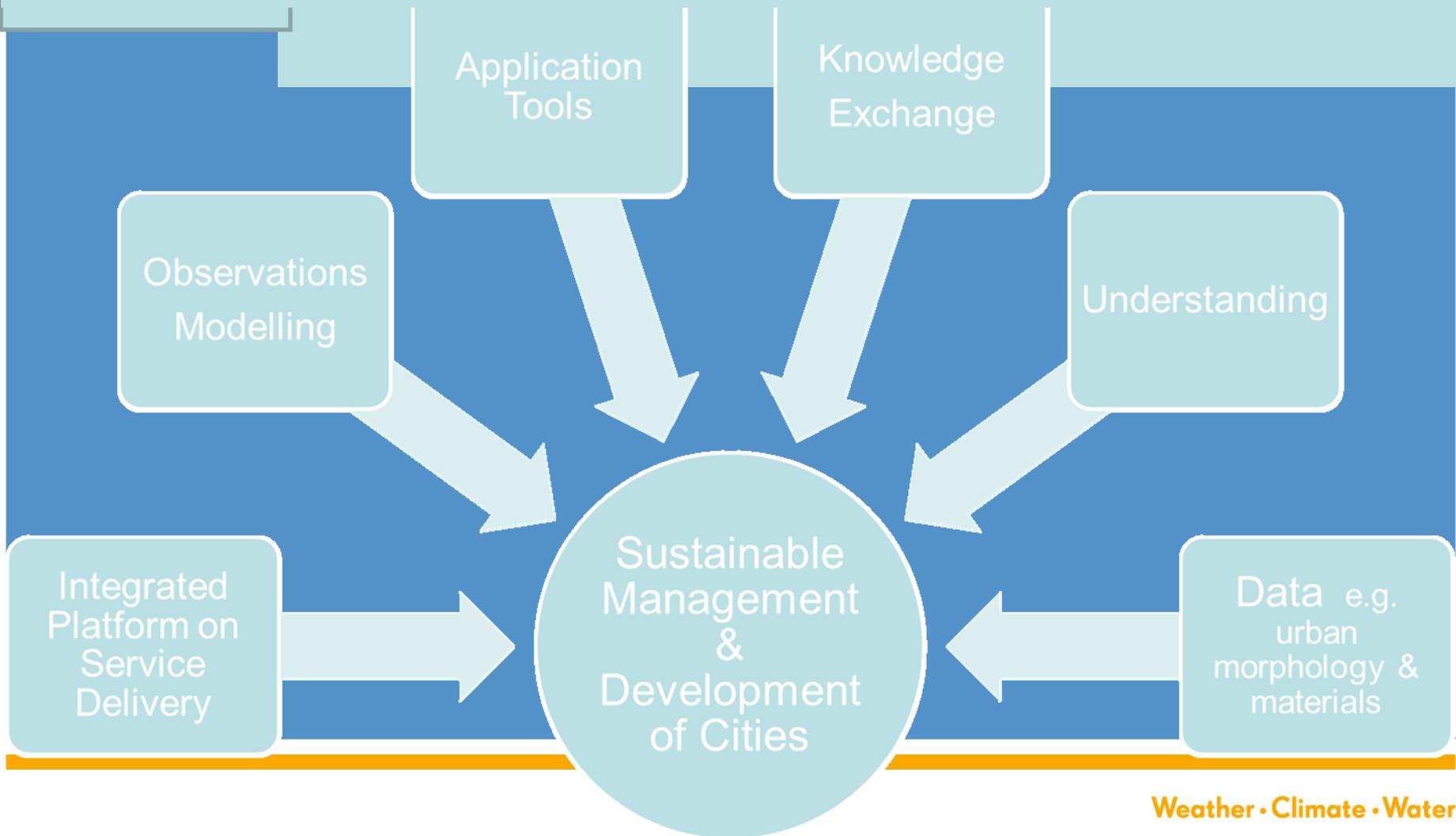
- Requested by the UN General Assembly (GA) Resolution A/RES/66/199
- UNISDR is facilitating a multistakeholder consultation process
- Consultation process engages a full range of actors from Member States to civil society. Events include regional platforms, the Global Platform, national and local events, and targeted events of DRR stakeholders, partners and networks.
- Builds on the *Hyogo Framework for Action 2005-2015 (HFA) - Building the Resilience of Nations and Communities to Disasters*.
- Expected to be adopted by the World Conference for Disaster Risk Reduction and endorsed by the GA in 2015.

For more information, visit:
<http://www.preventionweb.net/posthfa/>



DRR Strategy and its implementation in Mega Cities

Integrated Service Delivery on Weather and Climate including Supporting Research for Megacity and in Urban Areas, WMO Priority Area (2016-2019) as a response action to UN New Urban Agenda: Needs to go through integrating and crosscutting ways.



Urban Community Responses to Air-borne Hazards, Weather, and Climate Events

Urban Ecosystem & Healthy Community Planning

Smart City/Info Dissemination / Low Carbon/energy Business Cont. Planning

Security of infrastructure & Interaction

DRR & Risk Management

Public Health and Safety

Tourism & Recreation

Transportation

Urban Observing System

Severe Weather
 Risk Mapping
 Air Quality
 Climate Extreme
 Water Quality
 Food Security

Integrated Urban Weather and Climate Service delivery including User Interface for Urban Climate Service



User Interface Platform



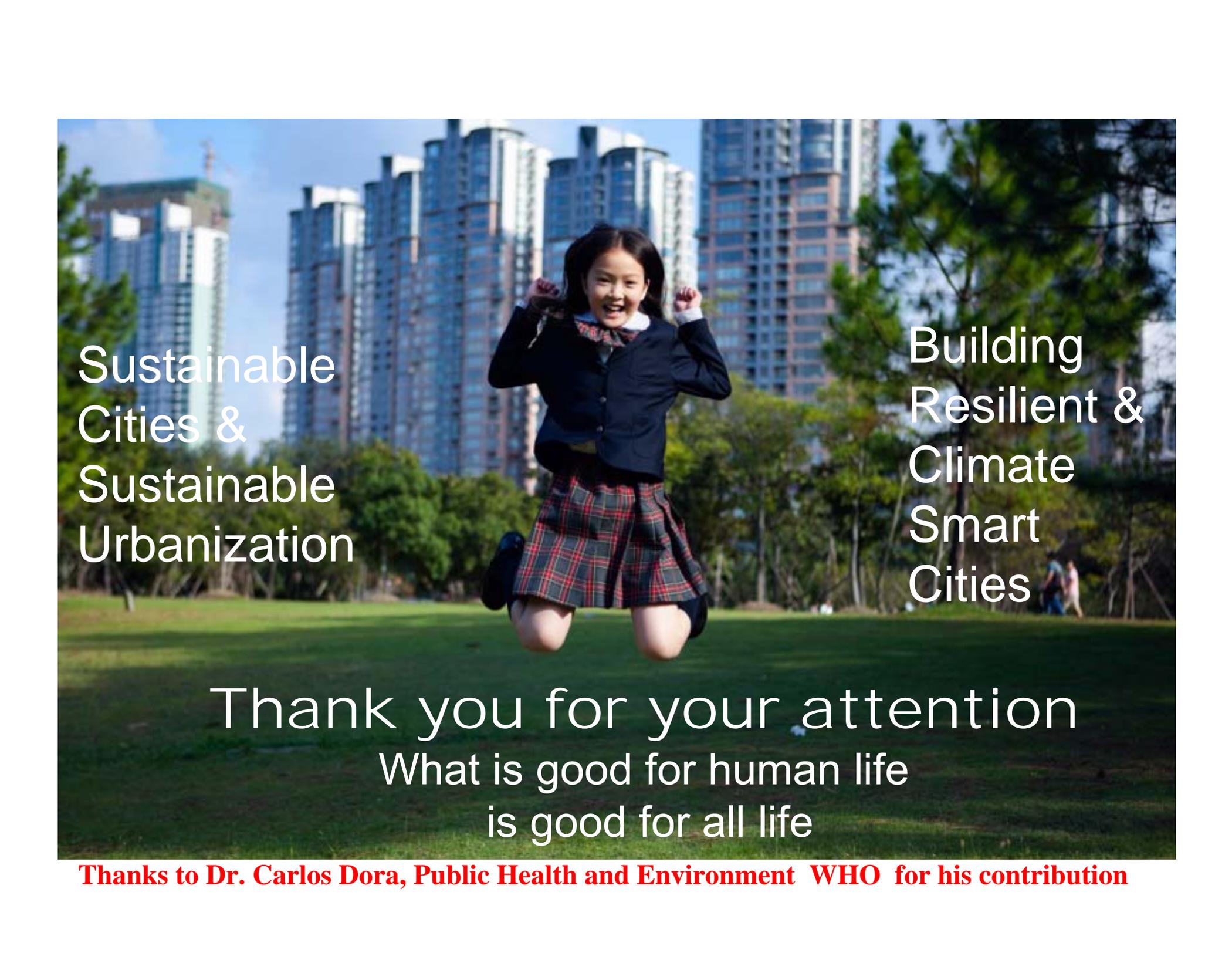


Urban Service Delivery Facilities in Shanghai

Weather • Climate • Water



Modernization of the urban infrastructure for better service delivery is a key effort which should be decided and consistent to implement in the procedure of sustainable development

A young girl with dark hair, wearing a dark blue school jacket and a red and green plaid skirt, is jumping joyfully in the air on a green lawn. In the background, there are several modern high-rise apartment buildings under a clear blue sky. The scene is bright and sunny.

Sustainable
Cities &
Sustainable
Urbanization

Building
Resilient &
Climate
Smart
Cities

Thank you for your attention
What is good for human life
is good for all life

Thanks to Dr. Carlos Dora, Public Health and Environment WHO for his contribution