



# SUSTAINABLE HYDERABAD PROJECT

## Climate and Energy in a Complex Transition Process Towards Sustainable Hyderabad

Institutions and Governance Structures for Adaptation and Mitigation

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**Future  
Megacities**

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## Introduction (II)

### **Focus: Climate Change Mitigation & Adaptation and Energy Efficiency**

- Polycentric approach: not waiting for global solutions (Ostrom)
- Building up from within by institutional innovation and governance reform
- Explicitly including the Society-Climate-Energy-Land-Water-Food-Nexus

### **An integrative view:**

1. Enormous technological options and achievements for sustainability
2. Ecological systems have limited carrying capacity and produce multiple responses to interventions due to interconnected natural resources
3. Social construction of corresponding situations and solutions.

**To be conceived of as a complex “socio-techno-ecological” system  
To be solved by institutional diversity and polycentric governance**





## Introduction (III)

### Fundamental principle No 1: mutual learning by joint action

- Developing concepts is followed by/combined with innovative implementation via capacity building and pilot projects
- By offering options/solutions education/coordination actors learn
- By being exposed to “reality” in a particular context we also learn
- One of the **most crucial empirical tests**; together with our partners

### Fundamental principle No 2: feasibility and transferability

- Employing a new procedure:  
“Crafting Rules by Discourse”
- Showing conditions of transferability between projects and in general
- *Meta analysis* on **Institutional Compatibility of Policies and Practices**





# Theoretical Underpinning (I)

## **Institutions:**

“... are the rules of the game in a society. They are made up of formal constraints (e.g., rules, laws, and constitutions), informal constraints (e.g., norms of behaviour, conventions, and self-imposed codes of conduct), and their enforcement characteristics. In consequence, they structure incentives in human exchange, whether political, social, or economic” (North 1990: 3; North 1994: 359).

**Example:** constraints on the rights of industries to pollute water bodies in Hyderabad





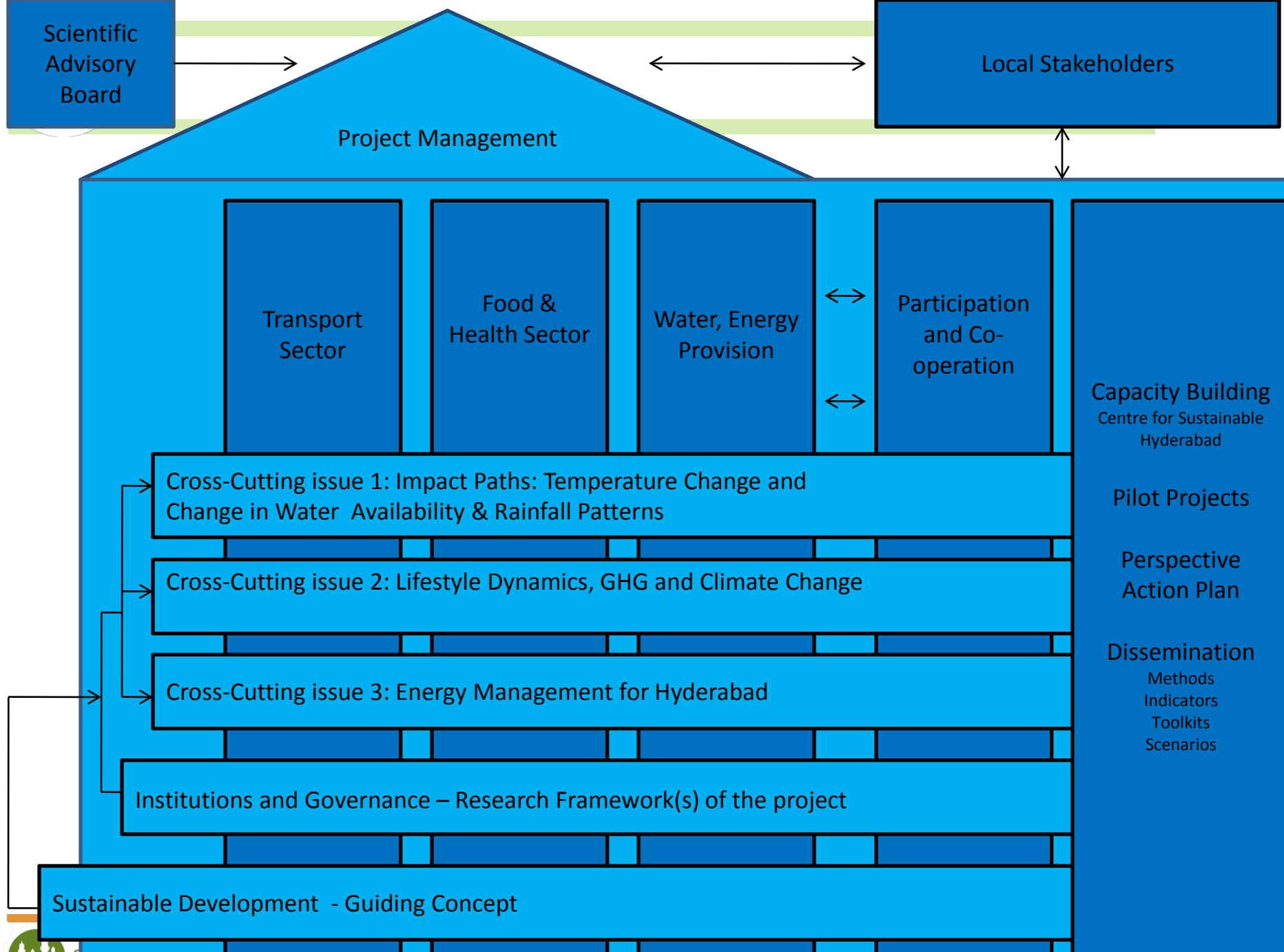
## Theoretical Underpinning (II)

### **Governance structures:**

... are the organisational solutions for making sets of rules (institutions) effective, i.e., they are necessary for guaranteeing the rights and duties and their use in coordinating transactions (see, for example, Ostrom 1990).

**Example:** Hyderabad Pollution Board develops a market for pollution permits together with a monitoring and enforcement system that makes the constraints on industrial pollution rights mentioned above effective – puts them into practice







# Research and Activities in the Workpackages

**What has been done to achieve the outlined outcomes?**





## WP 1: *Impact Paths: Temperature Change and Water Availability & Rainfall Patterns*



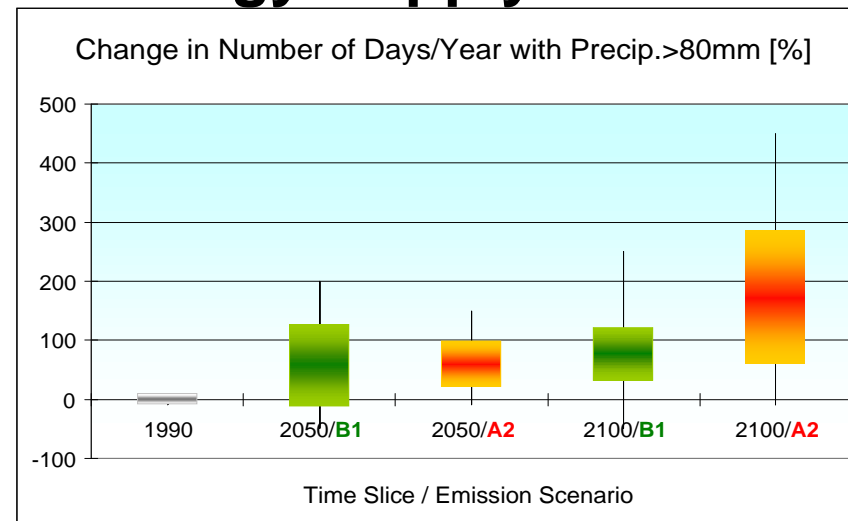
**Key Objectives:** Identification of the relevant climate variables and their expected development until 2050 and 2100 for the city of Hyderabad and its peri-urban region

- Investigation of the sensitivity of these projections with respect to global greenhouse gas emission scenarios
- Uncertainty of the projections for fixed emission scenarios

Identification of the impacts of these expected climate change emphasizing: **Transport and Infrastructure, Public Health and Food Supply, Water and Energy Supply**

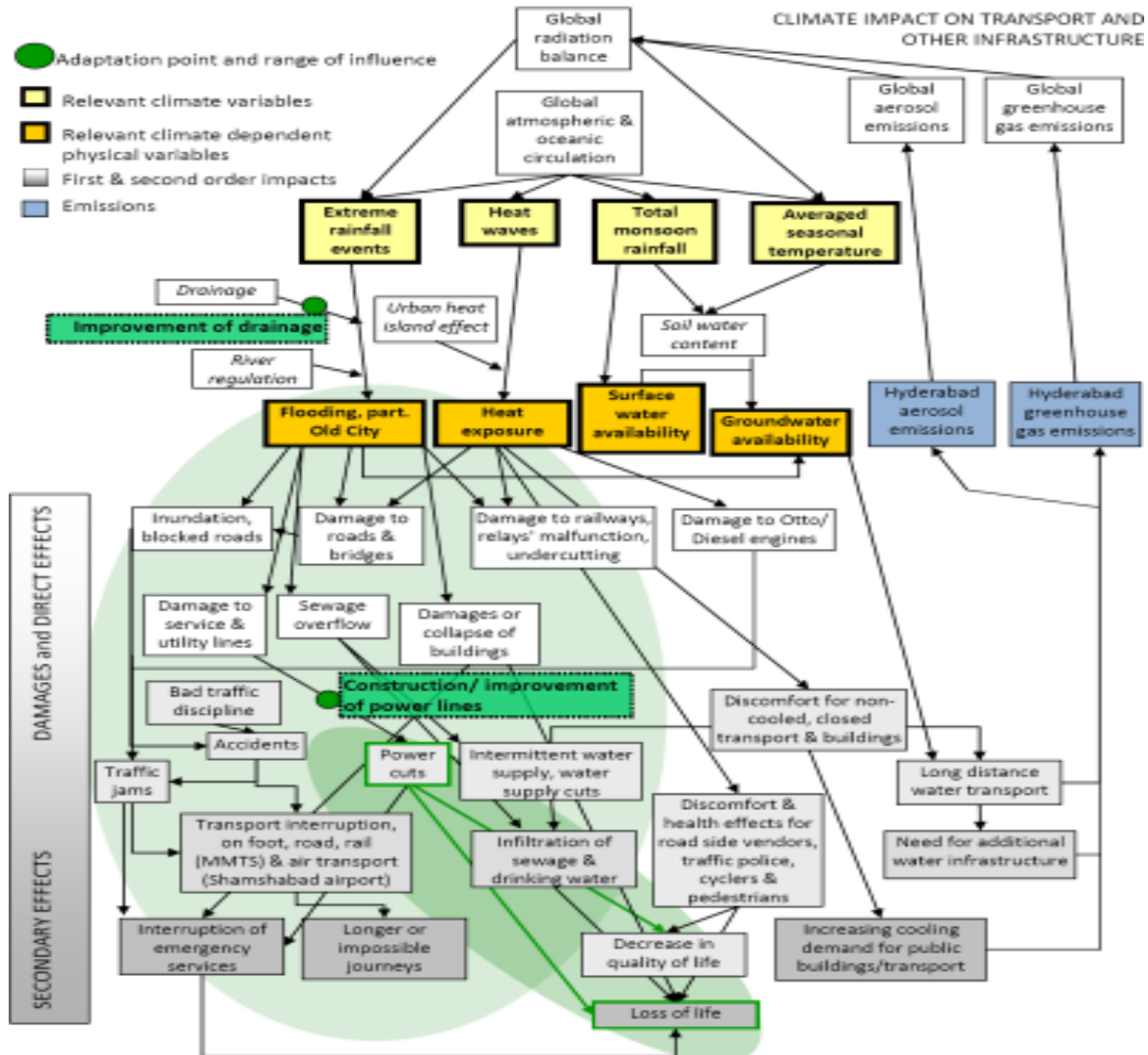
Identification of adaptation options regarding these expected impacts

- Explicit consideration of uncertainty
- Stakeholder participation enriches the options gained by scientific knowledge





# WP1: Climate Change Impact Path Illustration



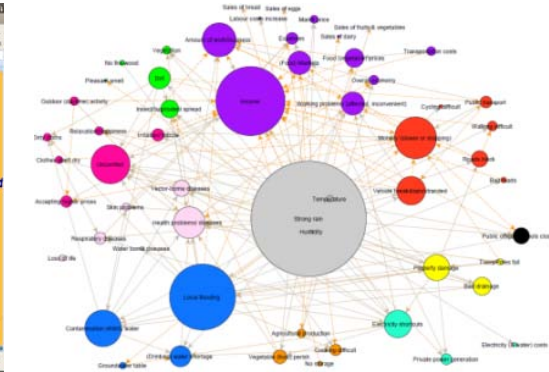
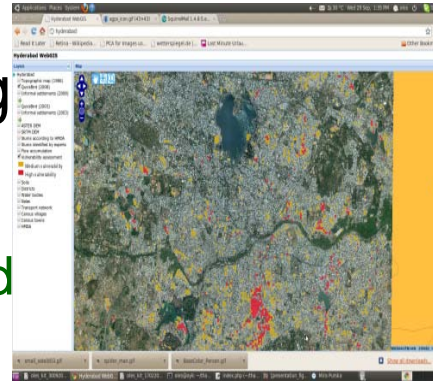


# WP 1: Future Plans



- Further development and refinement of **CATHY** (Climate Assessment Tool for Hyderabad - GIS-based planning tool)
  - Will constitute a key scientific outreach component of the Project

- Further quantitative modeling
  - Impacts on health & water supply
  - Enabling stakeholders to assess future climate change impacts and necessity of adaptation measures



- Deriving adaptation options for different social groups and climate change stimuli
- Pilot project on rainwater harvesting in different socio-economic environments



<http://ap.o-nan.org/wp-content/uploads/rainwater-harvesting-in-ramla-thanda.jpg>





## WP 2.1: Lifestyle Dynamics, Green House Gas (GHG) Emissions and Climate Change



### Key Objectives:

- Reconstruction of Indian and local climate change discourse
- Sectoral GHG emission analysis
- Lifestyle specific energy consumption and emission profiles
- Strategies to reduce individual GHG emissions/decouple them from economic growth





## WP 2.1: Achievements



- Analysis of Indian climate change discourse
  - Tracking of the 2008 released National Action Plan on Climate Change (NAPCC) as the policy framework
  - Analysis of national (English speaking) and local (Telugu) newspapers
  - Qualitative interviews with Hyderabadis about their understanding of climate change (→ climate reasoning maps)
- Lifestyle-based emission profiles
- Scenarios for a sustainable Hyderabad
- **Pilot project** to reduce individual carbon footprints





## WP 2.1: Future Plans



- Representative quantitative household study on energy and climate issues (→ lifestyle based climate change perceptions and GHG emissions profiles)
- Complete and finalize the emissions sector analysis with Indian partners
- **Pilot projects** together with Indian partners (e.g. Tarnaka RWA, Center for Climate Change, ESCI)
- **Using the National Action Plan on Climate Change (NAPCC) as a policy framework for stakeholder discussions on concrete mitigation and adaptation measures (e.g. with urban planning commissions)**





### Key Objectives:

- Improve urban food security without increasing the food carbon food print
- Promote institutional innovations and governance reforms contributing to local/regional potentials of **mitigation**, **adaptation** and coping (capacity building, policy advise, transition management)
- Employ bottom-up approaches involving local stakeholders and using participatory tools to identify the specific problems and risks in the field of food, nutrition & health



## WP 2.2: Achievements and Future Plans

### Achievements:

- Organisation of street food festival
- Documentary film “Immer essen”
- Environmental health risks
- Numerous awareness activities

### Future research:

- **Development of Food Safety Curriculum for India (in 2011)**
- Developing a „Community-based Environmental Health Risk Mitigation Concept“ for one model community on the base of empirical research and background papers (in 2011)
- Conceptualization and implementation of **Pilot Project** on „Sustainable Street Food Plan“ (to be finalised by 12/ 2011)



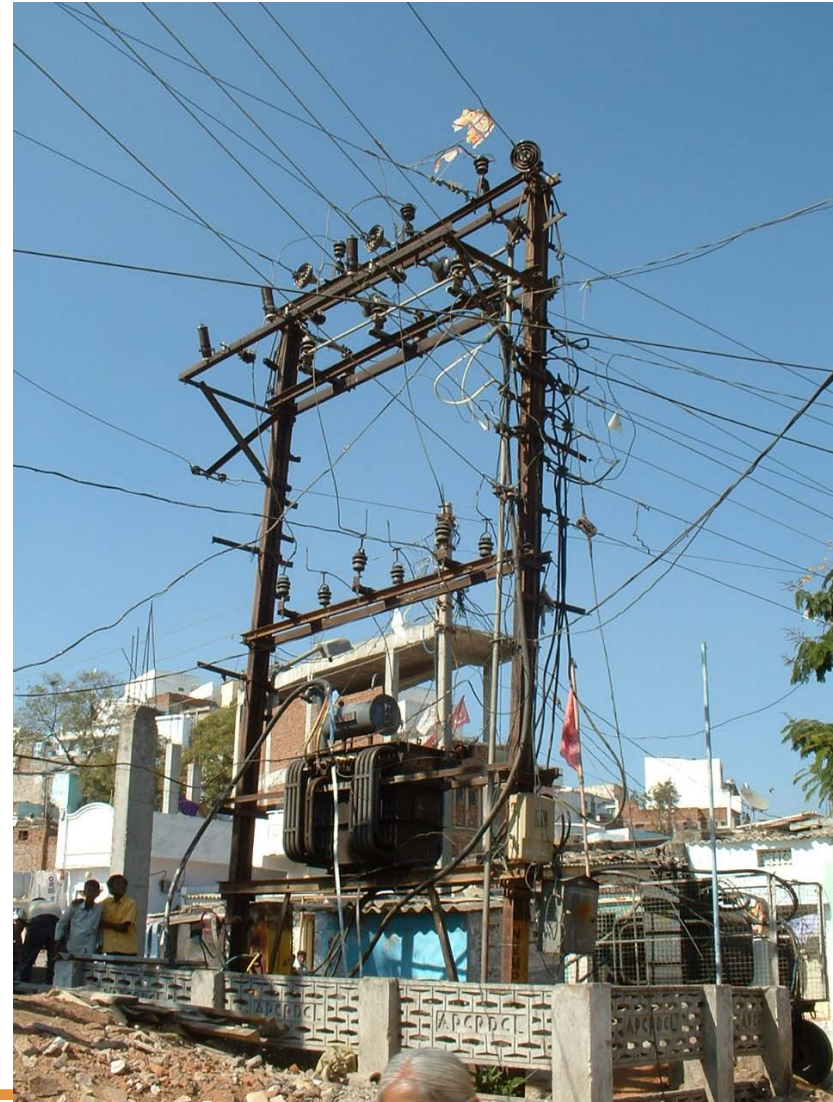


## WP 3.2.A: *Energy Management for the Emerging Megacity of Hyderabad*



### Key Objectives:

- Securing a sustainable, efficient, affordable, safe and stable energy supply for Hyderabad
- Calculating an evaluation function that enables quantifying the potential for energy efficiency improvements





## WP 3.2.A: Achievements



- Detailed knowledge gained about the energy sector in Andhra Pradesh/Hyderabad
    - Generation
    - Transmission
    - Distribution, and
    - Consumption
  - Identification of crucial problems
    - High carbon intensity
    - T&D losses
    - Insufficient or distorted incentives of efficient energy use in production and consumption,
    - Willingness of consumers to pay for stable energy supply
- |   |   |
|---|---|
| { | Institutional structures<br>Regulatory framework<br>Market supply and demand<br>Mitigation and adaptation |
|---|---|





### Further research:

- Mechanisms fostering behavioural change towards efficient energy use
- Market potential for Solar PV installations
- Regulatory effectiveness

### Pilot projects:

- Behavioural change in households: LED lighting and LPG cooking
  - Efficiency improvements in industry: capacity-building measures in regard to production processes
  - Feed-in-tariff for small-scale Solar PV installations
- Development of **Urban Energy Management Plan and Energy Master Plan**



### Key Objective:

- Develop and implement a **mitigation model** for industrial pollution abatement in Hyderabad

### Achievements:

- Detailed knowledge gained about overall industrial pollution
  - Key polluting industries, types of pollution and severity of pollution

### Further research:

- Understanding water pollution by industries: actors, resources, transactions, institutions and governance structures
- Development of efficient pollution management regimes
- Testing the practical feasibility of such regimes within pilot projects
- ➔ **Development and Implementation of a mitigation strategy for Pollution Abatement**



### Key Objectives:

- Strategic planning tool supporting decision maker to identify and implement a energy-efficient and climate-friendly transport system
  - Strategic Transport Model to predict travel demand
  - Development of evaluation method (cost-benefit-analysis)
  - Adjustment of state-of-the-art-planning software (VISUM) to India
- Implementation of **small-scale pilot-projects**, that contribute to the improvement of the overall performance of the transport system
  - Stakeholder Workshops to built capacities and ownership
  - Adjustment of a simulation tool (VISSIM) to Indian conditions
- Capacity Building/Know-How Transfer regarding
  - Sustainable urban transport planning (SUTP) and
  - Indian travel behaviour and traffic conditions



- Prototype of Strategic Transport Model established
  - First applications (e.g. analysis of impacts of climate change on transport system in cooperation with PIK)
  - Contribution to new Master Plan for Greater Hyderabad
- Three concepts for **Pilot Projects** (improvements for pedestrians; traffic calming, junction improvement)
  - Concepts currently proofed by GHMC; Traffic Police
- *Cooperation* with National Institute of Technology Warangal (Centre of Excellence for Urban Transport established by Ministry of Urban Development Delhi) → **Capacity Building**
  - Development of Training module for professional planner with ESCI
- Considerable improvement of microscopic simulation software *VISSIM adapted* to Indian traffic behaviour



- Continuation and enhancement of Capacity Building in cooperation with Indian partners including professional planners from implementing agencies
- Implement the conceptualized Pilot Projects, and set up additional **Pilot Projects**
- Further improvement of strategic planning tool by research activities carried out by NIT Warangal



## WP 5: *Institutions and Governance in Natural Resource Management*



**Key Objective:** analysis of institutions and governance structures in energy, transport, water and industrial pollution

### **WP 5 has just started!**

So far focuses on *developing a common language between disciplines*:

- Provided input on two important conceptual frameworks for institutional analysis, **IoS and IAD**
- Delivered components to be considered for institutional analysis
- Provided instructions on how to write an ‘institutional analysis’ paper for work packages on energy, transport, water and pollution abatement
- Designing **CRD** (already explained at the beginning)





## Key Objectives:

- Analysis of constraints and opportunities for communication, participation and awareness raising
- Initiation and implementation of participative processes (**pilot projects**) in cooperation with other WP's
- Support of policy learning processes
- Framing of transferable communication & participation strategies for megacities



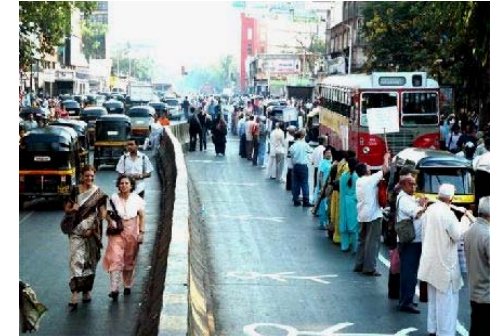


➔ For analyzing and improving existing communication and participation structures WP 6 initiates and monitors **pilot projects**:

- **Solar powered Schools - with HU Berlin**

Idea: small-scale solar PV on schools' roofs

Results: involve private companies (Schott Solar), stakeholder dialogue



- **Walkable City Hyderabad - with PTV**

Idea: Promote walking (most sustainable mode of transport)

Results: citizens exhibition, workshop "Citizens' Charter for Urban Transport", expert workshop "Walkable City Hyderabad"

- **Community Radio "The voice of Tarnaka"**

Idea: Empower a local community to improve their environment

Results: Workshop on organisational structure, setup of working groups

- **Rural-urban linkages**

Idea: Institutionalize "spatial partnerships" in rural-urban networks



## WP 9: *Dissemination Strategy, Policy Papers, Policy Learning and Workshops*



- Re-design of Website
- Flyer and Newsletter
- **“Rote Reihe”** - Discussion Papers (two groupings of papers expected in November and early 2011)
- International Conferences (e.g. IASC Hyderabad 2011 **19 papers** accepted so far)
- Scientific Publications (see [sustainable-hyderabad.de](http://sustainable-hyderabad.de) for full list)





# WP 9: Dissemination Strategy, Policy Papers, Policy Learning and Workshops



- Local/national Media
- Numerous Workshops (e.g. **Policy Learning Workshops, Institutional Innovation Workshops, On-the-Job-Training**) organised by each project partner or jointly (e.g. *International Workshop in Hyderabad, 27 Sept.-1st Oct. 2010*)
- Input to the Master Plan of Hyderabad



## THE HINDU

Online edition of India's National Newspaper  
Friday, Oct 01, 2010  
ePaper | Mobile/PDA Version

### Andhra Pradesh

News: ePaper | Front Page | National | Tamil Nadu | Andhra Pradesh | Karnataka | Kerala | New Delhi | Other States | International | Opinion | Business | Sport | Miscellaneous | Engagements |  
Advts: Retail Plus | Classifieds | Jobs | Obituary |

Andhra Pradesh - Hyderabad

#### 'Spare a thought for pedestrians'

Staff Reporter

*Workshop calls for proper space on city stretches to make them 'walkable'*

*Solution to problems faced by pedestrians in the city discussed*

*Closing down select roads for few hours for motorised traffic on weekends suggested*





## 'Regulations should not impede development'

### Speaker N. Kiran Kumar Reddy underscores value of planning at Indo-German megacity project launch

Special correspondent

**HYDERABAD:** Speaker N. Kiran Kumar Reddy underscored the importance of proper planning for sustainable development. Transparency, checks and balances were necessary but they should not become a hurdle in development, he said while inaugurating the workshop of Indo-German megacity project for Hyderabad here on Monday.

Mr. Reddy regretted the

obstacles that cropped up whenever a project was taken up. In this connection, he said that the Outer Ring Road project would have been completed long back had there been a proper planning. It was initially designed for a limited purpose but later the parameters changed and the peripheral area expanded.

Mr. Reddy recalled the 'pleasant' Hyderabad of yesteryears and said, from a beautiful city it has become a crowded city. As a student, it

- Five-day workshop focuses on strategies to address climate change among others
- About 20 young researchers from Germany are taking part in the workshop

took him 30 minutes to walk from HPS, Begumpet to his house in Masab Tank. "Now also it takes the same time, but in a car."

The five-day workshop focuses on working out mitigation options and strategies to

address climate change. About 20 young researchers from Germany are taking part in the workshop.

Higher Education Minister Sridhar Babu said the Indo-German team report about impact of climate change on

Hyderabad and the implications on transport energy and water had found a place in the recently-released master plan of Hyderabad. "Your efforts in coming up with a Hyderabad action plan for climate change will be successful," Mr. Babu assured the Germans.

Civil Supplies Minister J. Krishna Rao wanted all departments to work for overcoming the implications of climate change. Markus Hanisch, Indo-German project

leader, said that a right combination of documentation, education and experimentation could make a meaningful contribution to a more sustainable Hyderabad. Under the German Academic exchange programme, four Masters, 13 Ph.D.s, two Post-Doctoral and six senior scientists from India could work in Berlin, Prof. Hanisch said.

After this workshop, a big international megacities conference will be held in Essen, Germany.



@Keerthi





**THANK YOU**  
**for your attention!**

[www.sustainable-hyderabad.de](http://www.sustainable-hyderabad.de)

