

Methods for scaling data

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1. What are the status of scientific methods for scaling RS data (up-down) and linking RS and statistical data?

Issues: Scientific method for scaling RS data (up-down)

Linking RS and statistical data

Scale is related to level of information

➤ Scientific methods for scaling RS data (up-down):

- From top to bottom (downscaling)
- Increase of spatial resolution
- From global to local
- Heterogeneity <-> homogeneity

Methods are based on urban morphology and topology

Sampling important in methodology choice

Accuracy

➤ RS and statistical data

Statistical Data

➤ Household data

Physical characteristics

- House condition
- Infrastructure available
- Land use

Social characteristics

- No. of people
- Income
- Education

Ancillary data

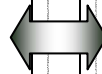
RS Data

➤ VHR data

➤ LISSIV / LISSIII / Landsat

➤ Laser and beyond

➤ Information extraction & data base creation



➤ Methodology for linking RS and statistical data

- Roof coverage → No. of inhabitants
- Information extraction & data base creation
- Object based feature extraction
- Upscaling
 - Statistical methods
 - Geostatistical methods
 - Generalization procedures
 - 3D approach
- Lacunarity based texture analysis
- Downscaling
 - Super pixel resolution mapping
 - Spectral unmixing

➤ &tc

Balancing the costs

- Field survey:
 - Total 100,000 inhabitants in 30 ha area
 - Man power - 10 persons @ 40 houses / day
 - Charges @ 10\$ / day / person
 - Total costs \$ 6000
- Remote sensing
 - Cost of Ikonos image: 15\$ per sq km
 - Total: 500 \$ per image
- Excludes processing, software, data entry and analysis
- We have to balance!



2. What resolution of data is needed for which spatial level And objectives – city – ward – EA – slum – household (is VHR necessary for every level?)

City level :

Objective- identification of slum pockets

Scale: 1:15,000

Data- Cartosat I (2.5 m spatial resolution in panchromatic mode) merged
LISS IV (5.8 m spatial resolution in panchromatic mode)

Ward level :

Objective- spatial extent of the slum area

Scale: 1:10,000

Data- Cartosat I (2.5 m spatial resolution in panchromatic mode) merged
LISS IV (5.8 m spatial resolution in panchromatic mode)



EA level :

Objective- Characteristics of the slum area

Scale: 1:5,000

Data-Ikonos/ Quickbird Pan sharpened MS image

Slum area

Objective- Details of the slum area

Scale: 1:2,000

Data- Ikonos/ Quickbird Pan sharpened MS image

Household level

Objective- exact size of the individual dwelling

Scale: 1:500

Data- Plane table survey and other techniques

3. How can scaling issues be applied in the process of production and delivery of policy relevant data on slum development?

Policy relevant data:

- **Processes: how do phenomena grow?**
- **Understanding processes: sociology, economy, &tc**
- **Process of development**
- **Local urban observatory/ policy planners**
- **Community based participatory approach**

Thematic maps

- Small scale maps
- Decision making purposes
- Accuracy is less important
- Generalization of the phenomena

We have

Current
situation

Top-down Planning approach We do

Cadastral maps

- Large scale maps
- Implementation purposes
- High accuracy maps
- Representation of ground reality

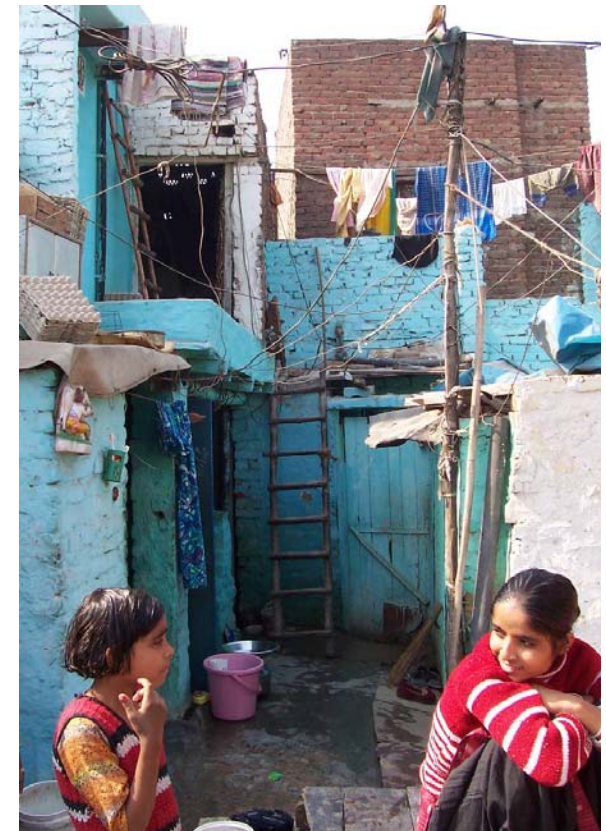
We need

Can data from slum intervention projects be up-scaled for strategic monitoring purposes?

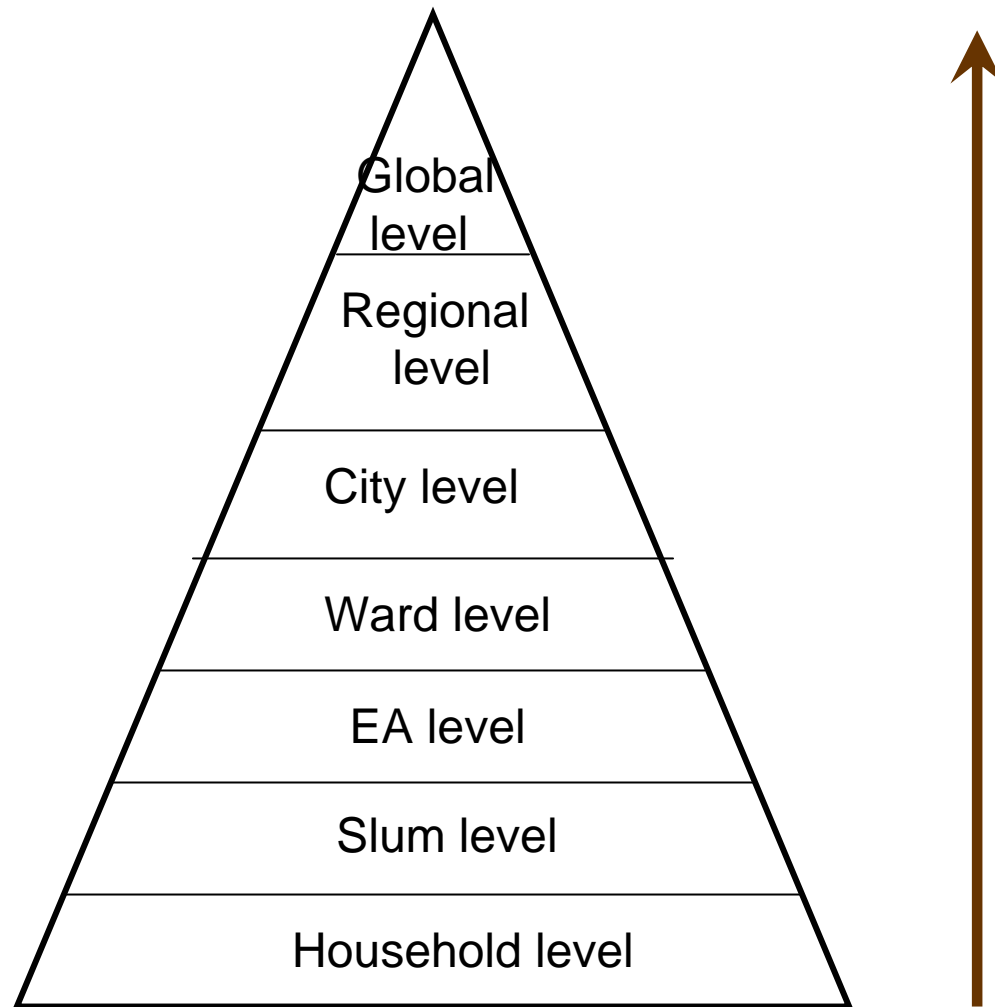
Future / Vision

Slum intervention projects:

- Slum up-gradation / improvement programme
- Health programme
- Type of data (standardization of datasets)
- Homogeneous units (neighborhood)
- Sample size and sampling plan
- Level of error/ precision
- Linking of auxiliary data



Thank you.....



Bottom up feedback mechanism