Bangladesh

The Haor Region

6-8 months fertile fishing grounds

During dry winter season: 0.71 million ha cultivable land

May is the harvest season

If Flash floods appear before the rice harvest virtually all crops are lost

How to design adaptation options based on the local impacts of climate change
Geodesigning a more Sustainable and Smarter World
the Bangladesh case

Henk Scholten
Arjen Koekoek

Geodan Amsterdam
Spinlab, Vrije Universiteit Amsterdam
GeoDesign

The Integration of Geography and Design

Making Our World A Better Place
Our World Is Changing Rapidly

We Need Integrated Knowledge . . .

. . . and Ways to Create Better Outcomes
Geography Provides a Foundation

GIS Makes It Come Alive

Integrating and Applying Our Knowledge
GIS Is About Integration

- Integrating and Synthesizing Information from Many Sources
- Facilitating Communication and Collaboration
- Breaking Down Barriers Between Institutions, Disciplines and Cultures

...Becoming a Language for Collaboration
Expanding 3D Capabilities

- Faster
- Scalable

Globes

Buildings

Landscapes

Virtual Cities

Editing & Content Generation

CityEngine

3D Analytics

Improving 3D Visualization and Analytics
Why are academics interested in Urban and Regional Futures?

- We are interested in Spatial Processes
- We try to understand these processes:
  - We try to simulate the land use patterns
  - We try to analyse the vulnerability of these patterns
- We try to design alternatives
- We try to analyse the impact of alternatives
- We try to support the participatory planning process

- All research is based on spatial information services
Vision on Urban and Regional Futures

Framework that integrates:
- Sciences of Spatial: geography, regional economy, traffic and transport e.a.
- Methods of Design: architecture, spatial planning
- Information Technology
- Public Participation, Decision Making
- Performance Monitoring
Towards a Framework for Geodesign

The World As It Is

How Can We Describe Geography?
Data Inventory

How Does Geography Operate?
Process Models

How Can We Alter Geography?
Capability/Sustainability Models

What Are the Consequences of Change?
Evaluation/Analysis
Geo-Accounting

Decisions/Values

How Should Geography Be Changed?

The World As It Could Be

Designing/Sketching
A B C
The Virtual World: data inventory
How does the region operate?
How might the study area be altered?
Impact: Noise
Impact: air quality
User interaction – interactive planning – public participation

• tangible user interface improves collaborative interaction
Framework of Geodesign

The World As It Is

How Can We Describe Geography?

Data Inventory

Process Models

How Does Geography Operate?

Capability/Sustainability Models

How Can We Alter Geography?

What Are the Alternative Scenarios?

The World As It Could Be

How Should Geography Be Changed?

Decisions/Values

Evaluation/Analysis

Geo-Accounting

Designing/Sketching

A

B

C
Bangladesh

How to design adaptation options based on the local impacts of climate change
Framework of GeoDesign applied to Bangladesh

- **How can we describe the region?**
  - Data Inventory

- **How can we analyse the land use patterns?**
  - Process Models

- **How can we alter these patterns?**
  - Capability/Sustainability Models

- **How should Bangladesh be changed?**
  - Decision making/Values

- **What are the consequences of change?**
  - Evaluation/Impact Analysis

- **What are the alternative scenarios?**
  - Design/Spatial planning

**Open Geospending**
Framework of GeoDesign applied to The Haor Region

How can we describe the region?

Data Inventory
Framework of GeoDesign applied to Bangladesh

How can we describe the region?
Data Inventory

How can we analyse the land use patterns?
Process Models

How can we alter these patterns?
Capability/Sustainability Models
What are the threats?

• Simulating land use based on Climate Change
  • Sea level rise
  • Temperature
  • Precipitation
  • Wind
    - Flood risk
    - Drought
    - Peak Rainfall
    - Salinity
B. Vulnerability Analysis

1. Food security
   - Boro rice production
   - Flash floods - current
   - Current food security
   - Boro rice production
   - Future food security
   - Flash floods - worst case CC impact

2. Flood risk
   - Current land use - settlements
   - Regular monsoon floods
   - Settlements currently at risk
   - Monsoon floods - worst case CC impact
   - Settlements at risk in worst case CC
   - Future land use - settlement growth
   - Future settlements at risk in worst case CC
Framework of GeoDesign applied to Bangladesh

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Open Geospending
We Need Integrated Knowledge . . .
. . . and Ways to Create Better Outcomes

Cooperation between Data Providers, Knowledge Centers, Policy Makers, IT Providers

Performance Audits have to become different: Open Geospending

Geodesign Framework offers a way of thinking
Further Information:

• Bangladesh: [www.climateadoptionservices.com](http://www.climateadoptionservices.com)

• European Geodesign Conference: 19 and 20 September
  • [www.geodesignsummit.com/europe](http://www.geodesignsummit.com/europe)

• Spinlab: [www.spinlab.vu.nl](http://www.spinlab.vu.nl)

• Geodan: [www.geodan.nl](http://www.geodan.nl)

• [Henk@geodan.nl](mailto:Henk@geodan.nl)