The Glowa JR Scenario Excercise

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Esslingen, 20.9.2006

Federal Ministry of Education and Research

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Outline

- What is the goal of the scenario exercise?
- What is “Storyline and Simulation”?
- Results of the First Scenario Panel meeting
- Preliminary quantification of storylines
- Next steps

Goals of the Scenario Excercise

- Provide new knowledge about **consequences of global and regional change** on **water resources** in the region;
- Explore new ideas on how society can **adapt to expected changes** and increase the well-being of people living in the region through sustainable water mangement;
- **Integrate information** from the **scientific sub-projects** of the Glowa-Jordan Project in a form useful to stakeholders in the region.

The Storyline and Simulation approach

A type of scenario exercise that …

… includes both **qualitative** information (storylines) and **quantitative** information (model calculations) and combines their advantages;

… is an iterative process engaging both stakeholders and environmental modelers;

… is useful tool for synthesizing information/findings from the Glowa-Jordan sub-projects in a form relevant to policymakers.

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Who is involved?

Scenario Panel: Stakeholders. Develop *qualitative* scenarios ("storylines").

Scenario Team**:** Glowa-Jordan scientists (Univ. Kassel & Tübingen). Coordinate scenario exercise.

Project Scientists Group**:** Partners from scientific sub-projects of the Glowa-Jordan project. Support storyline development with modeling analyses. Produce *quantitative* scenarios ("simulations").

Moderator Team ("Prospex"). Facilitate Scenario Panel meetings.

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SAS in the Glowa-JR project

First Scenario Panel Meeting (May, 2006)

Moderator Team facilitated meeting

Scenario Panel developed preliminary storylines

Project Scientist Group explained available scientific support

Scenario Team
- writes report of meeting
- prepares model inputs
- coordinates modeling

Project Scientist Group conducts modeling analyses

Second Scenario Panel Meeting (Early, 2007)

Moderator Team facilitates meeting

Project Scientist Group reports modeling results

Scenario Panel revises, elaborates storylines

Scenario Team
- writes report of meeting
- prepares model inputs
- coordinates modeling

Project Scientist Group conducts modeling analyses

Third Scenario Panel Meeting (Late, 2007)

Moderator Team facilitates meeting

Project Scientist Group reports modeling results

Scenario Panel revises, elaborates storylines

Scenario Team arranges review of scenarios

Scenarios distributed (2008)

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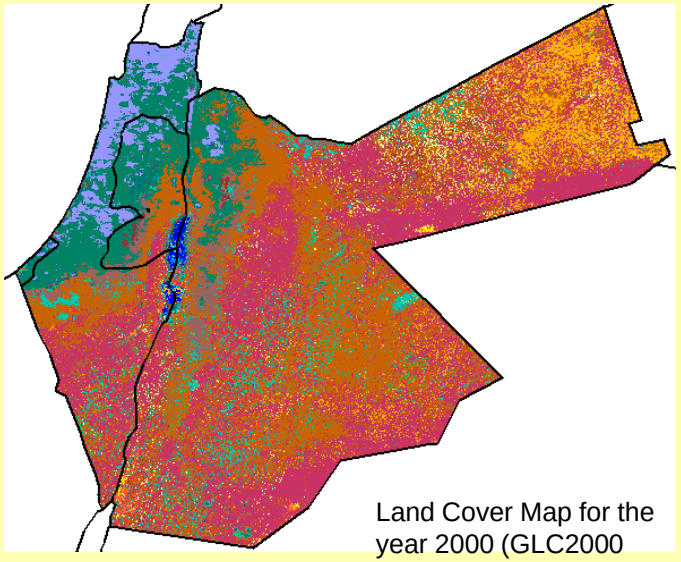
Results of first Scenario Panel meeting

Study region

Territory of Israel, Jordan and Palestinian Authority related to water resources of Jordan River.



Land Cover Map for the year 2000 (GLC2000 database) and ESRI Country Shape (provided with ESRI ArcView 3.2)

Time horizon and temporal development of Scenarios

Up to 2050 to evaluate impacts of climate change, long-term changes in vegetation cover.

Beginning (2008-2010) and middle (2025-2030) to evaluate steps towards sustainable development

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Results of first Scenario Panel meeting

Categories of factors influencing future water situation

1. Global climate change	8. Access to and allocation of water
2. Trade	9. Nature conservation
3. Water pollution and treatment	10. Finance and Pricing
4. Energy	11. Demographics
5. Competing water needs between sectors	12. Water supply
6. Values and attitudes	13. Peace / war regional strategies
7. Education	14. Agriculture

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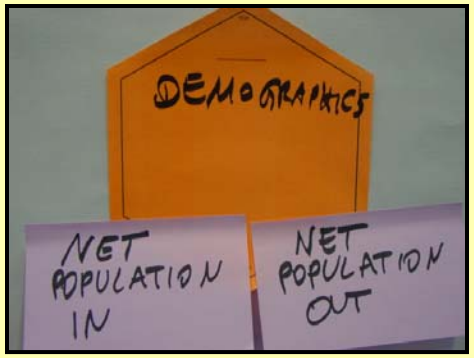
Main uncertainties within categories

Demographics

Known
Population increase
Need for more resources

Not known
Influx / outflux

Opposites
- **Net in vs. net out**



Trade

Known
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Not known
- Liberalization
- Market for agricultural production or not
- Extent of environmental protection in liberalization

Opposites
- **Emphasis on water intensive exports vs. importance of less water intensive exports**
- Net export vs. net import

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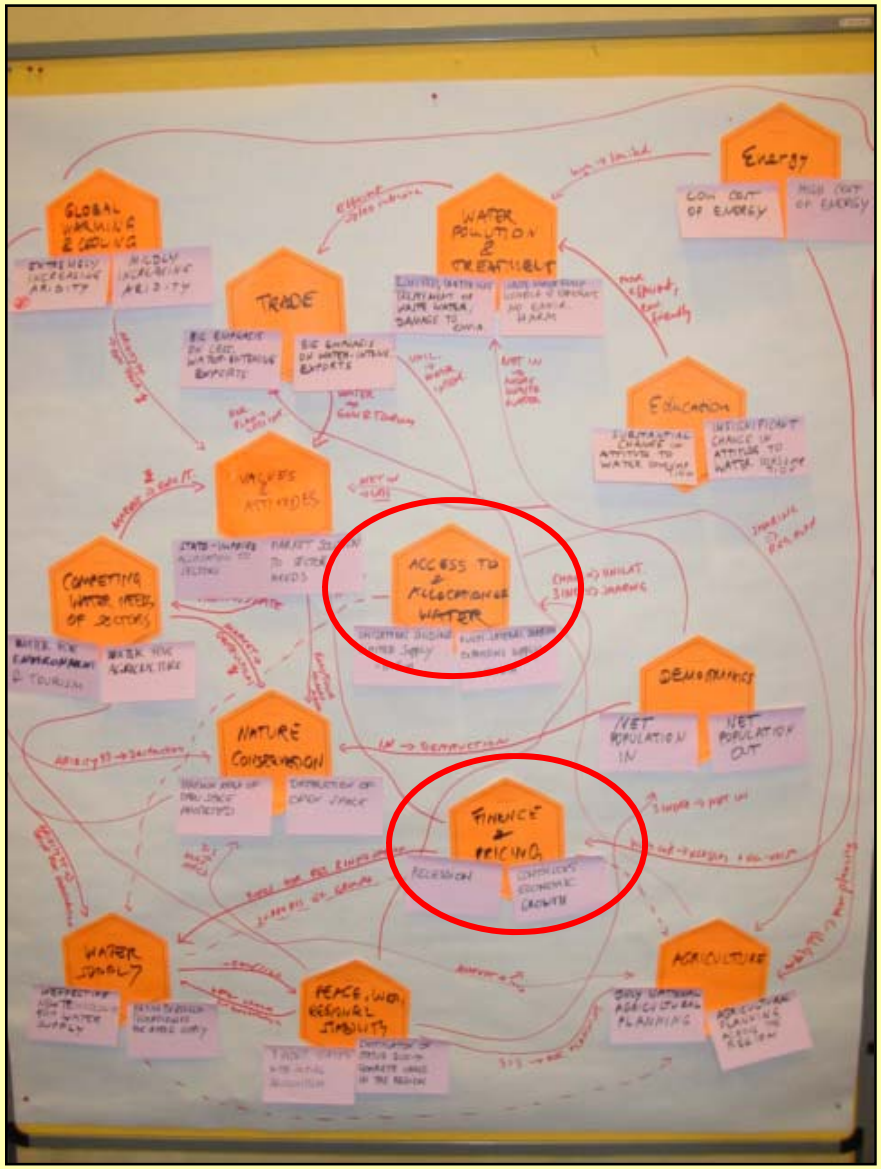
First draft scenario storylines



Define influences between factor categories

Identify factor categories with many interlinkages to other factor categories

1. **Access to and allocation of water**
2. **Finance and pricing**

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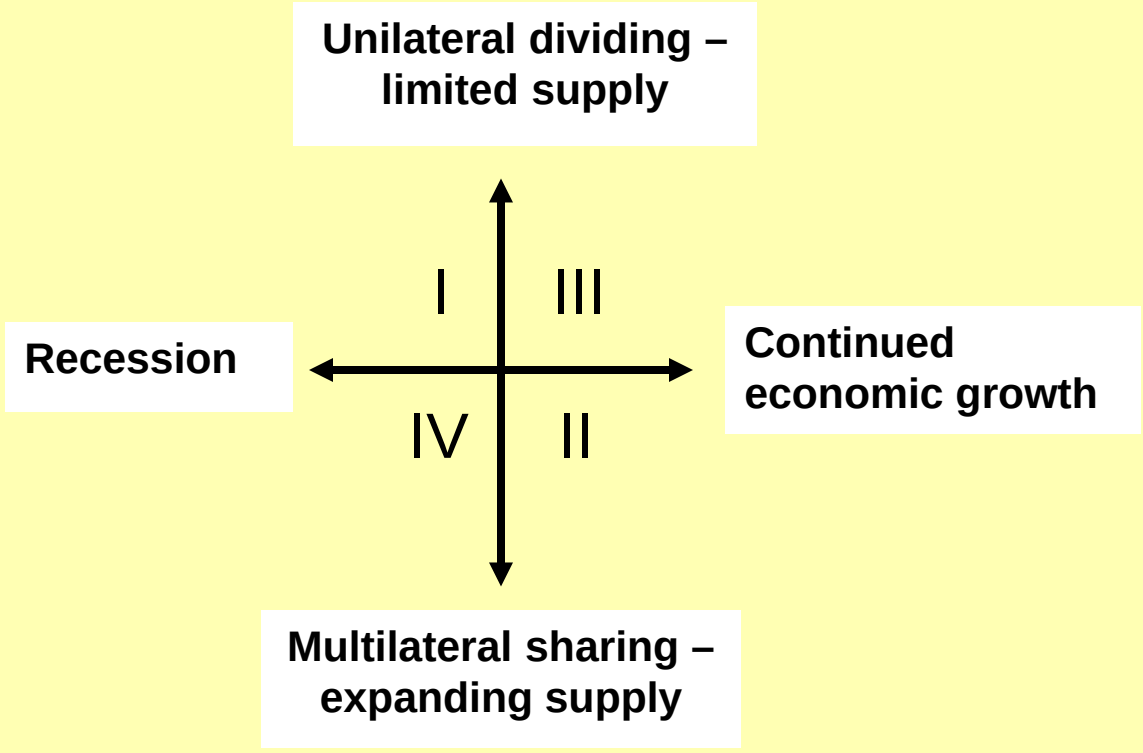
First draft scenario storylines



Scenario I: Recession / unilateral dividing of water
Scenario II: Economic growth / multi-lateral water sharing
Scenario III: Economic growth / unilateral dividing of water
Scenario IV: Recession / multi-lateral water sharing

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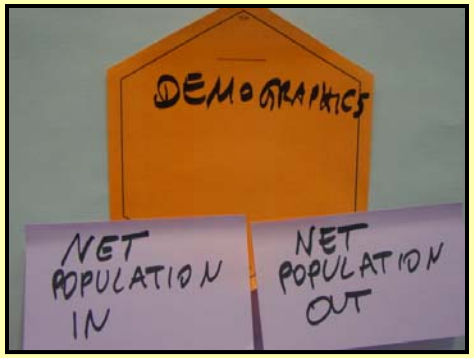

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From qualitative to quantitative (first step)

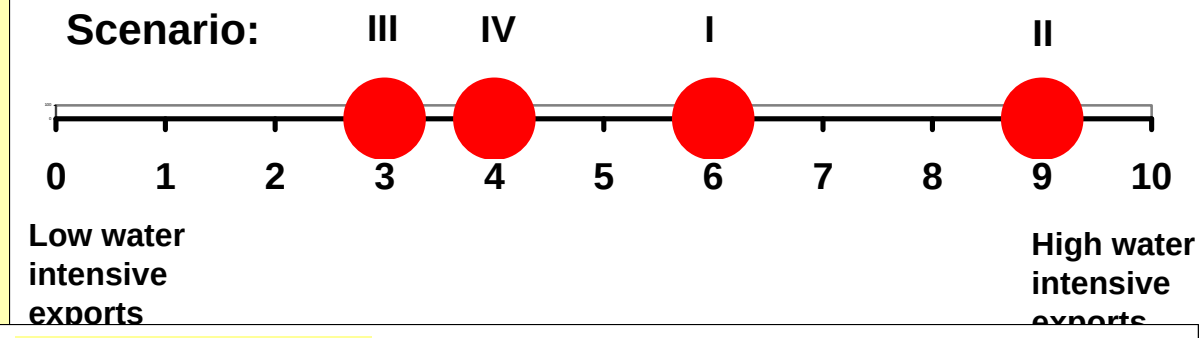
Competing water needs

Energy

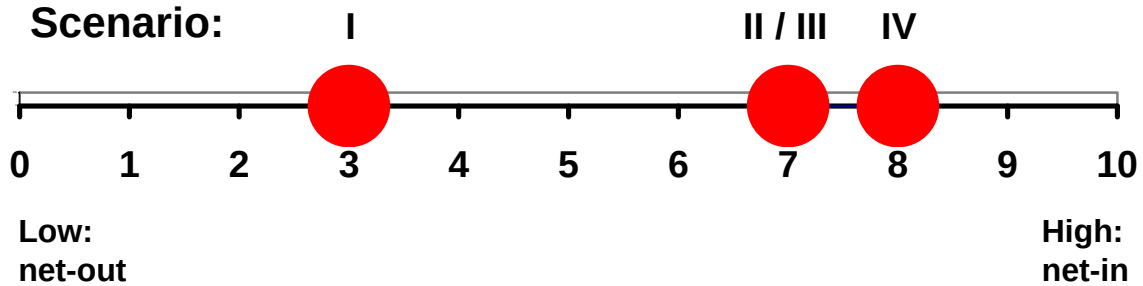
Water pollution & treatment

Global warming/cooling

Trade



Demographics



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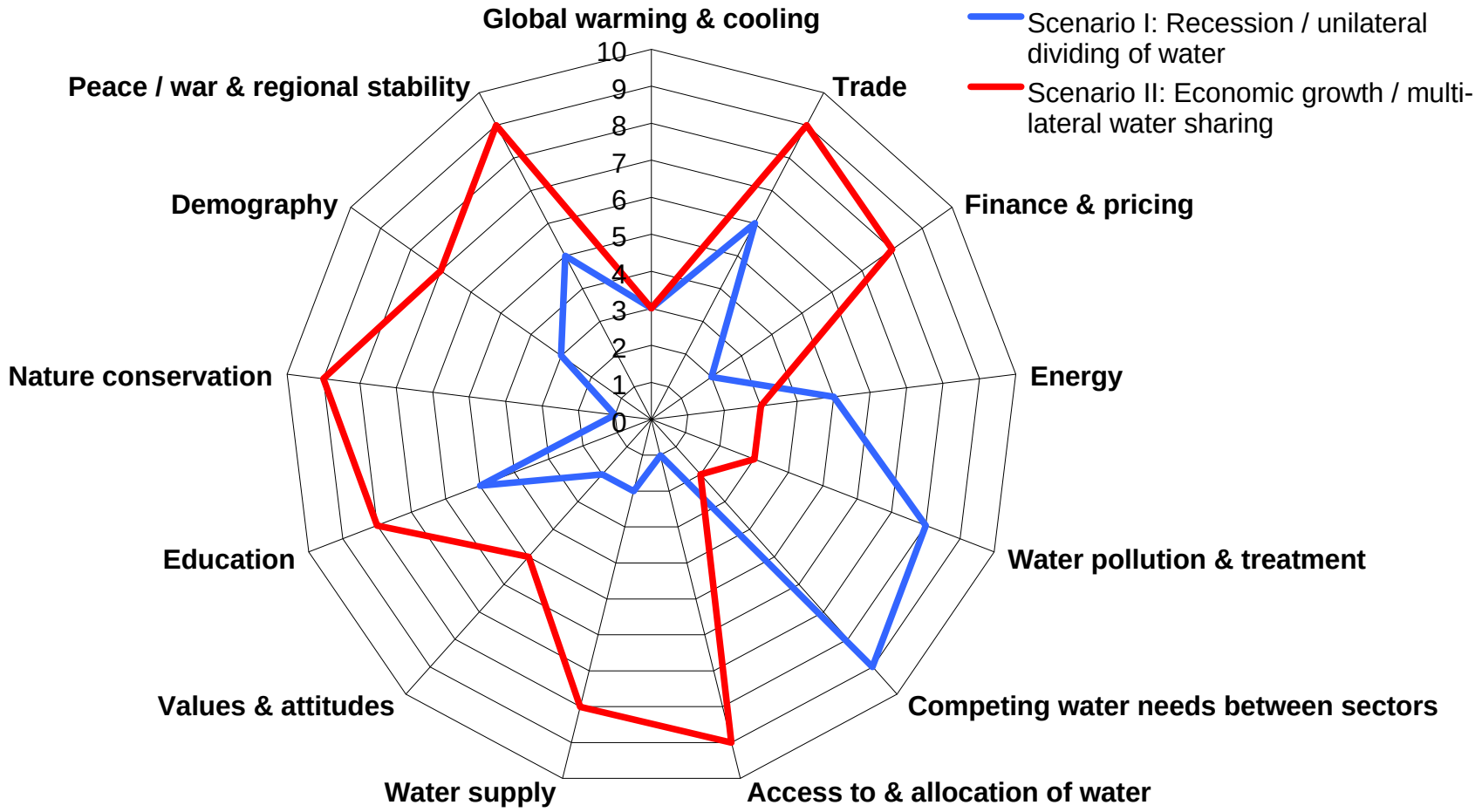
From qualitative to quantitative (second step)



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From qualitative to quantitative (third step)

First set of model input variables derived from two Scenarios of Millenium Ecosystem Assessment (MA)

"Order from Strength"

- a regionalized and fragmented world;
- concerned with security and protection;
- emphasizing regional markets;
- reactive approach to ecosystem problems;
- Economic growth rates are low (particularly low in dev. countries)
- population growth is the highest of MA scenarios

Scenario I: Recession / unilateral dividing of water

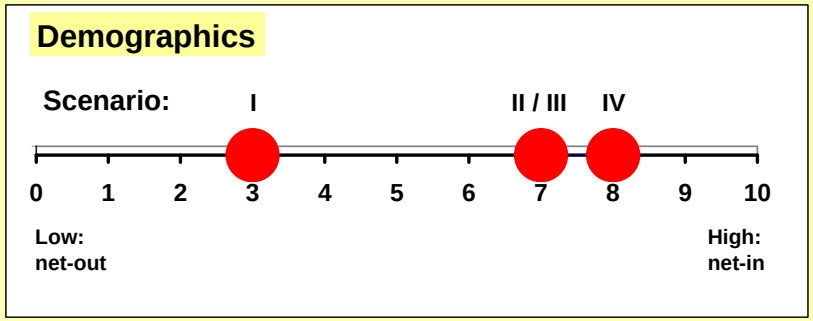
"***Techno Garden***"

- a globally connected world
- environmentally sound technology
- highly managed ecosystems
- proactive approach to the management of ecosystems
- Economic growth is relatively high and accelerates,
- population in 2050 is in the midrange

Scenario II: Economic growth / multi-lateral water sharing

From qualitative to quantitative (third step)

From semi-quantitative factors...



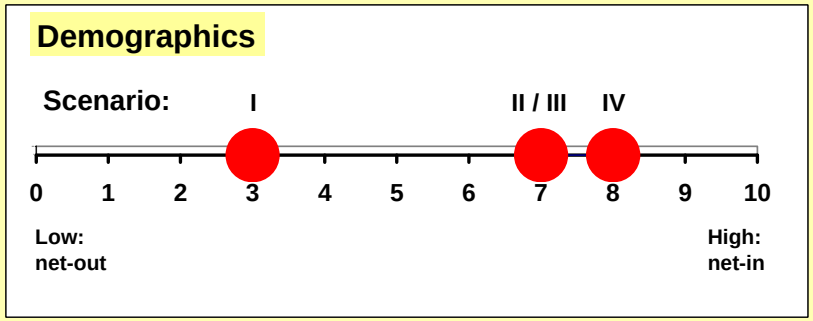
...to quantitative model drivers

Change in population growth rates [%] until 2050 (Scenario I)

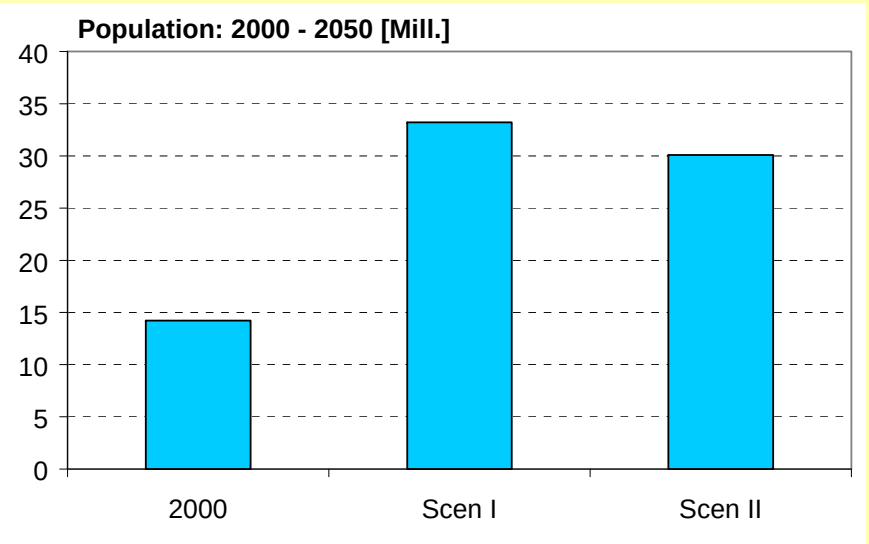
- Israel: 2.3 to 0.6
- Jordan: 3.3 to 0.6
- PA: 4.5 to 1.6
- Region: 3.2 to 0.9

From qualitative to quantitative (third step)

From semi-quantitative factors...



...to quantitative model drivers



Next steps

1. Integrate and harmonize simulation efforts of sub-projects.

2. Revise and complete model input data from SAS.

3. Carry out 2nd Scenario Panel Meeting in February 2007.

Thank you!

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