The Global Resource Nexus:
The Struggles for Land, Energy, Food, Water and Minerals
The Research

• Observations:
  • Accelerating demand for natural resources will lead to growing scarcities and possibly conflict
  • Increasing complexity of linkages between resources

• Premise:
  • Today is different: economics, politics, Anthropocene
  • Most challenges arising from the resource nexus have their origins in failures of governance/collective action

• Aim:
  • To identify challenges and opportunities (for Transatlantic Community) arising from the nexus of land, energy, food, water, and minerals
The Resource Nexus
Three “realms” of the nexus

• Managing Markets under Stress:
  – Inter-connected markets transmit effects between resources and between regions
  – Risks of supply interruptions and price volatility; illicit trade

• Strategic Interests and Interstate Conflict:
  – Governments ignoring transnational governance institutions; e.g. freshwater and seas;
  – Risk of tensions and armed conflict

• The Nexus on the Ground: Human Security
  – Local resource depletion: competition, migration, violence >> ungovernable spaces
  – International repercussions
MANAGING MARKETS UNDER STRESS
Analyzing Markets - The Three “I’s”

Integration

- Supply chain management for materials not yet in full swing
- Recycling rates low (< 20% worldwide for most metals)
- Material Flows cut across product chains, need for material flows innovations
Information deficits in resource markets

E = Energy; M = Materials; W = Water; F = Food; L = Land. Green indicates good information; yellow indicates some deficits; red indicates major deficits.
Internalizing externalities

Agricultural goods and biotic materials as well as mass metals are as environmental intensive as fossil fuels.
The risks and opportunities

• Risks:
  – High and/or volatile prices
  – Environmental damage, land degradation
  – Illicit trade, fragile supply, failing states
• Existing governance tools are fragmented and inadequate:
  – Prevalence of ‘silo’ policy analysis and policy making
• Opportunities for better supply chain management
STRATEGIC INTERESTS AND INTERSTATE CONFLICT
Water is the key

• Oceans/seas:
  – Fisheries
  – Energy and minerals
  – Trade routes

• Fresh water:
  – Energy
  – Food
  – Water supply
  – Livelihoods
China Seas
Eastern Mediterranean
Mekong River Basin
South Asia Waterways
Nile River Basin
THE NEXUS ON THE GROUND: HUMAN SECURITY
The Nexus on the Ground: Human Security

- Everyday politics of local struggles for multiple resources
- Degradation of local ecosystems, biodiversity
- Falling/changing rainfall patterns, Submergence of deltas
- Poor state capacity/resource governance

- Increasing vulnerability of many populations
- Domestic & international repercussions
Water sustainability risk in the USA

Source: NRDC, 2010
The Nexus on the Ground: Human Security

• Three themes:
  – Migration:
    • Expected growth of environmental migrants
    • Proliferation of walls and fences
  – Urban spaces:
    • Cities magnify nexus challenges
    • Urbanization provides threats and opportunities
  – Ungovernable spaces:
    • Vicious spiral of poor governance, resource scarcity and ‘small wars’
    • Compounded by “land rush”
## 25 Barriers Erected or Substantially Fortified Since 2000

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<tr>
<th>Year Started</th>
<th>Initiating Country</th>
<th>On Border With</th>
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<td>2011</td>
<td>Azerbaijan</td>
<td>Armenia</td>
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Piracy Incidents around Yemen
RESPONSIBILITIES AND OPPORTUNITIES
The Transatlantic Community: Key Recommendations on Managing the Resources Nexus

**Put our Own House in Order**
- Resource Efficiency
- Energy Transitions
- Get Prices Right:
- Rethink Prosperity and Growth
- Resolve Disputes
- Ratify Treaties, e.g. the Law of the Sea
- Reinvest in Shared leadership

**Engage the New Players**
- Supply Chain Due Diligence
- Partnerships on Supply and Recovery
- Work with New Players to Protect Sea Lanes
- Aid in Resolving Resource Disputes

**Strengthen Global Cooperation**
- International Data Hub
- Form a Hanseatic League of Urban Governance
- Establish a Global Food Security and Water Facility
- Codes of Conduct on Land Use and Purchase
- Convene Multi-Stakeholder Fora on the Resource Nexus and Governance
Relevance to China

• Markets under stress:
  – China is a major importer and exporter of raw materials of all types
  – Business opportunities in supply chain efficiency

• Strategic interests and interstate conflict:
  – China is a party to actual or potential disputes; maritime and river basin

• The nexus on the ground - human security:
  – Many of China’s domestic resource and environmental challenges are interconnected
  – Urbanization and agriculture
Agriculture- Nitrogen fertilizers

Cheap water
Changing diet

Poor fertilizing practices → Agriculture

Cheap (N) fertilizer

Waste of water and (N) fertilizer, Acidification of soils, Pollution of water, health effects
GHG emissions, ozone depletion

Ammonia production from coal
Cheap electricity

Waste of coal, GHG emissions

Food
Inefficient transport, storage & use

Food consumed

Waste of food

Coal mining
Coal

Waste of coal, pollution, safety
Conclusions

• Three realms of the nexus
  – Managing Markets under Stress
  – Strategic Interests and Interstate Conflict
  – The Nexus on the Ground: Human Security

• Most challenges arising from the resource nexus have their origins in failures of governance/collective action:
  – ‘Silo’ thinking
  – Poor supply chain management
  – Disregard for others

• Leadership required: richer nations & IOs
The Report