Integrating Water in Financial Decision-Making

Simone Dettling, 4th April 2016
Financing the Green Transformation

Global Financial Markets: 255 trillion USD

Annual need additional climate investments ca. 1.5 trillion USD (IEA) and investments in water ca. 1 trillion USD (McKinsey)

Hence:
Objective
redirect capital flows away from assets that deplete natural capital towards climate- and eco-friendly investments.

Approach
Work with financial institutions from G20 economies to integrate environmental indicators in lending and investment decisions, product development and risk management.

Joint Development of Tools and Methodologies
Research and Capacity Building
Market Development for Green Bonds: Strategic Alliance
Participating Financial Institutions

Total Assets
10 trillion USD
Tool for Integrating Water Risk in Corporate Bond Valuation
## Approach

**Combine Three Sources of Data**

<table>
<thead>
<tr>
<th>Global data on water stress (WRI)</th>
<th>Data on location of operations (Bloomberg)</th>
<th>Corporate credit Information</th>
</tr>
</thead>
</table>

### WATER VALUE

- Calculate shadow prices
- Combine company data with location-specific price

### COSTS FOR WATER

- $\text{water} = \text{value}$

### COMPANY FINANCIAL SPREADSHEET

<table>
<thead>
<tr>
<th>P/L, US $ DOLLARS MILLION</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>REVENUES</td>
<td>30,223</td>
</tr>
<tr>
<td>OPERATING COSTS</td>
<td>-27,474</td>
</tr>
<tr>
<td>ADDITIONAL WATER OPEX</td>
<td>-298</td>
</tr>
<tr>
<td>NON OPERATING SPECIAL ITEMS</td>
<td>-469</td>
</tr>
<tr>
<td>SHARE OF NET INCOME FROM ASSOC'S AND JV'S</td>
<td>168</td>
</tr>
<tr>
<td>OTHER SPECIAL ITEMS</td>
<td>4,514</td>
</tr>
<tr>
<td>EBIT UNDERLYING</td>
<td>6663</td>
</tr>
</tbody>
</table>
Water Stress vs. Water Prices

- **Vancouver**: $2.22/m³ (TEV: $2.01)
- **Copenhagen**: $7.38/m³ (TEV: $3.99)
- **Mexico-City**: $0.95/m³ (TEV: $8.66)
- **Sao Paulo**: $1.28/m³ (TEV: $5.33)
- **Mumbai**: $0.22/m³ (TEV: $13.58)

→ Gap between shadow price and current cost as measure for risk

Sources: GWI, WRI, TeVs water risk tool
Glencore and Rio Tinto used 1.7 billion m³ of water (Finland: 1.6 billion m³ source: WB)
Higher cost of capital incentivizes investments in water efficiency and supply security.

**Highlighted Results: Mining**

**Net debt/EBITDA**

- **Rio Tinto**: ratio rises by 200% to 2.96x in 2017

- **Vedanta**: ratio rises to 4 in 2014 → non-investment grade?

⇒ Higher cost of capital incentivizes investments in water efficiency and supply security
Application by Financial Institutions

<table>
<thead>
<tr>
<th>Corporate Due Diligence</th>
<th>Portfolio Review</th>
<th>Engagement</th>
<th>Product Development</th>
</tr>
</thead>
</table>

**Corporate Due Diligence**

**Portfolio Review**

**Engagement**

**Product Development**
Environmental Stress Testing
Drought Risk
Objective
Develop and test an analytical framework and model that allows banks to assess the potential impact of environmental shocks on the performance of their corporate loan portfolio.

2-3 drought scenarios per focus country (Mexico, Brazil, China, India, US) that simulate the impact of drought on water availability, taking into account local water infrastructure.

Model to estimate the effects of drought on up to 8-12 industries in country reflecting direct and indirect impacts as well as macro-economic feedbacks/political decisions.

Model that links drought impacts to drivers of corporate credit quality (such as profitability, leverage) and can be plugged into or inform banks’ internal stress testing models.
Thank you for your kind attention.

www.emergingmarketdialogue.org

Contact:
Simone Dettling
simone.dettling@giz.de