GIZ/NCD Drought Stress Testing Pilot Project
Drought Impact Modelling – High-Level Framework

Direct Impact

Industry Class
Locations
Relative Water Use
Water Dependency
Mitigation Strategies

Indirect Impact

Loss of Functionality
Increased Costs

Revenue Impact
Operating Cost Impact

Sectorial Impact

Power Generation
Water Supply
Manufacturing
Agriculture
Mining

Direct Impact

Model Results

Focus on industry classes which are important "primary" consumers of water (direct abstraction of large quantities of surface and groundwater):
- Agriculture
- Electric power generation
- Manufacturing
- Mining
- Water supply
EXPECTED LOSS CALCULATION

We have:

\[ EL_t = DP_t \times \exp_t \times LGD_t \]

Given that we will know the exposure, we need to find the default probability and the loss given default.
WHAT WE NEED TO BUILD
MODEL STANDARD ASSUMPTIONS

Updated Financial Statements
Output of the vulnerability model

Updated Credit Rating
First output of stress-testing module

Probability of Default and Loss Given Default
Second output of stress-testing module
FRAMEWORK VISUALISATION

| Score | P(default) | E(loss|default) |
|-------|-----------|--------------|
| 100   | 0.01      | 25%          |
| 95    | 0.02      | 50%          |
| 90    | 0.03      | 50%          |

Updated Characteristics

Loan
<table>
<thead>
<tr>
<th>Score</th>
<th>After drought</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>95</td>
</tr>
<tr>
<td>After drought</td>
<td>90</td>
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