Strata: Custom Climate Security Analytics

March 2022
United Nations Environment Programme
Environment, climate, peace and security.
Demand & capacity.

**Increased awareness of complex, multifaceted risks**
UN missions, UN country teams (CCA), PBF projects, climate change adaptation programs, natural resource management projects, etc.

**Demand for integrated assessment to support programming decisions**
conflict-sensitive climate and environmental programming
climate-sensitive conflict prevention and peacebuilding initiatives

**Limited capacity for data-driven analytics**
No data platforms on environment, climate, peace and security
Lack of internal analytical capacity or time
Strata’s unique value.

- Open-access data platform on environment and climate security
- Customizable analytics and visualization platform for non-tech practitioners
- Near real-time geospatial data streams at subnational and higher granularity
- Co-design as entry point for dialogue, capacity building and environmental peacebuilding
Strata’s objectives.

Accessible, customisable environmental and climate security analytics for practitioners and policymakers.

**ANALYSE earth stress**
Identify and monitor environment and climate stress hotspots in real time.

**INTEGRATE peace and security**
Visualise how hotspots overlap with socio-economic vulnerability, potentially driving maladaptation, displacement, or conflict.

**RESPOND policy and programming**
Science-based insights to design area-specific climate change adaptation, risk reduction, and resilience-building.
Making sense of complexity.

- Co-design process
- Area-specific, customizable
- Convergence of evidence approach
## Indicators

<table>
<thead>
<tr>
<th>Climate and environmental hazards</th>
<th>Socio-economic exposure and vulnerability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drought</strong></td>
<td><strong>Population</strong></td>
</tr>
<tr>
<td>• Rainfall (meteorological drought)</td>
<td>• Density, age and gender</td>
</tr>
<tr>
<td>• Soil moisture and vegetation</td>
<td></td>
</tr>
<tr>
<td>(agricultural drought)</td>
<td><strong>Urbanisation</strong></td>
</tr>
<tr>
<td><strong>Heatwave</strong></td>
<td>• Urban expansion</td>
</tr>
<tr>
<td>• Temperature &gt; 40°C for 3 days</td>
<td>• Population growth</td>
</tr>
<tr>
<td><strong>Flood</strong></td>
<td>• Internally displaced persons</td>
</tr>
<tr>
<td>• River flood likelihood</td>
<td><strong>Standards of living</strong></td>
</tr>
<tr>
<td>• Coastal inundation likelihood</td>
<td>• Freshwater (sanitation and drinking)</td>
</tr>
<tr>
<td><strong>Land change</strong></td>
<td>• Electricity</td>
</tr>
<tr>
<td>• Deforestation</td>
<td><strong>Infrastructure</strong></td>
</tr>
<tr>
<td>• Soil degradation</td>
<td>• Travel time to urban areas</td>
</tr>
<tr>
<td></td>
<td>• Travel time to healthcare</td>
</tr>
<tr>
<td></td>
<td>• Irrigation</td>
</tr>
<tr>
<td><strong>Peace and security</strong></td>
<td><strong>Food security</strong></td>
</tr>
<tr>
<td>• Violence against civilians</td>
<td>• Acute food insecurity</td>
</tr>
<tr>
<td>• Battles</td>
<td></td>
</tr>
<tr>
<td>• Remote violence/explosions</td>
<td></td>
</tr>
<tr>
<td>• Riots</td>
<td></td>
</tr>
<tr>
<td>• Protests</td>
<td></td>
</tr>
</tbody>
</table>
Convergence of evidence.

**Stressor flags** × **Exposure score** × **Vulnerability score** = **Hotspot map**

- **Stressor flags**
  - Climate and environmental stress flags
  - Peace and security flags
  - Stress indicator: 0 - n, where n is the total number of stresses

- **Exposure score**
  - Exposure indicator: 0 - 1, lowest to highest exposure

- **Vulnerability score**
  - Vulnerability indicator: 0 - 1, lowest to highest vulnerability

- **Hotspot map**
  - Lowest to highest climate security stress
So what?

Maps, diagrams and tables on area-specific environmental and climate security stresses

Strengthen
- baseline analyses;
- design, monitoring, and evaluation of interventions;
- awareness raising and training;
- in-depth assessments;
- advice and prioritization

Co-occurrence of risk factors
- no future modelling, no risk probabilities, no correlation, no cascading impacts
- Complement the data-driven maps with contextual knowledge

Guidebook
And more supportive materials to help interpret
Demo

www.unepstrata.org
Next steps.

Short-term: 2022

Improve useability and open-access
Climate change projection indicators
Evaluation and ethics
Regional expansion, Horn of Africa

Medium-term: 2023
Regional platforms
Global platform
Nature-based solutions
Thank you.

www.unepstrata.org
strata@un.org

UNITED NATIONS ENVIRONMENT PROGRAMME
Extra slides

www.unepstrata.org
Meteorological drought.

Flagged by Strata as very dry

Wetter

Dryer than historical average
Agricultural drought.

Vegetation health from satellite observations

Flagged as hotspot when lower than historical average
Flood likelihood.

Static map based on modelled likelihoods

River flood, 25 yr return period flood

<10m above sea level

Coastal inundation risk
Deforestation.

Vegetation health from satellite observations

increased rate of deforestation compared to average forest loss
Conflict events.

- Battles
- Explosions/remote violence
- Violence against civilians
- Protests
- Riots
Converged hotspot.

- Meteorological drought
- Agricultural drought
- Flood likelihood and coastal inundation
- Deforestation
- Conflict events
Exposure, vulnerability.

- Population density 2020
- Decreased electricity access
- Internally displaced
Digital value chain

Geospatial data → Google Earth Engine → Geospatial platform → Strata platform → Strata outputs

- Default analysis
- Customizable

- Maps, diagrams, tables
- Reports, briefs, fact sheets, alerts
- Policy and project recommendations
User consultations.

1. First broad stakeholder consultation
   Summer 2020: 86 experts from 50+ institutions consulted

2. Somalia survey and follow-up interviews
   Winter 2021: UN survey for indicator identification

3. Co-design workshops
   Spring 2021: Understand in more detail the end-user needs and requirements, gathered suggestions from 47 experts

4. Prototype testing workshops
   Fall 2021: test user experience of the platform and gather suggestions from 32 experts
Somalia co-design process.

- Five workshops with stakeholders
- Social, environmental and climate thematic focus
- Design, technology and operations discussed

Situations

Meet with decisionmakers
Policies, legislation and assessments

Needs

Easy maps and visuals
Integrated analysis
Identification of areas at risk

Outcomes

Environmental issues
Specific locations
Awareness raising