Vulnerability to inland flooding

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Inland flooding areas:

Study area based on areas with low flood potential or greater
Impact chain: Inland flooding area

**Exposure (0.50)**
- RHM
  - Change in runoff (0.34)*
- Extreme events indices
  - Change in annual count of 10 mm precipitation days (0.33)*
  - Change in annual count of 20 mm precipitation days (0.33)*

**Sensitivity (0.50)**
- Population (0.25)
  - Population density (0.21)
  - Share of agricultural labor force (0.14)
  - Share of children and elderly of the population (0.14)
  - Share of agriculture in GDP (0.15)
  - Refugee population (0.18)
  - Migrant population (0.18)
- Natural (0.25)
  - Land use - land cover (0.23)*
  - Soil erosion (0.21)
  - Degradation of vegetation cover (0.22)
  - Livestock density (0.15)
  - Wetlands areas (0.19)*
- Manmade (0.50)
  - Flood prone areas (0.50)
  - Urban extent (0.15)
  - Road network (0.13)
  - Areas under cultural heritage protection (0.11)
  - Wastewater treatment (0.11)

**Adaptive Capacity (0.50)**
- Knowledge & Awareness (0.10)
  - E-Government development (0.38)
  - Tertiary enrollment (0.31)
  - Adult literacy rate (0.31)
- Infrastructure (0.12)
  - Water & Sanitation (0.32)
    - Areas served by dams (1.0)
  - Environment (0.32)
    - Environment performance index (1.0)
  - Transport (0.36)
    - Density of road network (1.0)
- Institutions (0.10)
  - Governance index (0.34)
  - Areas under nature protection (0.31)
  - Disaster risk reduction committees (0.35)
- Economic resources (0.50)
  - GDP per capita (0.50)
  - ODA (0.50)
- Equity (0.07)
  - Female-to-male literacy ratio (0.34)
  - Years lost due to disability (0.29)
  - Migrants/refugees index (0.37)
EXPOSURE (0.50)

**RHM**
- Change in runoff (0.34)*

**EXTREME EVENTS INDICES**
- Change in annual count of 10 mm precipitation days (0.33)*
- Change in annual count of 20 mm precipitation days (0.33)*
16 indicators

SENSITIVITY (0.50)

POPULATION (0.25)
- Population density (0.21)
- Share of agricultural labor force (0.14)
- Share of children and elderly of the population (0.14)
- Share of agriculture in GDP (0.15)
- Refugee population (0.18)
- Migrant population (0.18)

NATURAL (0.25)
- Land use - land cover (0.23)*
- Soil erodibility (0.21)
- Degradation of vegetation cover (0.22)
- Livestock density (0.15)
- Wetlands areas (0.19)*

MANMADE (0.50)
- Floodprone areas (0.50)
- Urban extent (0.15)
- Road network (0.13)
- Areas under cultural heritage protection (0.11)
- Wastewater treatment (0.11)
**Exposure**

**EXPOSURE (0.50)**

**RHM**
- Change in runoff (0.34)*

**EXTREME EVENTS INDICES**
- Change in annual count of 10 mm precipitation days (0.33)*
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**Scenario**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Percentage of study area</th>
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<tbody>
<tr>
<td></td>
<td>Low EX</td>
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<tr>
<td>RCP 4.5 Mid-century</td>
<td>5%</td>
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<tr>
<td>RCP 8.5 Mid-century</td>
<td>5%</td>
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<tr>
<td>RCP 4.5 End-century</td>
<td>4%</td>
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<tr>
<td>RCP 8.5 End-century</td>
<td>7%</td>
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sensitivity

### Sensitivity of Study Area

<table>
<thead>
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<th>Scenario</th>
<th>Low SE</th>
<th>Moderate SE</th>
<th>High SE</th>
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<tbody>
<tr>
<td>All climate scenarios</td>
<td>89%</td>
<td>11%</td>
<td>0%</td>
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</tbody>
</table>
Areas with highest potential impact:

- Middle valley of the Senegal River
- Jubba–Shabelle river floodplains
- Bahr el Arab floodplain (eastern Sahel)

Areas with lowest potential impact:

- Atlas Mountains and coastal plain
- Jafara Plain
- Green Mountains
- Coastal Levant
- Zagros Mountains
Areas with lowest adaptive capacity:

- Wadis and streams in sub-Saharan Africa
- Wadis and streams in south-western Arabian Peninsula

### Percentage of study area

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<tr>
<th>Scenario</th>
<th>Low AC</th>
<th>Moderate AC</th>
<th>High AC</th>
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<tbody>
<tr>
<td>All climate scenarios</td>
<td>25%</td>
<td>73%</td>
<td>2%</td>
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Areas with highest vulnerability:
- Sub-Saharan Africa

Areas with lowest vulnerability:
- North Africa and Levantine coastal areas

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<tr>
<td></td>
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<tr>
<td>RCP 4.5 Mid-century</td>
<td>2%</td>
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<tr>
<td>RCP 8.5 Mid-century</td>
<td>3%</td>
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<tr>
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<tr>
<td>RCP 8.5 End-century</td>
<td>4%</td>
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</table>
Vulnerability hotspots:

- Western Sahel
- Eastern Sahel
- Horn of Africa (particularly the Jubba and Shabelle river floodplains)
- Isolated areas - southern Arabian Peninsula
Thank you