Addressing urbanization, poverty and vulnerabilities in developing countries

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Dr. Jean D’Aragon
Senior Sustainable Development Expert
Email: daragon@un.org

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SDG 11
Sustainable cities and human settlements: Make cities and human settlements inclusive, safe, resilient and sustainable
SDG 11 - Targets

11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

11.4 Strengthen efforts to protect and safeguard the world’s cultural and natural heritage

11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations
**SDG 11 – Targets (…)**

**11.6** By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.

**11.7** By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.

**11.a** Support positive economic, social and environmental links between urban, per-urban and rural areas by strengthening national and regional development planning.

**11.b** By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.

**11.c** Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials.
Urbanization Trend

GLOBAL POPULATION: RURAL / URBAN

- 200,000 people migrate to cities every day
- Every year, 70 million people move to cities
95% of the urban growth will occur in developing countries (particularly in Asia and Africa).

80% of this (95%) rapid urban growth will be uncontrolled or informal, taking the shape of urban slums, mostly in disaster-prone areas.

The main factors of urban growth are:
• Natural growth of cities,
• Conversion of rural areas into urban areas; and
• Rural migration.

Urban development and rural development are linked.

The main factors contributing to slum formation (in disaster-prone areas) are:
• Lack of access to adequate, affordable urban land
• Lack of access to adequate, affordable and safe housing options
• Lack of access to urban infrastructure and urban services

The main factors contributing to disasters are:
• Uncontrolled urban expansion
• Inappropriate land use planning and management

Which some link to the:
• Weakness of local human and institutional capacities and governance; and
• Limited financial means of local governments (insufficient resource allocations and/or revenue-raising powers transferred from central governments) to fulfil their responsibilities (ensuring basic service delivery, infrastructure development, adequate housing and services to communities, promoting social and economic development, and safe and healthy environment...)

Urbanization, poverty and vulnerability
Expansion of Accra, Ghana: 1985-2000 (over 15 years)

<table>
<thead>
<tr>
<th>Measure</th>
<th>T₁</th>
<th>T₂</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>1,882,990</td>
<td>2,789,380</td>
<td>2.57%</td>
</tr>
<tr>
<td>Built-Up Area (sq km)</td>
<td>133.35</td>
<td>344.26</td>
<td>6.56%</td>
</tr>
<tr>
<td>Average Density (persons / sq km)</td>
<td>14,120.39</td>
<td>8,102.64</td>
<td>-3.66%</td>
</tr>
<tr>
<td>Built-Up Area per Person (sq m)</td>
<td>70.82</td>
<td>123.42</td>
<td>3.79%</td>
</tr>
<tr>
<td>Average Slope of Built-Up Area (%)</td>
<td>3.11</td>
<td>3.11</td>
<td>0.01%</td>
</tr>
<tr>
<td>Maximum Slope of Built-Up Area (%)</td>
<td>12.28</td>
<td>12.28</td>
<td>0.00%</td>
</tr>
<tr>
<td>The Buildable Perimeter (%)</td>
<td>0.71</td>
<td>0.73</td>
<td>0.15%</td>
</tr>
<tr>
<td>The Contiguity Index</td>
<td>0.69</td>
<td>0.80</td>
<td>1.01%</td>
</tr>
<tr>
<td>The Compactness Index</td>
<td>0.68</td>
<td>0.61</td>
<td>-0.75%</td>
</tr>
<tr>
<td>Per Capita Gross Domestic Product</td>
<td>$1,325.50</td>
<td>$1,836.23</td>
<td>2.21%</td>
</tr>
</tbody>
</table>

Spatial expansion of Manila (Philippines): 1975-2010 (over 35 years)

Source: Planning City Extension for Sustainable Urban Development. UN-Habitat 2016.
Poverty increases exposure and vulnerability to environmental risks and natural hazards and disasters

The urban poor often have no other choice than establishing themselves on vulnerable land.
Disasters (even small-scale ones) perpetuates the cycle of poverty

- Increase vulnerability of urban poor
- Destroy assets and means of livelihoods (including house and/or plot)
- Reduce coping capacity (and options) for next disaster
- The reduced financial means may lead to bad or hazardous choices such as:
  - Reducing food intake quantity and quality;
  - Cut down education expenses; and even
  - Rebuilding on other disaster-prone sites...

and those will be worsening the urban poor’s vulnerability on the long run
2011 Thailand (Bangkok) flood: Summary of damage and losses by sector in Thai baht (millions)

<table>
<thead>
<tr>
<th>Sub Sector</th>
<th>Disaster Effects</th>
<th>Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Damage</td>
<td>Losses</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>-</td>
<td>8,715</td>
</tr>
<tr>
<td>Water Supply</td>
<td>2,907</td>
<td>8,886</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>-</td>
<td>251</td>
</tr>
<tr>
<td>Electricity</td>
<td>-</td>
<td>3,517</td>
</tr>
<tr>
<td>Agriculture</td>
<td>33,768</td>
<td>-</td>
</tr>
<tr>
<td>Productive</td>
<td>133,351</td>
<td>-</td>
</tr>
<tr>
<td>Social</td>
<td>1,664</td>
<td>1,731</td>
</tr>
<tr>
<td>Education</td>
<td>1,059</td>
<td>388</td>
</tr>
<tr>
<td>Housing</td>
<td>45,908</td>
<td>37,889</td>
</tr>
<tr>
<td>Cultural Heritage</td>
<td>4,429</td>
<td>3,076</td>
</tr>
<tr>
<td>Cross Cutting</td>
<td>375</td>
<td>176</td>
</tr>
<tr>
<td>Environment</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>630,354</td>
<td>795,191</td>
</tr>
</tbody>
</table>

US Equivalent (billion): 21  26.5  47.5  4.7  42.8

**Source:** GFDRR (2012) Thai Flood 2011: Rapid Assessment for Resilient Recovery and Reconstruction Planning

**4 most affected groups:**
1) Manufacturing industry (whose private estates’ individual flooding protection (dykes) systems have failed): biggest damage and losses;
2) Tourism industry: Limited damage
3) Finance & Banking: No damage
4) Households (no flooding protection, no insurance): second biggest damage

(1.9 million houses affected with about 19,000 houses destroyed)
Southeastern Asia

<table>
<thead>
<tr>
<th>Region/Country/Province/city</th>
<th>Total (1,000s)</th>
<th>Urban (1,000s)</th>
<th>Urban (% of total)</th>
<th>Population of urban agglom. of 750,000 inhab. &amp; more (1,000s)</th>
<th>Aver. annual growth rate of urban pop. (%) (cities: 2006-2020)</th>
<th>Populat. of slums (% of urban pop.)</th>
<th>GDP per capita at PPP (2005 constant intern. dollars)</th>
<th>Coastal status (coastal or inland)</th>
<th>Type of Hazard (years of data collection)</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>6 895</td>
<td>3 479</td>
<td>50</td>
<td>1,9</td>
<td>35</td>
<td>9 547</td>
<td>(1980-2000)</td>
<td>No Hazard</td>
<td>1st - 4th deciles (low-risk)</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>593</td>
<td>248</td>
<td>42</td>
<td>2,2</td>
<td>33</td>
<td>4 737</td>
<td>(1976-2002)</td>
<td>No Hazard</td>
<td>5th - 7th deciles (medium-risk)</td>
</tr>
<tr>
<td>Indonesia</td>
<td>239 871</td>
<td>106 217</td>
<td>44</td>
<td>1,7</td>
<td>26</td>
<td>3 813</td>
<td>(1979-2002)</td>
<td>No Hazard</td>
<td>8th - 10th deciles (high-risk)</td>
</tr>
<tr>
<td>Bandung</td>
<td>2 429</td>
<td>2,90</td>
<td>*Inland</td>
<td>1 hazard No hazard 5th-7th d. 8-10th d. No hazard No hazard 5th-7th d. No hazard</td>
<td>2 hazards No hazard 1st-4th d. 8-10th d. No hazard No hazard 5th-7th d. No hazard</td>
<td>2 616</td>
<td>(1985-2003)</td>
<td>No Hazard</td>
<td>8th - 10th deciles (high-risk)</td>
</tr>
<tr>
<td>Jakarta</td>
<td>9 769</td>
<td>3,03</td>
<td>Coastal</td>
<td>No hazard No hazard No hazard No hazard No hazard No hazard No hazard</td>
<td>No hazard No hazard No hazard No hazard No hazard No hazard No hazard</td>
<td>12 724</td>
<td>(1980-2000)</td>
<td>No Hazard</td>
<td>1st - 4th deciles (low-risk)</td>
</tr>
<tr>
<td>Malaysia</td>
<td>28 401</td>
<td>20 497</td>
<td>72</td>
<td>3,0</td>
<td>44</td>
<td>3 216</td>
<td>(1979-2002)</td>
<td>No Hazard</td>
<td>1st - 4th deciles (low-risk)</td>
</tr>
<tr>
<td>Klang</td>
<td>1 190</td>
<td>1,90</td>
<td>Coastal</td>
<td>No hazard No hazard No hazard No hazard No hazard No hazard No hazard</td>
<td>1 hazard No hazard No hazard No hazard No hazard No hazard No hazard</td>
<td>1 884</td>
<td>(1980-2000)</td>
<td>No Hazard</td>
<td>1st - 4th deciles (low-risk)</td>
</tr>
<tr>
<td>Kuala Lumpur</td>
<td>1 556</td>
<td>1,56</td>
<td>*Inland</td>
<td>No hazard No hazard No hazard No hazard No hazard No hazard No hazard</td>
<td>1 hazard No hazard No hazard No hazard No hazard No hazard No hazard</td>
<td>3 216</td>
<td>(1980-2000)</td>
<td>No Hazard</td>
<td>1st - 4th deciles (low-risk)</td>
</tr>
<tr>
<td>Philippines</td>
<td>93 261</td>
<td>45 607</td>
<td>49</td>
<td>2,1</td>
<td>44</td>
<td>3 216</td>
<td>(1979-2002)</td>
<td>No Hazard</td>
<td>1st - 4th deciles (low-risk)</td>
</tr>
<tr>
<td>Davao</td>
<td>1 565</td>
<td>1,56</td>
<td>Coastal</td>
<td>No hazard No hazard No hazard No hazard No hazard No hazard No hazard</td>
<td>2 hazards 8-10th d. 1st-4th d. 8-10th d. No hazard No hazard No hazard No hazard</td>
<td>1 904</td>
<td>(1980-2000)</td>
<td>No Hazard</td>
<td>1st - 4th deciles (low-risk)</td>
</tr>
<tr>
<td>Manila</td>
<td>11 862</td>
<td>1,86</td>
<td>Coastal</td>
<td>No hazard No hazard No hazard No hazard No hazard No hazard No hazard</td>
<td>2 hazards 8-10th d. 1st-4th d. 8-10th d. No hazard No hazard No hazard No hazard</td>
<td>7 560</td>
<td>(1980-2000)</td>
<td>No Hazard</td>
<td>1st - 4th deciles (low-risk)</td>
</tr>
<tr>
<td>Thailand</td>
<td>69 122</td>
<td>23 476</td>
<td>34</td>
<td>1,7</td>
<td>26</td>
<td>7 260</td>
<td>(1980-2000)</td>
<td>No Hazard</td>
<td>1st - 4th deciles (low-risk)</td>
</tr>
<tr>
<td>Krung Thep (Bangkok)</td>
<td>8 426</td>
<td>8,42</td>
<td>Coastal</td>
<td>No hazard No hazard No hazard No hazard No hazard No hazard No hazard</td>
<td>No hazard No hazard No hazard No hazard No hazard No hazard No hazard</td>
<td>12 724</td>
<td>(1980-2000)</td>
<td>No Hazard</td>
<td>1st - 4th deciles (low-risk)</td>
</tr>
<tr>
<td>Samut Prakan</td>
<td>1 212</td>
<td>1,21</td>
<td>Coastal</td>
<td>No hazard No hazard No hazard No hazard No hazard No hazard No hazard</td>
<td>No hazard No hazard No hazard No hazard No hazard No hazard No hazard</td>
<td>3 216</td>
<td>(1980-2000)</td>
<td>No Hazard</td>
<td>1st - 4th deciles (low-risk)</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>87 848</td>
<td>26 687</td>
<td>30</td>
<td>3,3</td>
<td>41</td>
<td>2 682</td>
<td>(1980-2000)</td>
<td>No Hazard</td>
<td>1st - 4th deciles (low-risk)</td>
</tr>
</tbody>
</table>

Concentration of flood in the regions

Urban agglomerations by size class and potential risk of flooding, 1970

Concentration of flood in the regions
Urbanization (seem to) increase risks of flooding

Urban agglomerations by size class and potential risk of flooding, 2011

Concentration of flood in the regions
Urbanization increases even more risks of flooding

Urban agglomerations by size class and potential risk of flooding, 2025

http://esa.un.org/unpd/wup/Maps/maps_flooding_2025.htm
Vanuatu: Category 5 Tropical Cyclone Pam

13 March 2015: TC PAM:
Winds @ +/- 250 km/hour
Gusts @ 320 km/hour

Impacts at national level

- 11 deaths
- 188,000 people affected
- 17,000 buildings damaged or destroyed
- 90,000 people (18,000 HHs) needing shelter assistance
- 65,000 people displaced from their homes
- Damage: USD 270.9 million
- Loss: USD 178.5 million
- Total: USD 449.4 million (64.1% GDP)

- Housing sector: 32% of total damage cost (highest damage)
- Tourism: 20% of total damage cost
- Education sector: 13% of total damage cost
- Transport sector: 10% of total damage cost
- Agriculture: 33% of total losses (highest losses)
- Tourism: 26% of total losses
Urbanization in Vanuatu (SIDS)

- Total population: 258,000 (2014)
- Urban population: 67,000 (26%)
- Annual urban growth: 3.4%

Population living in Port Vila: 53,000 (79.1% of urban population; 1/3 urban poor)

Annual Urban Growth
- Greater Port Vila: 10.7% (1999-2009)
- Central Ward: 1.6% (mainly formal)
- South Ward: (mainly formal): 2.3%
- *Malapoa-Tagabe, Northern Division: 14.6% (mainly informal), where 50% of population in Greater Port Vila resides

Source: UN-Habitat, 2014

Port Vila Greater Metropolitan Area

Source: OCHA, 2014

Port Vila, Efate Island

Source: UN-Habitat, 2014
Rapid urbanization, when not planned and managed properly, increase exposure and vulnerability to environmental risks and natural hazards and disasters.

The concentration, activities, practices & interventions of the urban poor (or any other group) on marginal flood-prone areas may exacerbate disaster risks by:

- Disrupting the natural surface drainage patterns, particularly human settlements along waterways, on floodplains, flood ways (conveyance zones)…;
- Turning pervious natural surfaces to less- or non-pervious artificial surfaces (erosion & flood);
- Deforestation and removing of vegetation cover provoking soil erosion and landslides under high storm water runoff volumes;
- Inexistence, inadequacy or failure of drainage, sanitation and solid waste, and even of flood protection infrastructure (flood);
- Over-extraction of ground water (leading to soil subsidence) – higher risk of flood in low-lying areas affected by sea level rises;
- The negative impacts of some (self-help) individual mitigation interventions (dumping solid waste in ravines, channels against soil erosion or for building dykes to avert flood…)
- Lack of well-planned, systematic (community-based) flood risk management activities.
Governments cannot address those issues alone, but in partnership with a wide range of actors playing different roles:

- **Central governments:** Setting national priorities; making policy reforms (institutional, legislative and financial); creating an enabling environment; providing financial support to sub-national authorities;

- **National/central Disaster Management Agency:** formulating and coordinating the implementation of a central (basic) Disaster Management Plan; formulating and coordinating the implementation of contingency plans for emergencies; providing logistic & technical assistance to lower levels of governments

- **Local (village, town, city, metropolitan) authorities:** coordination and guiding the direction of growth and development of urban areas, Urban Slum Upgrading + Disaster Risks Reduction strategies, measures, plans and programmes and their integration into official urban planning and management systems

- **Civil Society:** brings knowledge of needs and reality on the ground; participate in slum upgrading, disaster risk assessment, in development and implementation of community or local risk reduction strategies; watchdogs monitoring interventions and process (in particular, if they are transparent and in line with SDGs)

- **Private Sector:** can contribute with technical and financial resources in (re)building resilient infrastructures

- **International community:** can provide support in terms of policy, technical advise and capacity building
For Urban Flood Management, Some principles:

• Sustainable alternatives to hard-engineered structural measures, such as urban parks, community gardens and playgrounds should be used, and wetlands and natural buffers should be reintegrated (when possible) in the urban landscape, at least to complement, and limit the need for, the hard-engineered structural measures.

• Increasing the pervious surfaces (with permeable pavement and sidewalks...) in urban areas;

• Improving drainage and solid waste management;

• Structural measures be balanced by non-structural measures such as flood warning systems and evacuation planning;

• Developing non-structural measures such as realistic and pro-poor, performance-based building codes and land use planning laws;

• Awareness programmes adapted at local/neighbourhood level should be developed

Such combined measures should succeed to limit the impacts from flooding on inhabited flood-prone areas, whether protected by flooding defense systems or not.
Low cost housing and training project, East London RSA
Local/green building materials: 1,500 houses built (1996-1998)
Thank you very much for your attention!