Next Generation Land and Urban Systems ➔ 3D

Mika-Petteri Törhönen
Lead Land Administration Specialist
The World Bank
Global Trends: Food production

- **Increase of population**
  - 2 to 3 billion by 2050
  - 60% increase in agricultural production

- **Needs of...**
  - another 2 billion tons of cereals
  - another 200 million of meat
  - another 130 million of oilseeds
Global Trends: Climate Change
Global Trends: Growing Prosperity

Since 1990, the number of the poor living on $1.25 per day was significantly reduced by 700 million, mostly in China and Asia.

But... 1.2 billion people are still living in extreme poverty.
Global Trends: Urbanization

- 1970: Rural 63%, Urban 37%
- 2000: Rural 53%, Urban 47%
- 2030: Rural 40%, Urban 60%

2 billion new urban residents
1.2 million new km² urban area
Urbanization

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage of Population in Urban Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900</td>
<td>2 out of every 10 people lived in an urban area</td>
</tr>
<tr>
<td>1990</td>
<td>4 out of every 10 people lived in an urban area</td>
</tr>
<tr>
<td>2010</td>
<td>5 out of every 10 people lived in an urban area</td>
</tr>
<tr>
<td>2030</td>
<td>6 out of every 10 people will live in an urban area</td>
</tr>
<tr>
<td>2050</td>
<td>7 out of every 10 people will live in an urban area</td>
</tr>
</tbody>
</table>

Defined by UN HABITAT as a city with a population of more than 10 million

Challenges:

- Manage & support urban development
- Communicate with stakeholders & citizens
Social, Urban, Rural and Resilience Global Practice of

Sustainable Communities

CLEAN AND EFFICIENT

INCLUSIVE

RESILIENT

COMPETITIVE

And land is at the center of it all…
Land Administration Successes

World Bank Support on Land

- Recognition of property rights
- Land reforms and anti-discrimination
- First registration and cadastral mapping
- Digitalization and web-based services
- Land and geospatial records and eGovernance
- Sustainable business models for land agencies

EASTERN EUROPE AND CENTRAL ASIA

Doing Business 2016; Registering Property

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Rank</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>New Zealand</td>
<td>11</td>
<td>United Arab Emirates</td>
</tr>
<tr>
<td>2</td>
<td>Lithuania</td>
<td>12</td>
<td>Denmark</td>
</tr>
<tr>
<td>3</td>
<td>Georgia</td>
<td>13</td>
<td>Armenia</td>
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<tr>
<td>4</td>
<td>Rwanda</td>
<td>14</td>
<td>Norway</td>
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<td>5</td>
<td>Belarus</td>
<td>15</td>
<td>Iceland</td>
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<td>6</td>
<td>Estonia</td>
<td>16</td>
<td>Switzerland</td>
</tr>
<tr>
<td>7</td>
<td>Slovak Republic</td>
<td>17</td>
<td>Taiwan, China</td>
</tr>
<tr>
<td>8</td>
<td>Kyrgyz Republic</td>
<td>18</td>
<td>Kazakhstan</td>
</tr>
<tr>
<td>9</td>
<td>Russian Federation</td>
<td>19</td>
<td>Singapore</td>
</tr>
<tr>
<td>10</td>
<td>Sweden</td>
<td>20</td>
<td>Finland</td>
</tr>
</tbody>
</table>

KYRGYZ REPUBLIC

Dramatic Growth in Mortgages in Kyrgyzstan

MACEDONIA

Number of Transactions

<table>
<thead>
<tr>
<th>Year</th>
<th>Transactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>42,116</td>
</tr>
<tr>
<td>2006</td>
<td>53,582</td>
</tr>
<tr>
<td>2007</td>
<td>67,922</td>
</tr>
<tr>
<td>2008</td>
<td>85,786</td>
</tr>
<tr>
<td>2009</td>
<td>93,240</td>
</tr>
<tr>
<td>2010</td>
<td>105,567</td>
</tr>
<tr>
<td>2011</td>
<td>120,742</td>
</tr>
<tr>
<td>2012</td>
<td>138,122</td>
</tr>
<tr>
<td>2013</td>
<td>148,659</td>
</tr>
<tr>
<td>2014</td>
<td>147,645</td>
</tr>
<tr>
<td>2015</td>
<td>163,186</td>
</tr>
</tbody>
</table>
Cambodia; Participatory Land Registration

- Public Awareness
- Adjudication
- Demarcation
- Surveying
Applied Land Administration; Trends

**Modern Land Applications**
- Register outputs produced from *interlinked public datasets*
- Digital land and geospatial records used for *mass valuation systems* for property taxes
- *State lands inventory and management* integrated to the land administration system
- One Map defined as the baseline for *environmental conservation and management*
- Geospatial data provides the base for *Early Warning Systems* and other disaster resilience.

**Interlinked Data and Services in Macedonia**

**One Map on Land Use in Indonesia**

**Land Records for Mass Valuation in Slovenia**

www.katastar.gov.mk
Where do we go from here?
Stop Flattening the Reality!
Land and Building
Modern Finland
GIS and BIM will need to integrate in a new Urban 3D Cadastre and Spatial Infrastructure Approach
Solution: 3D SDI + BIM

Buildings & infrastructure are already planned in 3D

But regulatory processes and municipal SDI’s are still 2D + paper
Case: 3D building permit

- Scenic review
- Technical evaluation
- Fire & rescue aspects, etc...

...instead of a pile of paper...
Super Thanks for Listening

Mika-Petteri Törhönen
Lead Land Administration Specialist
The Global Land and Geospatial Unit
The World Bank
1818 H-St. NW
Washington DC 20433, USA
mtorhonen@worldbank.org

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