Growth Management Policies – An Assessment of Their Impact on Open Space: The Case of Israel’s Sharon Region

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Research questions

• What is the rate of loss of open space in the Sharon region between 1966 and 2003?
• What policies might be influencing this rate?
• Are growth management policies successful or do they have the potential to be successful?
• What cultural, demographic and/or economic trends might be influencing the rate of land cover transition?
Research questions

- What is the rate of loss of open space in the Sharon region between 1966 and 2003?
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Why study loss of open space?

- High biological diversity
- Damage and loss of ecosystems
- Ecosystem services
- Future reserves
Population Growth (1948-2007)

<table>
<thead>
<tr>
<th>Year</th>
<th>Population (1000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>2000</td>
</tr>
<tr>
<td>1980</td>
<td>4000</td>
</tr>
<tr>
<td>2000</td>
<td>8000</td>
</tr>
</tbody>
</table>


Israel’s National Bird?
Israel’s National Bird? Crane!

Proportion of land built (1948-2003)

- % built, whole country; Mazor
- % built, w/out Beer Sheva subdistrict, Mazor
- % built, whole country, Kaplan

Mazor, Table 5.2; P164; Israel 2020
Kaplan, Table 8.2; P161 Patterns of utilization of constructed land in Israel
Evolving paradigms in Israeli spatial planning

- **1950s – 1960s**
  - Distribute population to peripheries
  - Preserve agricultural land

- **1970s – 1980s**
  - Decline of consensus around agriculture
  - Rise of suburbs and exurbs (peripheries)
  - Fragmentation of planning goals

- **1990s - present**
  - Provide for immigrants and increased demand for development
  - Preserve open space
  - Distribute population to peripheries
  - Resurrection of national-level spatial planning

Central principles of Master Plan 35

- Urban development and prevention of suburbanization (sprawl)
- Preservation of open space: Nature, agriculture and village
- Accelerated development of public transportation
- ...
Spatial unit of analysis

- Sharon coastal region
- 17,200 ha
- Comprised of regional councils (3), local councils (5), and cities (3)

Spatial Data

- 11 maps
  - Survey of Israel
  - 1:50,000 scale
  - Buildings, roads, land use, topography, infrastructure
  - 1966-2003
<table>
<thead>
<tr>
<th>Year</th>
<th>Built (ha)</th>
<th>Annual Change Built $\frac{([Built_{t2} - Built_{t1}]/Built_{t1})}{(t2-t1)}$</th>
<th>Open (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1966</td>
<td>2830</td>
<td></td>
<td>84.25%</td>
</tr>
<tr>
<td>1972</td>
<td>3170</td>
<td>0.32%</td>
<td>82.35%</td>
</tr>
<tr>
<td>1976</td>
<td>3280</td>
<td>0.16%</td>
<td>81.71%</td>
</tr>
<tr>
<td>1978</td>
<td>3320</td>
<td>0.10%</td>
<td>81.51%</td>
</tr>
<tr>
<td>1983</td>
<td>3490</td>
<td>0.19%</td>
<td>80.56%</td>
</tr>
<tr>
<td>1985</td>
<td>3490</td>
<td>0.01%</td>
<td>80.54%</td>
</tr>
<tr>
<td>1987</td>
<td>3550</td>
<td>0.16%</td>
<td>80.22%</td>
</tr>
<tr>
<td>1989</td>
<td>3560</td>
<td>0.02%</td>
<td>80.18%</td>
</tr>
<tr>
<td>1994</td>
<td>3630</td>
<td>0.08%</td>
<td>79.78%</td>
</tr>
<tr>
<td>1999</td>
<td>4420</td>
<td>0.88%</td>
<td>75.39%</td>
</tr>
<tr>
<td>2003</td>
<td>4890</td>
<td>0.67%</td>
<td>72.73%</td>
</tr>
</tbody>
</table>
### Annual Addition of Built Space and Change in % of Open Space

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>d</td>
<td>0</td>
<td>500</td>
<td>1000</td>
<td>1500</td>
<td>2000</td>
<td>80</td>
<td>50</td>
</tr>
<tr>
<td>% of total space</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>80</td>
<td>90</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Graph:**
- **X-axis:** Year (1970 to 2000)
- **Y-axis 1:** Additional built space (dunam)
- **Y-axis 2:** Open space (% of total space)

**Legend:**
- Additional built space (dunam)
- Open space (%)

**Basic Laws**
- Agricultural land protected
Annual addition of built space and change in % of open space

**Suburban residential alternatives in periphery**

**Land decisions regarding kibbutz/moshav land**

**Mass immigration emergency measures**
Annual addition of built space and change in % of open space

--- | --- | --- | --- | --- | --- | --- | ---
Additional built space (dunam) | 0 | 500 | 1000 | 1500 | 2000 | 1000 | 500
Open space (% of total space) | 50 | 60 | 70 | 80 | 90 | 70 | 60

Additional built area per year and community type (sq km)

--- | --- | --- | --- | ---
Growth in Built Area (km²) | 0.0 | .1 | .2 | .3 | .4 | .5 | .6

Regional Councils
Local Councils
Cities
Interim conclusions

Historical analysis of thematic maps can assist in:
• Quantifying rates of land cover conversion and loss of open space
• Assessing the temporal gap between policy implementation and the creation of facts on the ground
• Spatially explicit analyses of the impact of land use policies

Agricultural land preservation policies were effective at preserving open space
The impact of open space preservation policies may take an extended amount of time to show on the ground

Thank you!