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S.E.A.
as a Tool for
Limiting Land Consumption

IAIA

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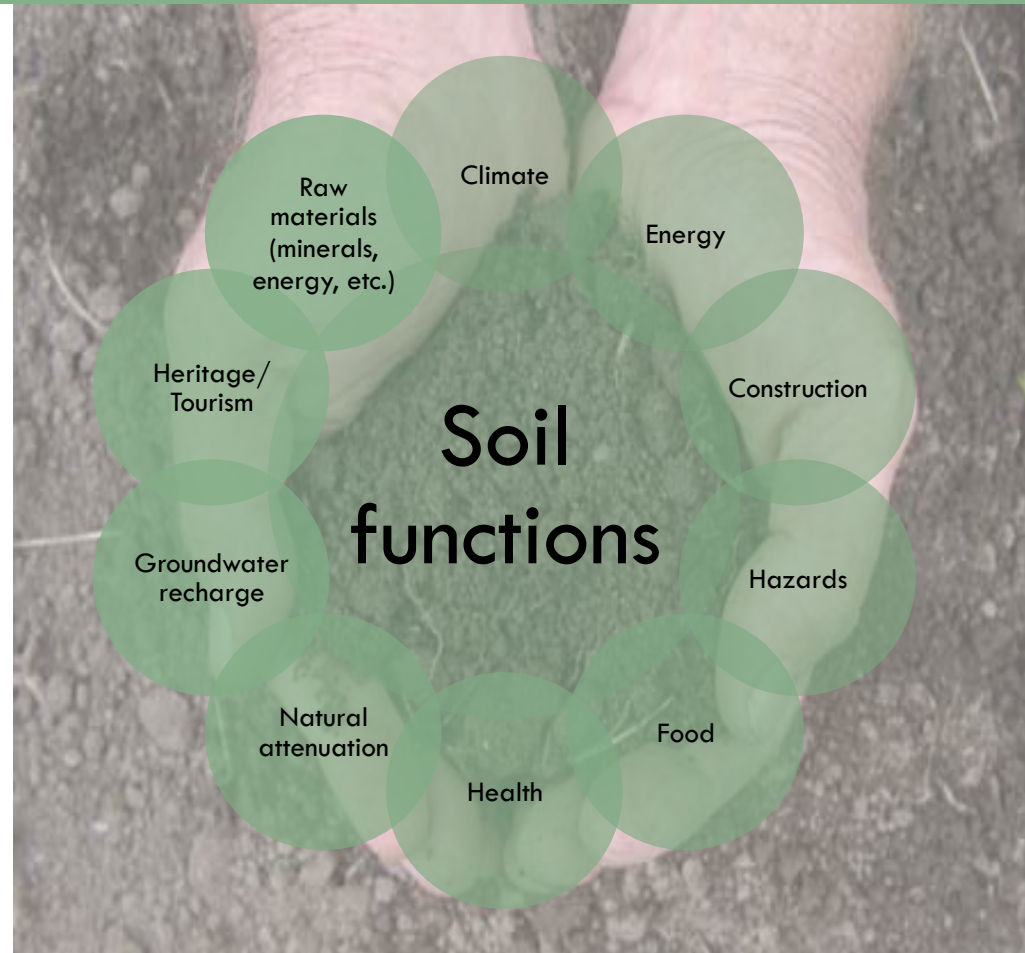
*“Earth provides enough to
satisfy every man's need,
but not every man's greed”
- Gandhi (1869-1948)*

Summary Outline

- The value of soil
- Impact of land consumption and SEA
- The objective of soil protection in EU
- Soil protection and SEA
- Land consumption in Italian and International SEA
- Final Considerations and Recommendations
 - ‘SEA as a tool for limiting Land consumption’
 - Monitoring land consumption in SEA
- Conclusion
- References

The value of soil

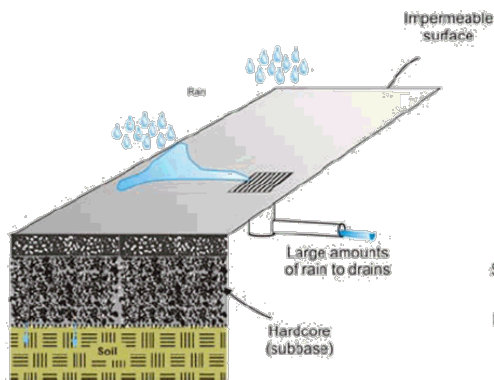
- **Soil:** *“the top layer of the earth’s crust, formed by mineral particles, organic matter, water, air and living organisms. It is the interface between earth, air and water and hosts most of the biosphere”* (ENVASSO project)
- **Soil/land consumption:** *“land take”, “urbanization”, “increase of artificial surfaces”, “urban sprawl”*
- **Soil as a “common”:**
 - social, ecological value



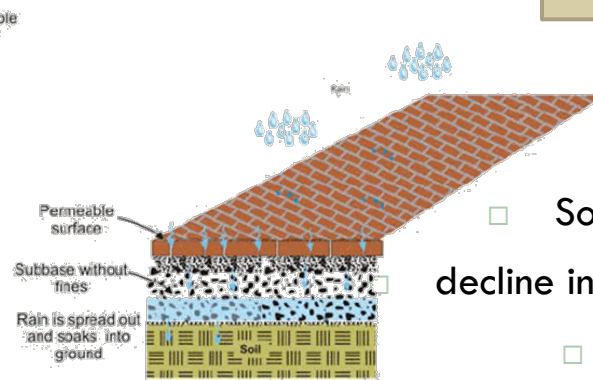
Impact of land consumption



Conventional impermeable surface



Permeable surface



Soil sealing

...and more:

- Soil contamination, decline in soil biodiversity
- desertification

□ ...



Source: The Environment Protection Group, 2008



The objective of soil protection in EU



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- “In the EU about 1,000 km² were annually subject to land take between 1990 and 2006. This is exceeding the size of Berlin. About half of this surface is actually sealed by buildings, roads and parking lots” (EEA, Land use, SOER 2010)
- The Soil Thematic Strategy COM(2006) 231
- Proposal for a framework Directive COM(2006) 232: setting out common principles for protecting soils across the EU



Soil protection and SEA



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- Different European/national policies are **contributing** to soil protection (for instance: water, waste, chemicals, industrial pollution prevention, nature protection, pesticides, agriculture) but there is a lack of an **integrated strategic** policy and tool
- Given the **complexity** of the soil consumption impact, an integrated policy and planning tool is needed to cope with soil protection issues
- SEA is an appropriate tool, because (by law):



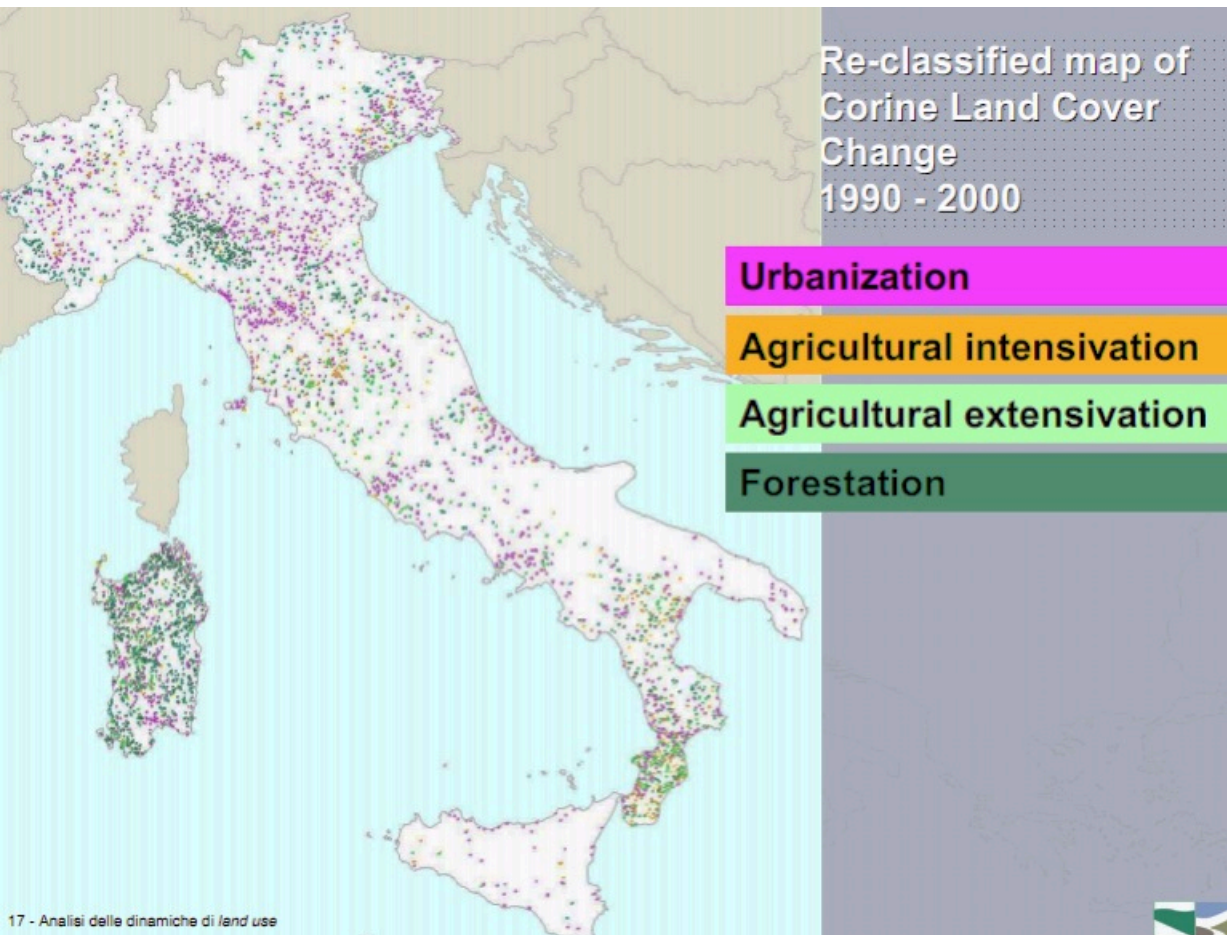
- evaluates the likely significant effects on the environment, including issues such as... **soil**, water, air...**landscape**...
- integrates environmental considerations and evaluates the **inter-linkage** with economic and social considerations (soil as a 'common')
- includes **monitoring** (land consumption, etc.)

Land consumption in Italian SEA

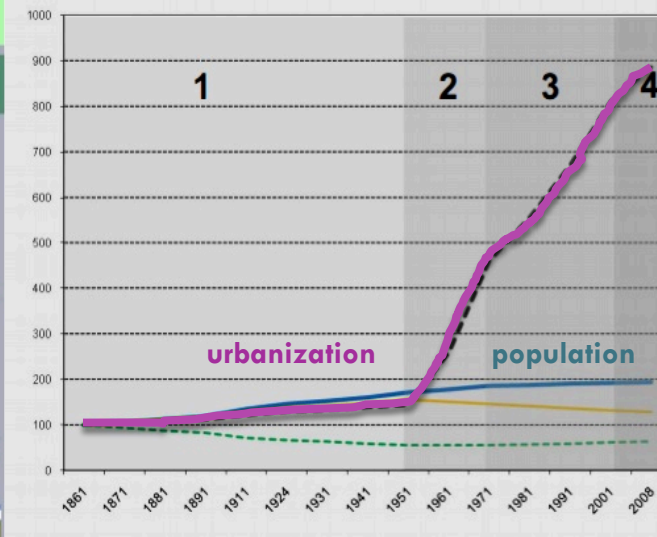


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- In the Po Valley (Lombardia, Emilia Romagna, ...) every day 200.000 m² are urbanized ('about 30 soccer fields') Legambiente Report, 2011





Land consumption in Italian SEA



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- Italy, unlike most European countries, does not have a **national spatial development plan**, nor a definition of soil sealing limits and targets (like in Germany, UK, Austria..)
- **Regional Planning:**
 - SEA of PTR Emilia Romagna Region (2010)  Regione Emilia-Romagna
 - Strong emphasis “*it is possible to consume new land only if there is no alternative deriving from the substitution of existing urbanized texture, or from its re-organization, re-zoning or regeneration*” (but no targets)
 - monitoring plan includes indicators like:
 - land fragmentation because of “artificialized” surface;
 - land use, change in soil consumption, soil sealing.
 - SEA of PTR Lombardia (2010)  Regione Lombardia
 - only a general objective of “land consumption reduction and promotion of brownfields regeneration”



Land consumption in Italian SEA



- At a **local level** (Provinces and Municipalities) land consumption and its impact have been taken into consideration in all the recent spatial planning;
- SEAs of territorial plans at the provincial level (PTCP), and their sectorial part (Water, PTA; Quarries, PIAE; Energy, etc.) include evaluation of land consumption, and propose its limitation through several **compulsory regulations**, such as:
 - *maximum amount of urbanization of new land, while promoting urban renewal, brownfield redevelopment, etc.;*
 - *further limitation (targets and threshold values) for new urbanization in “groundwater protection zones” (introduction of the “sealing balance”, etc.);*
 - *limitation of new quarry sites while allowing only existing sites extension;*
 - *limitation on setting new photovoltaic power plant on the ground, while promoting roof systems;*
 - ... (See PTCP Bologna, PTCP Modena, PTCP Piacenza, PTCP Parma, PTCP Reggio Emilia)

Land consumption in Italian SEA



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Lessons learned:



SEA process is not always taken into serious consideration by decision makers, and often SEA analysis, recommendations and information are **neglected** (soil protection against economic interests);

land consumption should be governed, evaluated and analyzed by **external bodies**, removed from the municipal level (focus is often on local interests instead of global environmental matters);

land use change, and land take in particular, has many **long-term effects** that should be estimated and evaluated, as they involve several issues (sealing, erosion, etc.);

in Lombardy, SEA is not required for “Piano delle Regole”, which is the component of a Municipality Plan that includes **quantitative limitations** and constraints (such as land consumption limitations);

existing plans (and their land consumption potential) are hardly questioned or changed to a more sustainable perspective

Land consumption in International SEA



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Good practice/Lessons learned:

- *SEA in Victoria Land use planning (Australia):*
 - SEA is considered to be systematic, transparent, useful in managing **land use conflict** and promoting more ecologically sustainable land use (parks, ...);
 - Effectiveness of SEA, also thanks to the **independent** SEA body;
- *SEA of Chengan Plan (China):*
 - under SEA frame, **ecological principles** guided urban planning and arguments between planners and SEA experts at an initiative stage;
 - Effectiveness of SEA in merging different objectives (ecological, etc.) in a common integrated process;
- *Need of SEA in Brazil:*
 - surge in planting of sugar cane crops for biofuels;
 - single EIA's do not address **cumulative impact**;
 - Land consumption needs to be considered at a strategic level;
- *SEA in German Land use planning:*
 - Germany set a **national target** of reduction of land consumption (30ha/d by 2020)
 - to be operationalized to regional planning: examples of suitable **indicators** for SEA

Final considerations and Reccommendations

‘SEA as a tool for limiting land consumption’

'SEA as a tool for limiting land consumption' (1/3)



- **Consultation and Participation** in SEA should increase **awareness** of soil value (as a common, as a non-renewable resource)

- SEA should emphasize **soil protection objective** and limitation on land consumption

- SEA should treat soil as the **main resource**, from which all other environmental (and social, economic) issues can then be addressed;

- SEA should evaluate **integration** of different policies

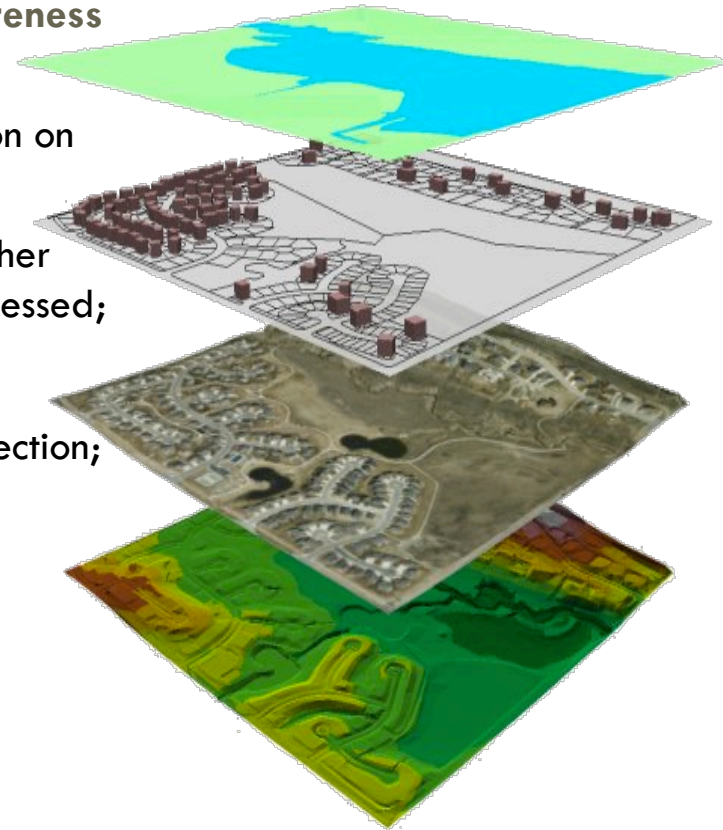
(agriculture, forest, ..) and assess the “**coherence**” in soil protection;

- SEA should properly **assess “land use change”**

(i.e. using multicriteria GIS spatial tools) and consider their

cumulative and synergistic effects;

- Soil resilience
- Soil multifunctionality;
- Soil fertility/productivity;





'SEA as a tool for limiting land consumption' (2/3)

SEA should assess different **alternatives**:

- *Different land use options, and their soil loss (with less or more land consumption, **business as usual**, etc.), assessing the value of preserving soil from urbanization (fertility, location, etc.)*
- *Impact prediction of the preferred option, in alternative scenarios (i.e. pessimistic scenario, optimistic scenario)*

SEA should include **mitigation measures/compensation**:

- *i.e. mitigating soil sealing (best practice, legal requirement, incentives, etc.)*
- *Compensation payments, compensation measures, trading systems, etc. (i.e. Germany eco-accounts)*

SEA at **different levels** of land use planning, should be a **strong link** between theoretical and practical planning:

- *Local level SEA should follow regional SEA*
- *Good (sometimes too general) objectives in regional SEA should be put in practice in local planning SEA (monitoring, etc.)*

Need of **better quality** SEA:

- *Poor quality SEA reflects poor planning (process and content)*
- *Quality SEA helps establish good "land" management*



'SEA as a tool for limiting land consumption' (3/3)



MONITORING Land consumption in SEA

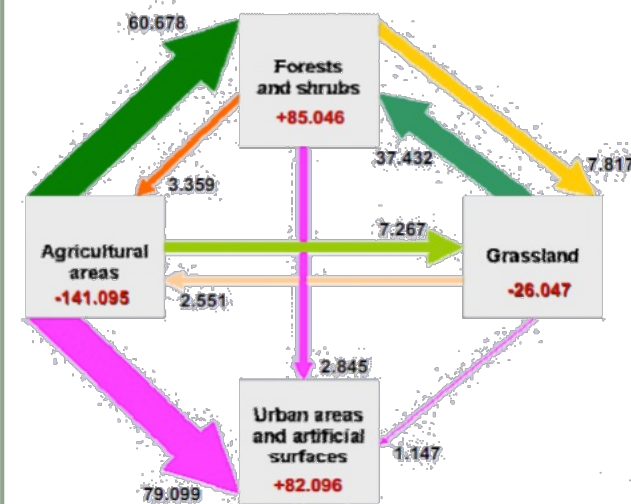
- The availability of data on soil/land consumption is the starting point for any further consideration and assessment on land use policy
- Need of a national framework and **database** on land use (IT territorial systems)
 - (ex. in Italy only local territorial IT systems, and data from Corine Land Cover (1990 2000))
- Compiling the "**the transition matrix**", for interpretation and evaluation

INDICATORS (comparable at local level): data trend, target check, ...

- land use at different times (i.e. every year);
- change of land use (different timeframe);
- land take;
- rapidity of the transformation;
- the incidence of the transformation compared to the original land cover stock;
- ...

Corin Land cover change in Italy, 1990-2000 (ha)

CLC	2000	Forests and shrubs	Grassland	Agricultural areas	Urban areas and artificial surfaces
	1990				
Forests and shrubs		Forests persistence	Agricultural intensivation	Agricultural intensivation	Urbanization
Grassland		Forestation	Grassland persistence	Agricultural intensivation	Urbanization
Agricultural areas		Forestation	Agricultural extensivation	Agricultural persistence	Urbanization
Urban areas and artificial surfaces					Urban persistence





Conclusion

- *SEA has the **potential** to be an **effective tool** for limiting land consumption:*
 - integration of different policies and the right framework to deal with social, economic and environmental issues
 - SEA can strengthen soil protection objectives thereby improving the sustainability of land use planning
- ***Future investigation:***
 - simplified methodology for estimating and assessing land use alternatives and their impact
 - SEA and GIS spatial decision support tools
 - definition of a few appropriate indicators suitable for the monitoring plan

What if these changes are not enough?

- Do we need **new practical tools** in spatial planning?
- Or perhaps, do we need a **new institutional framework**, reforms in the legislative structure and change in land use regulations, with major importance on land consumption? Would the introduction of **legal standards in SEA** ensure soil integrity?
- And finally, is it possible to think of a **next generation SEA** of land use planning, with **soil perceived as the main non-renewable resource**?

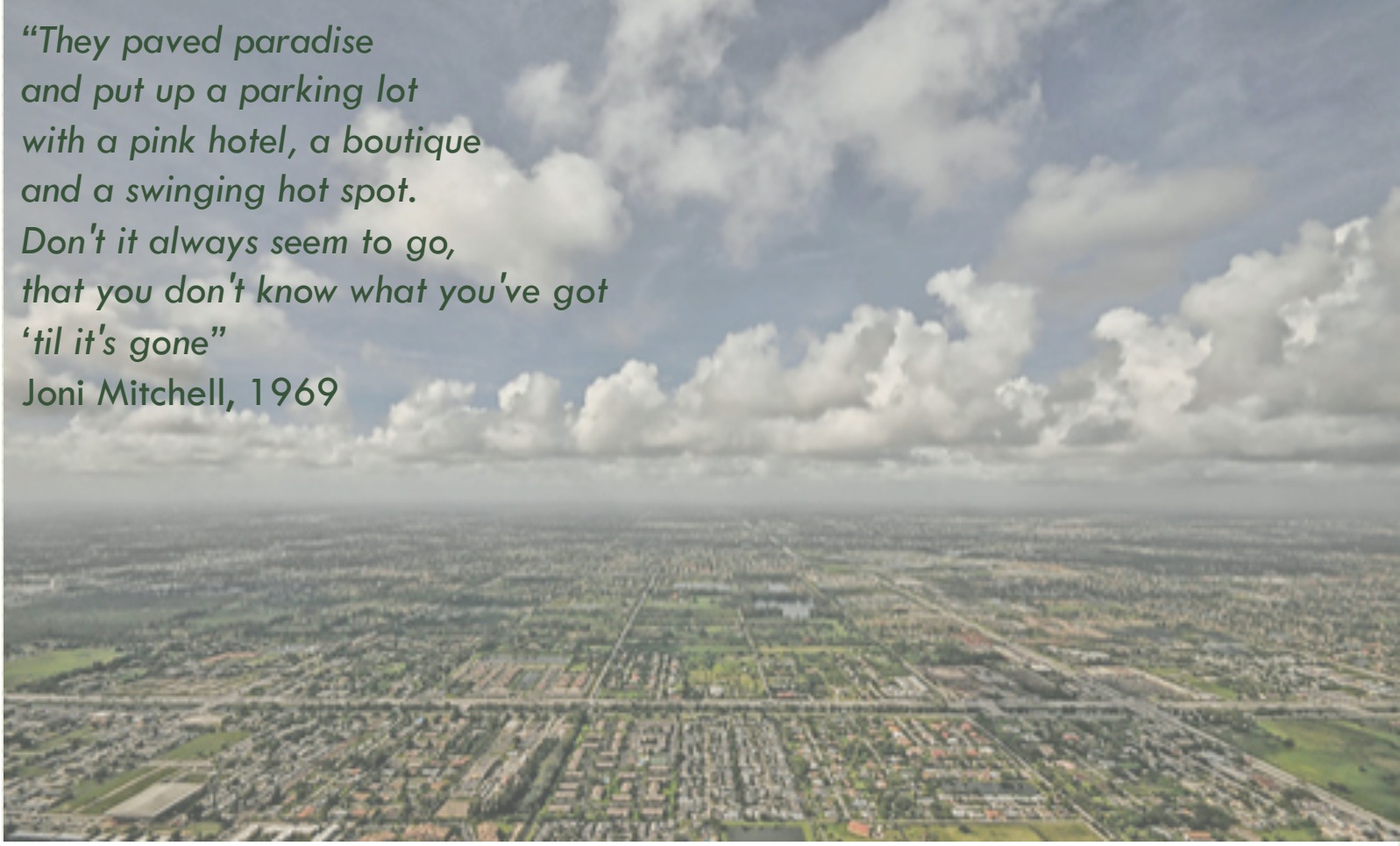


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*“They paved paradise
and put up a parking lot
with a pink hotel, a boutique
and a swinging hot spot.
Don't it always seem to go,
that you don't know what you've got
'til it's gone”*

Joni Mitchell, 1969



Thanks for your attention!

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