



Ecosystem services and benefits of Urban Forests and Green Infrastructure in the urban rural divide

Key words: ecosystem services, soil sealing, land consumption, land cover

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Overview

- ISPRA and the Italian National System for Environmental Protection (SNPA)
- National Report on Land Consumption
- ISPRA-SNPA data on land consumption and ecosystem services in Metropolitan Areas



ISPRA and the Italian National System for Environmental Protection (SNPA)

- Who is **ISPRA**? Acronym of Italian National Institute for Environmental Protection and Research (<http://www.isprambiente.gov.it/it>).
- ISPRA is a research institute that supports the Ministry of the Environment, Land and Sea for environmental monitoring and reporting.
- Coordinates the National System for Environmental Protection (**SNPA**) with 21 regional Agencies.

National Report on Land Consumption

- **National Report 2018 on these main issues:**
 - Land use, land cover, land consumption, soil sealing, spatial distribution
 - Diffusion, dispersion (*urban sprawl*) vs. urban densification
 - Impacts: loss of ecosystem services, fragmentation





National Report on Land Consumption

- Soil-related ES (Carbon Storage and Sequestration, Habitat Quality, Crop Production, Timber Production, Pollination, Microclimate Regulation, Particulate and Ozone Removal, Erosion Protection, Freshwater, Water Infiltration, Water Purification).
- These ES are represented as:
 - **Annual service Flow** that the land will no longer be able to provide.
 - **Stock of natural capital lost** due to land consumption. The stock values are provided only for these ES: carbon storage and sequestration services, crop production and timber production.



National Report on Land Consumption

	MINIMUM VALUE [€/YEAR]	MAXIMUM VALUE [€/YEAR]
Carbon Storage and Sequestration	102.056	538.898
Habitat Quality	11.615.539	11.615.539
Crop Production	61.796.023	61.796.023
Timber Production	26.945.760	26.945.760
Pollination	4.109.804	5.487.373
Microclimate Regulation	2.251.732	9.006.928
Particulate and Ozone Removal	950.980	2.938.569
Erosion Protection	10.521.848	112.385.949
Freshwater	1.977.636	47.463.254
Water Infiltration	1.535.630.715	1.789.521.660
Water Purification	226.033	60.297.780
Total	1.656.128.126	2.127.997.732

Table 1

	MINIMUM VALUE [€]	MAXIMUM VALUE [€]
Carbon Storage and Sequestration	35.549.433	187.716.460
Crop Production	857.063.550	857.063.550
Timber Production	21.847.012	21.847.012
Total	914.459.995	1.066.627.022

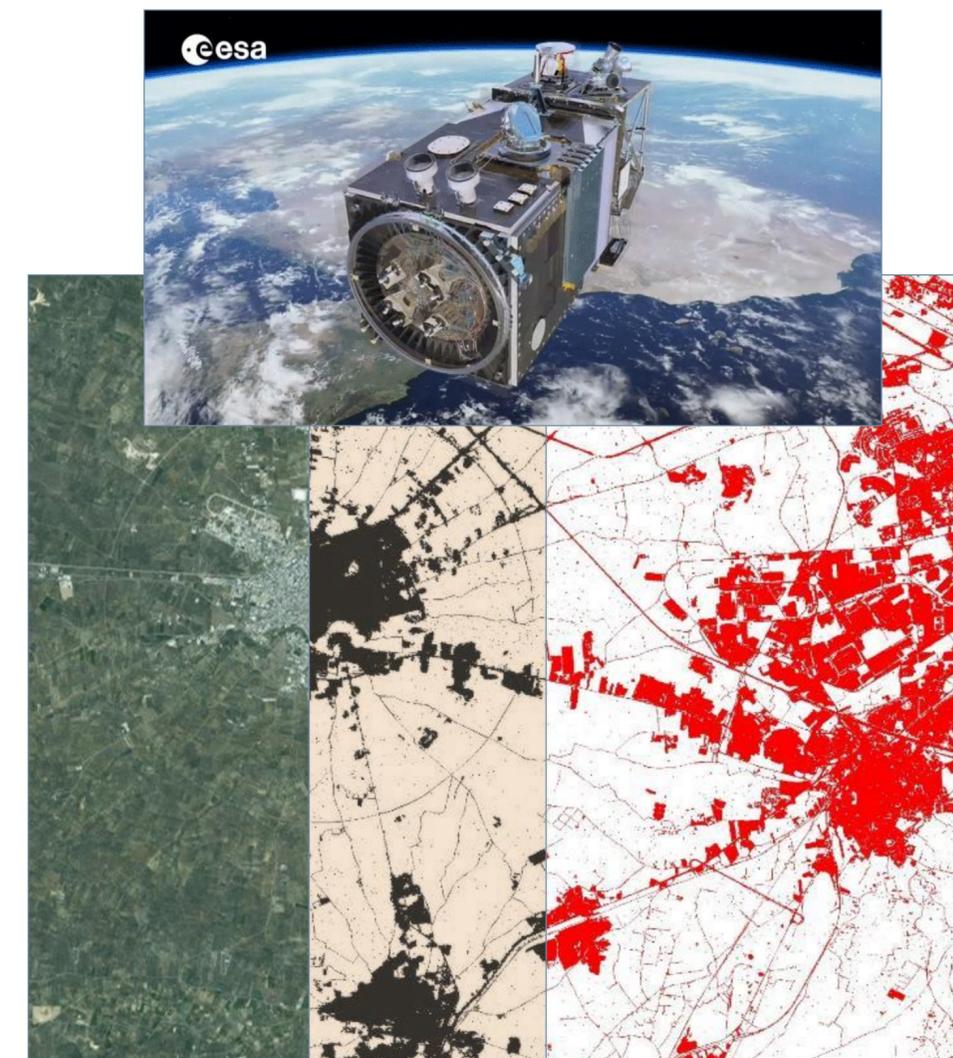
Table 2

Table 1 shows the maximum and minimum values of the **flow** of services calculated for the eleven ecosystem services considered.

Table 2 shows the natural resource **stock** values from which some services originate, that is the part of the natural capital whose loss is produced by the consumption of land during the period considered.

National Report on Land Consumption

- The analysis is based on changes in land consumption revealed by:
 - the National map of land consumption improved by ISPRA
 - integrated with Copernicus High Resolution Layers (HRL)
 - and the Corine Land Cover (CLC).
- Biophysical and economic assessment of services variations produced by soil consumption is performed using:
 - GIS based models,
 - InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs)
 - or other available methodologies.



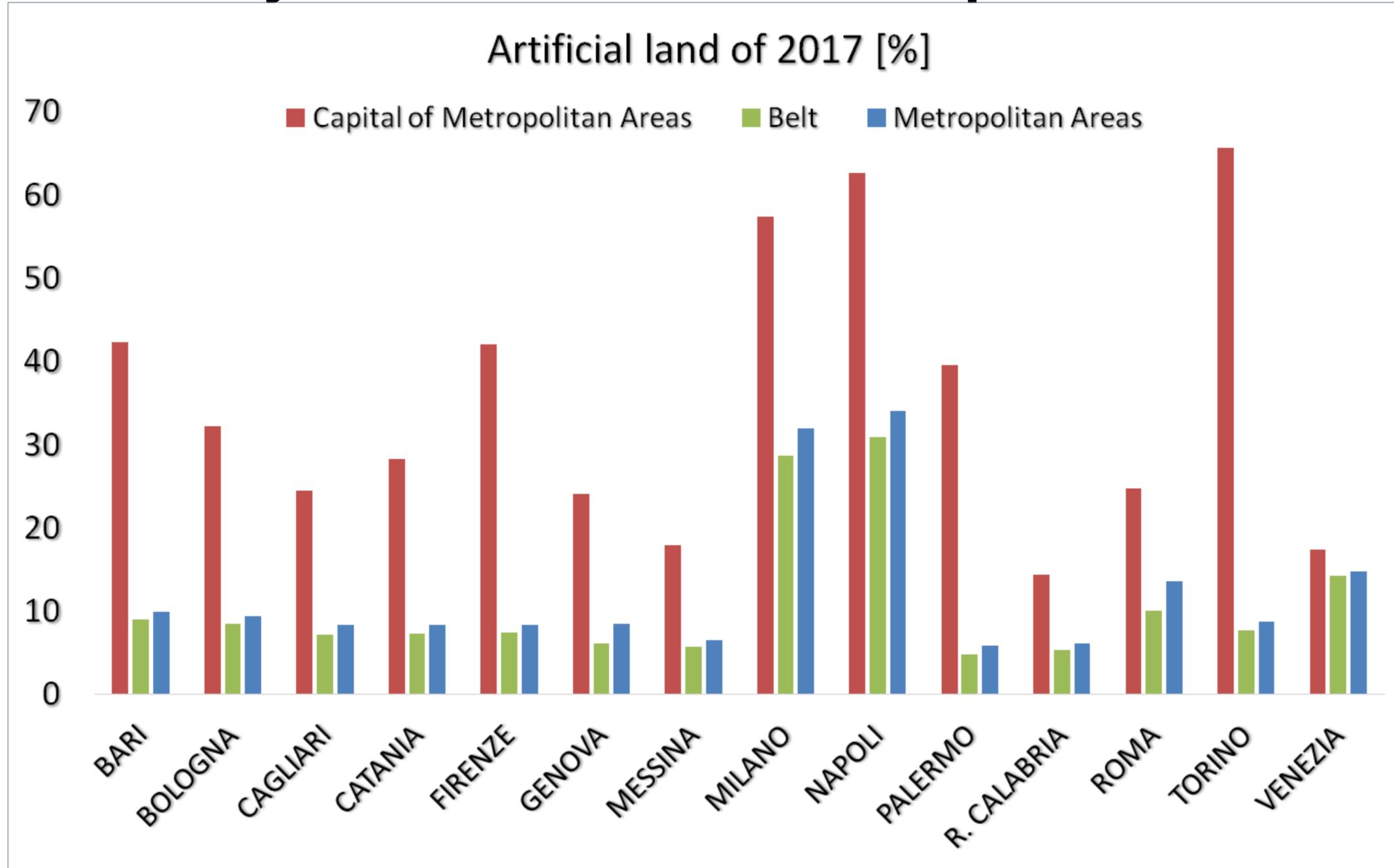


ISPRA-SNPA data on Land consumption and Ecosystem Services in Metropolitan Areas

- **LAND CONSUMPTION (% 2017 and 2016-17 variation)**
- **GREEN INFRASTRUCTURES (urban, rural, natural)**
- **ECOSYSTEM SERVICES LOSS**

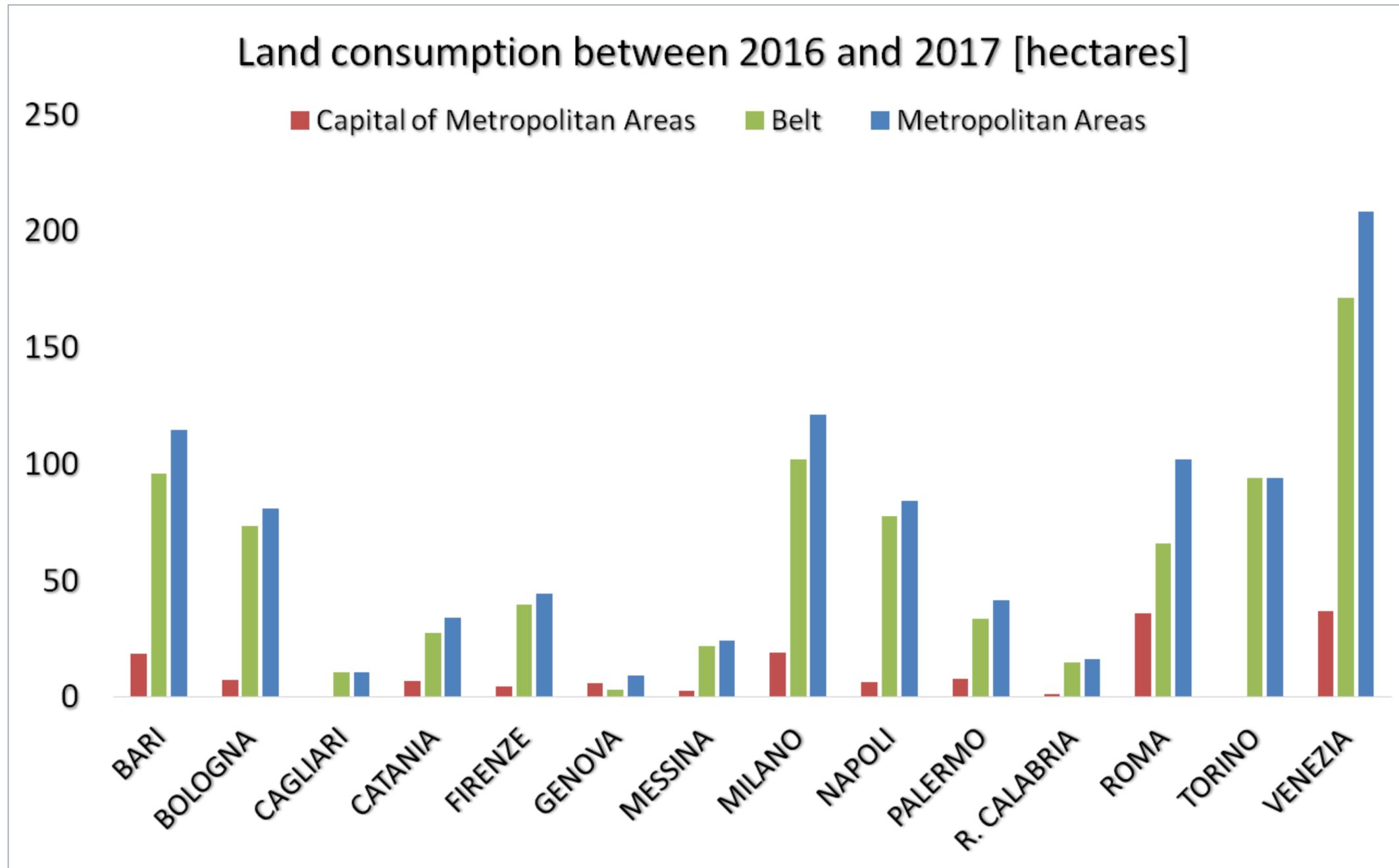


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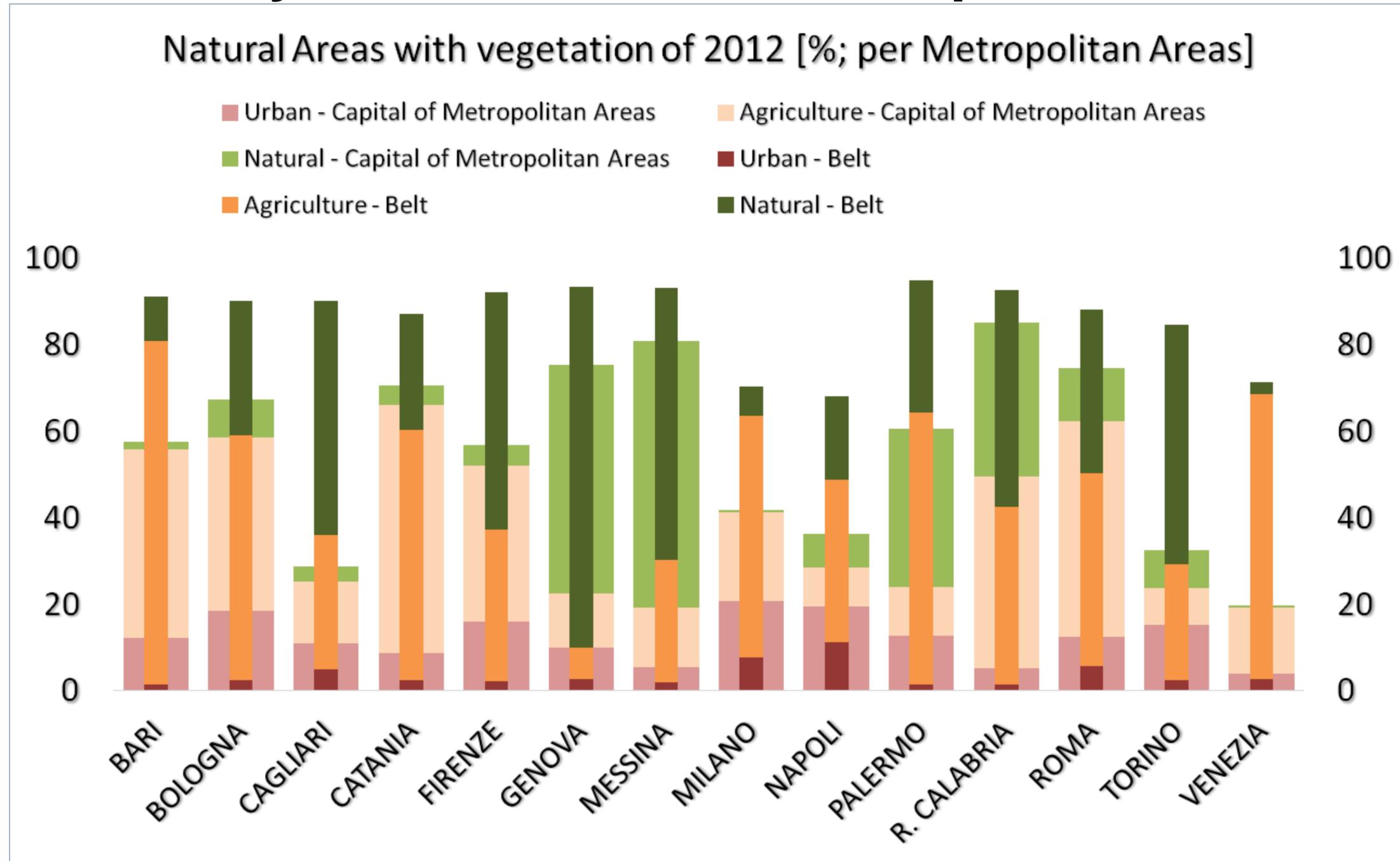


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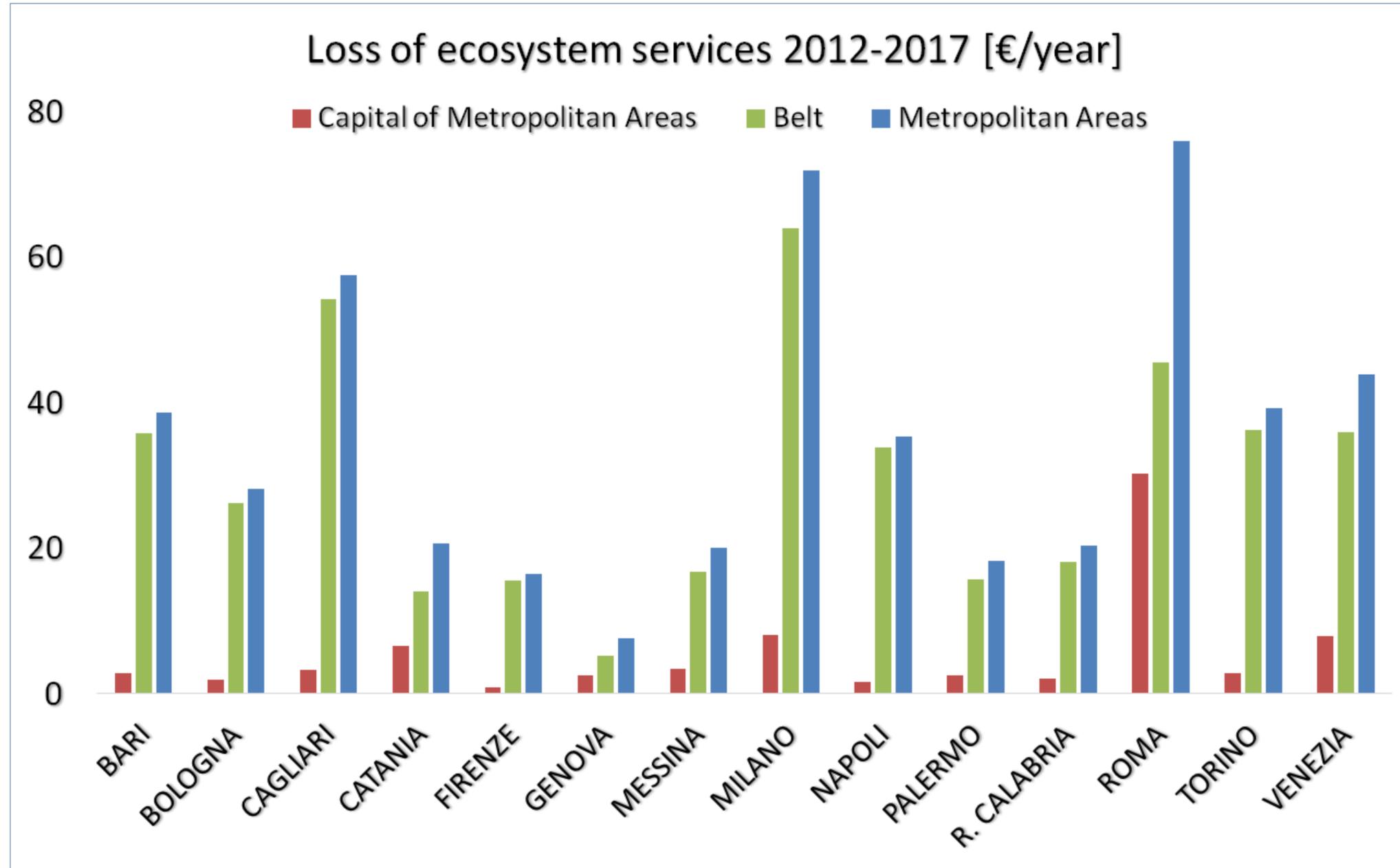


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ISPRA-SNPA data on Land consumption and Ecosystem Services in Metropolitan Areas





Conclusions

- **Land Consumption**

- **Green Infrastructure**



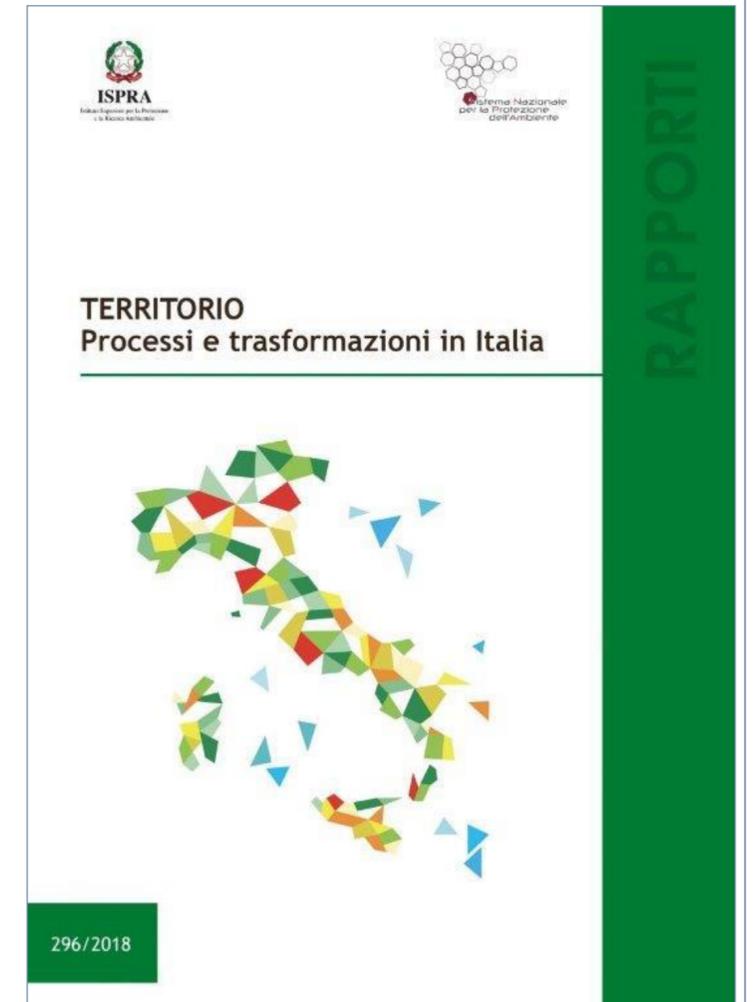
Conclusions

- Work in progress for the 2019 National report.
All data will be published on ISPRA's web-site

(<http://www.isprambiente.gov.it/it>)



- On december the 11th the presentation of the “Territory Report” about processes and modifications of Italian territory will be held in Rome



Thank you for your attention!

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