**Ecopolis: what does a post-growth city may look like?**

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**Abstract**

Building on the one side on the last-century alternative proposals to the dominant metropolitan paradigm and on the other side on the critique to the city deriving from the pursuit of economic growth at all costs, the novel model of Ecopolis as a vision and a territorial unit is presented for debate within the emerging stream of post-growth urbanism. Some systems thinking notions add up to social science ones in order to envision common possible features of such a model, pursuing strong ecological sustainability, resilience, and socio-political self-determination by also re-internalising stocks and flows that are currently delocated at the planetary level.

**Keywords:** post-metropolitanism; spatial metabolism; strong sustainability

1. **Introduction: how to define a post-growth city?**

Scientific and policy discourses have been increasing in the past half of a decade around post-growth societies and post-growth cities. It is well beyond the scope of this contribution to present them all - especially in an academic context where dozens and dozens of contributions are expected around “Post-growth Urbanism”. Here, we limit to present some basic understanding of what a post-growth city may be: building on the degrowth literature, it could be defined as a human settlement that breaks free from the narrative of economic growth come hell or high water, and from the resulting pursuit of unequal capitalist accumulation and of profit over societal wellbeing. More generally speaking, it refers to a human settlement that prepares itself to unavoidably and dramatically changing conditions this 21st century poses in front of all of us, with collectively planned preparation being preferable than authoritarian last-minute impositions. In a world where the mainstream ideology is so pervasive that it looks neutral, this is meant to investigate possible futures for the very survival of humanity. Hard sciences teach us that systems on this limited planet cannot grow endlessly (Meadows *et al*., 1972), and that they rather pulse at all scales (Odum *et al.*, 1995). Social sciences and the humanities help us understand e.g. the socio-economic and cultural implications of the resulting unjust patterns that a system trying to escape geobiophysical limits can yield at all time scales.

**2. The post-growth city is not a reality but a hope, maybe a perspective**

The contemporary “metropolis” is a recent construct that imposed itself in the early twentieth century, with the explosion of the Fordist economy. Its symbolic date of birth is when the “metropolitanism” of the great growth of New York, historically defeated the “regionalism” promoted by the Regional Planning Association of America (RPAA) (Wesley, 2008). In 1961, the geographer Jean Gottmann was the author of a book that exalted that cluster of metropolises that gave shape to the great conurbation of the eastern coast of the United States and that he called Megalopolis (Gottmann, 1961). Only 15 years later, however, he had to acknowledge its gigantic negative impact (environmental and social). Starting from the 70s and 80s of the twentieth century, the entire outcome of the process of urban evolution of modernity began to be not only reread and reinterpreted but also radically rethought, starting from the reflections by David Harvey (1973), Henry Lefebvre (1973), Manuel Castells (1974), on the urban question, up to the global cities of Saskia Sassen (1991). Since the 2000s, a literature of urban and regional studies has developed that proposes a critical interpretation of urban transformations, which derives from Edward Soja's reflections on Postmetropolis (Soja, 2000), later refined and extended to the global dimension and condition by Neil Brenner and Christian Schmid (2012), with the interpretation of Planetary Urbanisation. Both see, in a sort of “regional urbanisation”, the new frontiers of postmetropolitanism (Soja, 2011; Brenner & Schmid, 2014a, 2014b).

However, important international agencies predict that 70% of the world's population will live in cities by 2050 (today the same percentage is 57%)[[1]](#footnote-0). This means that, with the world population now being approximately 8.2 billion people (2024), of the 9.7 billion expected by 2050, 6.8 should live in cities, with an increase of over 30% compared to the current 4.6 billion city inhabitants. In other words, international public agencies predict an abnormal growth in the population of cities, but instead of countering the phenomenon, the great world economic powers are fanning the flames (see World Economic Forum[[2]](#footnote-1)) as if this were the most desirable of scenarios. Therefore, according to these scenarios, which are more intentional than natural in truth, a good 2.2 billion people will go to live in cities in the next 25 years or so! Since this figure exceeds the entire increase in world population expected in the same period, it must be assumed that this flow will also largely consist of new immigrants from rural or low-urbanisation areas. The negative aspect of this phenomenon is clearly twofold: on the one hand, rural areas and small towns are abandoned which, thanks to human presence, provide ecosystem services that are fundamental to life (food, water, CO2 capture, etc.). On the other hand, it generates housing pressure and a great demand for services and infrastructures in cities, which, at the very least, will lead to further land consumption equal to at least 40% more than that already used. This negative figure will also increase those already known: in fact, large cities (with more than one million inhabitants), concentrating 25-30% of total population, consume 70% of global energy and produce, more or less, the same percentage of energy-related CO2 emissions (Wei *et al.*, 2021).

The question therefore is: will cities continue to grow even more, approximating the tragic prophecy of Lewis Mumford who equated “metropolis” to “necropolis” (Mumford, 1940), or is it the time to change direction? In the presence of these levels of dissipation, can we still speak of a post-growth city as a desirable city? Evidently not as an existing fact: a post-growth city clearly does not exist – at least, not yet. The expression, if anything, can be used to identify, in a *destruens* fashion, a radical critique (in continuity with the lines of thought mentioned above) of the current city and the forces that push for its growth, and, in a *construens* way, some sort of preparation (or a prepared transition) towards the next phase: in the words of Odum and Odum’s (2006; 2008), some “soft landing” instead of a crash while facing what we would now call the passing of the planetary boundaries (Steffen *et al.*, 2015) and the thus induced tipping points (Lenton *et al.*, 2019). Therefore, the post-growth city is not a fact or even a natural tendency but an alternative scenario to the processes in progress and that must be forcefully pursued if we want to guarantee life on the planet. For urban planners it can certainly be a plausible scenario but it must also become an operational model. We will delve into the issue in the next two chapters.

**3. Urban scenarios in Europe**

Espon, the European agency for territorial studies, with a series of studies conducted in the second decade of the 2000s (2012, 2015, 2017, 2019), proposes three scenarios of which one, that of Ecopolis, can be better representative of the post-metropolitan transition and, perhaps, of the post-growth city:

• Scenario A is that of the “Europe of Flows/Metapolis”: it is characterised by the trends of financial globalisation and markets of goods, people and information, on a planetary scale. The large international transport networks are its framework. The major European cities are important nodes in this scenario.

• Scenario B is that of the “Europe of Cities/Metropoleis”: it is made up of the major European cities which are attractive to people and activities. They are strengthened above all through flows and migrations of various types, even from small cities and internal European areas.

• Scenario C is that of the “Europe of Regions/Ecopoleis”: it is made up of medium-small sized cities that, rather than attracting, try to retain inhabitants thanks to the economic, cultural and environmental quality of their territories, factors from which new activities can also be generated.

Metropolis and Metapolis certainly represent strong trends whose inertia will persist in the future and for a long time, but they are, as mentioned above, “dissipative” trends and, after the numerous crises of recent years, also less propulsive and, therefore, also less desirable (postmetropolis) than in the past. Ecopolis is the scenario that remains in play. Can it also be considered a post-growth city? Maybe it can, because it relies on (and defends) its own resources, upon which ecosystems (including human societies) can flourish, oscillate, *pulse*, just like all systems (Odum *et al.*, 1995), without growing endlessly based on external appropriation and internal inequity

If Ecopolis is a post-growth city scenario, we must try to understand how much it is already present and operating in the European territory and how to spread it further (Fabbro, 2024). But, to do this, it is necessary to well identify its structure, form and functions. In one word, to represent it as a model.

**4. Possible parameters of Ecopolis**

Ecopolis is an intentional and probably desirable scenario but it is also necessary to arrive at the definition of an operational model of Ecopolis if we want to feed and direct local and regional strategies. The premises of the model are found in three “progenitors” of Ecopolis[[3]](#footnote-2): the Garden City by E. Howard, from which Ecopolis takes inspiration for its moderate urban size and its urban polycentric structure immersed in a vast rural context (the “green belt”); the Regional City by C. Stein, from which Ecopolis can get inspiration for a new cooperation between a polycentric and decentralised urban setting and its environmental context. The Bioregion, which may represent the socio-ecological basis of Ecopolis.

Looking for a common denominator between the three progenitors we arrive at defining the fundamental parameters of Ecopoli which are:

- an urbanised surface that is a minority compared to the surface of the entire reference area (less than 15%), which, including vast natural and semi-natural areas, must be large enough to allow a “self-contained” metabolic interaction;

- an evident but not excessive urban system and in any case articulated in a certain polycentrism where the dominance of the main center is in any case low;

- human protection of the fundamental ecosystem services (those that allow life on earth), rather widespread in the region so as to preserve the quality and effectiveness of such services;

- a stable or not too negative population dynamic;

- “sustainable” mobility of people and goods;

- control of the flows of people, goods, materials, water etc. in such a way as to avoid the impoverishment of some territories to enrich others;

- a planning of land uses consistent with these general parameters.

From the point of view of the dimensions in play, we can refer to the parameters of the Regional City elaborated by Clarence Stein (a prestigious member of the RPAA) in the fifties. According to that model, the "Regional Ecopolis" could have one million residents divided into thirty smaller centers of size ranging from 5,000 inhabitants of the smaller nuclei to a maximum of 100 thousand inhabitants for the larger centers and with a total surface of around 2,500 km2 (50 x 50 km) and a density of a maximum of 400 inhab./km2 (the same density, in Europe, is currently about 75 inhab./km2).

Using the parameters mentioned above, an application exercise was done with reference to the Italian context (Fabbro, 2024). With some approximation (especially regarding the size of the population in play), we tried to see how many of the Italian "provinces" are compatible with the parametric model of Ecopolis. The research highlighted that 73 out of 93 Italian provinces (equal to 46% of the total population and 70% of the territorial surface), belong to the ecopolitan performance classes A (high) and B (medium). The rest are Class C (low) provinces (14% of the population and 18% of the land area) and “metropolitan cities” (15% of the population and 36% of the country’s land area).

The research led to the conclusion that most of the Italian territory, despite everything, retains unchanged certain structural characteristics that we can call “ecopolitan”.

It must be said, however, to avoid misunderstandings, that these structural characteristics do not correspond to either a subjective recognition of the ecopolitan potential or, even less so, a national and regional policy in some way compliant with these characteristics. But not even urban planners seem to realise this, focused as they are on inevitably metropolitan values ​​and scenarios and on a planning that essentially concerns the allocation of physical stocks in cities ("*urbs*").

On the basis of the theoretical parameters and the empirical verification conducted in the Italian territory, it can be said that the aforementioned parameters give structure and form to an operational model of Ecopolis where:

- Urban centers "associate" in clusters and these in larger regional "communities" (according to a revised principle of the "synoecism" inherited from the historical urban network) and where urbanisation remains a minimal percentage of the entire system.

- The non-urbanised area has its own recognizable structure (river basins, ecological networks, areas of high naturalistic value, agricultural cultivations, etc.) which constitutes the reference Bioregion and which must be brought out and made stable.

- The main mobility (internal and connecting with other Ecopoleis) is essentially electric or slow and occurs mainly on road and rail networks and on water channels that connect the main centers but also the secondary ones.

The planning of the ecopolitan system is based, in the first instance, on the constrained destination of land uses that aim to conserve or restore the fundamental components of these "ecopolitan systems" (the so-called "structural invariants"). We call this planning of "structural type". But the attribution of a constrained destination to some uses of the soils is not yet able to manage their metabolic flows (existing and potential) of water, food, energy, carbon dioxide, raw materials, waste, information, decisions, etc.. The ecopolitan system, with respect to these flows, must assume a goal of self-containment at least of negative externalities. We call this metabolic planning. It has to accompany land use planning. To this type of planning we dedicate, in the next paragraph, some in-depth analysis.

**5. Metabolic planning and Ecopolis’ self-containment**

Post-growth ecopolitan planning necessarily starts and learns from the limits to growth (Meadows *et al.*, 1972). To do this, it borrows from biological systems the concept of metabolism. The metabolism of a human settlement (Gandy, 2004; Kennedy *et al.*, 2011) focuses on inflows and outflows. In the model at hand, we seek the harmonisation of such flows, to re-internalise crucial resources, and to shift from a consumer system (a growing city as we know it) to a producing and consuming one, so as to lessen the dependence upon external inputs, often related to delicate global equilibria and supply chains, and - above all - limited on a limited planet. Crucial resources, on which life relies, are therefore self-contained in the ecopolitan system, of course allowing for oscillations based on availability and need, on top of resilient-seeking diversification of the supplies. Based on the conditions for strong sustainability (Daly, 1990), the uptake of local renewable resources ought to be no larger than their regeneration rate; the release of waste and pollutants should not exceed their absorption rate by local ecosystems; and the use of nonrenewable resources ought to be zero. This can be applied to both the inflows and the outflows of a post-growth ecopolitan system. In addition to flows, a system is also composed of stocks, where resources (e.g. fertile soil, forests, lakes, lagoons, etc.) are - indeed - stocked. As proposed (Cristiano, 2024), we may follow the example of a lake, naturally or artificially allowing for water to be contained when it is too much or too scarce: stocks help to mitigate downhill the effects of the oscillations uphill. If strong sustainability and resilience are pursued in a new post-growth era, stocks ought to dedicate increasing attention based on the centrality of their resources related to the metabolism of the ecopolitan system at issue (and that role should take into consideration the changing availability of resources and technologies in the medium-long run, not just the “business-as-usual” deriving from the habits developed in times of abundance) (*ibid*.). Again, following natural ecosystems, entropy should be taken in consideration, both for its imposing a limit to human activities (and making it impossible to think really “circular”, as some recent mainstream policies would makes us think we can, while defending pro-growth profit-seeking measures to leave the status quo), addressing a lower speed instead (Cristiano, 2024; Cristiano *et al*., 2020). Of course every local context has its own peculiarities, and it is out of our intention to draw general conclusions and to make general proposals. As a trend, though, we offer here some possible examples, among others: some tendency to relocalise production (Krähmer & Cristiano, 2022) and to close the ecological circles (Commoner, 1971). This may result in the following actions (Cristiano, 2024): a. supply diversification, with some relocalisation of part of the required resources, especially the livelihoods (e.g. water, food, energy, and more, based on local needs), while avoiding autharchical drifts, which would also undermine local/regional resilience; b. defense and encouragement of the flourishing of local ecosystems, so as to better self-contain the local main flows, and to use such “natural heritage” also to adapt and to mitigate climate change; c. inspired on the aforementioned lakes, creation of “stocks” to mitigate the multiple uncertainties that are expected in this century in the provision of key resources, but also in terms of flexibility in the present and future use of the local landscapes.

**6. Conclusion**

Ecopolis is not a city to be built *ex novo*. Ecopolis is a city that already exists in the folds of the existing “planetary urbanisation”. It is, however, a city that does not recognise itself as a real post-growth alternative and that, consequently, does not pursue the intention of “proclaiming” itself as an alternative to the dissipative Metropolis. Ecopolis potentially exists in 70% of the Italian territory and, probably, in a percentage not so different also in the rest of the European territory. What it lacks is a positive narrative of itself as well as the recognition that it represents one of the possible scenarios of the post-growth city.

Of course, it is not enough to recognise it as such or simply limit ourselves to preserving its main parameters (even if this is a categorical task to be achieved with structural compulsory planning methods). It will also be essential to proceed with its characterisation from the point of view of its metabolic flows. To this end, a metabolic, self-containing planning, of the ecopolitan systems will have to be defined and developed.

**References**

Brenner N., Schmid C. (2012), *Planetary urbanization*, in Gandy M. (ed.), *Urban constellations*, Jovis, Berlin, pp. 10-13.

Id. (2014a), *The ‘urban age’ in question*, in “International journal of urban and regional research”, 38(3), pp. 731-755.

Id. (2014b), *Planetary urbanization*, in Brenner N. (ed.) *Implosions/explosion: towards a study of planetary urbanization*, Jovis, Berlin.

Id. (2015), *Towards a new epistemology of the urban?*, in “City”, 19(2-3), pp. 151-182.

Brenner N. (2018), *Debating planetary urbanization: for an engaged pluralism,* in “Environment and Planning d: society and space”, 36(3) pp. 570–590.

Castells M. (1974), *La questione urbana*, Marsilio, Venezia.

Commoner b. (1970), The closing circle: man, technology, nature, Ridgeway.

Cristiano S., Zucaro A., Liu G., Ulgiati S., Gonella F. (2020), On the systemic features of urban systems. A look at material flows and cultural dimensions to address post-growth resilience and sustainability, in “Frontiers in sustainable cities”, 2, 12.

Cristiano S. (2024), Il modello funzionale del sistema ecopolitano, in Fabbro S (2024).

Daly H.E. (1972), Sustainable development: from concept and theory to operational principles, in “Population and development review”, 16, 25-43.

Espon (2012), *2050 territorial scenarios and visions for europe. Project* 2013/1/19. Interim report 31/05/2012. Revision | 12/10/2012.

Id. (2015), *Territorial scenarios for Europe. Working paper. Annex to the Espon policy brief “territorial scenarios for europe towards 2050”*.

Id. (2017), *Inner peripheries: national territories facing challenges of access to basic services of general intere*st.

Id. (2019), *Urban-rural connectivity in non-metropolitan regions* (URRUC), final report.

Fabbro S. (2024), *Postmetropoli e sistemi ecopolitani*, Carocci, Rome.

Gendy M. (2004), *Rethinking urban metabolism: water, space and the modern,* in “City”, 8, 3, 363-379.

Gottmann J. (1961), *Megalopolis. The urbanised northeastern seabord of the United States*, The twentieth century fund, New York (*Italian translation:* 1970, *megalopoli. Funzioni e relazioni di una pluri-città*, 2 voll., Einaudi, Torino).

Harvey D. (1973), *Social justice and the city*, University of Georgia press, Athens, GA.

Kennedy C., Pincetl S., Bunje P. (2011), *The study of urban metabolism and its applications to urban planning and design. Environmental pollution*, *159* (8-9), 1965-1973.

Krähmer K., Cristiano S. (2022), *Città oltre la crescita. Un dibattito internazionale per trasformazioni urbane ecologiche e sociali*, Castelvecchi editore, Rome.

Lenton T.M., Rockström J., Gaffney O., Rahmstorf S., Richardson K., Steffen W., Schellnuhber H.J. (2019), Climate tipping points — too risky to bet against, in “Nature”, *575*(7784), 592-595.

Lefebvre H. (1973), *La rivoluzione urbana*, Armando, Rome.

Meadows D.H., Meadows, D.L., Randers, J., Behrens W.W., *The limits to growth,* Universe books, New York.

Odum H.T., Odum E.C. (2006), The prosperous way down, in “Energy”, 31(1), 21-32.

Id. (2008), A prosperous way down: principles and policies, University Press of Colorado, Denver, CO.

Odum W.E., Odum, E.P., Odum, H.T. (1995), Nature’s pulsing paradigm, in “Estuaries”, 18, 547-555.

Sassen S. (1991), *The global city. New York, London, Tokyo*, Princeton University Press, Princeton, NJ.

Soja E. (2000), *Postmetropolis: critical studies of cities and regions*, Blackwell, Cambridge, MA.

Id. (2011), *Regional urbanization and the end of the metropolis era*, in Bridge, G., Watson, S. (eds.), *The New Blackwell Companion to the City*, Wiley-Blackwell, Oxford, pp. 679-689.

Steffen W., Richardson K., Rockström J., Cornell S.E., Fetzer I., Bennet E.M., Sörlin S. (2015), Planetary Boundaries: Guiding Human Development on a Changing Planet*,* in “Science”, 347(6223), 1259855.

wei t., Wu J., Chen S. (2021), *keeping track of greenhouse gas emission reduction progress and targets in 167 cities worldwide*, in “Frontiers in sustainable cities”, 3, 696381.

Wesley J. (2008), *Regional divide: the Regional Planning Association of America and the regional plan of New York and its environs* (July 2008), AESOP-ACSP Joint Congress, Chicago, IL.

1. World Population Prospects 2024,published by the Department of Economic and Social Affair of the United Nations(UN DESA). [↑](#footnote-ref-0)
2. The WEF Open Forum “The Evolution of Urban Life,” took place in January 2023 in Davos, Switzerland, as part of the WEF Annual Meeting 2023. [↑](#footnote-ref-1)
3. See C. Faraone in Fabbro (2024). [↑](#footnote-ref-2)