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Filling the old with new life. Application of original indicators for evaluating ecovillages as village repopulation initiatives

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Abstract. The recently intensified trend of centripetal movements from small to bigger centres has multiplied the number of inhabitants of large cities. In Italy, this has resulted in worrying figures: more than 70% of Italian Municipalities have less than 5,000 inhabitants. Despite several regional and national policies dedicating programs and funds to counteract this progressive phenomenon fostering the repopulation of abandoned villages, this trend is far from being halted. Though the functional gap between cities and villages is evident, this study and previous research on this theme aim to change the perspective on the possible uses and repopulation processes of villages, pivoting on their potential as places where to enjoy different lifestyles. The focus is on the ecovillage model, developing a set of specific indicators to individuate them through their peculiar aspects and assess their benefits and vulnerabilities. An experimental application is also proposed on 7 ecovillages. This set of indicators is not conceived as completely substitutive of those used in current policies, but rather as a suggestion of possible integrations to avoid demoting this category of villages in policy-related evaluations for funding allocation.

Keywords: indicators, inner areas, ecovillage.
JEL codes: I31, P25.

1. INTRODUCTION

In Europe, Italy has the most significant percentage of "small towns" or villages, also known as *borghi*. Italian Law 158/2017 defines a small town (*piccolo comune* in Italian legislation) as any municipality with less than 5,000 residents. These villages make up a remarkable 69.85% of all Italian municipalities, housing 17% of the population, that is, nearly 10 million residents. One more inhomogeneity is associated with the relevant presence of cultural heritage and museums within them: despite their small size, 31.1% of cultural artifacts and 32.8% of museums are located there (Rossitti and Torrieri, 2022a). This is naturally related to the stratified and articulated history of Italian regions and areas, with each of these villages having much more relevance in the overall context in the past.

Since the early 1900s, a large-scale migration has occurred from these villages to larger cities. Many villages are at risk of abandonment, with a growing average age and only 15.7% of residents under 40 (Rossitti and Torrieri, 2022b).

This depopulation puts a strain on both the villages and the larger cities struggling with overcrowding. For these reasons, these issues have placed an accent on the need to reverse this trend, by allocating funds and triggering individual and collective actions (Acampa and Parisi, 2021). However, impacting on these dynamics can be inspired by different goals and thus be structured in different ways. On the one hand, focusing on the material aspects of a village, that is, its architectural and cultural heritage, and its reconstruction may end up prioritizing tourism (Acampa et al., 2020) rather than the recovery of a collective identity, which follows different and more articulate processes.

Most of the initiatives launched by local and national administrations are noticeably more oriented in this direction:

- The 1 Euro Houses Project, a program that allows people to buy houses in some villages, most of them at risk of abandonment and in a poor economic state, for just 1 euro, provided they renovate the property and potentially start a local business. While initially popular, unofficial reports suggest it may not be as successful as hoped;
- The National Strategy for Inner Areas (NSIA), a wide program that aims to support development in rural areas in the overall Italian territory, was launched in 2013 by the Agency for Territorial Cohesion and focuses on the so-called Inner Areas, marked by higher levels of depopulation and lower economic levels (Rossitti et al., 2021);
- The National Recovery and Resilience Plan (NRRP), launched in 2021, consists of a wider set of actions and structural interventions to support Italy's post-pandemic relaunch. One of its sections, the National Plan for Villages (*Piano Nazionale Borghi*), is specifically dedicated to funding small villages (Germano and Lizzi, 2024).

On the other hand, some initiatives are driven by different principles, that is, to reconstruct a new identity beyond or regardless of the initial material heritage of the villages. These are often started by residents, former residents, or stakeholders who want to preserve their villages' identity and way of life. In some cases, a different and recurring typology of initiatives emerges. This alternative kind of initiative is based on the discovery and valorisation of new lifestyles in villages, rooted in the values that they can realize and are more difficult to find in cities. Spirituality and community cohesion play a bigger role in this: smaller, isolated places immersed in nature are an advantageous opportunity to rediscover a new paradigm of life, which can complement the typical values of urban contexts. In particular, this refers to ecovillages, a recurring repopulation model that is now spread in Europe in and beyond historical villages. In previous stages of this research, this model has been defined and codified, and indicators were developed to identify them among village repopulation initiatives through a score-based methodology and assess their benefits for residents and for the wider regional territory where they are located as well as their vulnerabilities. In this paper, the set of indicators is integrated with additional categories rooted in the concepts of social generativity and psychological well-being, which can help understand the manifold dimensions to be encompassed to perform a correct evaluation of these contexts.

Finally, the indicators are applied to 7 ecovillages to demonstrate their use and assess the procedural difficulties within their implementation.

2. MATERIALS AND METHODS

2.1. Literature review on ecovillages and village regeneration

An ecovillage can be defined as "an intentional community with a manifold approach to economic, environmental, and social sustainability" (Losardo, 2016). They are small settlements pursuing several dimensions of sustainability, attempting a more "human" lifestyle, thus often encompassing transversal values, such as spirituality, above all. When newly founded, their establishment and development follow a typical and characteristic process: after the acquisition and purchase of an uninhabited or scarcely habited location by an intentional community, which settles there, self-construction and self-production are employed to achieve self-sufficiency and self-sustainability; together with the autonomous reconstruction of uninhabitable households, this new lifestyle produces new attractiveness, which leads to forms of one-day tourism and small-scale hospitality, enhanced by the organization of cultural, spiritual, and educational activities.

The literature review on ecovillages focused on:

- determining the state of the art regarding the awareness of their diffusion in the national and international scene;
- exploring the formulation of indicators for the regeneration of villages and the employed methodologies;

– verifying the presence of specific indicators for ecovillages and their purposes.

For this reason, the following search queries have been performed on the Scopus platform:

– Search 1 – "ecovillage," 143 results;
– Search 2 – "village" AND "regeneration" AND "indicators," 22 results (11 excluded);
– Search 3 – "village repopulation," 19 results (4 excluded);
– Search 4 – "ecovillage" AND "indicators," 9 results (1 excluded).

Analysing the keywords employed in the 143 results from the first search provided an overview of the most discussed themes regarding ecovillages. In particular, except for "ecovillages" (used 54 times), "ecovillage" (used 26 times), and "ecovillage" (used 10 times), the top 5 keywords by the number of uses are "sustainability" (35 times), "sustainable development" (24 times), "intentional communities" (13 times), "ethnography" (9 times), and "social movements" (8 times). The first two keywords show a strong emphasis on the opportunity for sustainability arising from these contexts. Some recent articles (Nogueira et al., 2024) describe them as laboratories for social innovation, leading to sustainable development (Sherry, 2019), proving their contribution to the fulfilment of Sustainable Development Goals (de Souza et al., 2023). Socio-pedagogical aspects also appear in other works (Cisek and Jaglarz, 2021; Papenfuss et al., 2019), along with a focus on the benefits of these contexts for several other aspects, such as experiencing nature (Brombin, 2019) and the development of collective identity (Ulug et al., 2021). Ecovillages have been more frequently discussed in the scientific literature in the last few years – a peak of 8 articles was recorded in 2018 (Grinde et al., 2018; Henfrey and Ford, 2018; Ilieva and Hernandez, 2018; Moravčíková and Furjeszova, 2018; Sala and Casazza, 2018; Schafer et al., 2018; Ucok Hughes, 2018). Ecovillages are generally perceived as a chance to experiment with new and more sustainable lifestyles, which can allow mankind to better adapt to contemporary needs for sustainability, starting from the small scale and possibly expanding beyond the borders of episodic initiatives.

One of the most pertinent contributions that have emerged from the analysis is a 2018 work from Iran (Barani et al., 2018), which explored existing ecovillages throughout several countries to determine the extrinsic and intrinsic characteristics leading to the successful implementation of their settlement model and its associated sustainability. This led to the formulation of 10 criteria and 119 indicators; one more interesting aspect is the characterization of each criterion as a transferable (saving energy and resource mechanisms and effective transportation systems; self-reliance and support of the local economy; water and wastewater management; waste and scrap management; human development and capacity building; foresight) or non-transferable strategy (protection and conservation of the environment; provision of appropriate and sustainable habitats; social, individual, and spiritual capital; healthy physical and spiritual lifestyle). Non-transferable criteria encompass both the aspects related to the environmental capital in the place where ecovillages are set and aspects representing the effects and consequences of the settlement model; for example, this latter sub-group includes physical and mental health, whose high levels are observed in ecovillages as a consequence of specific choices and virtuous practices. Instead, transferable criteria refer to the management choices, the systems adopted for energy saving, and the ways through which self-sustainability and self-sufficiency can be achieved.

In Italy, research has been conducted on heterogeneous aspects: one of the most recent works (Pignatelli et al., 2023) outlines indicators to distinguish between different typologies of villages in inland areas to support optimal decisions for regeneration interventions, with a subdivision into "peripheral mountain municipalities", "peripheral mountain municipalities in significant shrinkage", and "belt municipalities in growth". Some articles explicitly address the issue of "repopulation" (Bascherini, 2021; Amodio, 2022), with criticism of stylistic restoration interventions that do not produce changes and improvements in a hamlet's social fabric, thus without altering the dynamics behind its depopulation.

Additional Italian research works are particularly pertinent to the reflection developed in this article: the case of Ingurtosu, in South Sardinia (Fiorino et al., 2020), an abandoned town where two historic buildings were reconstructed, yet no repopulation was triggered; the tourist attractiveness of cultural festivals in Vernazza, Liguria (Napoleone, 2020), showing that the valorisation of the immaterial heritage produces higher effects than for the material heritage; the TripAdvisor-based analysis of the artistic redevelopment in the towns of Satriano, Braccano, Cibiana, Orgosolo, Dozza, and others (Manuele, 2020), which reveals that the practice of murals mostly produces short visits, unable to revitalise the hospitality sector.

Finally, a particularly interesting work (Lauria and La Face, 2018) attempts to identify resilience indicators for small towns. This set of indicators assesses the characteristics of their fragility and evaluates the effects of regeneration interventions by introducing scales to monitor their results.

As one last note, the presence of ecovillages across Italian regions has been surveyed, detecting the promi-

Table 1. List of Italian ecovillages in abandoned villages in Emilia Romagna, Liguria, Tuscany, and Umbria, indicating region, village, and year of establishment.

Region	Village	Year
Emilia Romagna	Montefreddo di Tredozio	2015
Emilia Romagna	San Pietro in Cerro	1992
Emilia Romagna	Castel Merlino	2010
Emilia Romagna	Mogliazze	1970
Emilia Romagna	Coli	2004
Liguria	Torri Superiore	1989
Liguria	Cascina San Michele	2017
Liguria	Erli	1980
Tuscany	Campanara	1985
Tuscany	Sambuca Pistoiese	1980
Tuscany	Upacchi	1990
Tuscany	Buonconvento	2018
Tuscany	Tresana	2021
Tuscany	Sommo Ripola	2015
Tuscany	Ancaiano	1979
Tuscany	Tertulia	2012
Tuscany	Mezzana	2020

nence of this settlement typology in three main Regions: Emilia-Romagna, Liguria, and Tuscany. A list is reported in Table 1.

2.2. Typologies of village regeneration interventions

The literature analysis, in addition to the measures reported in the National Plan for Villages and the National Strategy for Inner Areas, has led to the drafting of a comprehensive table of the most frequent interventions adopted by local policies and national plans for the regeneration of small villages. Table 2 below reports on this.

Most regeneration interventions aim to fill a functional gap between towns and cities, create new elements for attractiveness, enhance services for citizens, restore the past history of the settlement and its traces, and provide amenities for tourists to increase interest and visit time.

2.3. Indicators in national Italian policies for village regeneration

The Italian government has initiated two major programs aimed at revitalizing small towns across the country: the National Strategy for Inner Areas (NSIA) and the National Plan for Villages. The NSIA, launched by the Agency for Territorial Cohesion in 2013, is an ongoing strategy that aims to promote and protect the assets and local communities of "Inner Areas." It encompasses a wide range of initiatives aimed at enhancing natural and cultural resources, creating new employment opportunities, and improving essential services such as education, healthcare, and mobility in 72 designated "Inner Areas" throughout Italian regions. The National Plan for Villages includes two distinct intervention lines. The first line, Line A, focuses on funding regeneration strategies in 21 villages, each selected by one of the Italian Regions and Autonomous Provinces. The second line, Line B, provides funding for 229 villages selected through a national tender. The two lines differ in their selection criteria, the types of villages they target, and the amount of funding allocated to each village. Line A targets "villages at risk of abandonment or already abandoned," with each village receiving €20,000,000 in funding. In contrast, Line B targets "historical villages with a population below 5,000 inhabitants," providing them with €1,600,000 in funding. The distinction in targeting and funding amounts suggests that Line A focuses on comprehensive regeneration efforts, including infrastructure and community revitalization, while Line B mainly emphasizes restoration interventions on buildings with historical significance, additional service implementation, and support for commercial activities to mitigate the lack of services and maintenance in small villages. Overall, these initiatives represent a concerted effort by the Italian government to address the challenges faced by small towns and villages and to support their sustainable development.

In the NSIA, indicators are utilized to determine the specific areas that require intervention. This process involves an initial desk phase followed by a more detailed on-field phase. The indicators consist of 161 elements classified into nine sections: Main characteristics, Demographics, Agriculture and sectoral specialization, Digital divide, Cultural heritage and tourism, Health, Accessibility, School, and Cooperation among municipalities. A recent study (Rossitti et al., 2021) has pointed out some limitations in this approach, including challenges related to data collection and quantitative comparisons. Furthermore, the approach towards evaluating cultural heritage primarily based on its potential for tourist attraction disregards its intrinsic and intangible values.

In the context of the National Plan for Villages, the fulfilment of the priorities in the NRRP is appraised using 14 common indicators as specified by delegated Regulation 2021/2106. These indicators are applied to assess proposals in each of the Plan's Measures and Tasks according to a detailed methodology. The indicators used for the National Plan for Villages include "1—

Table 2. List of interventions for village regeneration with description and most frequent outcomes in the centres where they have been carried out.

Intervention name	Description	Effects
Conservative restoration	Restoration of historic buildings with core functions in the original settlement to preserve heritage and restore the sense of identity within the population that has left the village.	When performed alone, it does not produce significant changes; however, it serves as the precondition for restoring a generally acceptable state of conservation in the villages and is combined with other strategies, such as functionalisation.
Diffused Hotel	Restored households and former public buildings are used for hospitality, and a central administration manages the houses throughout the town.	When established, it often represents a driving force for the local economy, primarily commercial and food businesses. Accessibility is a crucial factor.
Artistic redevelopment	Open-air artworks are realised in the town, often by volunteering artists or through local funding. The most frequently chosen medium is murals.	Tourism within the town is generally triggered, primarily through good communication strategies. However, due to the short visit time, local businesses scarcely benefit from it.
Musealisation	Realisation of punctual or diffuse museums, often monographic and related to major aspects of the town's history and art.	Preservation needs mostly trigger these interventions, but the results are hardly successful and economically detrimental due to the management costs.
Services to citizens and tourists	Refunctionalization of historic buildings to realise punctual services for the village's community, increasing local equipment.	This is the most frequent intervention in the NSIA. Most transformations have only been planned; when co-designed with the community, the new spaces are generally well-accepted.
Support to local businesses	Fund allocation for the start of new businesses in villages, hiring local professionals and workers.	This strategy has proven successful, especially for primary-sector businesses, recalling the original vocation of most villages. Instead, its inclusion in the buying conditions of the 1 Euro Houses Projects has yet to produce results.

Savings in annual primary energy consumption" and "9—Number of enterprises supported". However, this priority structure presents challenges.

Indicator 1 assesses the total energy savings achieved, which depends on the number of inhabited households and buildings where energy efficiency interventions are implemented. This may disadvantage villages experiencing depopulation, as the number of inhabited buildings suitable for intervention is lower. Hence, villages with a population closer to the threshold of 5,000 inhabitants may receive an advantage compared to those with lower population numbers, despite facing a higher risk of abandonment.

Similarly, Indicator 9 is subject to the same challenge as Indicator 1 due to the correlation between a village's population and the number of enterprises. Additionally, the generic nature of the NRRP's common indicators results in the exclusion of non-profit enterprises, a key driving force in village regeneration, which is explicitly not accounted for in the total number of supported enterprises.

The criticalities of these indicators are not strictly supposed to directly affect the decision-making processes behind the choice of the villages within Line A: this selection is performed by each Region and Autonomous Province without any approval by the central administration and according to internal selection processes. Even so, Indicators 1 and 9 have been proposed as criteria for choice; thus, it can be deemed that regional and provincial administrations have considered them when selecting the villages for funding. Moreover, this is confirmed by the distribution of the intervention modalities throughout the 21 local projects, as shown in the following. Instead, they directly affect the selection of projects in Line B; as shown in Table 3, the distribution of their allocation is heavily unbalanced with respect to the number of "small towns" in each Italian Region.

3. CASE STUDY EXPERIMENTATION

The traditional approach to selecting indicators for assessing a context or phenomenon for funding allocation or simple monitoring involves identifying common aspects to standardize different realities. The previous discussion aimed to emphasize the distinctive characteristics of ecovillages compared to other settlements and their incompatibility with the approach that is implicitly embodied in traditional indicators of national and local policies. For this reason, the apparent "transversality" of those indicators alters the perception of these contexts, turning their autonomous and self-sufficient economy into a flaw due to the lack of economic profit and the non-standard entrepreneurial form. Though indicators

Table 3. Funding allocation (A), number of small towns (<5,000 inhabitants) (B), and funding/number of small towns ratio for each Italian region in Line B of the National Plan for Villages (C).

Region	A (€)	B	C (€)
Abruzzo	5,469,692.84	253	21,619.34
Aosta Valley	2,708,640.22	73	37,104.66
Apulia	47,681,122.69	88	541,830.90
Basilicata	8,651,427.42	107	80,854.46
Calabria	27,925,095.53	325	85,923.37
Campania	61,637,928.16	344	179.180,00
Emilia-Romagna	31,878,591.92	135	236.137,70
Friuli Venezia Giulia	11,494,886.58	153	75.129,98
Latium	53,221,031.32	255	208.709,90
Liguria	16,924,652.18	185	91.484,61
Lombard	54,583,091.06	1,039	52.534,26
Marche	17,153,940.94	160	107.212,10
Molise	3,542,153.20	128	27.673,07
Piedmont	43,768,364.10	1,045	41.883,60
Sardinia	20,461,967.79	316	64.753,06
Sicily	64,900,612.37	212	306.135,00
Tuscany	35,987,678.55	119	302.417,50
Umbria	12,657,812.98	63	200.917,70
Veneto	48,148,148.14	291	165.457,60

should be based on a neutral and standardized formulation to evaluate multiple alternatives, those proposed here stand as complementary to correctly take into account the peculiarities of ecovillages. The established logic, rooted in urban development and performance (Acampa and Pino, 2023), should be modified or partially rethought to accommodate their significantly different principles. Consequently, valid indicators should emerge from an understanding of the specific advantages of ecovillages and the aim to address their inherent and external weaknesses and requirements.

This line of thought has led to the development of the following indicators:

- Benefit indicators: assess the positive aspects of the subject under evaluation.
- Risk indicators: evaluate the extent of vulnerabilities and risks faced by the subject under evaluation.

It's important to note that this is not a risk-benefit analysis where risks and benefits are compared to determine the desirability of a choice or scenario. In this case, the objective is different: benefit indicators identify desirable qualities that need to be preserved and enhanced, acting as benchmarks to identify contexts where the described pattern generates such positive environments. Conversely, the risk indicators can be utilized to gauge the extent of funding required and could be beneficial for public administration in tailoring appropriate measures. As a result, the two sets of indicators are not intended to be interconnected or to imply a trade-off evaluation.

3.1. Benefit indicators

The categories of benefit indicators have been chosen based on the principle of identifying areas where urban contexts lack certain features. The first inspiration has derived from the analysis of the Italian Index of Equitable and Sustainable Well-Being (BES, *Benessere Equo e Sostenibile*), promoted by ISTAT (Bruni and Mazzantini, 2018). Its avant-garde peculiarity resides in the goal of estimating non-economic factors to determine the state of progress of a country, thus encompassing 12 categories: Health, Education and training, Work and life balance, Economic well-being, Social relationships, Politics and institutions, Safety, Subjective well-being, Landscape and cultural heritage, Environment, Innovation, research and creativity, Quality of services (Chelli et al., 2015). Generally, almost all indicators have been showing good results and have been increasing since 2010. However, the only category with poor values is Social relationships: out of 9 survey items, five report results below 33% (less than one-third of the population above 14 answered positively). In detail, these correspond to Satisfaction with family relations (32.6% in 2022), Satisfaction with friend relations (21.6% in 2022), Social participation (25.4% in 2022), Volunteering activity (8.3% in 2022), and Generalised trust (24.3% in 2022). Therefore, these topics, which point out a general criticality in traditional societies, can be used to evaluate the social satisfaction of the community within the proposed indicators. Indeed, social satisfaction serves as a precondition to ensure that values are shared within the community and are easily transmitted to visitors (Weijis-Perrée et al., 2017). Specifically, they are evaluated through the corresponding five items (later indicated as SR1, SR2, SR3, SR4, and SR5 respectively):

- "How do you consider your satisfaction toward family relationships?";
- "How do you consider your satisfaction toward friends' relationships?";
- "In the last 12 months, have you participated in social activities, such as meetings or initiatives promoted by religious or spiritual groups, meetings of cultural associations or similar organizations?";
- "In the last 12 months, have you carried out free activities for associations or volunteering groups?";
- "How much do you consider people trustworthy, in general?".

The second category of benefit indicators is associated with the principle of social generativity, defined as "a distinctive social phenomenon apt to enlighten the relation between personal development and social change" (Di Fabio and Svicher, 2023) as well as "concern for future generations and contribution to the future of their community" (Slater, 2003). This idea, rooted in behavioural psychology, expresses strong assonance with the ideological foundations of ecovillages: that is, places where the fulfilment of collective benefits is pursued within the community while keeping in mind large-scale goals and ideals to contribute to the whole global society in terms of sustainability and resource preservation (Syamsiyah et al., 2023). A questionnaire-based tool to evaluate social generativity (Morselli and Passini, 2018) was adopted to devise specific indicators in the form of six items (later indicated as SG1, SG2, SG3, SG4, SG5, and SG6 respectively):

- "I carry out activities to ensure a better world for future generations";
- "I have a personal responsibility to improve the area in which I live";
- "I give up part of my daily comforts to foster the development of next generations";
- "I think that I am responsible for ensuring a state of well-being for future generations";
- "I commit myself to do things that will survive even after I die";
- "I help people to improve themselves."

The third category of benefit indicators is associated with Psychological Well-Being. It is worth pointing out that this concept is already quite difficult to frame since it has been subjected to several definitions and oscillates between mental health (Eiroa-Orosa, 2020), "positive functioning" (Burns, 2017), and the presence of positive feelings (Stoll and Pollastri, 2023). However, it was selected as the third area of benefit indicators because it has been envisioned as a way to evaluate the positive influence of inhabiting and visiting ecovillages without explicitly specific purposes and goals and considering the individual's psychological health as a useful, 360-degree benchmark instead. Moreover, the Ryff Scale (Ryff, 1989) seemed particularly suitable for this purpose. Ryff introduced a scale based on six factors: Autonomy, Environmental Mastery, Personal Growth, Positive Relations with others, Purpose in Life, and Self-Acceptance. Each represents a different dimension of psychological well-being and is evaluated through a distinct set of 3-to-7 items (specifically, the test can be administered in a longer 42-item version or in a shorter 18-item version).

3.2. Risk indicators

Risk indicators are, instead, associated with the vulnerability of the places where ecovillages are located. These places share all the typical characteristics of villages in a state of abandonment or at risk of abandonment: they are far from main centres and are often situated in non-convenient places, with morphological and orographic accessibility issues, such as being on a high mountain. These natural problems are compounded by those brought about by some intrinsic aspects of the lifestyle of ecovillages: for example, they tend to avoid employing electric systems or networks as well as sharing water networks with nearby cities and villages. In case of local problems with the obtainment of resources, this represents a weakness. Moreover, self-sufficiency lifestyles allow little redundance, thus hindering resilience: often, their connections with the outside are strongly limited or interrupted by phenomena such as floods or landfalls, requiring costly interventions to restore viability. This is generally solved through fundraising; however, the vulnerability within these dynamics is evident.

For this reason, it was chosen to introduce risk indicators as signals of the intrinsic issues within ecovillages, with a double function:

- on the one hand, as a tool to quantify the right to fund allocation of each place, based on their actual needs, which deeply differ from those in regular repopulated villages;
- on the other hand, to differentiate territorial contexts depending on the opportunities they provide for the successful and more resilient establishment of ecological villages. This can help driving settlers' choices.

These risk indicators have been drawn from a wider research work on indicators for villages' resilience that was individuated in the literature (Lauria and La Face, 2020), introduced in the previous paragraph. These indicators are subdivided into 8 categories (Natural/Environmental, Socio-Political, Financial, Human, Physical, Maintenance, Regeneration/Valorisation, and Development). They have several purposes and refer to heterogenous contexts and moments of their development. Moreover, many of them are not applicable to ecovillages, for the reasons that have been widely discussed in the previous paragraphs: for example, the Development category has indicators such as "Support to business creation" or "Adoption of network and emerging technologies for digital economy", which would result non-coherent with what is analysed in the approach of the present work; moreover, the mentioned benefit indicators already allow

a detailed survey of the positive aspects of these peculiar contexts. Instead, a complementary support to this set of indicators has been found in the "Natural/Environmental" and "Physical" categories, which respectively reflect the intrinsic natural risks in the place, due to the history of calamities, geology, morphology, and similar aspects, and the physical characteristics of the settlement typology, based on the state of networks with other cities. In detail, the following items were chosen:

- Existence of damage from (current or) expected flood (Natural/Environmental);
- Frequency of forest fire (Natural/Environmental);
- Quality of transport systems (Physical);
- Presence of water networks (Physical);
- Presence of electric networks (Physical).

3.3. Experimentation

A questionnaire comprising all the items of the benefit indicators has been sent to all ecovillages in the Italian RIVE (*Rete Italiana di Villaggi Ecologici*, Italian Network of Ecological Villages), requesting all inhabitants and visitors to answer to answer it. The request was sent by using the e-mail addresses reported in the profile pages of each ecovillage; thus, it was received by the administrators of ecovillage public relations services and presumably forwarded to all the involved individuals. The total number of ecovillages was 76; however, as was expected, a small number of them provided answers since ecovillages' lifestyle forces them to a very limited use of electronic devices and digital services and scarce familiarity with digital tools. However, a significant number of responses (32) came from an ecovillage with which a direct connection had been developed – Borgo Tutto è Vita, in Mezzano (PO) – and some responses came from other 6 ecovillages: 8 from Comunità rigenerative in Calasca-Castiglione (VCO), 4 from Eco-house in Noto (SR), 4 from Lacasarotta APS in Cherasco (CN), 28 from Lumen in San Pietro in Cerro (PC), 4 from Meraki in Monzuno (BO), and 4 from Shangri-là in Donnafugata (RG). This led to a total of 84 answers, which allowed the evaluation of the scores for the benefit

Table 4. Items of the questionnaire sent to the ecovillages of the Italian Network of Ecological Villages (RIVE).

Tab	Question	Options	Item
General Information	What is your gender?	Male/Female/Other/Unspecified	
	What is your age group?	0-14/15-24/25-34/35-50/51-64/65+	
	Which ecovillage do you visit/inhabit?	Text Input	
	Visit frequency/Residence	I live there/I go there more than weekly/I go there around weekly/I go there less than weekly/I rarely go there	
Social Relationships	How would you rate your satisfaction toward family relationships?	1-10 Scale	SR1
	How would you rate your satisfaction toward friend relationships?	1-10 Scale	SR2
	In the last 12 months, have you participated in social activities, such as meetings or initiatives promoted by religious or spiritual groups, meetings of cultural associations or similar?	Yes/No	SR3
	In the last 12 months, have you conducted volunteering activity?	Yes/No	SR4
	How much do you think people deserve trust?	1-10 Scale	SR5
Social Generativity	I carry out activities to ensure a better world for future generations.	1-7 Scale Agreement	SG1
	I have a personal responsibility to improve the area in which I live.	1-7 Scale Agreement	SG2
	I give up part of my daily comforts to foster the development of next generations.	1-7 Scale Agreement	SG3
	I think that I am responsible for ensuring a state of well-being for future generations.	1-7 Scale Agreement	SG4
	I commit myself to do things that will survive even after I die.	1-7 Scale Agreement	SG5
	I help people to improve themselves.	1-7 Scale Agreement	SG6

(Continued)

Table 4. (Continued).

Tab	Question	Options	Item
	I like most parts of my personality.	1-7 Scale Agreement	SA1
	When I look at the story of my life, I am pleased with how things have turned out so far.	1-7 Scale Agreement	SA2
	Some people wander aimlessly through life, but I am not one of them.	1-7 Scale Agreement	PiL1
	The demands of everyday life often get me down.	1-7 Scale Agreement	EM1
	In many ways I feel disappointed about my achievements in life.	1-7 Scale Agreement	SA3
	Maintaining close relationships has been difficult and frustrating for me.	1-7 Scale Agreement	PR1
	I live life one day at a time and don't really think about the future.	1-7 Scale Agreement	PiL2
	In general, I feel I am in charge of the situation in which I live.	1-7 Scale Agreement	EM2
	I am good at managing the responsibilities of daily life.	1-7 Scale Agreement	EM3
Psychological Well-Being	I sometimes feel as if I've done all there is to do in life.	1-7 Scale Agreement	PiL3
	For me, life has been a continuous process of learning, changing, and growth.	1-7 Scale Agreement	PG1
	I think it is important to have new experiences that challenge how I think about myself and the world.	1-7 Scale Agreement	PG2
	People would describe me as a giving person, willing to share my time with others.	1-7 Scale Agreement	PR2
	I gave up trying to make big improvements or changes in my life a long time ago.	1-7 Scale Agreement	PG3
	I tend to be influenced by people with strong opinions.	1-7 Scale Agreement	A1
	I have not experienced many warm and trusting relationships with others.	1-7 Scale Agreement	PR3
	I have confidence in my own opinions, even if they are different from the way most other people think.	1-7 Scale Agreement	A2
	I judge myself by what I think is important, not by the values of what others think is important.	1-7 Scale Agreement	A3

indicators through statistical analysis. The scores for the risk indicators were instead evaluated through technical data collection and synthesis.

The English translation of each questionnaire item (administered in Italian language) is presented in Table 4.

4. RESULTS AND DISCUSSION

4.1. Analysis of the questionnaire answers

Tables 5-6 report the analysis of the results of the questionnaire, aggregating the items for each of the benefit indicators: Social Relationships (SR), Social Generativity (SG), and the six dimensions of Psychological Wellbeing – Self-Acceptance (SA), Purpose in Life (PiL), Personal Relationships (PR), Personal Growth (PG), Autonomy (A), and Environmental Mastery (EM). A descriptive and a reliability analysis have been performed for each indicator and its items, evaluating the mean, median, and standard deviation (SD) for each item and the mean, standard deviation (SD), Chronbach-alpha, and McDonald-omega for each indicator. Reverse items are marked with an asterisk in Table 5.

4.2. Comparison with known data

Social Relationships items report particularly beneficial values: compared with the already-mentioned values from the 2022 BES Report, all 5 results are higher, converting percentage values into integer numbers on a 1-10 scale:

- SR1: 8.81 > 3.26;
- SR2: 8.87 > 2.16;

Table 5. Descriptive analysis of Social Relationship, Social Generativity, and Psychological Wellbeing items.

	Mean	Median	SD
SR1	8.81	8.75	1.45
SR2	8.87	8.75	1.18
SR3	9.05	10	3.01
SR4	8.10	10	4.02
SR5	7.35	7.14	1.71
SG1	6.48	7	0.98
SG2	6.57	7	0.87
SG3	5.57	6	1.80
SG4	6.24	7	0.99
SG5	5.90	7	1.41
SG6	5.63	5.60	1.36
SA1	5	5	1.38
SA2	5.30	5.60	1.76
PiL1	5.48	5.60	1.78
EM1*	4	4	1.95
SA3*	2.24	2	1.55
PR1*	2.10	1	1.58
PiL2*	2.62	2	1.77
EM2	6.05	7	1.47
EM3	5.53	5.60	1.27
PiL3*	3.29	4	1.95
PG1	6.30	7	1.21
PG2	6.57	7	0.75
PR2	5.80	5.60	1.13
PG3*	2.56	2.33	0.70
A1*	4	4.67	1.67
PR3*	2.62	2	1.80
A2	5.33	6	1.53
A3	5.67	6	1.43

- SR3: 9.05 > 2.54;
- SR4: 8.10 > 0.83;
- SR5: 7.35 > 2.43.

The Social Generativity items values have instead been compared with the values obtained in the experimentation conducted among university students in the city of Florence with the same items, which have been found in the literature (Morselli and Passini, 2015), leading to the following evidence:

- SG1: 6.48 > 4.43;
- SG2: 6.57 > 5.62;
- SG3: 5.57 > 4.31;
- SG4: 6.24 > 5.59;
- SG5: 5.90 > 5.12;
- SG6: 5.63 > 5.06.

In this case, too, all items proved better results than in urban contexts. In particular, the highest difference was found for SG1, over two points. This shows that, despite the general awareness of the need for sustainability-aimed actions, the opportunity of carrying out coherent actions, provided by ecovillages, is particularly rare outside.

Table 6. Reliability analysis of Social Relationship, Social Generativity, and Psychological Wellbeing indicators.

	Mean	SD	Chronbach	McDonald
Social Relationships	8.43	1.37	0.404	0.657
Social Generativity	6.03	0.861	0.753	0.780
Self-Acceptance	5.02	1.26	0.728	0.763
Purpose in Life	4.86	0.921	0.493	0.139
Environmental Mastery	3.83	1.03	0.304	0.389
Personal Relationships	5.36	1.13	0.584	0.665
Personal Growth	5.77	0.528	0.00798	0.344
Autonomy	5.44	1.34	0.831	0.842

The Ryff Scale's results are considered to show psychological well-being if single-indicator values are above sufficiency (4); in this case, this is applied to the mean of each dimension. Compared to others, this does not show remarkable results, instead, surprisingly, the Environmental Mastery indicator has a negative outcome. It can be speculated that the different perceptions of self in ecovillages' lifestyle do not suit the typology of questions in the Ryff Scale. For this reason, it will not be considered relevant to define the benefit ensured by ecovillages.

4.3. Definition of risk indicator values

The values for the five items of the risk indicators have been attributed by adopting the following criteria for each of them, using a 1-5 scale for items with a gradual variation (the first three), considering 1 as a low value of resilience and 5 as connoting a good resilience characteristic, and a 0-1 (absence-presence) scale for the last two, related to the existence or non-existence of networks:

- EN1, Flood damage (1-5 scale): values attributed based on the records of flood in the village or in the area surrounding the village. 1 was assigned if a flood was known to have caused liveability issues in the city, 2 if it had caused accessibility issues, 3 if it had hit the village but had not caused operational issues, 4 if floods were recorded but no effective damage, and 5 if no floods were recorded in the area;
- EN2, Frequency of forest fire (1-5 scale): values attributed to the frequency of news on forest fire in the area of the village, with 1 if over 3 fires per year were recorded, and 5 if none were found;

Table 7. Scores for the Environmental/Natural and Physical risk items.

Indicator	Item	Borgo Tutto è Vita	Comunità rigenerative	Eco-house	Lacasarotta	Lumen	Meraki	Shangri-là
Environmental/Natural	EN1	2	5	4	2	4	1	1
	EN2	2	2	2	4	2	2	4
Physical	P1	3	4	5	3	4	2	4
	P2	1	0	0	1	1	0	1
	P3	1	0	0	1	1	0	0

Table 8. Descriptive analysis for the Environmental/Natural and Physical risk items.

	Mean	Median	SD
EN1	2.71	2	1.600
EN2	2.57	2	0.976
P1	3.57	4	0.976
P2	0.57	1	0.535
P3	0.43	0	0.535

- P1, Transport system quality (1-5 scale): this evaluation was conducted based on the typology and length of road connections to reach relevant urban centres (>20,000 inhabitants). In particular, 1-2 scores have been attributed if a village requires using unpaved roads to reach the main road network, while 3-5 scores have been given if the village is directly connected to provincial/state roads, with higher scores corresponding to lower distances from main centres;
- P2, Presence of water networks (0-1) and P3, Presence of electric networks (0-1): based on direct knowledge from village inhabitants or websites regarding their history, it was determined whether the ecovillages were served by water and electric networks. It must be noted that this item is most often related to voluntaristic aspects of each ecovillage's lifestyle. 0 was attributed in case the networks were absent, while 1 was attributed if they were present.

Table 7 summarizes the results for each item.

Table 8 reports the results of the descriptive analysis of the five items carried out through the Jamovi software. In this case, it was not deemed correct to perform a reliability analysis through aggregation since the items of the same category refer to different natural conditions and settlement choices, not necessarily related to each other.

As expected, the results tend to be low for most items: the means for EN1 (2.71) and EN2 (2.57) are below the average (3), while P1 (3.57) is slightly above average. Finally, the two binary items, that is, P2 (0.57) and P3 (0.43), are around the average, showing that less than half of the tested ecovillages have the availability of electric networks, while almost half do not have water networks.

5. CONCLUSIONS

In the current age, contemporary urban settlements and lifestyles are experiencing a major crisis, which has been mostly interpreted in terms of sustainability, which represents the need to adjust our living standards and habits to suit a longer temporal perspective and a broader view of humanity and their needs as a whole. This is only one side of the problem: another one is represented by the increasing discomfort toward metropolitan, mostly artificial environments, where some vital aspects of people's lives cannot be thoroughly fulfilled. Villages in general, and ecovillages even more, are different players in this equation, leading to questioning the possible contaminations and diversification of contemporary living. However, as it has often been stressed in this paper, the role of villages can be valorised as long as they are considered places with different and complementary characteristics from a topological and morphological perspective: this change must be reflected in national and local policies, keen on capturing the aspects through which their opportunities can emerge the most.

This paper has attempted to perform a step in this direction, by outlining a proposal for possible integrative indicators to adopt in policies – where ecovillages are implicitly disadvantaged, as detailed and iterated – so that their distinctive features and opportunities can be evaluated in a fairer way. The work has pivoted on originality and innovation: on the one hand, focusing on the Italian context and discussing its existing policies provides new insight into this debate, highlighting the discrepancies between the vocation of places and the chosen approaches; on the other hand, the proposal of indicators articulated with a dual aim of proving the benefits of a context and assessing its degree of vulnerability is

not common and particularly suitable to allow administrations to correctly ponder the entity of the funding to be allocated for the successful implementation of a specific initiative, for example.

Aside from this, it is worth emphasizing the expected yet non-negligible outcome of the analysis conducted in the seven ecovillages involved in the experimentation. It indeed resulted that those who live or frequently visit ecovillages are characterized by higher satisfaction with Social Relationships than average people. This reflects the most typical nature of ecovillages: they foster close-knit social bonds through shared responsibilities, collaborative projects, and communal decision-making, encouraging trust and cooperation among residents. By prioritizing mindfulness and intentional living, these communities create a supportive social fabric where meaningful relationships and emotional well-being thrive.

The same goes with Social Generativity, and this leads to reflecting on the large-scale effect that these places can produce regarding the global awareness and consciousness of the battles that have to be fought at this moment. In other words, valorising them can easily translate into investing in sustainability. Instead, Psychological Well-Being indicators did not report particularly promising results. Other authors (Temesgen, 2024) who have researched the analysis of psychological well-being in ecovillages highlight an inhomogeneous and discontinuous trend due to the many challenges present when getting used to the different lifestyles of ecovillages. With a wider sample, it might be interesting to analyse the relationship between the number of years spent in an ecovillage or intentional community and the evolution of one's psychological well-being; however, the figures considered here for this experimentation could not allow that. Alternatively, it can be considered that its evaluation through the Ryff scale is not entirely suitable, and different substitutive tools will be tested in future research, such as the PERMA model (Chisale and Phiri, 2022) or the Flourishing Scale (Diener et al., 2009).

Finally, it must be stated that, despite often stressing that the characteristics of these ecovillages cannot be evaluated through traditional economic-based approaches, values, and principles, they can still be regarded in a broader economic dimension – as in the formulation of the Total Economic Value (Plottu and Plottu, 2007), for example. Future research on this topic will cover the economic evaluation of the way in which ecovillages impact territorial dynamics, with their restored capability of actively producing resources and activating new stable processes, which ultimately result in economic benefits to be compared to other territorial and local regeneration models.

REFERENCES

Acampa, G., & Pino, A. (2023). Optimal computing budget allocation for urban regeneration: an unprecedented match between economic/extra-economic evaluations and urban planning. *Lecture Notes in Computer Science*, 14112, 69–79.

Acampa, G., Grasso, M., Marino, G., & Parisi, C. M. (2020). Tourist flow management: social impact evaluation through social network analysis. *Sustainability*, 12(2), 731.

Acampa, G., Parisi, C.M. (2021). Management of maintenance costs in cultural heritage. *Green Energy and Technology*, 195-212.

Acampa, G., Parisi, C.M. (2021). Management of Maintenance Costs in Cultural Heritage. In Morano, P., Oppio, A., Rosato, P., Sdino, L., & Tajani, F. (Eds). Appraisal and Valuation. Green Energy and Technology. Cham, Springer.

Barani, S., Alibeygi, A.H., & Papzan, A. (2018). A framework to identify and develop potential ecovillages: meta-analysis from the studies of world's ecovillages. *Sustainable Cities and Society*, 43, 275–289.

Bascherini, E. (2021). Repopulating abandoned villages. New housing strategies for the pandemic. *Festival dell'Architettura Magazine*, 52–53, 204–209.

Brombin, A. (2019). The ecovillage movement: New ways to experience nature. *Environmental Values*, 28(2), 191–210.

Bruni, S., & Mazzantini, G. (2018). Gli indicatori del Bes quali strumenti di better regulation per la quantificazione degli impatti nelle Air e nelle Vir. *Rivista Italiana di Public Management*, 1(2), 101–131.

Burns, R. A. (2017). Psychological Well-Being. In Pachana, N. A. (Ed.). *Encyclopedia of Geropsychology* Singapore, Springer.

Chelli, F. M., Ciommi, M., Emili, A., Gigliarano, C., & Taralli, S. (2015). Comparing equitable and Sustainable Well-Being (BES) across the Italian provinces. A factor analysis-based approach. *Rivista Italiana di Economia, Demografia e Statistica*, 69(3), 61–72.

Chisale, E., & Phiri, F. E. (2022). PERMA Model and Mental Health Practice. *Asian Journal of Pharmacy Nursing*, 10(2), 21–24.

Cisek, E., & Jaglarz, A. (2021). Architectural education in the current of deep ecology and sustainability. *Buildings*, 11(8), 358.

de Souza, L. L. D., da Silva Filho, C. F., & Mastrodi, J. (2023). Contributions of rural ecovillages to the United Nations 2030 Agenda: evidence from research applied in the state of São Paulo. *Desenvolvimento e Melo Ambiente*, 62, 1311–32.

Di Fabio, A., & Svicher, A. (2023). The Eco-Generativity Scale (EGS): a New resource to protect the environment and promote health. *International Journal of Environmental Research and Public Health*, 20(15), 6474.

Diener, E., Wirtz, D., & Tov, W. (2009). New measures of well-being: flourishing and positive and negative feelings. *Social Indicators Research*, 39, 247–266.

Eiroa-Orosa, F. J. (2020). Understanding psychosocial wellbeing in the context of complex and multidimensional problems. *International Journal of Environmental Research and Public Health*, 17(16), 5937.

Fiorino, D. R., Melis, C., Pilia, E., Pirisino, M. S., & Porcu, M. (2020). Processes of depopulation in Sardinia. Issues and potentialities of some case studies. *ArchHistoR Extra*, 7, 187–207.

Germano, L., & Lizzi, R. (2024). The implementation of NRRP policies between politics and policy. An interest group perspective. *Contemporary Italian Politics*, 16(1), 7–20.

Grinde, B., Nes, R. B., MacDonald, I. F., & Wilson, D. S. (2018). Quality of life in intentional communities. *Social Indicators Research*, 137(2), 625–40.

Henfrey, T., & Ford, L. (2018). Permacultures of transformation: steps to a cultural ecology of environmental action. *Journal of Political Ecology*, 25(1), 104–119.

Ilieva, R. T., & Hernandez, A. (2018). Scaling-up sustainable development initiatives: a comparative case study of agri-food system innovations in Brazil, New York, and Senegal. *Sustainability*, 10(11), 4057.

Lauria, M., & La Face, G. (2020). Resilience markers for fragile areas. Innovative approaches and strategies for the villages of Reggio Calabria, Metropolitan City. *ArchHistoR Extra*, 7, 1410–1439.

Losardo, M. (2016). "New Ways of Living, as Old as the World" Best Practices and Sustainability in the Example of the Italian Ecovillage Network. *Studia Ethnologica Croatica*, 28, 47–70.

Manuele, G. G. D. (2020). A_R_T_ (A_rtistica R_ivitalizzazione T_erritoriale): a strategy for the revitalization of small centres. *ArchHistoR Extra*, 7, 1286–1301.

Moravčíková, D., & Fürjészová, T. (2018). Ecovillage as an alternative way of rural life: evidence from Hungary and Slovakia. *European Countryside*, 10(4), 693–710.

Napoleone, L. (2020). Abandoned villages in Liguria. Tourist development and transformation of the sense of place. *ArchHistoR Extra*, 7, 966–981.

Nogueira, C., Marques, J. F., & Pinto, H. (2024). Intentional sustainable communities and sustainable development goals: from micro-scale implementation to scalability of innovative practices. *Journal of Environmental Planning and Management*, 67(1), 175–96.

Papenfuss, J., & Merritt, E. (2019). Pedagogical laboratories: a case study of transformative sustainability education in an ecovillage context. *Sustainability*, 11(14), 3880.

Pignatelli, M., Torabi Moghdadam, S., & Lombardi, P. (2023). Spatial clustering-based method for Italian marginal areas toward the sustainable regeneration. *Valori e Valutazioni*, 32, 77–89.

Plottu, E., & Plottu, B. (2007). The concept of Total Economic Value of environment: a reconsideration within a hierarchical rationality. *Ecological Economics*, 61(1), 52–61.

Rossitti, M., & Torrieri, F. (2022a). Action research for the conservation of architectural heritage in marginal areas: the role of evaluation. *Valori e Valutazioni*, 30, 3–42.

Rossitti, M., & Torrieri, F. (2022b). The THEMA tool to support heritage-based development strategies for marginal areas: evidence from an Italian inner area in Campania Region. *Region*, 9(2), 109–129.

Rossitti, M., Dell'Ovo, M., Oppio, A., & Torrieri, F. (2021). The Italian National Strategy for Inner Areas (SNAI): a critical analysis of the indicator grid. *Sustainability*, 13(12), 6927.

Ryff, C.D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57, 1069–1081.

Schafer, M., Hielscher, S., Haas, W., Hausknost, D., Leitner, M., Kunze, I., & Mandl, S. (2018). Facilitating low-carbon living? A comparison of intervention measures in different community-based initiatives. *Sustainability*, 10(4), 1047.

Sherry, J. (2019). The impact of community sustainability: a life cycle assessment of three ecovillages. *Journal of Cleaner Production*, 237, 117830.

Slater, C. L. (2003). Generativity versus stagnation: an elaboration of Erikson's adult stage of human development. *Journal of Adult Development*, 10(1), 53–65.

Stoll, S. J., & Pollastri, A. R. (2023). Social and environmental influences. In Halpern-Felsher, B. (Ed.). *Encyclopedia of Child and Adolescent Health*. London, Academic Press.

Syamsiyah, N., Sulistyowati, L., Noor, T. I., & Setiawan, I. (2023). The sustainability level of an EcoVillage in the Upper Citarum Watershed of West Java province, Indonesia. *Sustainability*, 15(22), 15951.

Temesgen, A. K. (2024). Ecovillage scale-up and its well-being challenges: a case study from Norway. *SuStainability: Science, Practice and Policy*, 20(1), 2393912.

Ucok Hughes, M. (2018). Sustainable living in the city: the case of an urban ecovillage. In Dhiman, S., &

Marques, J. (Eds.). *Handbook of Engaged Sustainability*. Cham, Springer, pp. 869–883.

Ulug, C., Horlings, L., & Trell, E. M. (2021). Collective identity supporting sustainability transformations in ecovillage communities. *Sustainability*, 13(15), 8148.

Weijis-Perrée, M., Van den Berg, P., Arentze, T., & Kemperman, A. (2017). Social networks, social satisfaction and place attachment in the neighborhood. *Region*, 4(3), 133–151.