Terrestrial protected areas and local socio-economic development: A systematic literature review

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ABSTRACT

The article provides a structured synthesis of research on the socio-economic aspects of protected areas and their impacts on local development. The analysis draws on 440 academic publications from 1960 to 2025. The literature was classified thematically, analysed spatially, and examined with regard to authors' institutional affiliations and thematic co-occurrence patterns. Two dominant research nexuses were identified: (1) a tourism–economy nexus, in which tourism constitutes the principal mechanism linking protected areas with local economic outcomes, and (2) a social–institutional nexus, centered on governance arrangements, social impacts, and the perception of protected areas by local communities. The results reveal a strong prevalence of empirical, case-study-based research, which provides detailed contextual insights but limits generalisation and theory development. The spatial distribution of studies is highly uneven, with a concentration in Europe, South Asia, and Southern Africa, alongside the predominance of authors affiliated with institutions in the "Global North". The review highlights gaps in the literature related to the long-term effects of protected areas, the uneven distribution of costs and benefits among stakeholder groups, and the limited presence of studies allowing causal inference. Overall, the findings underscore the multidimensional and context-dependent nature of protected areas' socio-economic impacts, which are shaped by local conditions and management approaches.

KEYWORDS

protected areas; local development; socio-economic impacts; park–people relationships; protected area governance; spatial differentiation

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1. Introduction

Protected areas (PAs), understood as "clearly defined geographical spaces designated and managed to ensure the long-term conservation of nature, together with associated ecosystem services and cultural values" (Dudley 2013), constitute one of the key instruments of global nature conservation policy. Their importance has been steadily increasing in line with the expansion of PAs worldwide, which currently cover 16.5% of the global terrestrial and inland water surface and 9.6% of marine areas (UNEP-WCMC and IUCN 2025). At the same time, the objectives and operational models of PAs have been evolving from historically diverse approaches – ranging from recreation- and landscape-oriented models to approaches primarily centred on nature conservation within protected area boundaries (Dearden and Dempsey 2004; Keiter 2013; Pichler-Koban and Jungmeier 2017; Sellars 1997) – towards frameworks that recognise PAs not only as components of broader ecological systems, but also as elements of socio-economic systems, emphasising their interconnections and roles within regional and local development processes while simultaneously strengthening conservation functions where nature protection had previously been less emphasised (Becken and Job 2014; Lange and Jungmeier 2014; Mose and Weixlbaumer 2016; Watson et al. 2014). In Europe, however, examples of protected area models integrating conservation and local development objectives existed earlier, as exemplified by the French regional natural parks. Nevertheless, for many years protected area governance was dominated by top-down approaches based primarily on ecological and scientific criteria, which also shaped the social perception of PAs as spaces separated from socio-economic processes. In recent decades, this paradigm has increasingly been replaced by more integrative governance models combining conservation with regional development and stakeholder participation (Gerber 2018; Janssen and Knippenberg 2012; Kupper 2014; Stoll-Kleemann 2001).

This shift has been reflected in international documents and strategies including the Convention on Biological Diversity (UNEP 2011), the 2030 Agenda for Sustainable Development (UN 2015), the EU Biodiversity Strategy for 2030 (European Commission 2020), as well as the guidelines of the International Union for Conservation of Nature (IUCN) on the governance and management of PAs (Borrini-Feyerabend et al. 2013; Dudley 2013). PAs are viewed in those documents not only as instruments of biodiversity conservation, but also as components of sustainable development policies, influencing – to varying degrees – local economies, social structures, and patterns of land use.

The relationships between PAs and local and regional development have become the subject of intensive academic research since the 1990s. The literature in this field encompasses a broad range of issues, including governance models, park–community relations, social attitudes towards nature conservation, socio-economic impacts, the role of tourism and outdoor recreation, and conflicts related to land use. These issues are examined in diverse geographic and institutional contexts and across multiple academic disciplines, as reflected both in the spatial distribution of the PAs studied and in the structure of authors' affiliations, representing different research centres and scholarly traditions.

With the growing number of publications and diversity of topics addressed, the research field on the relationships between PAs and local socio-economic development is broadening and diversifying (e.g. Saayman and Saayman 2006; Ritzel et al. 2023; Aschenbrand 2022; Mika et al. 2016; Bonet-García et al. 2015; Gundersen et al. 2022). Existing studies tend to focus on selected issues or specific empirical cases, while broader syntheses of this rapidly expanding body of literature appear to remain relatively limited. Previous reviews have addressed selected dimensions of the relationships between PAs and socio-economic development, including poverty reduction and human wellbeing (e.g. Oldekop et al. 2016; Pullin et al. 2013), social perceptions and community participation (e.g. Allendorf 2022; West et al. 2006), as well as governance and regional development perspectives in the European context (e.g. Becken and Job 2014; Hirschnitz-Garbers and Stoll-Kleemann 2011; Mayer and Job 2014). However, these studies have usually focused on specific thematic issues, regions, or types of impacts and have only occasionally examined thematic, spatial, and institutional dimensions together within a single analytical framework. Consequently, there appears to be a lack of analyses that simultaneously capture the dominant research themes as well as the geographic distribution of study areas and research centres.

The aim of this article is therefore to systematise and synthesise, through a systematic literature review, the research output on the relationships between PAs and local socio-economic development by identifying the main research themes, the spatial distribution and geographic scope of studies, and by highlighting research gaps and formulating directions for future analyses[1]. By combining thematic, spatial, and institutional perspectives, the study provides a broader overview of the structure and diversity of research on PAs and local socio-economic development and highlights areas that remain underexplored.

1 In this article, the term "local development" refers primarily to socio-economic processes occurring in communities and territories located in or adjacent to PAs and functionally connected with them, although some studies also address broader regional dimensions.

2. Methodology

2.1 Literature search and thematic coding

The study was conducted using a systematic literature review, following the general principles of the PRISMA approach to literature identification, screening, eligibility assessment, and selection, as presented in Fig. 1. The review included publications indexed in the Web of Science (WoS) and Scopus databases, selected as the primary sources because they provide structured and standardised bibliographic data. The analysis covered publications available up to the first quarter of 2025. The search was based on a set of keywords used to construct an SQL query for both databases: ("*national park*" OR "*protected area*" OR "*biosphere reserve*" OR "*nature reserve*") AND ("*local development*" OR "*economic impact*" OR "*local economy*" OR "*regional development*" OR "*park-people relation*").

In the next phase, additional publications were included from a review conducted using Google Scholar, used as a supplementary search tool to identify additional relevant publications not retrieved through database searches. This initial search in bibliographic databases returned a total of 2,442 English-language

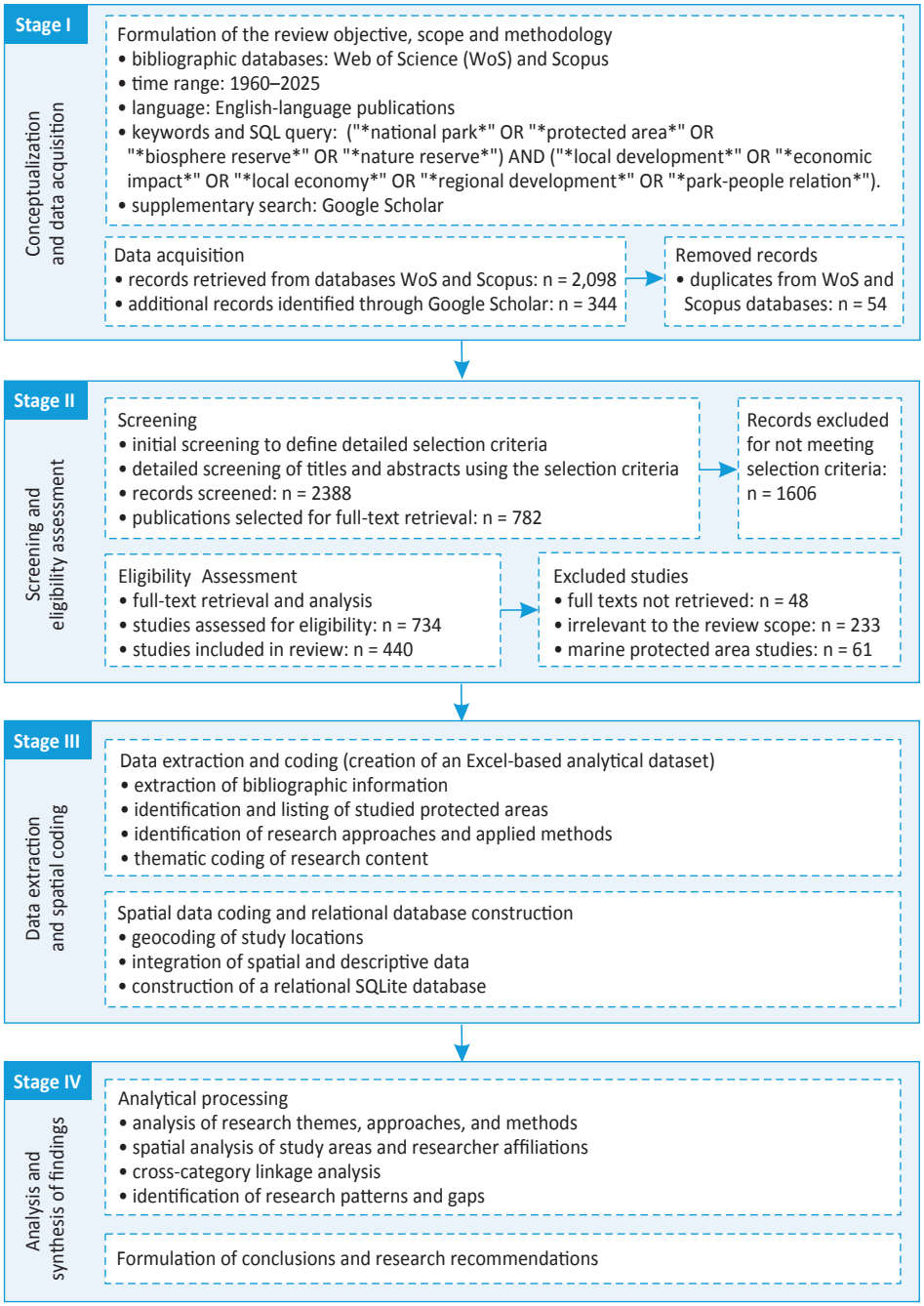

Fig. 1 Research procedure.
Source: authors' own elaboration.

publications (including 2,098 records from WoS and Scopus and an additional 344 from Google Scholar). After removing duplicates, 2,388 records remained. Of these, 654 publications from WoS and Scopus and 128 from Google Scholar (782 in total) were selected for full-text analysis. Following the full-text analysis, 501 works were retained, and after restricting the scope to terrestrial PAs, the final dataset consisted of 440 publications.

The general inclusion criteria required that articles address the following research questions:

1. What approaches and models of protected area operation can be identified worldwide in the context of their relationships with their respective local socio-economic systems?
2. What functional linkages exist between PAs and local socio-economic systems?

During the full-text analysis, the basic bibliographic data (authors' names, year of publication, article title, journal or book title), authors' affiliations and countries of affiliation, types of PAs analysed, and – where studies covered no more than five sites – their names were recorded in an MS Excel spreadsheet. Additionally, the type of study (theoretical or empirical), methods applied, and thematic focus were identified and coded using detailed thematic codes. The coding process was conducted manually by three researchers through iterative qualitative content analysis.

Through an initial screening of titles, abstracts, and keywords, we identified a set of detailed, descriptive thematic categories reflecting the research issues addressed in the literature. The initial categories were derived inductively during the screening process and subsequently refined and expanded during the full-text analysis. Based on content analysis, each publication was assigned to a category corresponding to its dominant research problems. For articles that met the research questions but did not fit into any predefined category, supplementary categories were created. In total, 26 coded categories were identified. These categories were subsequently combined into seven broader thematic groups by combining categories addressing related research themes, in order to systematise the thematic structure and identify overarching research directions. Publications with complex thematic profiles were assigned to more than one category.

2.2 Spatial and relational database analysis

QGIS software (version 3.40) was used to visualise the locations of the PAs and analyse their spatial distribution. For all the articles included in the review which contained information on the location of the studied area (park, reserve, or region), the location was geocoded using the Nominatim service and Google Maps (Serere et al. 2023), based on contemporary official names of PAs. After the initial extraction of data, including bibliographic information and coordinates, the entire literature dataset with descriptive information was organised and implemented in a relational SQLite database (Bhosale et al. 2015).

The study employed a relational database architecture based on SpatiaLite, an extension of the SQLite engine enabling the integration of bibliographic and spatial data. This choice was dictated by SpatiaLite's capability to integrate standard relational data with spatial geometries, enabling the synchronization of literature records with geographic datasets. The database served as a central framework for multidimensional analysis of the literature, including the classification of records according to protected area type, protected area name, country, and authors' institutional affiliations. Basic bibliographic data were supplemented with information on authors' affiliations in order to identify major research centres and geographic patterns of scientific activity. Structured SQL queries and JOIN operations were used to connect bibliographic records with spatial layers representing protected area boundaries and national borders.

A key stage of the analysis involved assigning publications to specific geographic entities. Protected area names identified in publications were manually verified and linked to corresponding geographic coordinates and polygon layers (for studies involving up to five PAs). SpatiaLite spatial functions were then used to verify spatial intersections and assign records to countries and PAs. GROUP BY aggregation procedures enabled the calculation of the frequency and spatial distribution of case studies and authors' affiliations across countries and regions.

The SpatiaLite/SQLite architecture also played a key role in preparing datasets for the visualisation of relationships between authors' institutional affiliations and the geographic locations of the studied PAs. It provided the structured input required for Sankey flow diagrams. Dedicated SQL queries were used to generate node and flow tables defining links between countries of authors' affiliations and the locations of analysed PAs.

3. Results

3.1 General characteristics of the reviewed studies

A total of 440 publications focusing on the relationships between PAs and local socio-economic development and referring exclusively to terrestrial PAs were included in the detailed analysis. The final dataset included publications published between 1980 and the first quarter of 2025. The temporal distribution of publications indicates that relatively few records included in the review appeared before the early 2000s. Only 63 studies from the period1980 and 2005 meet the selection criteria (14.3% of the total dataset). A clear increase in publication output was observed between 2005 and 2010, as reflected

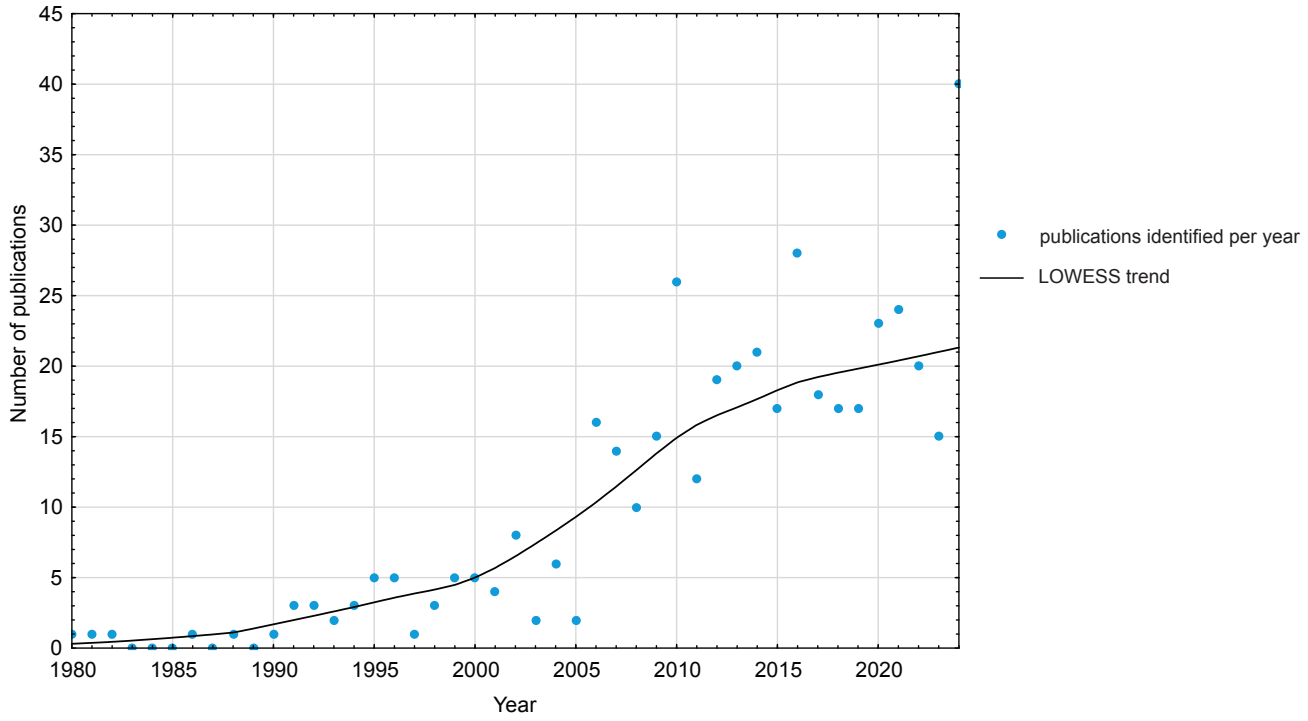

Fig. 2 Temporal distribution of publications included in the review.
Source: authors' own elaboration.

by the LOWESS trend line (Fig. 2). Overall, 85.7% of the analysed works were identified for the period 2006–2025, with 9% of them published in the most recent full year covered by the study (2024). These results indicate a substantial increase in the number of publications addressing the relationships between PAs and socio-economic development, although this trend also reflects broader changes in international scientific publishing, the expanding coverage of bibliographic databases, and the growing dominance of English-language journal articles.

The analysed body of research has a distinctly global character, as confirmed both by the locations of the PAs studied (distributed across six continents in 88 countries) and by their authors' affiliations (representing 537 institutions located in 75 countries). Authors' affiliations indicate the dominant role of research centres located in highly developed countries, particularly in the United States of America (94 affiliation instances; 17.5%), the United Kingdom (42; 7.8%), and China (33; 6.1%). At the same time, growing research activity from scholars representing developing regions was also observed.

Empirical studies accounted for the majority (73%) of the analysed publications and relied primarily on case-study approaches, most often focusing on one PA (206 publications; 46.8%) or two PAs (29; 6.6%).

Although the literature covers various categories of PAs, national parks dominate among the analysed protected area types, accounting for 49.8% of all publications referring to specific PAs. This dominance results from the fact that national parks are the most internationally recognisable, and institutionally established form of nature protection and are present in most countries worldwide, while also exerting significant influence on their surrounding socio-economic environments (McDonald and Wilks 1986; Reimann et al. 2011; Saayman and Saayman 2006). The next most frequently represented category comprised biosphere reserves (8.4%), followed by nature reserves (5.0%). Other types of PAs appeared in less than 5% of the analysed publications, including UNESCO World (Natural) Heritage Sites, Natura 2000 areas, regional parks, nature parks, landscape parks, wildlife sanctuaries, and related categories. However, these shares should be considered in the context of differences in protected area classifications and terminology across national systems, as comparable forms of protection often operate under different names. When analysed jointly, categories such as regional parks, natural parks, nature parks, landscape parks, and protected landscape areas accounted for approximately 6.6% of the analysed studies, making them the second most frequently represented group after biosphere reserves. Moreover, some PAs operated under overlapping protection designations (e.g., national park, biosphere reserve, and Natura 2000 site), while some studies simultaneously addressed multiple PA categories, resulting in overlapping category counts. Additionally, in almost 26% of the publications, the type of PA was not further specified, which mainly refers to theoretical works and more general approaches to the role of PAs in local socio-economic systems.

The most frequently used research methods included questionnaire surveys, conducted primarily among local residents, and expert interviews, particularly with representatives of local authorities and protected area managers. The surveys focused primarily on socio-economic perceptions and impacts related to PAs. In some studies, survey methods were combined with statistical analyses, enabling quantitative assessment of attitudes and relationships (e.g. Bajracharya et al. 2006; Lekgau and Tichaawa 2020; Ward et al. 2018). On the other hand, publications of a theoretical nature or combining theory with empirical research focused on the formulation and testing of conceptual models, analytical frameworks, and systems-based approaches (e.g. Allendorf 2010; Du et al. 2015; Imene et al. 2019; Lane 2001). The analysed dataset consists primarily of journal articles (90.2% of publications). The publications are distributed across 188 journals, led by the *Journal of Sustainable Tourism* (4.0%) and *Sustainability* (3.5%), followed by *Environmental Conservation, Eco.mont, and Land Use Policy* (2.8% each). The broad range of journals reflects the interdisciplinary scope of research on the socio-economic impacts of PAs and the growing importance of this topic across multiple scientific fields.

3.2 Thematic structure of the research field

By analysing the 440 publications, we identified seven main thematic categories (T1–T7) reflecting the principal research streams on relationships between PAs and their respective local socio-economic systems.

The first category comprises theoretical foundations (T1 – *theory*). Although quantitatively less represented than other groups (25.2% of publications), this category plays a key interpretive role in the development of approaches linking conservation with the social and economic development of PAs. These studies formulate the fundamental concepts, models, and analytical frameworks describing relationships between PAs, local communities, and economic systems, theories of governance and sustainable development, and the evolution of protected area management approaches (Hirschnitz-Garbers and Stoll-Kleemann 2011; Mose and Weixlbaumer 2016; Oldekop et al. 2016; Phillips 2003). The analysed literature also includes references to selected social and economic theories used to explain attitudes towards conservation, tourism development, the role of PAs in territorial development, and participation in protected area governance. However, such approaches appeared relatively rarely and were usually applied in individual case studies rather than constituting a broader theoretical framework for the field. These included, among others, the Theory of Planned Behavior (Ward et al. 2018), Social Exchange Theory (Nugroho and Numata 2020), and economic approaches related to local and regional development (Mayer et al. 2010; Saayman and Saayman 2006). The largest category consists of publications addressing governance and management of protected areas (T2 – *governance*), accounting for 64.8% of the dataset. These studies analyse management models, financing, institutional systems, power relations between administrative levels, protected area policies, and issues of social participation and co-management. The latter two issues – social participation and co-management – are particularly strongly represented (21.2% of all publications). These works examine the involvement of local communities and other stakeholders (including NGOs) in protected area governance, often emphasising the importance of such involvement for legitimising conservation actions and reducing conflicts, while also highlighting challenges in implementing participatory management (Buono et al. 2012). Examples include analyses of co-management in biosphere reserves (Klenovec 2021; Mohedano Roldán et al. 2019; Stoll-Kleemann and Welp 2008) and other PAs in Europe, Asia, and Africa (Bajracharya et al. 2006; Brockington 2004; Buono et al. 2012; Pütz et al. 2017; Salerno et al. 2010; Ward et al. 2018).

The third category includes studies on social impacts of protected areas (T3 – *social impacts*), accounting for 55.9% of the publications. Research focuses on the social functions of PAs (mainly at the local level) in 32.7% of studies, including changes in residents' well-being and quality of life (Rinzin et al. 2009; West et al. 2006). A significant research strand (25.5%) concerns relations between protected area authorities and local populations (park–people relations), often conceptualised as park–people relations, including cooperation, conflict, and trust-building processes, participation in governance, and interactions between local communities and protected area authorities (Allendorf 2010; Anthony 2007). A substantial group of publications (10.8%) looks at the PAs where communities depend on those areas' resources; this includes issues related to indigenous peoples and the links between PAs and poverty (11.8%) (Vedeld et al. 2012). Case studies dominate, examining land-use restrictions, conflicts over resources, distribution of benefits, and forms of park–community cooperation, particularly in developing countries. These studies reveal the complex nature of social effects, highlighting, on the one hand, improvements in quality of life through tourism development, and on the other, economic losses resulting from conservation regulations (Holmes 2013; Laudati 2010).

The fourth category, research of perceptions and attitudes (T4 – *perceptions*), includes 44% of analysed publications. These studies focus on local communities' perceptions of PAs and social attitudes towards them (31.7%), as well as residents' attitudes towards tourism (13.2%). Although closely related to park–people relations, this category specifically groups studies focused primarily on subjective perceptions, attitudes, and levels of acceptance regarding PAs and their socio-economic and environmental impacts. The

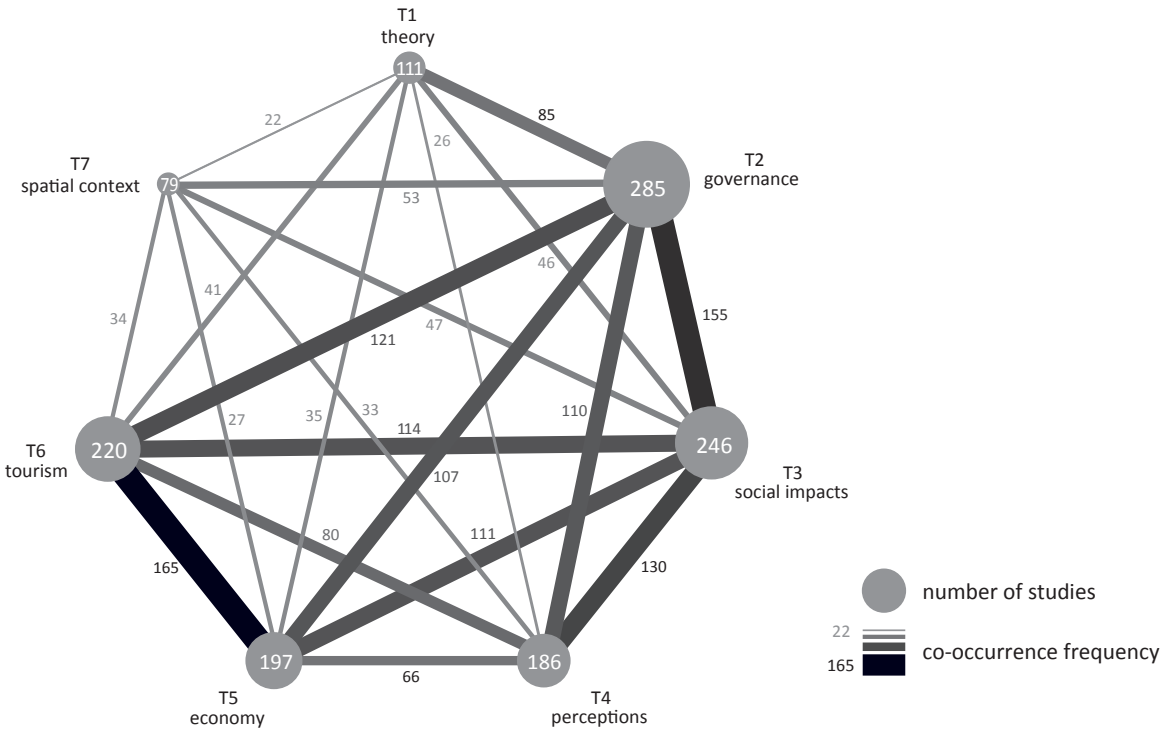

Fig. 3 Thematic structure of the research field.
Source: authors' own elaboration.

analyses address the degree of acceptance of conservation measures, factors which determine support for conservation and tourism development, trust in protected area administrations, and diverse impacts of the PAs on various stakeholder groups, including farmers and tourism service providers (e.g. Arnberger and Schoissengeier 2012; Gundersen and Rybråten 2022; Karanth and Nepal 2012; Mika et al. 2019; Nastran and Istenič 2015; Stern 2008).

The economic impacts category (T5 – *economy*) comprises 48.1% of publications. These studies analyse the economic value of the PAs and their influence on local labour markets, household incomes, entrepreneurship, and regional economic structures (Bennett et al. 1996; Mayer and Job 2014). Both qualitative and quantitative approaches are used, including microeconomic analyses of tourist expenditure and income flows to local communities and households with some studies utilizing regional value-added or input-output models (e.g. Chidakel et al. 2021; Mayer et al. 2010; Majewski 2024; Saayman and Saayman 2006; Snyman 2013; Baral et al. 2008), as well as macroeconomic assessments of national park impacts on regional and national development (e.g. Bennett et al. 1996; Fredman and Yuan 2011; Walls 2022). The literature also encompasses cost assessments and cost-benefit analyses (Mayer et al. 2010; Majewski 2024), as well as analyses of opportunity costs associated with conservation restrictions and protected area management (e.g. Loch et al. 2024; Mayer 2014).

A further strand examines the broader links between PAs and socio-economic development, addressing issues of poverty, inequality, and long-term development trajectories in park regions (e.g. D'Alberto et al. 2024; Kandel et al. 2022; Kauano et al. 2020). The sixth category, tourism and recreation (T6 – *tourism*), includes 51.4% of publications and is closely linked to the economic impacts category, but focuses specifically on tourism as the main channel of socio-economic impacts of PAs. Studies examine economic effects of tourism, its influence on residents, spatial conflicts, overtourism, visitor management, and links between tourism and conservation financing (e.g. Behrens et al. 2009; Lanfranchi et al. 2014; Sapiyeva et al. 2024; Shoo and Songorwa 2013; Spenceley and Goodwin 2007).

The last category, spatial and planning perspectives (T7 – *spatial context*), accounting for 16.3% of publications, focuses on the spatial context of PAs, including their distribution and spatial consequences for regions, land-use changes within and around PAs, spatial planning challenges (particularly in peri-urban areas), integration of spatial and environmental policies, and the role of ecological and infrastructural connectivity for local development (e.g. Aschenbrand 2022; Bender et al. 2017; DeFries et al. 2007; Fan et al. 2022).

The analysis of co-occurrence of thematic codes shows that the strongest linkages occur between categories T5 and T6 (economy–tourism) and between T2 and T3 (governance–social impacts) (Fig. 3). At the level of multi-code configurations, the most frequent thematic configuration is T2–T5–T6, accounting for 19.8% of all publications, and representing

the dominant governance–economy–tourism nexus. The second most frequent configuration, T2–T3–T4 (17.7%), forms the socio-institutional core of the field by integrating governance, social impacts and perceptions. Other frequent configurations (e.g. T2–T3–T5–T6, 10.9% and T3–T4–T5–T6, 8.9%) confirm the multi-thematic nature of the field and the frequent integration of social and economic perspectives. Category T1 (theory) most often co-occurs with T2 (governance) and rarely with T7 (spatial context), indicating that theoretical reflection is developed primarily in relation to management, while spatial issues are predominantly application-oriented.

Despite the multi-thematic character of the field, relatively few studies combine objective economic indicators with analyses of social perceptions and attitudes. Similarly, longitudinal and long-term analyses of socio-economic changes in protected area regions remain limited. The reviewed literature is also strongly dominated by tourism-oriented approaches, while alternative development pathways linked to PAs are addressed much less frequently.

3.3 Spatial distribution of the study areas

Our analysis included 254 publications describing empirical research that had been conducted in specific PAs (up to five per study). Their distribution is shown in Fig. 4. There is an evident concentration of studies in Europe, particularly in the Alpine–Carpathian region. The most frequently analysed areas include PAs in the Alps, such as Hohe Tauern National Park in Austria, Berchtesgaden National Park in Germany, Swiss National Park and the Entlebuch UNESCO Biosphere Reserve in Switzerland, Vanoise National Park in France, Gran Paradiso and Stelvio National Parks in Italy, and Triglav National Park in Slovenia (Bender et al. 2017; Duglio and Letey 2019; Gabrovec et al. 2017; Getzner 2003; Getzner 2010; Getzner et al. 2014; Job et al. 2021; Mayer 2014; Mose 2016; Ritzel et al. 2023; Thompson 1999). In the Carpathians, studies were conducted, among others, in Babia Góra National Park in Poland, Slovak Karst National Park, Aggtelek National Park in Hungary, Apuseni Mountains Natural Park in Romania (Kőszegi et al. 2022; Manea et al. 2019; Mika et al. 2019; Tomaskinova and Tomaskin 2013, Zawilińska et al. 2023).

The second major area where research was concentrated is South and Southeast Asia, especially the Himalayas, e.g. Chitwan National Park and the Annapurna Conservation Area in Nepal (Bajracharya et al. 2006; Karanth and Nepal 2012; Lehmkuhl et al. 1988; Nepal and Weber 1995; Stræde and Treue 2006, among others). Outside the Himalayan region, numerous studies

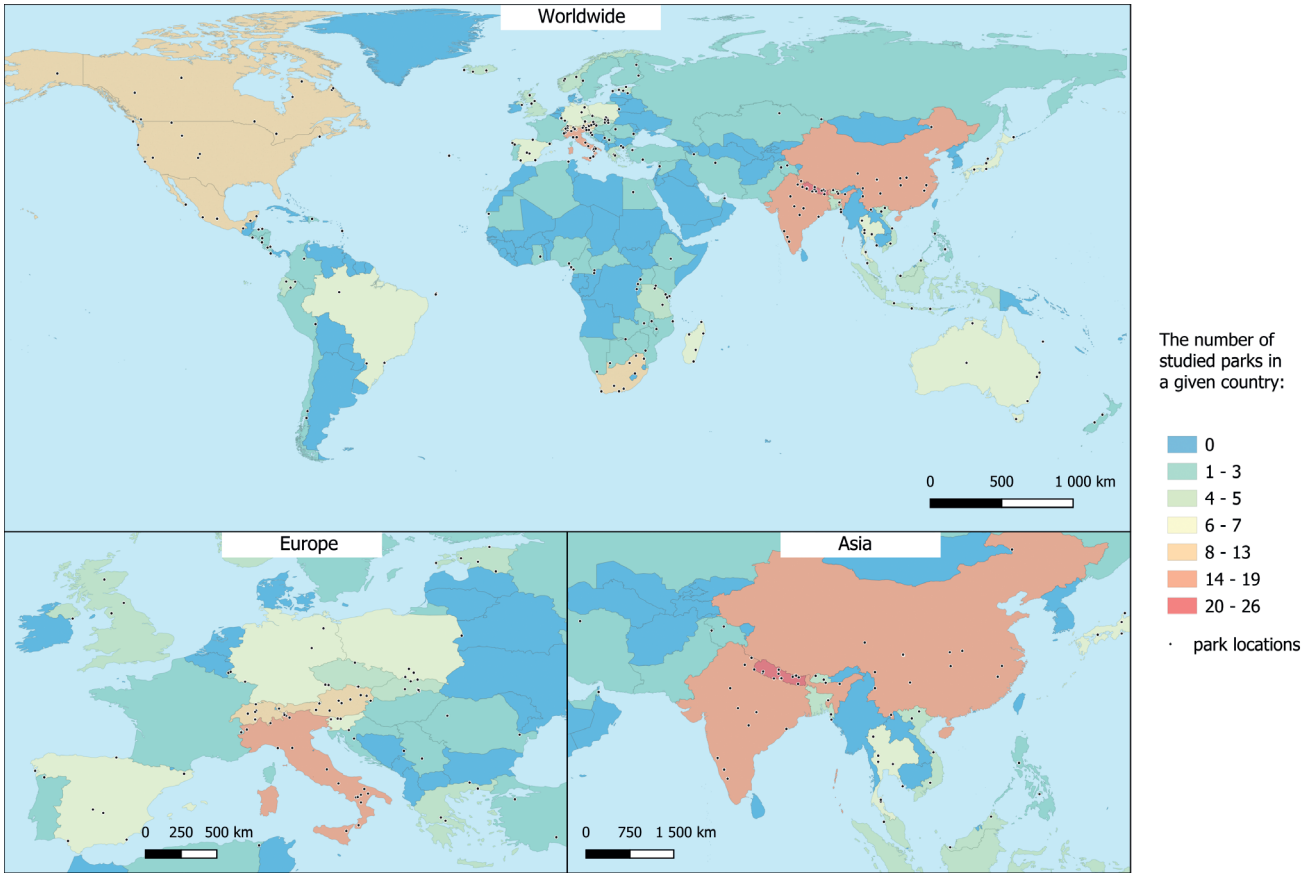

Fig. 4 Spatial distribution of case studies included in the review.
* The map includes only studies focused on up to five specific protected areas.
Source: authors' own elaboration.

were conducted in China (e.g., Wolong Nature Reserve and Wuyishan National Park: He et al. 2021; He and Su 2022; Liu et al. 2012; Xu et al. 2009) and India (e.g., Kanha and Kaziranga National Parks: Heinen and Shrivastava 2009; Sinha et al. 2012).

Research is also prominent in Southern and Southeastern Africa (especially the Republic of South Africa), with particularly numerous studies focusing on Kruger National Park (Anthony 2007; Chidakel et al. 2020, 2021; Saayman and Saayman 2006; Spenceley and Goodwin 2007; Strickland-Munro et al. 2010), but also other parks in South Africa (e.g., Addo Elephant and Table Mountain National Parks: Fezeka and Stella 2020; Saayman et al. 2013) and in other countries of the region, e.g. Maasai Mara National Reserve (Kenya), Bwindi Impenetrable National Park (Uganda), Serengeti–Ngorongoro Biosphere Reserve, and Mikumi and Kilimanjaro National Parks in Tanzania (Botha et al. 2021; Kitole and Sesabo 2024; Mojo et al. 2020; Tumusiime and Sjaastad 2014; Vedeld et al. 2012).

The spatial distribution of the studied areas reveals limited representation of PAs in some regions. Therefore, the interpretation of Fig. 4 should take into account the methodological limitations resulting from the adopted assumptions and review methodology. First, the analysis excluded publications concerning marine PAs, which resulted in lower representation of Australia and island countries such as New Zealand and Indonesia. Second, the adopted methodology included only peer-reviewed scientific publications published in English. Consequently, national and organisational reports, as well as non-peer-reviewed publications, were excluded. This is reflected in the relatively small number of PAs identified in countries such as the USA, Canada, and New Zealand, where a substantial part of research is conducted by governmental agencies and focuses on long-term monitoring. Third, the exclusion of non-English publications results in the underrepresentation of studies from regions where a substantial share of research is published in languages other than English, including Central and Eastern Europe, France, German-speaking countries, and Spanish- and Portuguese-speaking regions.

3.4 Institutional affiliations and the geographical scope of authors' research

Publications where author affiliations have been indicated (n = 399) are dominated by studies authored by a single researcher or a team of researchers from a single country (72.4%). Institutions from the United

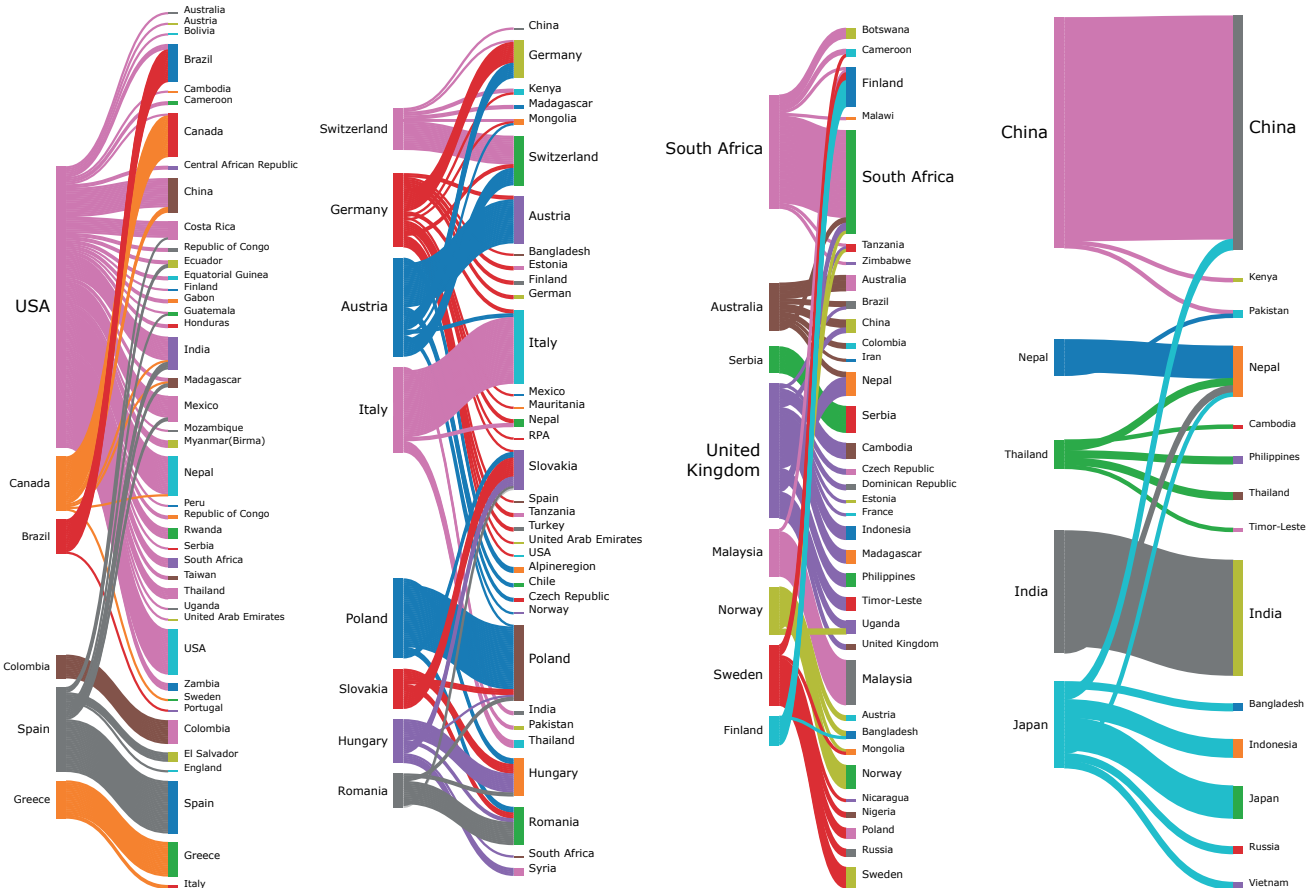

Fig. 5 Links between authors' countries of affiliation and countries of studied protected areas.
Source: authors' own elaboration.

States occupy a significant position: 20.3% of publications with identified affiliations included at least one author affiliated with a US institution. A strong presence of nationally focused research is evident: among publications for which both author affiliations and the country of the study area could be identified (n = 332), 48.5% (161 publications) involved exclusively authors from the country where the protected area or areas concerned were located. At the same time, international co-authorship is observed, particularly concentrated in the Alpine region and, to a lesser extent, in the Carpathians. The geographic dispersion of research conducted outside authors' countries of affiliation is substantial, with authors affiliated in "Global North" countries conducting a significant share of analyses in "Global South" countries. In this context, Nepal emerges as one of the most frequently studied locations by authors affiliated with foreign institutions.

For a subset of 254 articles where both detailed study locations (specific PAs) and author affiliations could be clearly identified (with affiliations from a given country recorded at least ten times), an analysis of relationships between the country of affiliation and the country of research was conducted (Fig. 5). The analysis reveals both variation in the scale of research activity among countries and different spatial patterns of research activity. One pattern characterises countries strongly oriented towards international research (notably the United States, the United Kingdom, and Germany), where the number of studies conducted abroad clearly exceeds domestic studies. The United States stands out for the broadest territorial scope of research activity. The second pattern represents countries primarily focused on domestic research (e.g., China, India, South Africa, Canada, Italy, and Poland).

4. Discussion

4.1 Research trends and the complexity of protected area impacts

The systematic literature review shows that research on the relationships between PAs and socio-economic development has developed into a broad field integrating perspectives from both natural and social sciences, including environmental sciences, geography, economics, management studies, and sociology. The field is dominated by empirical case studies focused on selected aspects of social impacts, economic effects, or institutional relationships. The findings confirm earlier observations regarding knowledge fragmentation and limited potential for drawing general conclusions. This results from the strong context dependency of relationships between PAs and local socio-economic systems (Hirschnitz-Garbers and Stoll-Kleemann 2011; Upton et al. 2008). While the dominance of local and sector-specific approaches enables in-depth analysis of individual cases, it simultaneously hampers comparability of findings and their translation into broader public policy frameworks.

Empirical studies indicate that impacts of PAs are very diverse and often ambivalent. On the one hand, PAs may stimulate tourism and entrepreneurship, create jobs, strengthen social capital, and raise environmental awareness. On the other, they may restrict access to resources, contribute to the decline of traditional and culturally significant livelihood practices, exacerbate poverty and social inequalities, and generate conflicts related to land use and benefit distribution (D'Alberto et al. 2024; Ma et al. 2019; Oldekop et al. 2016; West et al. 2008). The complexity and ambiguity of these effects underscore the need to analyse PAs in interaction with their institutional, cultural, and territorial contexts that co-shape their social and economic impacts.

4.2 Dominant research themes and emerging perspectives

Thematic analysis indicates a broadening of research perspectives from studies focused on selected issues concerning PAs – such as resource-use restrictions, social conflicts, and tourism issues (e.g., Brandon and Wells 1992; Nepal and Weber 1995) – towards more complex approaches that consider the interrelations between nature conservation, governance, and socio-economic development issues (Bahfon Feyeh 2016; Becken and Job 2014; Silva et al. 2024; Sims 2010). Increasingly, PAs are analysed not as isolated conservation units but as elements of broader territorial systems embedded in specific natural, socio-cultural, and economic contexts (He et al. 2021; Mika et al. 2016; Palomo et al. 2014; Salerno et al. 2010). This direction aligns with a systems-based approach to studying society–environment relations, developed within the framework of social–ecological systems (SES) theory (Berkes et al. 2009; Cumming et al. 2015; McGinnis and Ostrom 2014; Ostrom 2009, among others).

Our analysis of thematic structure (T1–T7) highlights the prominence of the research category relating to governance and management of protected areas (T2), which co-occurs with all the other categories, underscoring the importance of institutional frameworks as determinants of both social and economic impacts of protected areas. A particularly strong socio-institutional research strand focuses on park–community relations, social acceptance of conservation measures, and residents' attitudes (T2–T3–T4). Studies across diverse geographic contexts show that participatory governance approaches tend to reduce conflicts and strengthen positive impacts, whereas top-down, exclusionary approaches ("fences and fines") correlate with growing social tensions and negative attitudes towards conservation

(Ayivor et al. 2013; Buono et al. 2012; Getzner 2003; Hirschnitz-Garbers and Stoll-Kleemann 2011; Lockwood 2010; Mika et al. 2019; Wells et al. 1992). At the same time, the literature indicates that whether participatory and community-based conservation approaches are feasible and effective depends strongly on local institutional conditions, social capital, traditions of cooperation, and genuine access to decision-making mechanisms (Berkes 2008; Buono et al. 2012; Chen et al. 2005; Durbin and Ralambo 1994; Hammer et al. 2016; Salerno et al. 2010; Shrivastava and Heinen 2007).

The second dominant research strand is the economic–tourism perspective, focusing on the influence of PAs on local economies, primarily through tourism development. The strong co-occurrence of economic and tourism categories (T5–T6) reflects a prevailing narrative in which PAs become key components of local economies, largely due to the development of tourism in its various forms. Research highlights positive development impulses resulting from tourist spending, development of the service sector, and job creation (Bonet-García et al. 2015; Getzner 2010; Mayer et al. 2010; Saayman and Saayman 2006). Within this broader research perspective, it has often been implicitly assumed that increasing economic benefits from tourism would translate into more positive attitudes of local communities towards PAs and conservation policies. Importantly, however, these analyses often fail to account for the full balance of benefits and costs. Tourism benefits do not always compensate for burdens borne by local communities (especially those highly dependent on natural resources) and unequal benefit distribution means that costs and benefits accrue to different stakeholder groups, with the greatest economic gains not necessarily reaching those experiencing the most severe restrictions (Sandbrook and Adams 2012; Walpole and Goodwin 2000). The balance between tourism-related benefits and conservation-related costs differs significantly between industrialised and developing countries, where local dependence on natural resources and institutional conditions shape both the distribution of tourism benefits and perceptions of PAs (Karanth and Nepal 2012; Tumusiime and Sjaastad 2014). At the same time, studies by Stern (2008) question this dominant paradigm, showing that trust in protected area authorities and perceived legitimacy of governance may play a more important role in shaping park–people relations than purely economic considerations. Relatively limited attention has also been devoted to the long-term socio-economic effects of PAs and to changes in the distribution of costs and benefits over time. Moreover, only a limited number of studies allow for more reliable causal inference regarding the relationships between PAs and local socio-economic changes. Consequently, there is increasing emphasis on the need for comprehensive socio-economic evaluations of PAs that take into consideration both benefits and costs incurred by different stakeholder groups and the spatial distribution of those benefits and costs. Although relatively few comprehensive cost–benefit analyses of PAs have been published, existing studies point to the importance of such integrated approaches. This is crucial for shaping endogenous development policies and planning future scenarios (Job et al. 2021; Mayer and Job 2014). Existing research, however, focuses primarily on direct economic effects, while indirect costs, opportunity costs, and non-material and non-market values remain insufficiently explored (Job et al. 2021). This points to the need for more integrated assessment models combining economic analyses with studies of social change and social perceptions of protected area impacts as well as more systematic monitoring and integration of conservation and development objectives in protected area management (Job et al. 2017; Jones et al. 2020).

4.3 Spatial patterns and contextual diversity in protected area–development relations

The reviewed literature also suggests important differences between world regions in the ways PAs are embedded in local socio-economic systems. In wealthier regions with well-established institutions and high social capital – such as Western and Northern Europe, including the Alpine region – PAs are, at times, associated with restrictions and social tensions but are more often perceived as development assets and integrated into local development strategies (Getzner et al. 2014; Getzner 2010; Hammer et al. 2016). Studies highlight their role in diversifying local economies not only through tourism and related services but also through organic agriculture, local products, and territorial branding (Gandariasbeitia 2010; Leibenath 2016; Moreira et al. 2021; Ritzel et al. 2023; Kraus et al. 2014). Studies in European PAs emphasise the active institutional role of PAs, portraying them not only as nature conservation tools but also as important actors in local socio-economic systems (Mose 2016; Silva et al. 2024; Zawilińska et al. 2023).

A different picture emerges from studies conducted in "Global South" countries, where strong dependence of local communities on natural resources coincides with those communities' limited institutional capacity. These studies focus more heavily on conflicts related to land-use restrictions, wildlife damage, displacement, poverty, and unequal distribution of tourism benefits and conservation outcomes (Barrow and Fabricius 2002; Brockington and Igoe 2006; Fan et al. 2022; Laudati 2010; Lehmkuhl et al. 1988; Sandbrook and Adams 2012; Sarker and Røskaft 2011; Shoo and Songorwa 2013; Shrivastava and Heinen 2007). It is stressed in the literature that negative impacts disproportionately burden local communities, while benefits are often captured by actors (often external) who

are economically and institutionally stronger, making social justice a key challenge for the legitimacy of conservation policies (Oldekop et al. 2016). These regional differences suggest that the socio-economic role of PAs cannot be interpreted independently from broader institutional and development contexts.

Overall, the findings indicate that PAs are increasingly analysed in relation to their respective local socio-economic systems and, in some studies, treated as their integral components. Their effectiveness is primarily linked to the quality of park–community relations and the ability to design governance models adapted to territorial contexts. Research is predominantly empirical and case study–based, while theoretical reflection (T1), although present, mainly serves as an interpretive background for social and institutional analyses, most often co-occurring with categories T2 and T3.

4.4 Limitations of the study

The findings should be interpreted in light of several limitations related to the adopted search strategy and data sources. The analysis was based primarily on publications indexed in the Web of Science (WoS) and Scopus databases, supplemented by additional searches conducted using Google Scholar. While this approach ensured transparency and reproducibility of the search procedure as well as access to standardised bibliographic metadata necessary for the quantitative analyses, it also constitutes an important limitation, as it excludes a considerable part of older publications and studies published in non-indexed journals and other sources (e.g. books and national reports). This database-related limitation may also contribute to the concentration of authors' affiliations in countries strongly represented in internationally indexed scientific publishing, particularly the United States of America, the United Kingdom, and China. This pattern reflects broader characteristics of international scientific publishing and database coverage rather than a feature specific to research on PAs (Asubiaro et al. 2024; Paasi 2005).

The most significant limitation, however, concerns the language criterion. Only English-language publications were included, following a common practice in international systematic and bibliometric reviews aimed at ensuring comparability, transparency, and consistency of the analysed material. At the same time, this approach excludes a substantial body of research on PAs published in other languages, which often contains context-specific and locally grounded knowledge (Brenner and Job 2022). Given the local nature of many protected area studies, this may partially distort the overall picture of research activity, particularly in countries where a substantial share of research is published in national languages. Additionally, the adopted methodology excludes international guidelines and policy-oriented documents (e.g. Spenceley et al. 2021), unless they were also published as peer-reviewed scientific publications.

Another limitation results from restricting the analysis to terrestrial PAs. Marine PAs were excluded because their governance systems, socio-economic interactions, and management challenges differ substantially from those of terrestrial ones (Kearney et al. 2013), which would increase the heterogeneity of the dataset. While terrestrial PAs are primarily shaped by land-use change, agricultural and forestry pressures, the expansion of built-up areas, tourism-related development, as well as complex private property rights and conflicting land ownership claims, marine PAs face distinct governance challenges related to common-pool resources, fisheries management, access to marine assets and the specific pressures associated with marine and coastal tourism (Bennett and Dearden 2014; Kearney et al. 2013; Pascual et al. 2016).

In addition, the diversity of protected area terminology used internationally constitutes an important methodological challenge. Different countries apply different names and classifications for PAs, many of which lack direct equivalents in other national systems (Protected Planet 2026). Therefore, the search strategy relied on broad internationally recognisable categories and terms, which may have limited the inclusion of some nationally specific forms of PAs. Despite these limitations, the adopted approach enabled the identification of major international research trends and comparative analyses across different geographic and institutional contexts.

A separate limitation concerns the spatial analysis presented in Section 3.3 and Fig. 4. While all publications were included in the quantitative, thematic and affiliation analyses, the spatial visualisation was limited to empirical case studies analysing up to five specific PAs. Larger regional and comparative studies covering numerous PAs were excluded from the map, as the aim of the figure was to illustrate the spatial concentration of detailed place-based case-study research rather than the overall geographic coverage of all analysed publications.

5. Conclusions

The systematic literature review demonstrates that research on relationships between PAs and socio-economic development constitutes a broad and multi-thematic research field, integrating perspectives from natural and social sciences. Over the past decade and a half, the field has developed dynamically, expanding its thematic scope and shifting from fragmented approaches towards more integrated analyses of the role of PAs in their respective local socio-economic systems. Empirical case studies, deeply embedded in local contexts, dominate the literature. The impacts of PAs are neither uniform nor unequivocal; rather, they

are multidimensional and context-dependent, shaped by the interaction of historical, spatial, social, cultural, and economic factors and varying according to analytical perspective, spatial scale, and stakeholder group.

The review findings confirm the global character of research on PAs and local development, alongside an uneven spatial distribution of studies, reflected both in the geographic concentration of analysed PAs (mainly in Europe, South Asia, and Southern Africa) and in the structure of authors' affiliations. Authors affiliated with institutions in the United States, the United Kingdom, China, and European Union countries clearly dominate, while a high share of studies is conducted by authors affiliated in the countries where the analysed PAs are located.

The thematic structure of research centres on governance issues, park–community relations, and the economic and tourism functions of PAs. The content analysis has revealed that (1) there is a shortage of long-term studies which would make it possible to track changes in socio-economic structures; (2) detailed cost–benefit distributions among stakeholder groups have only been examined to a limited extent; and (3) objective economic indicators have not been sufficiently integrated with analyses of social perceptions of the impacts of PAs. Also, research on development pathways alternative to tourism remains relatively underdeveloped. The findings suggest that future research should place greater emphasis on long-term, comparative, multi-scalar, and multi-dimensional analyses to better capture the diverse roles of PAs in their respective local socio-economic systems. Such an approach may provide more useful and empirically grounded foundations for shaping conservation policies aligned with territorial development goals and adapted to diverse local conditions.

Data availability

The dataset supporting the findings of this study is available in the RODBUK repository at https://doi.org/10.58116/UEK/H2LYSM.

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