

# Nature Conservation and Urban Development Control in the Portuguese Planning System: a New Impetus Against Old Praxis?

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## ABSTRACT

Natura 2000 areas bring a new incentive to assess the performance of land-use planning in protecting environmental values from the impacts of development pressures. In the last decades, urban growth and consequent environmental impacts on natural areas have been a major concern for the Portuguese land-use planning system. Sprawl around sensitive areas has been revealed to be a persistent phenomenon in spite of the increasing challenges underlying land-use plans. This article critically analyses the content of three main documents recently adopted by the Portuguese government – the ‘National Strategy for Sustainable Development’, the ‘National Policy Programme for Spatial Planning’ and the ‘Sector Plan for Natura 2000’ – seeking prospects to innovate future plans at lower levels in order to prevent additional pressures on natural areas. First, the article reviews the recent theoretical debate on planning for the protection of natural areas. Results evidenced by recent EU evaluation reports are used to propose a set of guidelines to evaluate planning guidance at national level. Second, it critically analyses the three planning documents, bearing in mind the main features of the planning system and the proposed guidelines. The article is concluded with a discussion of their potential, exploring whether they bring a new impetus to the role of land-use planning against an outdated and persistent praxis, or whether, on the contrary, further efforts to strengthen planning guidance remain to be formulated. Copyright © 2008 John Wiley & Sons, Ltd and ERP Environment.

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## Introduction – Planning for the Protection of Natural Areas

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TOGETHER WITH THE ABANDONMENT OF TRADITIONAL AGRICULTURAL AND FORESTRY PRACTICES, land-use change and urban sprawl are major factors of disturbance of natural areas, undermining their important ecological systems and functions. Consuming land and green areas, urban sprawl encourages the use of private transportation, thus increasing energy demands and air pollution, and reducing the efficiencies of environmental infrastructures. Natural areas and associated biodiversity continue to be degraded by the negative impacts of urbanization, which translate into altering natural drainage patterns and natural rainfall–runoff–storage relationships, fragmenting habitats and adding non-point pollution and pollutants to runoff and streams, increasing surface temperatures that cause decline in habitat quality and biodiversity and limiting the public's ability to enjoy many of the benefits these areas provide (see, for example, the analysis of the effects resulting from different land cover types (Theobald *et al.*, 1997; Pauleit and Duhme, 2000; Pauleit *et al.*, 2005; Randholf, 2004) or the analysis of the ecological footprint of cities (Wackernagel and Rees, 1996) revealing the dependence of urban areas on surrounding natural resources). It is true that technological changes can significantly reduce environmental impacts of increased natural resource consumption (Kahn, 2000), but when natural assets such as classified ecosystems are at stake technology does not fully avoid major negative impacts. This argument, added to the recognition of the value of biodiversity for life support, calls for a precautionary approach in the articulation between nature conservation and land development.

Nature conservation objectives, established by international, national or local regulations, provide a protection framework for particularly sensitive areas. These frameworks are usually defined outside the planning system but the system must operate within them (Owens and Cowell, 2002). Various public measures have been promoted to protect natural areas and to control urban development in their vicinities throughout the world. On the one hand, there is the establishing of boundaries for natural areas, over which new development may only take place if subject to strict environmental criteria and conditions, or even not at all. On the other hand, and usually from a different angle, there are instruments for controlling urban development, including basic regulatory tools of comprehensive plans, zoning schemes and subdivision regulations, which may be implemented in a variety of often overlapping scales and jurisdictions. These are often influenced by various factors such as coordination, effective implementation, landowner involvement, land prices, housing affordability (Bengston *et al.*, 2004) or planning taxes (Razin, 1998), hindering a full evaluation of their effectiveness.

Amezaga and Santamaria (2000) argue that part of the failure in conserving natural areas is 'rooted in a fragmented view of resources management, which results in spatial mosaics where highly protected "natural" reserves are surrounded by semi-natural or intensively used "non-natural" territory'. The fragmentation both on the conceptual ground and on the actual territory leads to policies and practices disconnected from the social and natural processes that shape the functioning and structure of natural (and often economic and social) systems. The protection of ecosystems has been a concern of European environmental policy and has led to the enactment of several directives seeking nature conservation. Among them, as presented in the following section, are the two that establish the Natura 2000 network, aiming to protect European biodiversity. Despite their innovative view, Amezaga and Santamaria (2000) argue that they do not overcome the illusion of separating spaces to be ruled by contrasting objectives, i.e. nature conservation and economic growth, which has been at the core of the European Nature Conservation Policy. The integration of environmental and nature conservation principles in urban development control requires not only the acknowledgement of environmental problems but also the understanding of natural cycles and related phenomena associated with ecosystems nearby. Leading to a new assimilation of the concept of biodiversity and improved spatial governance, sustainability should

be the unifying theme overcoming the apparent incoherence between conservation and development (Gibbs *et al.*, 2007).

Empirical evidence reveals real difficulties in successfully articulating these two perspectives. The results of two recent European Environmental Agency reports show the need for stronger ties between nature conservation and urban development control in Europe. The report on the protection of biodiversity (EEA Report 5.2006) shows that land use in Europe continues to change, and on an unprecedented scale. In spite of some positive results from nature conservation policies such as the Natura 2000 designation process, land is becoming a scarcer resource and being increasingly converted to artificial surfaces, taking over agricultural and natural areas, particularly wetlands. In addition, the report on urban sprawl (EEA Report 10.2006) shows high levels of urban development throughout Europe, especially on urban fringes and in coastal areas. As an impact of urban sprawl, the disruption of natural areas is strongly mentioned, especially coastal and mountain areas. Pressures on natural areas derive not only from new land-use change but also from the cumulative effects of past land uses. According to the report, 'this process of degradation of ecological networks clearly threatens to undermine the important nature conservation efforts of initiatives such as Natura 2000'.

Several specific recommendations are made by both reports. Out of these, we single out five that could underpin the framework for action to prevent impacts of urban sprawl over natural areas:

- a stronger recognition that biodiversity conservation is not just about preserving special habitats and threatened species but about preserving the basic life-support systems on which life on Earth depends;
- a stronger impetus on biodiversity action plans and a clearer sense of priority and broad-based agreement among key stakeholders;
- a stronger integration of policies at various levels, namely urban development and nature conservation policies and strategies, which, bearing in mind the potential of spatial planning, should also be considered in the integration of planning levels, principles, guidelines and plan articulation, assuring shared principles and reinforcing mechanisms between them;
- a revised system of soil value, valuing it according to its potential use and not over-valuing urban development use, assessing the dependence of human health on biodiversity management and seeking the internalization of external costs to biodiversity;
- a land-use accounting based on land cover and indicator use to systematically measure trends and related impacts.

Keeping in mind the above-mentioned guidelines, this paper aims to critically analyse whether Natura 2000 is in fact contributing to a new assimilation of the concept of biodiversity by land-use planning, attenuating the traditional border-type and consequently fragmented view of land development versus nature conservation. This is especially relevant for Portugal, where land-use planning has been increasingly blamed for neglecting natural values by allowing high levels of urban sprawl and the consequent disturbance of environmentally sensitive areas (see Fidelis, 2001). The main research questions of this paper focus on the following issues: is the concept (and process) of biodiversity protection associated with Natura 2000, designed to further extend protection values beyond classified areas, for instance, by giving guidelines to prevent negative pressures around sensitive areas or to formulate development plans and projects outside their 'borders' in order to prevent disruption effects on environmental sustainability? Are land-use planning policy guidelines in Portugal recognizing and foreseeing the need to integrate biodiversity within planning objectives and formulas, and guiding the design of new plans so as to prevent additional pressures close to sensitive areas, for instance by preventing urban sprawl or the increase of impervious surfaces? After briefly framing the theoretical debate in this section, the structure of the paper is as follows. First, we provide a brief description and critical analysis of the Natura 2000 network, its

concept, process and potential to influence land-use planning in revising its traditional way to view the protection of natural values through a fragmented view of land and related development processes. Second, we critically analyse three recent Portuguese national planning documents – the ‘National Strategy for Sustainable Development’, the ‘National Policy Programme for Spatial Planning’ and the ‘Sector Plan for Natura 2000’ – seeking prospects to innovate future plans at lower levels in order to prevent additional pressures over natural areas. The article is concluded with a discussion of their potential, namely of whether they bring a new impetus to the role of spatial planning against an old and persistent praxis, or whether, on the contrary, further efforts to strengthen planning guidance remain to be formulated.

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### Insights into the Natura 2000 Network

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The Natura 2000 network, established in two directives, is widely regarded as by far the most important legislative instrument for the protection of biodiversity within the EU territory. The ‘Birds’ Directive was adopted in 1979 in order to protect all wild bird species and their natural habitats in the member states of the EU. The ‘Habitats’ Directive was adopted in 1992 with a similar aim: the conservation of biodiversity and of endangered flora and fauna, including their respective habitats. Together, these directives aim to create a coherent European ecological network of protected areas called Natura 2000. Member states are required to select and designate Special Areas of Conservation (SACs) under the ‘Habitats’ Directive and Special Protection Areas (SPAs) under the ‘Birds’ Directive. The basis for this selection is the criteria set out in both directives, together with relevant scientific information that is used to assess the site’s relative importance within the European context.

Natura 2000 was conceived because previous strategies were proving to be ineffective for semi-natural habitats that depended on the continuity of their active management, and on the other hand because it was becoming clear that many species and habitats require far larger areas than dispersed protected ‘islands’ in order to maintain a favourable status. This is especially true if we approach biodiversity conservation from a non-equilibrium paradigm that acknowledges the ever-changing dynamism and fluxes of natural systems, which do not fit within a static notion of nature that has been hitherto dominant (Gibbs *et al.*, 2007). If already inadequate for relatively small areas, the ‘classic’ models of conservation could not even be classified as a viable option to manage a much larger proportion of national territories that necessarily included various degrees of development. Natura 2000 may include more populated areas whose development needs to be more dynamic (thus requiring a higher degree of infra-structures) than that of the mostly rural traditional protected areas. Although there is a considerable amount of overlap, Natura 2000 does not intend to replace the already instituted national systems of protected areas. These may well be more appropriate to the more sensitive areas, where even minimal economic development could be detrimental to nature and biodiversity conservation. It is also important to bear in mind that the Natura 2000 status of a determinate area concerns exclusively the protection of the area’s species (and respective habitats) targeted upon designation, not all the present species and habitats (EU, 2000). Furthermore, the selection of Natura 2000 sites has in mind the creation of an ecologically coherent network at the European level, leaving the coherence of national biodiversity conservation to be sought by other means. Finally, the scope of objectives of other protected areas goes beyond the conservation of biodiversity, including the protection of unique landscapes, environmental quality standards and, with particular relevance to the argument of this article, sprawl control.

Covering almost a fifth of the EU territory, the unprecedented nature of the scale of Natura 2000 and its synergetic character imply a substantially different approach than that of ‘classic’ nature reserves. In accordance with its ideological background, it departs from the premise that the success of conservation efforts lies in considering the people and the stakeholders of the affected areas as central to the whole

conservation effort rather than on its periphery (LIFE, 2004). Article 2(3) of the Habitats Directive explicitly requires conservation measures to 'take account of the economic, social and cultural requirements and the regional and local characteristics of the area'. In the Habitats Directive, the legal protection of Natura 2000 areas is assured mainly by Article 6, which indicates the various tasks involved so that the sites' targeted natural assets can be safeguarded, including proactive, preventive and procedural requirements. Specifically concerned with project licensing issues, Articles 6(3) and 6(4) are especially relevant for planning systems. Introducing for the first time the precautionary principle for protected areas, Article 6(3) obligates any project that may potentially impact on a Natura 2000 site to be subject to an environmental assessment, stating that it may not be approved if the assessment indicates that the project may adversely affect the integrity of the site. Article 6(4) however, opens a window for the approval of plans or projects with significant effects on Natura 2000 sites, but only when no alternative solutions exist; compensatory measures have been proposed to ensure the overall coherence of Natura 2000 is maintained, and the project is justified on the grounds of imperative reasons of overriding public interest (IROPI). If the site contains a priority natural habitat type and/or a priority species, 'the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other [IROPI]'. The required opinion from the EC is 'not binding but in case of non-conformity with Community law, legal action may be taken' (EU, 2000). Regarding the spatial application of Article 6, the Habitats Directive does not set physical boundaries for possible sources of disturbance. In other words, once granted the probability of 'significant effects' over the site's protected species and habitats, the scope of its legal protection includes not only projects or plans located within the site, but also those located outside, be they in the directly surrounding areas or further beyond these. The same principle extends to necessary management measures that may have to be implemented outside the site.

Still, in spite of all the obstacles and setbacks, the effective implementation of Natura 2000 represents an important step towards the institutionalization of sustainable development in the sense that it subjects local development to specific biodiversity protection criteria that in the future could broaden and extend beyond these areas. These are areas where partial environmental sustainability may be legally enforced, thus restricting incompatible land uses as a function of the requirements of protected species and habitats. From this perspective, Natura 2000 areas may constitute an invaluable laboratory for testing feasible modes of articulation between economic development and the environment, i.e. sustainable development. In addition, the implementation of Natura 2000 implies that activities in and around protected areas can have significant effects on protected natural values and need to be assessed (Beunen, 2007). Spatial planning, therefore, finds in Natura 2000 a most useful test ground for strategies, as well as for different environmental ethics (see Rosa and Silva, 2005), which may help define its full potential as an instrument for sustainability. In the long term, once the identification of workable sustainable practices and the necessary change of institutional, economic and social paradigms – which a successful Natura 2000 would imply in the designated areas – have occurred, it is hoped that Natura 2000 may be 'allowed' to expand beyond itself. This expansion is meant both geographically, beyond designated areas, beyond the EU and ultimately beyond the developed world, and in scope, beyond a narrow selection of species and habitats and finally beyond biodiversity itself, encompassing a much broader aggregate of environmental criteria.

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## Biodiversity and the Land-Use Planning System in Portugal

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In Portugal, the policy framework for biodiversity conservation is provided by the 'National Strategy for Biodiversity Conservation' and structured into two legal frameworks, one related to the Natura 2000

network and another to the national network of protected areas. The legislation for the Natura 2000 network, seen as the European nature conservation regime, is regulated through Decree-Law 140/99, which basically translates the directives into national legislation. In the Portuguese mainland, 29 Special Protection Areas and 60 Special Areas of Conservation have been classified so far, increasing to approximately 20% the areas subject to national regimes of nature conservation. Like many other member-states, Portugal has adopted a set of guidelines and approaches towards the management of Natura 2000 areas. While some other European countries have adopted management plans for each classified area (EU, 2005), in Portugal measures to protect species and habitats listed in the Birds and Habitats Directives are, so far, established in a single national plan ('Sector Plan for the Natura 2000 Network'), which then have to be integrated into other territorial plans. These measures include specific management objectives and regimes for each area.

With particular relevance for biodiversity protection there is also the national nature conservation regime that is established by Decree-Law 193/93 (together with Decree-Law 227/98), creating a national network of protected areas with eight types of area: national parks, natural reserves, natural parks, natural monuments, protected landscapes, classified sites, sites of biological interest (private) and marine protected areas. These areas are obliged to have land-use as well as management plans. While the former are almost completed for the majority of areas, the latter, which are particularly relevant for evaluation and monitoring, still require additional efforts. The main objectives and conservation regimes of these areas may in certain circumstances overlap with those of Natura 2000. In order to ensure an ecological spatial continuum, the 'National Ecological Reserve' (REN) regulates the use of other sensitive areas defined according to bio-physical criteria. These areas include river margins, sand dunes, high slope areas, wetlands etc, where new development cannot take place, in spite of efforts by recent legislation to introduce some flexibility (Decree-Law 203/2002). By bringing additional obstacles to new development, the REN has been severely criticized both by development and environmental lobbies. The first argue that the REN is just one more obstacle to development. The latter argue that it does not consider sensitive areas already made artificial, neglecting their real environmental fragility and the necessary degree of caution with environmental values. In addition, they argue that by adding more obstacles to development, and by covering different types of sensitiveness to development effects with a single classification, the REN promotes a negative view of the environment and does not teach nor lead to alternative ways of articulating environment and development, as opposed to what was initially expected (Fidelis, 2001; Pardal, 2003).

Despite the existing REN, the protection of habitats outside designated areas is still missing from the law and from the planning practice. National authorities deny this charge by arguing that the external border of the national sites for European classification is much larger than it should be, precisely in order to include buffer zones. In practice, nevertheless, the effect is that urban development areas and some other development actions proposed to be located outside their margins are acceptable if foreseen in local plans. This means that, although the national level, through the National Institute of Nature Conservation and Biodiversity, has the main responsibility for biodiversity protection, a strong role is allocated to local planning as it has the potential and power to consider the surrounding areas of protected regimes by formulating development options and by controlling associated effects. So far, however, local development plans have not been subject to strategic environmental assessment, and urban perimeters, which were defined in local master plans during the 1990s, have allowed wide areas for urban expansion (areas for urban development are approximately twice as big as the existing urban areas), thus giving space to sprawl. Consequently, no matter how wide the protection areas that have been designed, it is becoming increasingly important to evaluate the extent to which the European conservation regime contributes to further extend biodiversity protection beyond classified areas in order to promote a new approach to environmental sustainability in land development and planning.

Spatial development (strategic)	National Policy Programme for Spatial Planning (PNPOT) Regional Land-Use Plans (PROT) Inter-Municipal Plans (PIOT)	The first establishes the land policy and planning objectives for the country's mainland. The second establishes the policy and territorial model for each of the five NUT II regions. The third promotes planning strategies for a set of municipalities with critical common development issues.
Sector planning (strategic)	Sector Plans with Spatial Incidence (PSIT)	Sector Plans regarding the spatial impacts of economic development (Natura 2000, water, energy, forests etc.)
Spatial environmental planning (regulatory)	Land-Use Plans for Coastal Areas (POOC), for Protected Areas (POAP) and for Public Water Catchment Areas (POAAP)	These plans establish the main environmental protection objectives and measures for protected areas, for public water catchment areas and for coastal zones, which have to be integrated into local plans.
Spatial planning (regulatory)	Local Master Plans (PDM) Urbanization Plans (PU) Detailed Plans (PP)	A PDM is a regulatory zoning instrument covering the territory of each municipality; Urbanization Plans are general frameworks to guide land-use changes in human settlements and Detailed Plans do the same but with a higher degree of detail.

**Table 1.** Land use planning system in Portugal

In addition to the legal structure and policy guidelines from the nature conservation side, the implementation of protected areas and Natura 2000 sites is supported by land planning regulations that establish a set of territorial plans at several levels: national, regional, sectoral and local levels. The main objectives, structure and processes of the Portuguese planning system are stated in the Framework Law 48/98 on Spatial Planning and Urbanism,<sup>1</sup> and complementary legislation. Framework Law 11/87 on the Environment, although particularly focused on environmental issues, is also a relevant document as it states the role planning instruments should play for the protection of environmental values and for the promotion of sustainable development. According to Law 48/98, the planning system aims to achieve integrated sustainable development in an economic, social, cultural and environmental way throughout different regions and urban centres. It includes the main objectives of planning policy, the structure of spatial plans and the process for their preparation and approval. The planning system is organized into three main levels of approach – national, regional and local (see Table 1). The national level is addressed in the National Programme for Spatial Planning Policy (PNPOT), defining the main strategic guidelines for spatial development and for the Sector Plans with spatial incidence. Under the responsibility of the central government are also the Special Environmental Plans. The regional level is defined by the Regional Land Use Plans (PROT), aiming to establish the regional spatial development strategies. The local level is implemented through the Municipal Land Use Plans.

The Land-Use Plans for Protected Areas concentrate their approaches and measures in the interior of national protected areas, seeking to protect special areas and natural resources (through the zoning of different types of human use) from the impacts of the invasion of human settlement, leaving the control of development outside their margins to Local Master Plans. Local plans, with a distinct role

<sup>1</sup> Recently altered by Law 54/2007 of 31 August.

in controlling the expansion of human settlements, are now undergoing a process of revision that seeks, among other objectives, to better manage urban development. Local Master Plans must take into account land-use restrictions related to biological diversity in protected areas and sites designated under the Natura 2000 network as well as in the areas of the above-mentioned National Ecological Reserve. Additionally, the development and implementation of a demanding framework of environmental impact assessment of projects, particularly those that may affect protected areas, allows the identification of major threats to biodiversity potentially caused by large development projects, as well as the evaluation of their approval or the proposal of mitigation measures. The analysis of cumulative environmental effects of planning options, measures and decisions, however, has not been undertaken as specific legislation has only (very) recently been adopted.<sup>2</sup>

Although highly desired by practitioners and the public, the Portuguese planning system has received several criticisms. Pires (2005) stated that 'overall, there seems to be a paradox between an emerging planning system (to some extent reflecting growing social expectations about the contribution of planning to qualify development trajectories) and a common disillusionment with the practical achievements of planning activity'. While there is no comprehensive assessment of the threats to the biodiversity of protected areas, or of the efficacy of the planning system in protecting natural values, various criticism has brought forth evidence that the land-use planning system has not fully incorporated environmental values or safeguarded protected areas from the negative impacts of development (Fidelis, 2005). There are, however, a few sources of data indicating trends regarding land-use in the Portuguese mainland that reveal critical results. During the 1990s, Portugal experienced a period of rapid economic growth and structural change, with a substantial increase in public and private investment, in environmental infrastructure and, more importantly in the context of this article, in urban expansion. Through the analysis of data provided by the Corine Land Cover of 1985 and 2000, the most recent Report on the State of the Environment (MAOTDR, 2005 and 2006) has outlined some alerting results:

- the Portuguese territory has been under numerous pressures, which, among others, include the strong concentration of urban settlements in coastal areas and urban expansion;
- artificial soils have increased by 42%, mainly due to the growth of urban areas;
- areas of natural flora have suffered the greatest loss, being reduced by 9%, while agricultural areas with natural zones have been reduced by 4%.

These results are reinforced by EEA Report 11.2006, where the mean annual increase of artificial land between 1990 and 2000 is said to be one of the highest among European countries, of which approximately 55% is associated with urban sprawl, 40% with economic activities and infrastructures and 5% with consolidated urban settlements. Four critical factors of current planning and land management suggest an urgency to review current options associated with land development. One factor is associated with the land ownership system, which is strongly influenced by cultural, social and economic aspects as well as by an outdated and complex legal framework (Law 794/76) that is unclear in regard to property rights, thus serving as a poor instrument to regulate land management policy (Lobo, 1990). Another factor is associated with the fact that the rate of urban growth is much higher than that of population growth, which is partly explained by the influence of the powerful building industry lobby. The third factor is associated with the fact that current financial revenues of local municipalities are made up of urban taxes and building initiatives, a situation that apparently is not likely to be changed in the near future, causing an increasing dependence on urban development and, consequently, on sprawl. Finally,

<sup>2</sup> Decree-Law 232/2007.

the fourth factor is related to the weak formulation of planning objectives and related indicators able to evaluate planning efficacy as well as to the lack of a systematic observation and evaluation system, foreseen in the legislation but not yet implemented.

The evidence of ineffective land management to prevent urban pressures over natural areas and the critical factors referred to above present both national and local planning with the challenge to formulate different or at least enhanced options to protect natural areas and control sprawl in future land development and planning praxis in Portugal. Are there any trends or prospects that foresee major changes? The next section analyses in detail three recent national strategic documents which are expected to have a significant influence on the Portuguese planning system. The aim of the analysis is to assess the extent to which these documents bring to the fore new guidelines to further integrate nature conservation objectives into land-use plans by making use of the strategic objectives and mechanisms of Natura 2000, and how far the new guidelines for planning practice promote the assimilation of new biodiversity and nature conservation objectives into the development of measures to alleviate urban pressures close to natural areas.

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## ENDS, PNPOT AND PSRN2000

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Procedural and technical tools to promote the protection of biodiversity have received numerous contributions from the main literature of both planning and nature conservation. Added to these, the institutional recognition and compromise translated into national policy and strategic frameworks may play a significant role in renewing concepts and practices, and ultimately bring new challenges to the performance of planning in protecting natural values. Seeking relevant content for the protection of biodiversity and its integration in urban development control guidelines so as to prevent additional pressures over natural areas, we cross-analysed the already mentioned documents, i.e. the 'National Strategy for Sustainable Development' (ENDS), formally adopted by the Council of Ministers Resolution 109/2007 of 20 August, the 'National Policy Programme for Spatial Planning' (PNPOT), approved by Law 58/2007 of 4 September, and the Sector Plan for Natura 2000 (PSRN2000), expecting formal adoption. Table 2 presents their main objectives and structure. The analysis of ENDS and PNPOT focused on their main objectives related to biodiversity and nature conservation and to urban development, seeking to assess

- the relative importance given to biodiversity protection,
- whether concern for biodiversity is extended beyond protected areas,
- whether Natura 2000 is used to pursue this extension and
- whether there are any objectives or measures reflecting an integrated view of biodiversity protection and urban development control.

National sustainable development strategy frameworks can be quite important to establish the extent to which environmental and nature conservation should be considered and integrated into different sector policies. In Portugal, the ENDS places biodiversity and nature conservation in the third objective, 'better environment and use of natural resources', after objectives related to knowledge and to economic issues. The strategy outlines the need to protect natural values but specific objectives and measures are basically confined to national protected areas and to Natura 2000 areas. These are only referred to in the strategy as additional areas for nature conservation. The specific objective 3.5 mentions the need to

ENDS	The ENDS has three key development priorities – sustainable economic development, environmental enhancement and protection of natural resources and improvement of social cohesion and higher employment. Out of these broad priorities it defines seven key objectives: (1) preparing Portugal for the knowledge society, (2) achieving growth and competitiveness in the global economy, with more efficient use of Energy, (3) better environment and use of natural resources, <sup>3</sup> (4) more equity, equal opportunities and social cohesion, (5) better international connectivity of the country and an equilibrated regional territorial development, <sup>4</sup> (6) active participation of Portugal in the process of European construction and international cooperation and (7) efficiency and modernization of the public administration. Each of these is then developed into various strategic priorities, vectors and associated indicators to evaluate implementation. Specific measures and indicators are then established for this purpose.
PNPOT	The PNPOT is the national framework policy for land development and planning. The new territorial model is structured into four themes – prevention and reduction of risks, natural resources and agricultural and forest planning, urban planning system and mobility and international connectivity. Six strategic objectives are stated: (1) to protect biodiversity, natural values, landscape and cultural heritage, to use energetic and geological resources in a sustainable way and to prevent risks, <sup>5</sup> (2) to strengthen territorial competitiveness, (3) to promote polycentric development of territories and to strengthen infrastructures relevant for spatial cohesion and integration, <sup>6</sup> (4) to ensure territorial equity in infrastructures and collective equipments, (5) to expand networks and infrastructures of communication, (6) to strengthen the quality and efficiency of land management promoting public and institutional involvement. These objectives are then subdivided into various specific objectives and measures.
PSRN 2000	It promotes nature conservation under Natura 2000 policy objectives, namely for the mainland's SPAs and SACs. The objectives are (1) to establish guidelines for spatial management of SPAs and SACs, (2) to establish the regime of protection of resources and natural values, and to establish compatible uses, (3) to establish guidelines for zoning inside the areas according to conservation objectives and priorities, (4) to define measures that guarantee the valuing and maintenance of habitats and species, and that determine the types of land-use constraint, (5) to provide guidelines for the insertion of specific protection measures in local master plans or special environmental plans and (6) to define conditions, criteria and processes to be followed in environmental impact assessments. The plan then develops a set of guidelines for each protected area including species, measures for protection and constraints for development.

**Table 2.** Main objectives of ENDS, PNPOT and PSRN2000

articulate biodiversity protection with sector policies but proposed measures are fundamentally associated with tourism and agriculture, omitting specific references to urban areas. In fact, apart from the references to regional and local ecological structures in land use plans and the creation of a Nature and Biodiversity Conservation Framework Law that clarifies the content, the legal framework and the

<sup>3</sup>Specific objectives: 3.1, mitigation of climate changes; 3.2, efficient water use and management; 3.3, integrated air management, sustainable agriculture and forestry; 3.4, agricultural and forest management that is compatible with nature conservation and landscape protection; 3.5, articulation of nature and biodiversity conservation with sector policies and with desertification prevention measures; 3.6, use of oceans as a development and competitive factor; 3.7, natural and technological risk management, 3.8, integrated waste management.

<sup>4</sup>Specific objectives: 5.1, better international connectivity; 5.2, accessibilities that contribute to territorial cohesion and to a more polycentric spatial model; 5.3, attractive, accessible and sustainable cities; 5.4, strengthened support to less developed regions.

<sup>5</sup>Specific objectives: 1.1, development of knowledge systems on environment and natural resources; 1.2, improvement and consolidation of regimes, systems and fundamental areas to protect biodiversity and natural resources; 1.3, definition and implementation of a national strategy for soil protection; 1.4, promotion of sustainable planning and management of forest activities and areas; 1.5, implementation of an integrated water management policy; 1.6, definition and implementation of an integrated planning and management policy for coastal areas; 1.7, implementation of a national strategy of ocean management; 1.8, definition and implementation of an integrated policy for geology resources; 1.9, definition of a national strategy for energy and climate change prevention; 1.10, protection of landscapes and cultural heritage; 1.11, risk assessment and prevention.

<sup>6</sup>Specific objectives: 3.1, improved structuring of urban centres, especially in less developed regions; 3.2, development of infrastructure networks to support accessibility and mobility to favour new centralities and urban centres; 3.3, promotion of more compact and polycentric urban development and of low density urbanization and strengthened centralities to control sprawl; 3.4, promotion of rural development adjusted to spatial development.

instruments of nature conservation policy, it does not indicate any concrete mechanisms capable of achieving such integration. The mention made in the specific goals of the need for 'securing the functionality and connectivity of natural systems, namely by guaranteeing the balance of nutrient and water cycles and the existence of ecological corridors' does point towards a broader understanding of biodiversity, but this is rather vague and insufficient in face of the concrete need to disseminate the awareness that protecting biodiversity is also about preserving the basic life-support systems on which life on Earth depends. Regarding national protected areas and Natura 2000, the ENDS lists several measures related to the design and implementation of management plans and stresses the need for subsidies and strategies that support economic and social development in rural areas – particularly those with strong land-use restrictions, but no specific references are made to a stricter control of urban development in the surroundings of protected areas. In addition, Objective 5, related to urban development, includes in its specific objectives the need to promote sustainable cities (5.3), but does so in rather vague terms, giving no clue on how biodiversity protection is to be articulated with urban development control. Associated measures and indicators proposed under these objectives do not indicate further details on the subject.

The National Policy Programme for Spatial Planning seeks to outline the planning and development of the national territory, define strategic options and a territorial model and establish an integrated framework of commitments within a set of policies to carry out its strategy and specified objectives. It is a fundamental piece of policy in developing and implementing some of the spatial strategies referred to in the ENDS. Curiously, when listing the main problems that spatial planning needs to address, it starts by referring to 'the insufficient protection of natural resources' and 'urban sprawl with the consequent fragmentation effects on surrounding territories'. The PNPOT proposes a territorial model for the Portuguese main land structured into three themes – one for natural and technological risks, another for agricultural and natural systems and another for urban development and main transport systems (see MAOTDR, 2006, pp. 8–12). When listing its key objectives, the PNPOT places the protection of biodiversity ahead of objectives related to territorial competitiveness and to the development of territories, centralities and infrastructures. The protection of biodiversity and the Natura 2000 network are mainly, almost exclusively, dealt with in the chapter dedicated to nature conservation and protected areas. The PNPOT recognizes that 'nature conservation has problems of articulation with other activities' but it only mentions activities related to agriculture, forestry, energy production and tourism, it being difficult to assess how the concept of biodiversity is being further assimilated by other intrusive sectors such as urban development. The third main objective of the PNPOT, related to urban development, does consider the need to control urban sprawl and to opt for quality low-density areas but does not suggest any measures to interrelate these issues with biodiversity and nature conservation. Conflicting integration of nature conservation with urban sprawl in the surroundings of protected areas can be illustrated by some critical examples in the Portuguese territory such as the 'Ria de Aveiro' on the northern coast, the 'Ria Formosa' in the Algarve or the river Tagus estuary, not to mention others. The territorial model ends up with a fragmented view of spatial planning by being unable to overlay and articulate its proposal for urban development with environmental and biodiversity structural national values, mainly left to environmental special plans of protected areas. Once again, Natura 2000 is treated as an additional network of protected areas instead of being referred to as a motive to further extend biodiversity conservation to urban policies.

The Sector Plan for Natura 2000 (PSRN2000) establishes the guidelines to protect the existing SPAs and SACs in the Portuguese territory. Reasonably, its approach is anchored in the fundamentals and institutional structure of nature and biodiversity conservation. The main objectives of the plan are centred on the procedures and measures needed for the protection of these areas, which focus particularly on activities within their borders. Considering the poor content of the plan on this matter, spatial options and conditions outside these areas should be formulated by land-use plans. In fact, apart from the general

need to promote 'ecological corridors' in land-use plans or the environmental assessment of plans or large projects potentially harmful to natural values, no particular guidelines or measures are suggested in the plan regarding the management of surrounding areas so as to prevent additional pressures from urban development on protected areas. In fact, although conceptually the Natura 2000 network aims to contribute towards the increasing integration of biodiversity into land-use planning and environmental decision-making, procedurally it provided poor guidelines for an improved practice and this is evident in the PSRN2000, which does not seem to be adding new insights to traditional practice in Portugal where surroundings of protected areas are being poorly considered by protection measures, and where existing legislation related to protected areas already required the environmental impact assessment of potentially harmful activities within their limits.

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## Conclusions

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A stronger integration of sustainable development and biodiversity principles requires at least the review of the criteria used to design, place development and judge development proposals. This implies challenging established priorities, concepts and practices of planning, which need to overcome the generally conservative, compartmentalized and weak approach to sustainability and biodiversity protection. Together with legal instruments, policy frameworks may play a role in promoting such a change. This article aimed to critically analyse the content of three central documents recently adopted by the Portuguese government – the 'National Strategy for Sustainable Development', the 'National Policy Programme for Spatial Planning' and the 'Sector Plan for Natura 2000' – seeking prospects to innovate future plans at lower levels in order to prevent additional pressures on natural areas. The analysis aimed to outline their potential, exploring whether they bring a new impetus to articulate biodiversity protection with urban development control strategies, particularly in the surroundings of natural areas. Although the ENDS and the PNPOT make specific references to Natura 2000, they tend to confine its concepts to classified areas and thus maintain traditional approaches, instead of using it as an incentive to further biodiversity protection. Moreover, even though the PNPOT recognizes nature conservation as a relevant priority, it does not offer an effectively integrated view of nature conservation and urban development, and so fails to consider the conflicts and obstacles that will certainly occur during the actual implementation of its spatial policies. Thus, the recently adopted Portuguese planning policy still reveals the fragmented view of spatial planning we described in the introduction, hindering the necessary integration of policy sectors and creation of synergies for the sake of biodiversity protection. Both documents remain tightly focused on a limited concept of biodiversity, neglecting the need for new approaches and measures specifically designed to prevent additional pressures close to sensitive areas, in particular those caused by urban sprawl. Apart from ecological corridors, a concept still under construction and assimilation by planning practice, we find no mention of other measures such as the clustering of different types of urban and green area to increase available habitats for species and supplementary ecological functions associated with those of classified areas nearby, the definition of buffers to avoid disturbing natural spaces if and where necessary, the maintenance of soil permeability, the reduction of traffic intensity or the necessary integration of roles and initiatives of local planning actors, among other possible examples. Although improvements regarding priorities and approaches are evident, new challenges remain to be addressed to improve the role of land-use planning. Further efforts are required to enhance the articulation between nature conservation and urban development policies and strategies. This will depend not only on stricter guidelines for the elaboration of plans, but also on a closer and more coordinated collaboration and consultation between sectors, as well as on a

wider discussion within Portuguese society about the relevance, future benefits and possible strategies in addressing such a challenge for current and future generations.

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