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# BENEFITS OF EVALUATION IN SPATIAL PLANNING: LEARNINGS FROM THREE METHODOLOGIES

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## ABSTRACT

The article discusses research oriented towards spatial planning evaluation practices as an important contribution to achieve positive improvements on the efficiency and effectiveness of the planning system. A significant part of current planning problems are directly connected with the necessity of dealing with uncertain scenarios and future dynamics variations. This increasing uncertainty has been engaging the plan making process and is currently leading urban planners to flexible planning models especially supported on monitoring and evaluation mechanisms. The research focuses on the evaluation theories and the methodologies that have been developed around the world, seeking to present a survey on the state of the art on the matter. A focus is therefore established on three evaluation methodologies (General Plan Evaluation Criteria; After the Plans; and the Policy – Plan / Programme – Implementation – Process) and some measures are identified in order to adapt and apply these theories to the main instrument of Portuguese local planning system – the PDM (Plano Director Municipal). The findings show the benefits of the evaluation practices in spatial planning, as well as the advantages for the sustainability of the Portuguese local planning system. Moreover, the research identifies positive contributions coming from these specific methodologies to the evaluation of the Portuguese local master plans (PDM).

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Key words: spatial planning evaluation, planning and monitoring, local planning practices, local master plans

## Introduction

It is clear that spatial planning has always been directly related to human activities. Firstly, human activities are developed in a certain territory, which means that they do happen on a territorial basis. Secondly, the act of planning and organizing daily life activities have always been a rational demand of every human being run by social, temporal or spatial factors. The way human activities have been territorialized has led to deep transformations on the territory, with heavy impacts on the natural areas and the territorial resources pressed by the growing complexity and heterogeneity of the anthropic system. Increasing incompatibilities and disparities between the natural and the anthropic systems have emerged in the last decades, placing urban and territorial planning as the main instrument for territorial management and intervention. Notwithstanding its own value as a tool to order and regulate territorial actions, spatial planning is by itself a social activity having as a main objective to draw up place-based strategies focused on the achievement of specific predefined goals [1], [2].

Defining the concept of spatial planning is not easy though. On the contrary, it represents an extremely hard task, as there are multiple factors and viewpoints involved. On the one hand, it is not possible to provide a single theoretical basis able to establish clear disciplinary boundaries and responsibilities. On the other hand, spatial planning integrates the joint action undertaken by several professionals, such as economists, architects, geographers, sociologists, jurists, engineers, landscape architects, etc., each one focused on his own discipline and having a specific perspective and different operating methods [1], [2], [3]. At the same time, the fact that territorial characteristics are constantly changing requires a continuous upgrade and adaptation of the planning process, making impossible the achievement of a global and completed concept definition [3].

The numerous educational, professional, disciplinary and sectorial backgrounds give rise to very different concepts and approaches, which justifies the argument that there are as many planning definitions as urban planners (Association of European Schools of Planning). Nevertheless, planning is understood as an activity based on the particular conditions and circumstances of each moment (situation/reality), supported in past experiences and looking forward future scenarios with adaptation capacity [1], [2], [4].

Two different planning modes can therefore be easily established and found on spatial planning instruments: the first one is what one might call the strategic

planning focused on the establishment of possible development scenarios and a long term framework vision which orientates the decision-making process; the second one is what one would call a more traditional and operative type of planning especially focused on the definition of the land use regime and the zoning for a certain area. These two spatial planning modes offer a completely different rationale having behind distinctive aims, operating methods and tools. Whether the strategic planning is much more of a process or a programme which, envisioning a desired future, operates by the establishment of the path and the means to achieve it, the blueprint planning configures a regulatory type of planning that proceeds by the drawing up of bounded areas to which a certain land use regime is addressed. Assessment or evaluation practices and techniques differ depending on the type of planning. Focused on the municipal scale and the main planning instrument of the Portuguese Spatial Planning Legal System (SGTP) – PDM -, this article is also necessarily considering the distinction between the strategic and the blueprint planning, emerging from PDM's dual nature (strategic and operative). Indeed, in contrast to the other Portuguese planning instruments that have either a strategic nature or a spatial/physical nature, PDM combines both. This research field clarification is essential because evaluation is directly connected with the type of plan/program/planning.

## Evaluation as a Mechanism of Comprehension and Learning

Broadly speaking, the concept of evaluation comprehends every mental, cognitive, axiological and instrumental process of value assignment (whatever the type of value one is considering). This process of understanding and in-depth knowledge taken in the evaluation process is the first step towards the enhancement of the subject under scrutiny. It is therefore possible and desirable to recognize its worth as a mechanism of learning and understanding, since it builds up knowledge over what is being evaluated.

At this point it is worth distinguishing evaluation from assessment, although in the Portuguese language there is not two different words to express it. In planning, Evaluation focuses on results and assessment focuses on the process. Evaluation measures specific aspects of the plan with the purpose of determining its value. It is the process used to measure how effective the plan is to achieve its goals and to enables decision-making based on the level of quality demonstrated. On the other hand, assessment focusses on understanding the state and condition of the plan and its outcomes. It provides information for process improvement and usually it is not graded. Assessment is used to provide feedback on plan implementation and enables elevating future performances and learning outcomes.

While the evaluation process usually happens in a specific moment, assessment necessarily involves a constant observation and follow-up, in a dynamic course that shall have repercussions on the planning process.

## Monitoring as a Mechanism of Follow-Up and Observation

Monitoring is therefore a crucial mechanism in spatial planning, providing the necessary framework and the tools for a regular, accurate and close observation and follow-up. Whether assessment and monitoring might be close to each other since they are both dynamic procedures, evaluation still benefits from a regular monitoring. Data collection is one of the issues. Monitoring feeds evaluation in terms of available data and offers the back office for comparative and critical analysis and value assignments. Moreover, the territorialisation of human activities supposes constant social, economic and territorial changes in a rather challenging and uncertain environment that, together with the incertitude that characterizes the present times, requires the ability to regularly track or gauge the reality and to accordingly adjust the strategy for the future.

In strategic planning, the concept of monitoring is related with the capture and the understanding of any variance or deflection from the plan on the several stages of implementation. It allows a constant oversight over the execution systems and the implementation frameworks, enabling a continuous analysis and a systematic evaluation of the impact of the plan during the implementation process. Strategic monitoring puts evidence on the territorial dynamics and the territory feedbacks to a certain strategy and a set of policy measures, which turns monitoring into an indispensable task. It ensures both the updating of the knowledge bases and a permanent and closer reflection on the complexity of the territorial dynamics.

In Portugal, there is still a long way to go on local spatial planning's monitoring and evaluation, especially on what concerns the PDM. According to Carmo there is *"(...) a lack of organized and available information to allow decision makers to act in a timely manner, in accordance with either positive or negative dynamics (...)"* [5]. Juncal et al [6] corroborate with Oliveira and Pinho arguing that monitoring and evaluation of plans should be a civic process based on balanced development in time, focusing different aspects of planning and providing information towards a dynamic planning process. This way it allows meet legal assessment duties and enables to timely evaluate the performance of the plan.

## Benefits of Monitoring and Evaluation Procedures in the Spatial Planning Process

The relevance of integrating both monitoring and evaluation into the planning process emerges with the question of the plan's effectiveness and implementation

and reverts to the possibility of making adjustments, improvements and adaptations throughout the several stages of the plan's "life cycle", contributing to the understanding and improvement of the planning process and, at the same time, to the upgrading of the planning standards [7], [8], [9]. Planning is not a science, neither it is the result of a scientific procedure that always reaches the same result regardless the performance of the actors involved. It is rather the result of the interaction of multiple players with diverge interests and behaviors, in a quite complex system where uncertainty plays a very significant role [1].

The ambiguity and uncertainty inherent to the planning process, as Rittel and Webber have pointed out when defining the activity of planning as a way to solve "wicked problems" - according to the authors specially complex problems, for which only inaccurate information is available and where solutions are neither 100% right nor 100% wrong, but rather less good or less bad solutions [1], expressed the "(...) need for monitoring and evaluation as an integrated part of the planning process (...)" [2]. Being "(...) an exercise as hard and complex as necessary (...)"[2], evaluation requires the ability to embrace the wide range of disciplines and emerging paradigms in the planning activity [9]. Evaluation can thus work as a mechanism of direct and active assistance in the understanding and improvement of the planning process. This way it can work as a step towards strategy adaptation in different scopes or targets, i.e. ensuring the achievement of implementation goals and promoting the quality of life and the protection of environmental values.

In SGPT, evaluation is a duty of the public authorities responsible for the development and the implementation of territorial plans. The requirement is explicitly mentioned in the Legal Regime of the Territorial Management Instruments (Law-decree No. 380/99 of 22 September, article 144°), although the obligation to guarantee a close and permanent follow-up and evaluation of the territorial plans has been for the first time established in 1998 by the Law of Territorial Development and Urbanism (Law No. 48/98 of August 11). In 2014 a new Framework Law has been published (Law No. 31/2014 of May 30). Evaluation procedures, not only have remained as a duty in the SGTP, but have actually been reinforced. Every plan or strategic territorial development programme is now compelled to integrate a set of parameters and indicators for monitoring and evaluation purposes, while revisions or amendments became dependent on the evaluation reports.

## Evaluation Theories in Spatial Planning

In spatial planning, the task of defining an interventional strategy (plan) is closely related to tasks of accomplishing that strategy (implementation) and regulating the activities to achieve it (management). The three tasks complement each other

thoroughly, depending on one another and having shared spin-off effects. Nevertheless, these intertwining tasks are not easily performed together in a coherent and fluid chain that goes from programming to execution and implementation. This turns the planning process into an extremely complex activity focused, not only on the plan itself, but also on the management process required on its implementation.

Current research on "planning evaluation" is therefore specifically addressed to the aim of gauging the effects of planning tools, namely by identifying in a objective way the critical factors and the parameters to measure the plan's degree of implementation. Three evaluation moments have been broadly recognized: ex-ante; on-going and ex-post: Ex-ante: performs a comparison between the several possible scenarios and alternatives with the aim of adjusting the strategy during planning process) [10]; On-going: checks the accomplishment and the implementation, considering the dynamics, the programmed actions, as well as the achievements in terms of execution[10]; Ex post: reviews the goals and the results attending to the strategic aims [10].

Several authors argue that ex-ante evaluation is now witnessing some dominance on current practices, which somewhat has been depreciating evaluation during the subsequent phases [2], [10]. Some evaluation theories and methodologies can however be highlighted, such as Cost-Benefit Analysis (CBA), Planning Balance Sheet Analysis (PBSA), Goals-Achievement Matrix (GAM), Policy-Plan/Programme-Implementation-Process (PPPIP) and Environmental Impact Assessment (EIA), this last one already integrated in the SGTP following the European Directive.

CBA was the first formal evaluation method applied (predominantly at ex-ante) and seeks to establish the relationship between the costs and benefits associated with each measure or strategic option. It is used mostly as a benchmark for monetary quantifications, being one of the CBA advantages since it uses a steady reference easily understood by the average citizen [11]. The rating procedures of CBA follow the simple principle of associate a monetary value to each effect. Therefore CBA is based on a stabilized value theory and unit of measure (money) that are both understood by decision makers and citizens [2]. CBA was created with the aim of ensuring that public investment should maximize the overall social benefit, although it has been criticized from time to time because it is supported on the assumptions that there is a "willingness to pay" [2].

PBSA emerged regarding the weaknesses CBA. PBSA is supported on the assumption that costs and benefits are not homogenous (like territorial units). The reason why PBSA proposes an assessment sheet that allows the account discrimination of each factor [11]. This balance sheet allows the assessment between the cost discrimination by promoter and by consumer [2].

GAM was the first set of methods designated as multi-criteria evaluation that was both integrated and analyzed as a package. GAM has emerged as an alternative to the former existing methods such as CBA and PBSA. Oliveira argues that Morris Hill pretended to overcome four fundamental gaps in CBA: 1- the non-incorporation of intangibles aspects; 2- the distance between the CBA foundations and the reality; 3- the no integration of equity issues; 4- the conversion of the effects in monetary terms [2].

Multi-Criteria Evaluation in Urban and Territorial Planning assessments, unlike other types of evaluation procedures, enables to integrate incommensurable and intangible effects [2].

By its turn, EIA has been following the development of the Planning Activity. Comprising wide-ranging scopes it has been considered as an integral part of the planning process and a required step for numerous planning instruments (policies, programs, reports and plans). The focus goes to the assessment of the physical and the ecological impacts of the strategy. As an ex-ante evaluation procedure, the aim is to support and guide decision-making specifically addressing environmental concerns [2].

The several theories are presented in the theory of planning by Khakee [12] and quoted by Oliveira [2], stressing the lack of consensus when it comes to choose the assessment or the evaluation method that better fits spatial planning intends. This also means that evaluation methods are closely related to both the evaluation purposes and the nature of the planning tool.

## Evaluation Practices in Urban and Territorial Planning

The evaluation as an emerging dimension in the planning process is distinguished by its lack of accomplishment as common practice that is regulated, standardized and mandatory. It is also still insufficient the speed at the integration process, with over 20 years, of evaluation into the planning system [13]. Their achievement disguised in GIS and market analysis results in the absence of a methodology for performing these evaluation duties [2]. Simultaneously, it was also observed that in many cases is the lack of a methodology for evaluating which leads to incorrect evaluation practices or absence of evaluation. Within the scope of evaluation, there are several methodologies as Oliveira presents in his PhD research: Policy - Plan / Programme - Implementation - Process (PPPIP); Means For Evaluating Actions of a Structural Nature (MEANS); Evaluation Implementation Plan (PIE); More and Better Local Planning (PBLP); After the Plans (AP); General Plan Evaluation Criteria (GPEC); Performance of National Policies (PNP); Reading Plans (RP); Making Plans That Metter (MPM); and Does Work Planning (DPW).

PPPIP is a set of criteria originated in objective and subjective visions and in evaluation visions based on "centered decision" concept [2]. This set is organized in a programmed sequence of issues to be applied to a particular plan/policy/planning process and their results [2]. PPPIP in the evaluation of each criterion can take three positions: positive, neutral and negative. The first criteria is the "accordance" (objective assessment), the second is the rational process of decision making, the third is ex-ante optimization, the fourth is ex-post optimization and the fifth is the diffusion and use of the plan in operational decisions. It should be noted that in PPPIP the third and fourth points of this methodological process determines if the strategy was ideal [2].

AP, is a methodology that quantitatively analyzes the conformity of results in the urban environment and the plan proposal at the level of accessibility between people and facilities. Uses GIS to examine whether the plan is successful and to articulate the spatial distribution pattern and the socio-economic factors adopted [2].

General Plan Evaluation Criteria, appears as a set of methodological suggestions based on generic criteria to achieve the evaluation. Within the evaluation criteria presented by Baer [10] are the appropriateness to context, considerations the rational model, procedural validity, adequacy of the scope, guidance for implementation, approach and methodology, quality of communication and format of the plan [2].

A quick analysis of the several methodologies allows understanding that the evaluation in planning can take several strands, supporting each other in the physical elements of the plan, both in graphical and textual elements, or in the physical elements of the plan implementation and participation processes present in the preparation of the plan. With this, it can be understood that evaluation in urban planning should adopt an open framework structure [14] flexible and applicable in accordance with the characteristics of the plan. Must also be viable to be a practical, useful and realistic evaluation. However, it is necessary that evaluation methodologies do not arise particularly vague, to the point of being just mere methodological guidelines for conducting an evaluation without the ability to express the real effect and consequences of the plan. It is also possible to conclude that methodologies, methods, theories and types of evaluation presented in this research reveal functional inconsistencies of articulation based on the fact that the theories turn to a qualitative evaluation and its practical applications for a quantitative evaluation [2].

## Portuguese PDM

PDM is a municipal spatial plan prepared by local authorities that defines and spatializes the strategic options for the municipality development, planning policy and other urban policies and the model of spatial organization. It is a strategic-operational instrument that considers the relationship between the territorial nature and potential land use. PDM as a territorial management instrument, has emerged as a complex instrument that required a very in-depth knowledge of the municipal territory so it could be prepared in accordance with local realities and therefore allow a viable implementation. However, the first generation of PDM found a great lack of information that was crucial to support the preparation of the PDM, particularly in terms of updated topographic surveys, information about on-going plans, land registry, etc. Current practices at the time of first generation understood the territory as the extension of the Earth's surface in which a group of people live and where man pursued his action, transforming territory's physical conditions and imposing his order. Therefore, rural and urban structures were understood as resulted from the human action that desired to dominate the physical elements and the climate in order to allow the implementation of the envisaged activities, whether they be urban nature, agriculture or forestry.

The evaluation duties are written in SGTP since its inception. They are defined in the latest revision of the main law of planning policy and urban planning and in the system of land management instruments, including the adjustments made by following legislation. In Portúgal, the evaluation mechanisms are poorly implemented or not implemented at all. Although the instruments are registered in SGPT, there is a lack of methodologies for applying these mechanisms in accordance with the specific instruments registered in the system to evaluate the PDM. The no perform of this evaluations generates a lack of information on real consequences/effects and results of PDM implementation, turning the task of PDM review more difficult. It also make more difficult to ensure improvements of planning process based on adapting policies and overcome weaknesses.

## Conclusion

In the development of research was possible to understand that the concept of planning is accomplished in the course of his statement as an essential instrument for intervention in the territory, according to a process where uncertainty plays a very significant role [1], [2[, [3], [4]. This feature and the level of uncertainty requires moments of deliberation and reflection on the consequences and effects of planning. For this, the evaluation assumes a direct role in assisting the understanding and improvement of the planning process, allowing the realization of improvements in order to optimize the effectiveness of the process itself. The planning and evaluation are two directly related concepts both at theoretical and

practical point of view, being it in the specific case of the PDM, very important ensure measures of evaluation and monitoring to safeguard the viability and usefulness of the plan.

PDM evaluations in Portugal verify the absence of a consensual approach capable of being applicable to all municipalities, partly due to lack of technical expertise on municipal councils to carry out the complexity of their duties in these matters and also due to the absence of harmonized national guidelines. Therefore, it is pertinent the study of existing applications and methodologies and try to identify the elements that can be adapted to evaluate the PDM. In this section it is presented the main elements and characteristics of PPPIP, AP and GPEC that can contribute positively to the PDM evaluation practices and improving the sustainability of the system.

From PPPIP it is remarkable that the evaluation methodology should to be supported on a stabilized set of criteria and should be articulated both the objective and subjective dimensions and that evaluation can be based on "centered decision" concept. It is also possible to note that evaluation criteria should be organized in a programmed sequence of issues and by a simplified process with only three positions: positive, neutral and negative. These criteria should be able to reflect the "accordance level" (objective assessment), the rational process of decision making; the ex-ante optimization; the ex-post optimization; and the diffusion and use of the plan in operational decisions. The main contribution that can be taken from PPPIP is that evaluation should be applied to a particular plan/policy or planning process and also to their results/outputs, articulating the ex-ante and ex-post moments. Therefore, evaluation in PDM should focus the plan and their results, in an on-going evaluation process with specific outputs at the ex-ante and ex-post moments.

The main positive contribution from AP methodology to PDM evaluation is that it should be both quantitative and qualitative and use GIS to articulate the different issues. By using GIS it is simpler to analyze the conformity between the results of plan implementation and the urban environment. It is also easier to analyze the plan proposal in terms of accessibility between people and facilities and between the spatial distribution pattern and socio-economic factors adopted. In AP methodology the general evaluation of the plan is based on his utility and usability.

From GPEC it is possible to conclude that evaluation needs to be based on generic criteria to enable the application in different contexts. Only in this way the evaluation can be performed through the same methodology on different and heterogeneous elements like municipalities. Therefore, GEPC is both quantitative and qualitative process, open to several plan natures, excluding difficulties and complications in terms of adapting to the plan under evaluation. The main positive

contribution of GEPC is that the evaluation methodology should seek to exclude bureaucratic implications of creating new mechanisms and repetition of efforts in data collecting. By this it is possible to highlight in GEPC that the evaluation should use the existing data collected to avoid repetition of efforts and should evaluate the plan based on appropriateness to context; considerations the rational model; procedural validity; adequacy of the scope; guidance for implementation; approach and methodology; quality of communication and format of the plan. It is also remarkable from GEPC that evaluation should go beyond the traditional orientation, focusing on success, measuring the achieving stated goals and objectives.

This article is part of an ongoing investigation that contributes to finding a methodology that enables the application of mechanisms for monitoring and evaluation that are planned as part of SGPT. The findings and conclusions in this article show the possible lessons that can be drawn from the three evaluation methodologies presented in terms of its elements and focus of evaluation. It is also remarkable in this article that one of the biggest challenges in the evaluation of all PDM in Portugal is the absence of a single and consensual approach capable of being applicable to all municipalities.

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