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ID 1513 | EXPLORING THE ZONING AND LAND USE MISMATCH – AN EX-POST EVALUATION OF A DETAILED PLAN IN A LAND READJUSTMENT AREA IN TAINAN

Hsiu-Tzu Betty Chang¹, Chun-Tzu Fan¹

¹National Cheng Kung University

hsiutzuchang@mail.ncku.edu.tw ; fanchuntzu@gmail.com

ABSTRACT: Over the past twenty years, planning scholars have paid more attention to evaluation research as local governments request performance measurements for future decision making, and as citizens and stakeholders request higher accountability and transparency on policy interventions. Planning evaluation can take place at three different times: ex-ante, on-going, and ex-post evaluation. The latter two receive relatively little attention in the literature due to the lack of resources, the norms of organization culture, and the limited availability of data and analytical methods. As the legitimacy of planning and its effects has been increasingly questioned in Taiwan, this study takes on the challenge of the ex-post evaluation, to evaluate the effect on plan implementation on the ground in Taiwan, using a case study of a detailed plan of a land readjustment neighborhood in Tainan City to empirically demonstrate the quantitative evidence for planning implementation. Due to the regulatory planning system in Taiwanese city

areas, this research takes a conformance-based approach on planning implementation evaluation. The mismatch of land use, built area ratio, and floor area ratio will be analyzed quantitatively for its spatial distribution, patterns of concentration, and potential social-economic factors that may be associated with the implementation. An empirical assessment of the gap between plan and outcome is the foundation to define the success or failure of the plan in its relationship to the urban development process. This study is a significant attempt to provide empirical evidence on the effect of zoning and the ability of a plan to create change in Taiwan. As New York City's Zoning Resolution reaches its first centennial, this study attempts to join the international dialogue on connecting planning theory, planning practice, and education.

KEYWORDS: zoning, land use, plan implementation, ex-post evaluation, conformance-based, Tainan

1 INTRODUCTION

Over the past twenty years, planning scholars have paid increasing attention to evaluation research as local governments request performance measurements for future decision-making, and as citizens and stakeholders request higher accountability and transparency for policy interventions. While planning scholars have been committed to identifying the links between planning theory and evaluation, developing assessment approaches and methods, and exploring the factors that lead to the failure of planning implementation, many local governments are trapped in the myth of “new plan syndrome” (Calkins, 1979), devoting resources to making new plans rather than assessing the implementation of previous plans. Many inefficient plans were made due to negligence in evaluating the success of earlier planning implementation. Putting efficiency aside, the gaps between reality and plan, as shown by the variances and the zoning activities mismatches, are important lessons for planning scholars to bridge theory and practice.

Zoning regulations in land use control were first implemented beginning almost fifty years ago in Taiwan, but the concept of Floor Area Ratio (FAR) was not implemented until the late 1990s. These zoning regulations were implemented within the detailed plan system (細部計畫) in Taiwan, and used as a tool to restrict the types and intensity of land use to reach a balance of land use and reduce the negative influences of intensive land use on nearby areas. Despite the zoning regulations, the mismatch of land use, such as industrial use in agricultural zone and mixed use in residential zones, is a common phenomenon. Such uses, which were not originally planned that way, not only showed the poor execution and management of the plan, but also the gap between planning goals and practical requirements. This is the consequence of many reckless plans that did not learn any lessons from previous plans.

The current research takes on the task of the ex-post evaluation, to evaluate the effect of plan implementation on the ground in Taiwan, using a case study of a detailed plan for a land readjustment neighborhood in Tainan City. An empirical assessment of the gap between plan and outcome is the foundation to define the success or failure of the plan, particularly in its relationship to the urban development process. This research is a significant attempt to provide empirical evidence for the effect of zoning and the ability of a plan to create change in Taiwan. As New York City's Zoning Resolution reaches its first hundred years of implementation in the United States, while Taiwan is reaching its fiftieth year, this study attempts to join the international dialogue on the reflective thinking of connecting planning theory, planning practice, and education.

2 LITERATURE REVIEW

Planning evaluation is defined as a systematic assessment of plans, planning processes, and outcomes compared with explicit standards or indicators (Laurian et al., 2010). The significance of evaluation in planning has been expressed in much of the literature. The necessity of the exercise is acknowledged despite its complexity and difficulty. Planning evaluation is believed to contribute to a better planning practice and is important for numerous reasons, including proving legitimacy, improving decision-making, and fostering continuous learning (Oliveira & Pinho, 2010; Guyadeen & Seasons, 2015). The assessment of planning evaluation can be done at three different times: ex-ante evaluation, on-going evaluation, and ex-post evaluation. The latter two have received relatively little attention in the literature due to the lack of resources, the norms of organization culture, and the limited availability of data and analytical methods. Oliveira and Pinho (2010) believed that the exploration of these two dimensions is one of the main issues for future research to focus on.

The approaches to ex-post planning evaluation can be generally assorted into two types: performance-based approach and conformance-based. Both are used to assess the success of the implementation of the plan, but with different orientations. The conformance-based approach considers whether the outcomes adhere to plan policies and objectives, which is a rational approach; the performance-based approach considers if the plan was consulted irrespective of outcomes, which is a communicative approach (Guyadeen & Seasons, 2015). These approaches are based on the different sets of assumptions about the function of plans (Laurian et al., 2010). In other words, a conformance approach is needed if a plan is meant to be implemented; otherwise, the assessment should take a performance approach if a plan aims to frame lower order plans and subsequent implementation decisions (Guyadeen and Seasons, 2015).

Owing to the scarcity of methods in evaluation, some researchers attempted to construct the evaluation structure in on-going and ex-post evaluation practices. Among various efforts, Talen (1996, 2010) in particular, had called for developing both empirical and quantitative evaluation techniques for assessing how successfully the plans were implemented, and made an effort to outline various assessment methods that delineate how one particular aspect of plans—for example, the allocation of public facilities—can be evaluated. Furthermore, Talen (2016) in her most recent empirical conformance-based research has investigated the disconnection between zoning and land use at the parcel level. Her spatial approach using GIS delineates the spatial distributions of land use and zoning mismatches, shows the existence of land use concentrations, and identifies possible factors that contribute to the disconformity.

The legitimacy of planning and its effects on the control of land use has also increasingly been questioned in Taiwan. Lai and Chen (2006) had indicated the evidence by which the zoning regulations have a decisive influence on the distribution of land use. The process of exactly how the zoning regulations impact on the changing of land use has also been discussed. Zhang (2005) tried to build a comprehensive framework of understanding the internal and external factors of the land use change. Tsai (2009) built a model of land use changing over time to explore the factors by which zoning affected that change. Some other factors that can influence the land use distribution had also been discussed in other studies. Using GIS tools, Hsu (2006) discovered some physical factors that can affect the distribution pattern within spatial autocorrelation and spatial regression analysis. Most planning evaluation has aimed at developing ex-ante evaluation systems. The potential factors that contribute to land use occurrence and land use change, as well as the analytical tools used to measure the distribution pattern of land use, have been discussed by planning researchers. However, similar to the planning evaluation literature elsewhere in the world, there is little discussion on the ex-post evaluation, judging how successfully the plan was implemented by assessing planning outcomes. Regardless, by law the land use plan needs to be updated every five years, and no scholarly research in Taiwan has paid enough attention toward assessing the plan implementation evaluation to help planning practitioners to make informed decisions. Such findings motivate the authors to take on the empirical study of disconformity between land use and zoning in Taiwan.

3 METHODOLOGY

The design of a methodology to assess planning evaluation must be clearly linked with planning evaluation theory (Oliveira & Pinho, 2010). Due to the nature of planning law in Taiwan, we took a conformance-based approach on planning implementation evaluation in order to empirically demonstrate the quantitative evidence of planning implementation. In this study, we took a similar approach as Talen (2016) to map and measure the extent of mismatched land use using descriptive statistics and spatial analytical methods. As Talen (2016) suggested, there are four overlapping dimensions of the zoning-land use disconnect that can be considered: temporal, legal, aspirational, and social-economic dimensions. By taking a land readjustment area (a type of planned neighborhood in Taiwan) as the empirical site, we exclude the consideration of the temporal dimension. That is, the disconformity of land use cannot be grandfathered in, because the developments have all happened after the plan implementation. The major consideration and discussion among the zoning-land use gap in this research will be in the legal dimension and the aspirational dimension. In legal terms, the legitimacy of the non-conforming use will be examined according to the practical regulations. For the aspirational aspect, land use goals will be criticized if the mismatch use goes against the goals of the original plan.

To address the inconsistency of land use and zoning first, we obtained three sources of spatial data: land use/land cover, zoning, and parcel data. The land cover satellite imagery and zoning map, last updated in 2012, is made available from the Urban and Rural Development Branch of Construction and Planning Agency of the Ministry of the Interior. The parcel data comes from the Department of Land Administration of the Ministry of the Interior. All the data are converted into ArcGIS in order to overlay with the parcel layer and to be analyzed at the parcel level. Site visits and field observations to document the individual land use in the study area were made between February to April 2017, to verify and update the land use/land cover data. In the following analysis, we employed spatial analysis tools to analyze the distribution pattern of land use and demonstrate the clusters of mismatched use. Basic statistic methods are used to describe the distribution of the on-the-ground land use. To further evaluate the planning outcomes, a spatial analysis tool in GIS was used to quantify the extent of the mismatch use. The original land use shapefile were converted into raster data to characterize the clusters of different types of land use by spatial analyst. Non-conforming use and the extent of clustering in specific categories of land use were identified. Some of potential factors that contribute to the phenomenon of land use/zoning mismatch will be discussed at the end of the paper.

4 EMPIRICAL ANALYSIS

We took a detailed plan of a land readjustment neighborhood in Tainan City as the empirical area to examine the implementation of the detailed land use plan of Taiwan. Huwuiliao land readjustment neighborhood was the 9th readjustment area in Tainan City, where the cadastral patterns of land have been replotted; streets, public facilities, and new subdivisions were built to make the area suitable for new development. Before the replotting and subdivision in 1984, this was an undeveloped area before the execution of the detailed plan, making it ideal to review and measure the planning implementation directly. We excluded the area of east of the highway from this study in order to focus on the mismatch in the area that was zoned for residential use.

The Huwuiliao area had several transformations in its planning history despite its current plan as a low-density residential area. It was first planned for industrial use in 1979, primarily due to its proximity to the highway. However, its undulating terrain proved unsuitable for industry development. The area was rezoned both in 1984 and 1992. With only small portion designated as a commercial zone, the area was mostly zoned for low-density residential to target the high-end single family housing market that was rare in this portion of the city. There are three types of low-density residential zones in Huwuiliao. The first type (LR-1) only allows for residential use, LR-2 allows for certain categories of retail/commercial use for neighborhood services delivery, and LR-3 allows all categories of commercial use except for industry. In the detailed plan (see Figure 1), we can see that those blocks zoned for LR-1 are located either at the inner blocks or the periphery, surrounded by LR-2 and LR-3. The land use layout reveals the intention of the plan to keep the inner parts of the neighborhood for a high-end living environment, and place non-residential activities further outside to maintain the quality of life.

Despite the current zoning categories, “zoning with development condition” has been added as an amendment to reflect the market conditions in 2012. Those blocks zoned with condition of development can be altered to another zoning category by conditions, which means that developers could obtain upzoning for those parcels. By paying a linkage fee, developers can apply for a modification of zoning; for example, making LR-2 upzoned to LR-3, or LR-3 to commercial. Owing to the flexibility of the regulation of the updated detailed plan, we now examine the zoning and land use mismatch in two aspects. One is the mismatch of usage types in legal terms, and the other is the mismatch of using categories that may conflict with the original purpose of creating a high-end residential environment.



Figure 1 -Zoning plan in the case study area Huwulliao

4.1 DISTRIBUTION OF MISMATCHED USE

To identify the mismatched use, we first used the land use/land cover set to do a preliminary examination on the scale of mismatched land use. We overlaid the land cover data with parcel dataset polygons, then converted the polygons into points to delineate the land use activities at the most detailed level. To distinguish whether the use of land conformed or not with the zoning, three boarder categories of land use were made: residential use, unused, and other use (see Figure 2). In total area of residential zones of in the land use plan is 80.5 hectare. In reality, only 49.5 hectares of land cover, which account for 61.6% of the area, are for residential used. Other 31 hectares of area are covered by non-residential use, including unused area of 17.6 hectares (take over 21.8% of lands) and other land use of 13.4 hectares (take over 16.6% of lands). Table 1 shows the counts of each type of land use activity. Not surprisingly, residential took over 82% of the development activities in the study area. The amount of other use, counted as 534 land covers, takes over 9.21 percent of the total amount of land cover. The unused category, — mostly vacant lots—comprised the rest of the land cover in the area.



Figure 2 - Location of non-residential use in residential zones

Types of Use	Number	Percentage
Residential Use	4,753	81.93%
Other Use	534	9.21%
Unused	514	8.86%
Total	5,801	-

Table 1 - The number of developments under each type of land use

4.2 CLUSTER

To identify the cluster more clearly without eliminating the spatial feature of the distribution, we intersected the data to grids and set each cell size at 30 square meters. The decision on the grid size was made by looking at the average block size in the area. Figure 3 shows the scope of the disconformity, including its extent and spatial clustering in the study area. Around 71 percent of the grids conformed, but almost 13 percent of them did not. The share proportion of non-conformed grids are between the interval of 0.00 to 0.25 percent and 0.75 to 1.00 percent (see Table 2). It shows that whether or not the use conformed, there was a tendency to cluster in different types of uses. The aggregation of non-residential land use tended to be located near main roads, intersections, and the public facilities. Such a phenomenon could be found in the demonstration of the share of other land use in residential zones (see Figure 3).

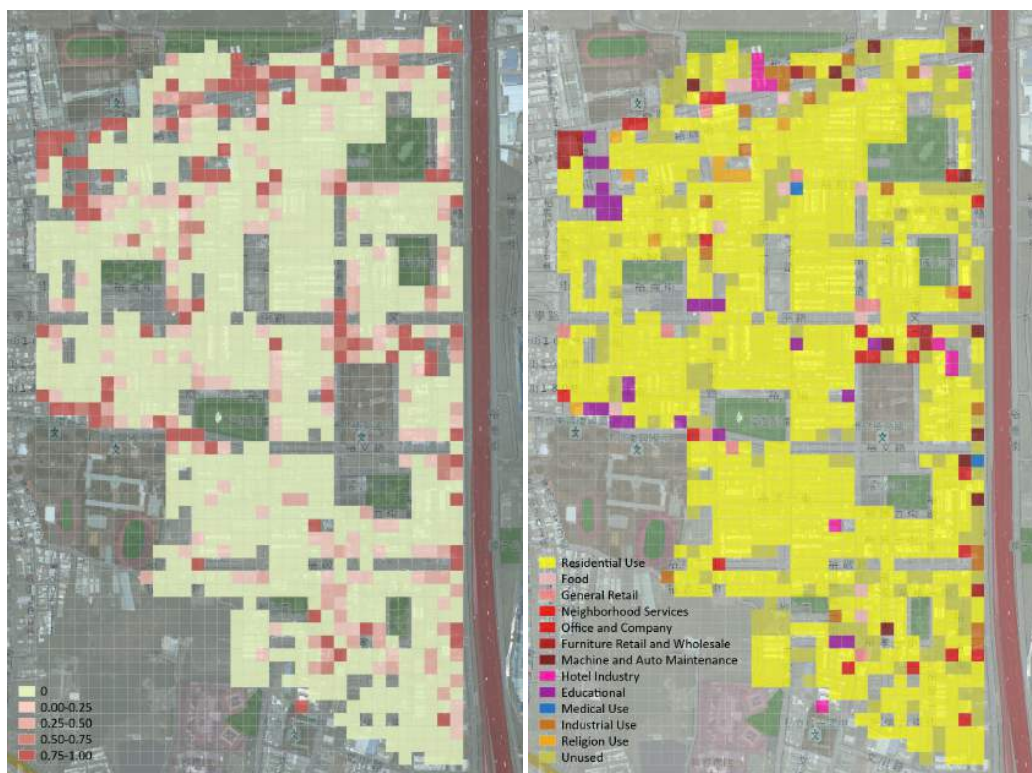


Figure 3 - Percentage of non-residential use in the land cover grid analysis (left)
Figure 4 - Frequency of mismatched use categories in residential zones (right)

	Other Use Proportion	Number	Percentage
Conformed	0.00	762	71.02%
Not Conformed	0.00-0.25	114	10.62%
	0.25-0.50	79	7.36%
	0.50-0.75	21	1.96%
	0.75-1.00	97	9.04%
Total		1,073	-

Table 2 - Other use proportion in the grid analysis

The “other use” category can be further subdivided into different sub-categories. By examining the most frequently used in each grid, the different patterns of spatial distribution in various categories of uses appeared (see Figure 4). In Table 3, which shows the count of grids in each category of uses, we can see which kind of uses were most frequent. Comparing both the number of land use parcels and the frequency, the extent of clustering in each sub-category can be learned. Office/company and educational use are the highest concentrated in the sub-categories among “other use”. The other sub-categories, like food, general retail, and neighborhood services, have more activities by parcel analyses but lower frequency in grid analyses; this shows their relatively even distribution in the community. By contrast, those sub-categories of use with lower count in parcels but higher frequency in grid tend to be aggregated and usually are distributed towards specific locations (see Table 3).

Categories	Count		Frequency	
	Number of Parcels	Proportion	Number of Grids	Proportion
Residential Use	4,753	(81.9%)	777	(72.4%)
Unused	514	(8.9%)	162	(15.1%)
Office and Company	106	(1.8%)	22	(2.1%)
Educational	85	(1.5%)	25	(2.3%)
Food	74	(1.3%)	13	(1.2%)
General Retail	63	(1.1%)	9	(0.8%)
Industrial Use	58	(1.0%)	19	(1.8%)
Machine and Auto Maintenance	43	(0.7%)	13	(1.2%)
Furniture Retail and Wholesale	31	(0.5%)	10	(0.9%)
Religious Use	24	(0.4%)	10	(0.9%)
Neighborhood Services	22	(0.4%)	1	(0.1%)
Hotel Industry	14	(0.2%)	10	(0.9%)
Medical Use	14	(0.2%)	2	(0.2%)
Total	5,801	-	1,073	-

Table 3 - The frequency of land use category in the grid analysis

5 DISCUSSION AND CONCLUSION

In legal terms, those non-residential uses are not allowed in LR-1 zones, and no industry is allowed in any residential zones. Such non-conforming use could have happened due to the consequence of conditional development, or the lack of law enforcement. The condition of development provides developers a convenient way to upzone the original zoning to a higher density zoning. As a result, not only commercial retails and higher-density residential could be developed in LR-1 zones, but also all commerce and industry could be permitted in LR-2 and LR-3 zones. Such amendments on the conditional development in the detailed plan updates could be the result of developers' pressure, but the original purpose of making this neighborhood a high-quality, low-density environment could be altered as the result of the zoning relaxation via conditional development. Regarding the aspirational dimension, the actual development conflicts with the stated purpose of building a high-quality residential environment. Those industrial uses, as well as some others like machine and auto maintenance, seem to be legal. However, resulting pollution could be a nuisance to the quality of life in the residential environment. Yet to what extent rezoning may jeopardize the quality of life in the study area requires further study. As the urban theorist Jane Jacobs advocated, these service provisions may add to the diversity of the street life in the neighborhood. It will be critical to identify the factors behind the amendments in each detailed plan update, so that researchers and practitioners can understand the dynamics of plan implementation as it relates to the market, politics, property rights, local culture, and planning practices. In relation to Talen's (2016) research, we see similar results. The mismatched uses are spatially clustered instead of being random. In this empirical assessment, we have identified the patterns of the gap between the plan and outcomes. Our future research will continue to investigate the case study area through planning document analyses and interviews with the government officials, planners, and real estate developers. Understanding the precise reasons for the gap between the plan and the outcome is beyond the scope of this assessment, but it directs future research to understand the dialectic process between plan and social reality.

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ID 1540 | ON WHAT GROUND STANDS STRATEGIC PLANNING?

Sophie Sturup¹, Nicholas Low²

¹Xi'an Jiaotong Liverpool University; ²University of Melbourne
sophie.sturup@xjtlu.edu.cn ; npl@unimelb.edu.au

ABSTRACT: We live today in a world where there is enlarged freedom for many of us to invent and reinvent who we are. This freedom, in late capitalist modernity, has also come at a cost. The freedom to invent and reinvent is grounded on an expectation that we can renegotiate the fundamental threads of what we are, and what we are known as. This freedom has spread beyond the individual to our institutions, political parties, and of course public persons. No longer is it possible to say definitively what or who someone is, nor is it possible to hold them to account for who or what they said they are or would be. Such holding to account would be tantamount to a reduction of their liberty. This paper explores what impact this lack of saying, and lack of accountability for what was said has on strategic plans. Starting from Hannah Arendt's discussion of the loss of the public realm, we explore the consequences for strategic planning of this capacity to reinvent ourselves and consider how in this pluralist and individualised world a collectively arrived at vision of the future might be grounded and survive beyond the next saying of ourselves.

KEYWORDS: Heidegger, Arendt, Ontology of planner

1 INTRODUCTION

A strategic plan for a city or metropolitan region is a spatial expression of the public will which endures over time. Albrechts' (2006: 1152) definition serves well: 'Strategic spatial planning is a transformative and integrative, (preferably) public-sector-led, socio-spatial process through which a vision, coherent actions, and means for implementation are produced that shape and frame what a place is and what it might become'. Strategic planning: the making of visions, aligning policies to planned outcomes and the taking of actions in accordance with those visions; is a critical part of the project of planning. It is where the 'will to improve' (Li, 2007) in planning is most clearly situated. But more fundamentally it is the place where