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Qualitative Comparative Analysis (QCA) in Space Utilization Control in Indonesia

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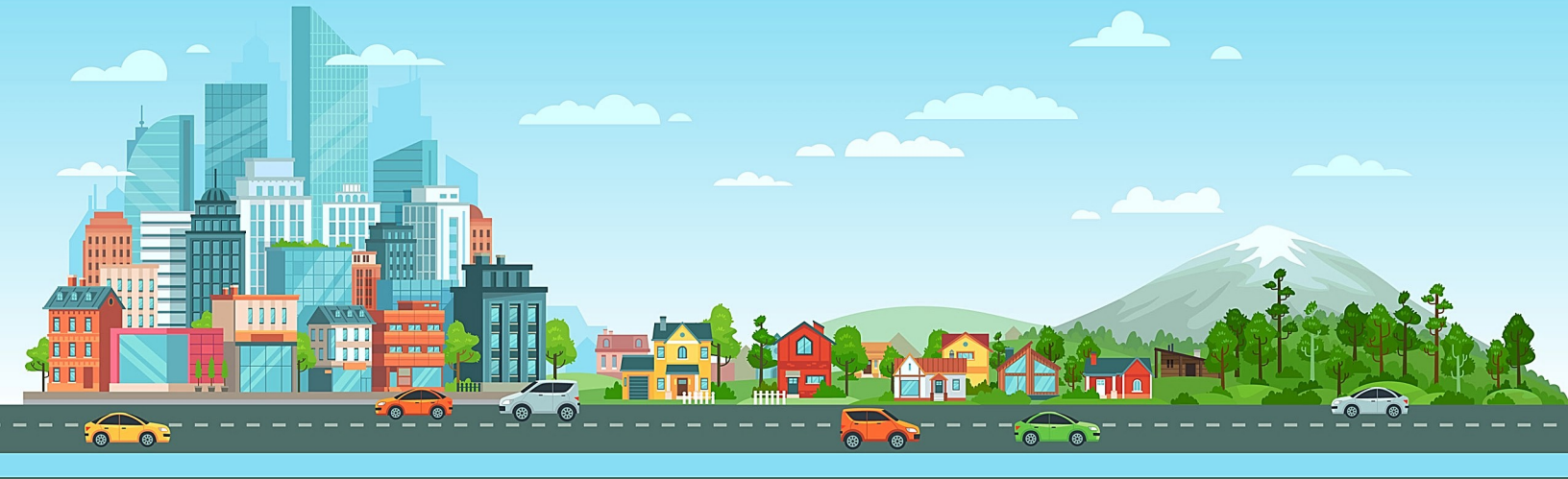

Master thesis Environmental dan Infrastructure Planning

Faculty of Spatial Sciences

rijksuniversiteit groningen

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Master thesis:
MSc Environmental and Infrastructure Planning
Faculty of Spatial Sciences
University of Groningen
July 2021

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Abstract

Controlling the space utilization is a crucial step to ensure that the implementation of the spatial plan does not deviate. In Indonesia, spatial planning recently focuses on control because of the high level of violations that occur. Many studies have been conducted regarding the violation of spatial use, but most of the research focuses on a certain case partially or only focuses on a particular city, district, or province. Comparing between provinces as a case will enrich the picture of the occurrence of spatial violations in Indonesia. Using the Qualitative Comparative Analysis (QCA) method, this study tries to identify the configurations of conditions that lead to violations and weak control as outcomes. These conditions are factors related to control in the spatial planning cycle and part of the control itself. There are five conditions analyzed: spatial plan, regulation, guidance, control instrument, and context. Various indicators and sub-indicators describe each condition based on the literature. The indicators and sub-indicators of these conditions are collected and prepared before being calibrated and analyzed using the QCA method. In QCA analysis, the calibrated data are compared to produce a solution configuration. This solution or configuration describes the causal relationship between conditions and outcomes. Based on the results of the analysis, obtained three configurations, one of which is counterintuitive. Regarding findings that did not meet the theoretical expectations, the study continued with (representative) case studies on each configuration to get a more in-depth explanation of the relationship. Studies in representative cases show the possibility of intervention in the counterintuitive solution from other factors. This study concludes that the five conditions analyzed cause weak control over space utilization with different combinations (as INUS or sufficient conditions). These results provide an overview and input for spatial planning stakeholders and academics on how to treat each of these conditions to prevent outcomes based on solutions that emerge from the analysis results.

Keywords: Space utilization control, Spatial violation, Qualitative Comparative Analysis, Fuzzy set, Causal relationship, Spatial planning in Indonesia.

Acknowledgement

First and foremost:

- Immense gratitude to my husband, **Arco Emelio Perangin Angin**, for his support, patience, and motivation during the completion of my master's studies, including the work of this thesis. Your name should be on this thesis as much as mine.
- I am extremely grateful to my children, **Aiko Kiana**, **Daiki Khalifa**, **Sahla Yumna**, and **Sajia Ijaba**, for their love and encouragement.
- I would also like to extend my gratitude to my parents, **Harry Hadi Rusli**/**Emmy** and **Kasim Perangin Angin**/**Alini Tanjung**, for their prayers and advice.
- I also wish to thank my brothers and sisters for all the supports.

For my family, I gave everything, including this.

Furthermore, a very sincere thank you to everyone who supported my effort on this essay:

- **dr. Stefan Verweij**, my deepest gratitude for being the most supportive supervisor. This thesis would not have been possible without him. The title of this thesis was inspired by his lectures and developed from his writings. Thank you for always being fully committed to providing advice and encouragement.
- **dr. Ferry Van Kann**, as coordinator, along with all lecturers and administrative staff of the University of Groningen, especially the Department of Environmental and Infrastructure Planning, Faculty of Spatial Sciences. I am very grateful for all the help and support I received during my master's degree.
- **Prof. Ir. Haryo Winarso, M.Eng., Ph.D**, **Prof. Dr. Delik Hudalah, S.T, M.T, M.Sc**., along with the entire academic community of the Bandung Institute of Technology, especially the Department of Urban and Regional Planning, I sincerely thank you for all the knowledge and assistance I received during my master's studies.
- Colleagues from the **Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN)** and the **Ministry of National Development Planning of the Republic of Indonesia (Bappenas)**, special thanks for the opportunity, support, information, and all assistance provided.

Alhamdulillahi rabbil 'alamin.

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List of Abbreviations

APBD	*Anggaran Pendapatan dan Belanja Daerah* (Regional revenue and expenditure budget)
BKPRN	*Badan Koordinasi Penataan Ruang Nasional* (National Spatial Planning Coordinating Board)
CFA	Configural Frequency Analysis
CONINST	Control instruments
CTXT	Context
GRDP	Gross Regional Domestic Product
GUID	Guidance
INUS	Insufficient but necessary part of a condition which is itself unnecessary but sufficient for the result
KP2B	*Kawasan Pertanian Pangan Berkelanjutan* (Sustainable Food Agricultural Area)
KPK	*Komisi Pemberantasan Korupsi* (Corruption Eradication Commission)
KRB	*Kawasan Rawan Bencana* (Disaster Prone Area)
OPD	*Organisasi Perangkat Daerah* (Regional Apparatus Organizations)
Perda	*Peraturan Daerah* (Regional Regulation)
Perdais	*Peraturan Daerah Istimewa* (Special Regional Regulation)
POKMAS	*Kelompok Masyarakat* (community groups)
PPNS	*Penyidik Pegawai Negeri Sipil* (Civil Servant Investigators)
PSN	*Proyek Strategis Nasional* (National Strategic Projects)
QCA	Qualitative Comparative Analysis
RDTR	*Rencana Detil Tata Ruang* (Detailed Spatial Plan)
REG	Regulation
RPJM	*Rencana Pembangunan Jangka Menengah* (Medium-Term Development Plan)
RPJMD	*Rencana Pembangunan Jangka Menengah Daerah* (the Regional Medium Term Development Plan)
RPJPD	*Rencana Pembangunan Jangka Panjang Daerah* (Regional Long-Term Development Plan)
RTH	*Ruang Terbuka Hijau* (Green Open Space)
RTRW	*Rencana Tata Ruang Ruang* (Regional Spatial Plan)
SCON	Space utilization control
SIWASTEK	*Sistem Informasi Pengawasan Teknis* (Technical Supervision Information System)
SPLAN	Spatial plan
TKPRD	*Tim Koordinasi Penataan Ruang Daerah* (Regional Spatial Planning Coordination Team)

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Introduction

1. Introduction

1.1. Research background

Spatial planning is a bundle of governance practices to develop and implement plans, strategies, projects, policies, and regulate the form, timing, and location of the development (Healey, 1997). Spatial planning is perennially associated with several terminologies ranging from its nature such as 'physical planning', objects such as 'land use planning', and scope ranging from urban, town, regional to country planning (Acheampong, 2019). Regarding two terminologies based on nature and objects, spatial planning can be defined as an act of identifying medium and long-term strategies and objectives for using an area in terms of land use and physical development and coordinating this with sectoral policies as part of government activities (Koresawa and Konvitz, 2001). Understanding spatial planning goals is crucial because it is one of the keys to success, and the planning's success will yield many benefits. Spatial planning has become a significant part of community life including the resource management hence outcome is pervasive; albeit most of it is a public sector activity, the output of planning can affect individuals, households and private businesses (Acheampong, 2019).

Spatial planning in Indonesia is a challenging process both in planning and implementation. Regarding the implementation, space utilization control is an important part of determining the success of spatial planning. If the control is not optimal, it will result in many violations, such as not complying with spatial planning regulations, not having a permit, not fulfilling permit requirements, and using space that obstructs public access. (Thomas, 2019). For example, there are many villas, hotels, and houses built in water and land conservation areas, especially in Java, due to the demands of the economic sector's interests that ignore environmental factors (Junef, 2017). Weak control that results in many violations is caused by several conditions, namely those directly related to the spatial planning process (proximate conditions) and those not directly related but affect the spatial process (remote conditions) (cf. Schneider and Wagemann, 2006). Those that are directly related or proximate conditions in this study are directly related to the cycle of spatial planning principles in Indonesia, namely: Planning, Regulation, Guidance, and Control instruments. The reference for the implementation of spatial planning in Indonesia is the Spatial Planning Law. No. 26 of 2007, therefore, nomenclature and explanation regarding proximate conditions will refer to this law. Meanwhile, the remote condition is the context of each province. This context influences determining or utilizing the appropriate choice of (space utilization control) instruments (Jordan, Wurzel and Zito, 2013).

As an archipelagic country with an area of 1.913.578,68 km^2 and a population of 269.603.4 thousand people (Statistics Indonesia, 2017), the number of cases of spatial planning violations comes in a great deal. Based on the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency data, 6,621 cases of spatial violations occurred in the 2015-2018 period and are indicated to continue to increase. Most cases are in development that does not comply with the spatial plan, action without a permit, and public access closure (Prabowo, 2019). Indonesia is an archipelago divided administratively; each province headed by a governor. Based on the Law of the Republic of Indonesia Number 26 of 2007 concerning Spatial Planning, the central

government's authority is only at the level of regulation, guidance, and supervision for spatial planning in the regions hence for the preparation and implementation carried out by the provincial government. This situation means that the level of control in each region can be different even with the same legal umbrella.

Most studies related to space utilization control or spatial violations are carried out in certain study areas, such as environmental-related (Suroso and Firman, 2018), hazards (Buchori *et al.*, 2018), or institutional setting (Hudalah and Woltjer, 2007). Besides, most of them discuss specifics in certain cities or areas. Comparisons between provinces can help examine spatial violation cases more broadly and find common causal relationships (cf. Rihoux and Ragin, 2009). However, there are still limited studies that analyze these spatial problems in a holistic way; if any, it is more partial (Syahadat and Subarudi, 2012). This study tries to connect the conditions in each case (province) with the spatial violation that occurs to yield a more comprehensive study. Verhaeghe and Zondag (2019) state that a structured analytical approach by considering spatial problems, contextual conditions, and policies will help achieve spatial planning's main objectives. This statement implies filling the knowledge gap, namely the lack of structured analytics, which considers the problems by focusing on factors affecting the violations instead of research that focuses on case-by-case violations. One way to analyze these factors is to compare spatial violations between different cases in one population. This qualitative comparative study will help to analyze the causes of weak control and provide more on-the-ground empirical Qualitative Comparative Analysis (QCA) applications in the discipline of spatial planning are needed (Verweij and Trell, 2019). This study provides societal relevance by helping to provide an explanation to stakeholders regarding spatial planning about the relationship between the explanatory factors and weak control. This explanation may help to suppress the number of violations after identifying the causative factors' configuration. Furthermore, this study also contributes to academics in QCA-related research particularly enriching the application in spatial planning.

1.2. Research objective

The aim of this study is to analyze the explanatory factors and map their relationship with the space utilization control weakness in the province using the number of violations that happen as an indicator. The point of departure is that some factual conditions are interdependent in determining spatial planning success. Explanatory factors represent these conditions as the independent variables. In order to achieve the identification of causal configurations in this study, QCA is used to summarize patterns in the data collected (regarding factors) and describe the similarities/differences between cases (per province) (Verweij and Trell, 2019).

Spatial violations can be assessed from the spatial plans' inconsistency, which can be analyzed quantitatively from comparisons between spatial planning for a particular area and spatial use following a specific area (Umar, Dewata and Barlian, 2018). In addition, this study aims to find the configuration of conditions that influence the number of violation cases of space utilization as an indicator of space utilization control weakness. Thus, this research uses the qualitative-comparative analysis method to elaborate on Verweij and Trell's (2019) call for more on-the-ground works on QCA to further develop the method explicitly as a learning tool transferring lessons.

1.3. Research question

The research questions in this study are divided into two, the primary ones being the main problem to be solved and the secondary questions to help guide the research to answer the questions.

Primary research question

Which configurations of conditions explain the weak control on space utilization in Indonesia?

The configuration consists of a combination of the presence or absence of explanatory factors, namely: *Planning*, *Regulation*, *Guidance*, *Control instruments*, and *Context*. Answers from secondary questions that represent each of the factors lead the discussion in this study.

Secondary research questions

- How is control of spatial use conceptualized from a theoretical perspective?
- How do the existence and completeness of spatial plan affect space utilization control?
- How do existing legal products affect space utilization control?
- How does the government's guidance towards the institutional level below and society affect space utilization control's weakness?
- Are the application of control instruments and availability of investigators sufficient to support the implementation of space utilization control?
- How do differences in context between each province affect the weakness of control at the provincial level?

1.4. Research design

This thesis consists of seven chapters that explain the research sequentially with the following outline:

Chapter 1 Introduction

This chapter serves as an introduction starting the research, begins with a description of the research background, research objectives, research questions, and an outline of the research design.

Chapter 2 Theoretical Framework

This chapter describes the theory used in research to provide an overview and direction from the theoretical side of the variables to be used and the context of the problem to proceed to the next chapter related to data collection and analysis.

Chapter 3 Methodology and Data Collection

This chapter is a combination of research methodology and data collection. This chapter discusses the consideration of selecting research methods and measurements of explanatory factors as the unit of analysis. Also, this chapter presents the sources of data collection and how the raw data are prepared for analysis.

Chapter 4 Data Calibration

This chapter contains a description of the calibration process for each variable and its results.

Chapter 5 Data Analysis

This chapter explains each stage of the data analysis process, starting from processing data using software, making comparisons and interpretation, selecting cases, and analyzing selected cases.

Chapter 6 Conclusion

This chapter discusses how the results of the analysis carried out can answer the research questions.

Chapter 7 Discussion

In this chapter, a comparison is made between the results obtained with the theory from the Theoretical Framework. In addition, it discusses the results concerning the academic relevance and societal relevance as well as the limitations of this research.

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Theoretical Framework

2. Theoretical Framework

2.1. The Outcome: Space utilization control

The focus of this research is space utilization control. Control, specifically related to space utilization, plays an important role in achieving the desired goals because this function steers the business or activity not to deviate from the predetermined planning (Muhajir, 2017). The objectives for applicating control are: (1) so that the implementation process is carried out following the plan's provisions. (2) take corrective measures if deviations occur. (3) so that the resulting goals match the plan (Hasibuan, 2006). Spatial Planning Law No.26/2007 in Article 1 emphasizes the importance of controlling space utilization to create order in spatial planning implementation. Control plays a role in overseeing the implementation of spatial planning to achieve the desired outcomes as stated in the law, namely safe (*spatial resilience*), comfortable (*spatial comfortability*), productive (*spatial productivity*), and sustainable (*spatial justice and sustainability*) (Renald, 2017). The outcome to be achieved is used as an indicator of the success of spatial planning in general, which is also the success of space utilization control, respectively.

In the beginning, the point of emphasis in Indonesia's spatial planning was at the planning phase because Indonesia was focusing on development to increase the economic level. However, over time, spatial planning problems started to emerge, and violations of spatial use have increased. The government must prepare to start entering the new stage, shifting the attention to optimizing the spatial use based on the existing spatial plan and strengthening space utilization control to adhere to the plan. Spatial planning is a continuous process, and it requires control in the form of monitoring, evaluation, or periodic reviews to ensure that the plans are made to run effectively (Segura and Pedregal, 2017). One of the problems with increasing violations is due to the increasing complexity. The causes of this increased complexity include an increase in the number of actors involved or taking part in the decision-making process related to spatial planning (ibid) and overlapping other public policies with spatial impacts (cf. Faludi, 2012). Prolonged conflict over spatial planning can hinder economic growth, investment, and infrastructure development (Raharjo, 2016).

Based on their relationship with the spatial planning process, conditions that cause weak control over space utilization are divided into proximate and remote conditions (cf. Schneider and Wagemann, 2006). Proximate conditions are those that are directly related to the planning process or immediately responsible for causing outcomes. Meanwhile, remote conditions are conditions that affect/contribute to the outcome but not directly. An example is such as industrial development and natural disasters. This research focuses more on proximate conditions as the possible causes of weak control function. The outcome or the dependent variable in this analysis is the change in the number of spatial violation cases as an indicator of space utilization control weakness. Many studies confirm that the weaker control over spatial use will increase spatial violations (Nugroho and Sugiri, 2009; Jazuli, 2017; Setiawan et al., 2017; Budhianti, 2020).

2.2. Explanatory factors

The problem of controlling spatial use is fraught with complexity. In identifying conditions that can affect space utilization control weakness in planning, it is necessary to do a comparative analysis between the related factors from the cases observed. This comparison further produces the configuration of the existing cases, in this research, 34 provinces in Indonesia. Likewise, it is necessary to focus on the explanatory value of contextuality to examine this complexity (Verweij and Gerrits, 2012). This explanatory value is observed from several factors. Based on the legal basis, institutions, and current issues regarding space utilization control, five explanatory factors become the independent variables in this research: *spatial plan*, *regulation*, *guidance*, *control instruments*, and *the context* of each case (provinces in Indonesia). Regulation and guidance were chosen as the independent variables because they are directly related spatial implementation in the spatial planning process (see Figure 1). Supervision is excluded as independent variable because supervision is applied after implementation not before or during the process. The spatial plan becomes an explanatory factor because, as aforementioned regarding the issue of control, the plan contributes to the success of control. Moreover, control instruments determine because it is an internal factor, as the tool used to carry out the control function itself. Lastly, the other explanatory factor is context because contextual local conditions will influence each case's situation (Verweij and Gerrits, 2012).

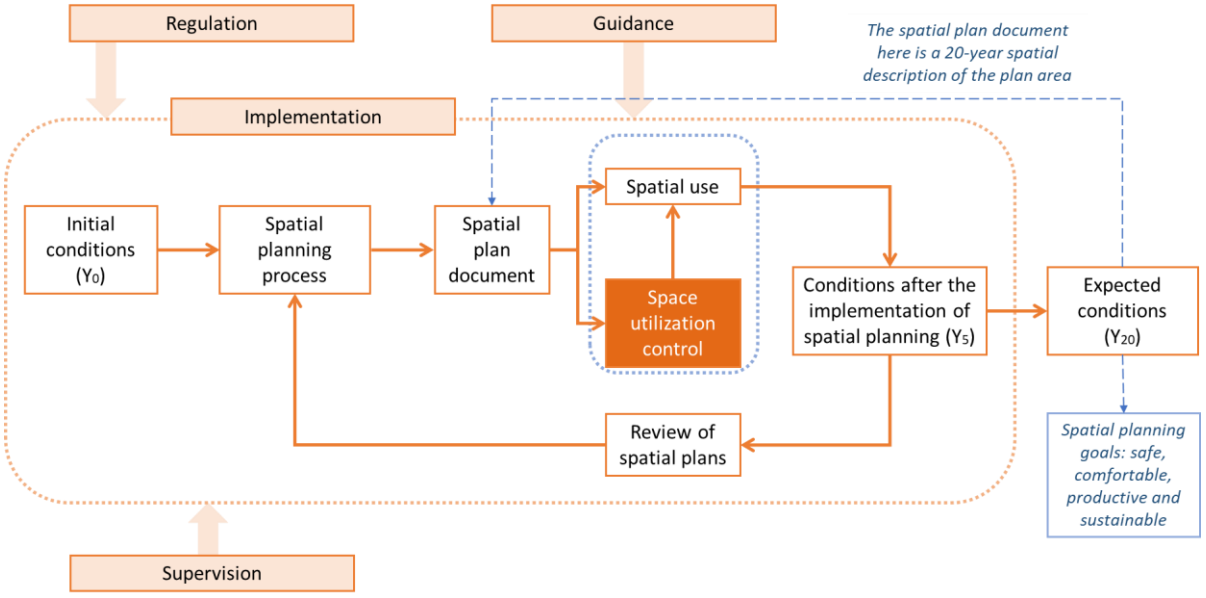

Figure 1. Flowchart of functional relationships in spatial planning in Indonesia

Spatial plan

The Spatial Planning Law No.26/2007 enunciates controlling space utilization as a measure to realize an orderly spatial plan. In Indonesia, a spatial plan is called Rencana Tata Ruang Wilayah or abbreviated as RTRW. Based on Law No. 26 of 2007 on Spatial Planning, spatial planning is classified based on the system, the primary function of the area, the administrative area, the

activities of the area, and the strategic value of the area. RTRW, as a product, is categorized according to administrative areas into national, provincial, district/city levels. It is one of the legal products that must be owned by each level as mandated in the law. The spatial plan's initial purpose was to secure the land use to become into the plan, efficient, and in line with long-term policy objectives, and also provides the direction in which private capital should be directed (Payne, 2000). The preparation of spatial plans aims to achieve a more effective way of integrating economic, social, environmental, and cultural agendas besides carrying a potential for rescaling the issues from the municipal level or down from the national level (Albrechts, Healey and Kunzmann, 2003). Spatial planning is designed to integrate development and land use policies with other influencing policies and programs. Spatial plans are not limited to the traditional land-use plan that only regulates land use purposes. They help facilitate and promote the sustainability and inclusiveness of development in urban and rural areas (Mungkasa, 2020b). The availability of an integrated and comprehensive spatial plan that takes into account the environmental sustainability and livability of the region will prevent activities or impacts that yield adverse effects to humans and the environment (Oliveira, Tobias and Hersperger, 2018).

The spatial plan as an independent variable uses two indicators. The first one is the availability of an agreed and approved spatial plan. A spatial plan (RTRW) agreed upon and approved will get legality based on its status. There are three categories of RTRW legal status (Direktorat Tata Ruang dan Pertanahan, 2015), namely:

1. RTRW with permanent legal status (legalized in Regional Regulations),
2. RTRW, which has not been ratified in Regional Regulations but has received substance approval in the forum of the National Spatial Planning Coordinating Board (*Badan Koordinasi Penataan Ruang Nasional*/BKPRN),
3. RTRW has not received substance approval but has been submitted by the Governor to the BKPRN forum.

The spatial plan's availability as an indicator, in this study, uses the number of RTRWs that have been legalized at the final stage, namely in the form of Regional Regulations. Nevertheless, the RTRW, which has been ratified in the Regional Regulation, can be reviewed periodically on a five-year cycle. In the process, the slow revision of Regional Regulations may hamper the availability of the RTRW, which needed as the primary foundation for local governments (provincial and district/city) to reap investment (Antoni, 2021).

Nevertheless, with technological developments, population growth, and various problems, particularly in developing countries like Indonesia, the spatial plan is not enough to only be available. As the demand for spatial plans to cover more problems is getting higher, they must be comprehensive. Comprehensive can be interpreted as complete and focuses on only important issues that provide directions on the allocation of space used for development activities (Syamwil, 2004). We can use several terms to explain the level of comprehensiveness of a plan. For instance, Burby (2003) used the term *plan strength* to describe a comprehensive planning level based on covered hazard-mitigation measures. In this research, the term *plan quality* is used, measured by its substance's completeness. This completeness is the second indicator. The more complete the substance shows the more comprehensive a plan is. Adequate spatial plan (RTRW) in Indonesia is one that already loaded essential substance like Disaster Prone Area (*Kawasan Rawan Bencana*/KRB), Green Open Space (*Ruang Terbuka Hijau*/RTH) for cities/urban areas, and

Sustainable Food Agricultural Area (*Kawasan Pertanian Pangan Berkelanjutan*/KP2B) for districts/rural areas (Renald, 2017).

Definition of the disaster-prone area is an area that has conditions or characteristics (biological, climatological, hydrological, geological, geographical, economic, social, technology, political, or culture) that for a certain period unable to suppress, prevent, or achieve readiness, thereby reducing the capability to respond to specific disaster hazards (Tondobala, 2011). Incorporating this aspect into the spatial plan is intended as an intervention measure to improve resilience and overcome the disaster-prone area's vulnerability. Meanwhile, green open space is defined in Law no. 26/2007 regarding Spatial Planning as an elongated area/lane and/or grouping, which use is more open, a place to grow plants, both those that grow naturally and those that grow intentionally planted. Green open space can balance the provision of O_2 needs with the absorption of CO_2 and affect environmental quality, especially health (Prihandono, 2010). Lastly, the sustainable food agricultural area (KP2B) included in the spatial plan is an effort to prevent agricultural land conversion, which will affect the food supply. As stated in Law No. 41 of 2009 concerning the Protection of Sustainable Food Agricultural Land, that this plan will include the area and distribution of KP2B locations and plans regarding the area of reserve land, available land area, and the intensity of food agricultural cropping at the national, provincial and district/city levels to ensure food availability. The fulfillment of the three substances in this spatial plan makes the plan more comprehensive. Conversely, lack/incompleteness of the prepared and comprehensive plan as the product of the planning process will affect the level of weakness in space utilization control.

The regulation

The regulatory aspect is one of the things that becomes a backlog in spatial planning. This backlog is related to the availability of legal products to regulate. The absence of regulation in spatial planning can cause irregularities in the application of spatial plans, thus impacting environmental damage (Firman, 1997). This availability becomes the indicator of regulation as an independent variable. Legal products assessed for availability are divided into planning, guidance, utilization, and control legal products following spatial planning principles (Direktorat Jenderal Pengendalian Pemanfaatan Ruang dan Penguasaan Tanah, 2019). Using technical supervision manual used by the Ministry of Agrarian Affairs and Spatial Planning, the form of legal products related to planning are separated into two: regulations contained in the Regional Spatial Plan (RTRW) (divided into provinces and districts/cities) and regulations contained in the Detailed Spatial Plan (*Rencana Detil Tata Ruang*/RDTR). The regulations in the RDTR refer more to an operational function. Local governments prepare RDTR for link building and environmental planning as a reference for granting permits. The regulations contained in these two plans play a significant role because the rules contained in these regulations function to oversee the utilization of the plans. These rules prevent changes or irregularities in the implementation of the plan. The government must prioritize this regulation. Otherwise, it will not be easy to maintain consistency. Inconsistent regulations make it susceptible to external factors, which may cause an operational shift or fail (Prianto, 2012).

Furthermore, based on the Regulation of the Minister of Home Affairs of the Republic of Indonesia No.116 of 2017 about Regional Spatial Planning Coordination, legal products related to guidance are in the form of legalization of the team in charge of:

- coordinating the implementation of spatial planning,
- coordinating in controlling space utilization,
- providing licensing recommendations and forms of sanctions, and
- coordinating in conflict handling and resolution as well as district or city spatial planning cooperation.

This team is called the Regional Spatial Planning Coordination Team, after this abbreviated as TKPRD (*Tim Koordinasi Penataan Ruang Daerah*). TKPRD is an ad-hoc team formed to support the implementation of Law No. 26 of 2007 concerning Spatial Planning in the region and has the function of assisting the implementation of the governor's duties regarding spatial planning coordination in the district/city level. District/city officials report the results of controlling the space utilization in their area to the TKPRD periodically at least every six months. Furthermore, the head of the TKPRD will continue the report hierarchically to the governor level to be forwarded to the ministry. TKPRD legalization in the legal product confirms the existence of direct control, starting from the lowest level (Akil, 2020). The expectation is that with immediate control, prevention of spatial planning violations can be more responsive.

Next is the legal product related to utilization as part of the regulatory aspect. It is the Regional Medium Term Development Plan, abbreviated as RPJMD (*Rencana Pembangunan Jangka Menengah Daerah*). The RPJMD is a regional development planning document for 5 (five) years, which elaborates the vision, mission, and programs of the head of the region (governor) based on the Regional Long-Term Development Plan or RPJPD (*Rencana Pembangunan Jangka Panjang Daerah*) and considering the Medium-Term Development Plan or RPJM (*Rencana Pembangunan Jangka Menengah*) at the national level. The relationship between regional development planning (RPJMD) and regional spatial planning (RTRW) is solid and influences each other (Widodo, 2017). The influence that occurs in this relationship is because the strategies in the RTRW or RPJPD will not be implemented if they are not accommodated in the RPJMD. The RPJMD will ensure the implementation of the RTRW or the space utilization according to its directions. Conversely, the RTRW is expected to have a significant impact on the development of a region.

The last one is a legal product related to control. This legal product is in the form of control instruments such as permits, zoning regulations, incentives-disincentives, and sanctions that are legalized in regulations. The ratification of these control instruments is expected to empower the instruments in controlling, directing, and preventing irregularities in spatial use. The presence of control instruments under applicable regulations will make it easier for the government to carry out spatial order works through the space utilization control mechanism (Kautsary and Shafira, 2019).

The availability of these four legal products is the indicator of good or complete regulation. However, on the other side, regulation is often seen as an instrument that complicates rather than facilitates the spatial planning process. Besides treated as a bureaucratic process that is too rigid and convoluted (Payne, 2000), regulations are also considered to hinder development (Amis, 2020). Nonetheless, this assumption is met with a different perspective which sees regulation as serving an essential support function as a reference that other instruments cannot replace (Jordan, Wurzel and Zito, 2005). The regulation also provides formal authority to the party responsible for planning and implementing spatial planning (ibid., 491). Apart from the differences

between the two points of view, the relationship between regulations, represented by legal products' availability as a reference, and space utilization controls cannot be denied.

The guidance

The guidance aspects regarding spatial planning consist of three indicators: communication, information, and public involvement (Figure 2). Communication is an essential factor because, in every spatial planning context, there is a distinct power relation of division, exclusion, and domination, which can be suppressed by developing communicative practices (Healey, 1996). In the communication process, dialogue occurs through collective sense-making and joint fact-finding (Goldstein, 2009) involving parties related to spatial planning ranging from experts, policymakers, the private sector to the society. Each actor has their contribution. Although the experts have the capacity and capability in the scientific field of planning, they still need to broaden their views with practice (Watson, 2002) obtained from practitioners. Meanwhile, the society can help strengthen the legitimacy of spatial plans with local wisdom, which they understand better about their place. The communication established by the government is done through TKPRD; thus, TKPRD communicates regarding technical aspects of spatial planning through coordination meetings. Coordination is vital at all levels in the planning system (vertical integration) in all sectors (horizontal integration), including at all stages of the development management process (Syamwil, 2004). Of the 500 districts/cities in Indonesia, 405 districts/cities have TKPRD determined through a Regent/Mayor Decree (Direktorat Jenderal Pengendalian Pemanfaatan Ruang dan Penguasaan Tanah, 2019). Under the mandate of the Regulation of the Minister of Home Affairs of the Republic of Indonesia No.116 of 2017 regarding Regional Spatial Planning Coordination, TKPRD needs to hold meetings coordinating spatial planning management at least once every three months. In addition to the coordination carried out by TKPRD, communication can also be elevated via dissemination to regional apparatus organizations (*Organisasi Perangkat Daerah*/OPD) and the society. Dissemination in building communication is expected further to develop society's awareness and responsibility (Chandra, Aulia and Izziah, 2019).

Another factor that affects control from the guidance aspect is the information. The public has the right to know (right to be educated), which is the society's right to obtain information from the government regarding the spatial planning process (Zega, 2010). Therefore, the government should convey and publish information by socializing matters relating to spatial planning regulations. This right to information also applies to governments at lower levels from above levels and vice versa. Ignoring the information provided is neglecting society's rights, which is treated as a violation of laws and regulations (ibid). Three aspects can represent information as an indicator for guidance: innovation, information systems, and information publication (through the media) (Direktorat Jenderal Pengendalian Pemanfaatan Ruang dan Penguasaan Tanah, 2019). The innovations developed related to spatial planning aim to accelerate work processes that have been done manually, such as developing a compliant application. Meanwhile, the information system functions to provide information related to spatial planning and as a forum to facilitate applications for space utilization permits. The last is the publication of information through print media, digital media and social media to reach a broader range of people in conveying information.

The last factor that is part of the guidance is public involvement. Planning has grown to be more collaborative to answer the problems of uncertainty and complexity in planning. In this

collaborative effort, a broader civic role for citizens to contribute was created (Brand and Gaffikin, 2007). Contribution in broad public involvement affects realizing the more robust plans and their implementation (Burby, 2003). Stronger plans and implementation that receive community support will further influence the application of control as a function that ensures implementation does not go out of the plan's trajectory. However, not at all phases, public involvement will deliver optimal results. This optimization will depend on the community's ambition and the availability of instruments to stimulate participation (Willems *et al.*, 2020). In Indonesia, one of the instruments is community groups (known as *kelompok masyarakat*/POKMAS) which become a means at the district/city level for the community to contribute voices to spatial planning. The existence of this community group is one of the indicators for measuring the guidance variable. Nevertheless, the degree of public satisfaction so that they want to participate with the provided involvement activities may also be influenced by contextual factors such as political issues or social aspects (Hamersma et al., 2018). Therefore, context is one of the independent variables.

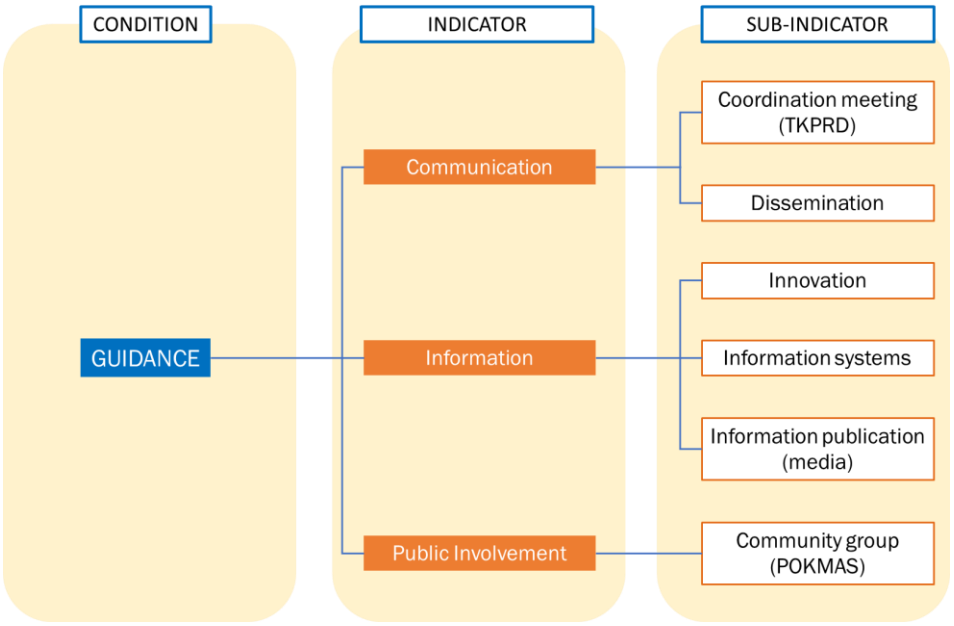

Figure 2. Indicator and Sub indicator for Guidance

Control instruments

There are five indicators for this condition. Four of them are referring to the Spatial Planning Law No.26/2007. Space utilization control is carried out by implementing four control instruments covering zoning regulations, permits, giving incentives/disincentives, and the imposition of sanctions. These four instruments are the indicators, with the fifth being the law enforcers in spatial planning. Space utilization control can be done proactive/preventive (*Ex Ante Factum*) or reactive/responsive (*Post Factum*) (Tenrisau, 2019). Control over spatial use in Indonesia that is preventive is in zoning regulations, incentives/disincentives, and permits, while repressive ones take the form of sanctions. The purpose of sanctions is to provide a deterrent effect for violators. The absence of sanctions combines with weak supervision due to the lack of spatial planning investigators will result in frequent violations (Anton *et al.*, 2020). On the other side, zoning

regulations, incentives/disincentives, and permits are more aimed at instruments directing so that violations do not occur. The general provisions of the zoning regulations or the zoning regulations themselves serve as a reference for the government to issue the space utilization permits (Direktorat Jenderal Pengendalian Pemanfaatan Ruang dan Penguasaan Tanah, 2019). Meanwhile, incentives and disincentives are tools to encourage space utilization activities to align with spatial plans or, conversely, limit the activities that have the potential to interfere with efforts to realize the plan (ibid).

The success rate of implementing the instrument will be contextual and relate to various application areas (Solly *et al.*, 2020). Adequacy, responsiveness, and effectiveness are the criteria for measuring control instruments in public policy (Pamungkas, Rini and Cahyo, 2016). However, in this study, the measurement of the instrument's success are not elaborated further but only considers the progress of its implementation in each province. Most of the instruments are passed by the municipalities because Indonesia's autonomy regulations have decentralized most of the powers to the municipal level (ibid). There needs to be synergy between agencies at the municipal level to avoid administrative sanctions that are sectoral according to the interests and authorities of one agency (Sugiarto, 2019). This synergy can accelerate the progress of implementing control instruments. In addition to synergy, to be more effective, human resources related to the enforcement of regional regulations regarding the RTRW need to be considered considering the complexity of space utilization.

This human resource is also related to the apparatus's availability to ensure the instruments are working accordingly. Spatial Planning Law No. 26/2007 in articles 68 up to 75 regulates Criminal Law Facilities. The National Police or Civil Servant Investigators (*Penyidik Pegawai Negeri Sipil*/PPNS) in spatial planning act as law enforcers who conduct investigations on allegations of spatial use violations (Anton *et al.*, 2020). Spatial Planning PPNS is initiated to assist the police related to criminal acts in spatial planning over the investigation process. PPNS is equipped with investigative knowledge, supporting infrastructure, budget, and authority to disclose a criminal act. The Spatial Planning PPNS consists of central, provincial, and municipal government officials under the auspices and responsibilities of the central government, Ministry of Agrarian Affairs and Spatial Planning. It is expected that the availability of PPNS will strengthen the control function and prevent violations of spatial use. Nevertheless, in real world, the existence and performance of PPNS are often judged to be ineffective due to institutional and employment status, unplanned work programs, and others (Sodikin, 2017). Therefore, it is still necessary to analyze how much influence PPNS has on the strength or weakness of the control.

The context

Spatial planning emphasizes contextualism (Sykes, 2008), wherein different territories, the same rules and applications can produce different results. One of the things that are used as an indicator is the land status (certification). Initially, spatial planning was traditional land-use planning which focuses on integration, vision, and participation (Palakodeti, 2020). Nevertheless, as development overgrows, spatial planning becomes more expansive with other new dimensions besides land. In Indonesia, land management and spatial planning substantially are two different things but still have a relationship. The spatial planning process contains at least two elements, namely institutional arrangement, and physical arrangement (Shohibuddin, 2018). Discussing physical

arrangements will be related to land management. Land management involves various processes from planning to land use. Simultaneously, violations of land-use plans will become violations of spatial planning as well. Violation of the land use plan is related administratively through land registration activities or land certification (ibid). Nonetheless, the relationship between land registration and space utilization control is not as an instrument of prevention or control but rather of data collection. Land that has a certificate will be easier to monitor if there are irregularities in its use. Land use can be claimed as deviant if there is physical evidence of abuse, one of which is related to land certificates.

Apart from the land status, another thing that becomes an indicator is the regional revenue and expenditure budget (Anggaran Pendapatan dan Belanja Daerah/APBD) in each province. The APBD is the annual financial plan of the regional government, in this case, the province. APBD is an indicator for context because it reflects the development progress in each province (Direktorat Jenderal Tata Ruang, 2012). APBD includes funds prepared to solve problems in development or meet a regional demand identified and agreed upon by the executive and legislative bodies (Suwarli, 2015). The high percentage of APBD absorption indicates high development. However, the absorption of significant funds can also often be misused (Afrilianti, 2016). In addition, development is often the cause or one of the triggers for spatial planning problems (Verhaeghe and Zondag, 2019). It is necessary to study factually how the amount of absorption in APBD affects the control of space used in the provinces of Indonesia.

The last thing that becomes an indicator is the level of corruption in each province. Land use has been identified as one of the weak points in government that are often threatened by corruption (Chiodelli and Moroni, 2015). Deputy Chairman of the Corruption Eradication Commission (*Komisi Pemberantasan Korupsi*/KPK) in Indonesia, Alexander Marwata, stated that corruption and spatial planning are closely connected because the licensing process for space utilization is often used as a means of taking advantage by specific individuals, which leads to environmental damage (Risalah and Hafil, 2020). The problem of corruption is a typical problem that often occurs in developing countries, including Indonesia. In addition to the low integrity of the apparatus, in Indonesia, the causes of corruption are economic or political reasons, uncontrollable power, and the socio-cultural framework of the administration and the economy (Server, 1996). The higher the level of corruption, will logically affect the more prone to spatial planning violations. These three context indicators (land status, APBD, and corruption) are used as a thinking scheme for analysis in the following chapters.

2.3. Conceptual model

Based on the theoretical framework compiled from several studies related to space utilization control, there is a relationship between factors regarding spatial planning, such as the spatial plan, regulation, guidance, control instruments, and the specific context of each case with spatial violations, as an indicator of the weak control function. Provision of an adequate and comprehensive plan, regulation, guidance, and control instruments, in theory, will lead to expectations for the success of spatial planning (Jordan, Wurzel and Zito, 2005; Zega, 2010; Anton *et al.*, 2020; Mungkasa, 2020b), one of which is indicated by a reduction in the level of violations. Nonetheless, because the measurement is the stagnant or increase of violations as an indication

of control weakness, then in any configuration where one of the conditions is absent, a weak control will be expected. As an exception, the context cannot entirely be a linear causal relationship. High levels of corruption can give high expectations of violations, but this is not always the case with land status and APBD.

The conceptual model (Figure 3) describes the relationship between spatial related factors and space utilization control as an outcome. Two of the five explanatory factors (conditions), planning (spatial plan), and control instruments, are at the same phase in the spatial planning cycle, namely the implementation phase, whilst regulation and guidance, are at the other two interconnected phases. Moreover, context is a separate and independent factor. Context does not only discuss spatial planning but always affects the implementation of spatial planning. This interaction description is used as a reference in the next discussion.

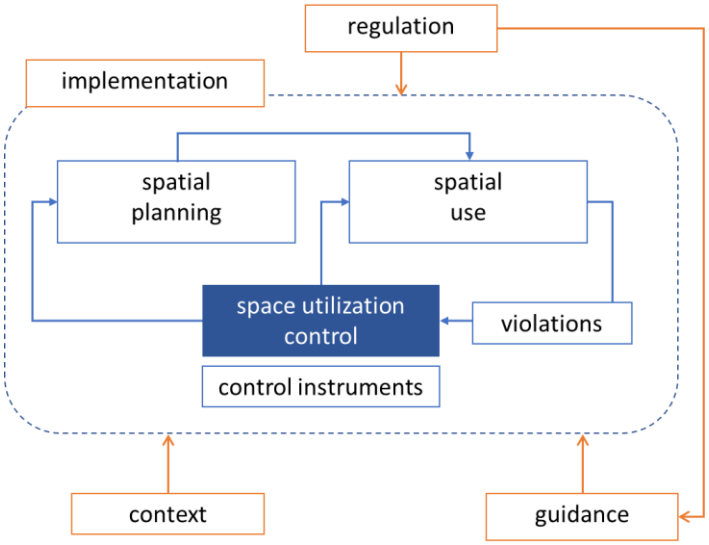

Figure 3. Conceptual model

This chapter summarizes the outcome and conditions, with a definition, and their indicators in Table 1 as an introduction to the next chapter.

Table 1. Outcome and conditions

	Outcome	Conditions				
	Space Utilization Control	Spatial Plan	Regulation	Guidance	Control Instruments	Context
Definition	Degree (weakness) of space utilization control at the provincial level	Comprehensiveness of provincial spatial plan (RTRW)	Legal products related to spatial planning	Measures done by the government for guidance related to the implementation of spatial planning	Instruments used and actors of space utilization control (investigator)	Special characteristics of a province
Indicator	Spatial violations	Availability in Regional Regulations and completeness of additional content (KRB, RTH, KP2B)	Availability of legal products (regarding: - Planning - Guidance - Utilization - Control)	- Communication - Information - Public involvement	- Zoning regulations - Permits - Incentives/disincentives - Sanctions - PPNS (investigator)	- Land status (certificate) - APBD - Corruption case

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Methodology and Data Collection

3. Methodology and Data Collection

Thirty-four provinces in Indonesia have homogeneity and heterogeneity, which make them comparable. Cases are comparable if they have similarities or differences in all but one (Levy, 2008) or diverse if shows variations on conditions under investigation (Marx and Dusa, 2011). The homogeneity is under the aegis of the same rule of law. So that related to spatial planning, all provinces adhere to the same spatial planning principle. While the heterogeneity is the difference in each province's context, this difference in context will also affect proximate factors as one of the independent variables. Each of these conditions can influence space utilization control, whether it can optimally ensure that the implementation stays in line with the plan or deviates. Albeit the heterogeneity of these provinces, the forms of violations that occur are generally similar. Therefore, Qualitative Comparative Analysis (QCA) is the method chosen in this study because it can analyze the spatial planning's performance, especially how explanatory factors can explain the control function's weakness resulting in violations. QCA can provide a formulation that explains how the causality relationship occurs, considering the complexity of each case's contextual environment (Verweij and Zuidema, 2020).

QCA is a method that can identify and narrow down a pattern and relationship between existing conditions and emerging outcomes. This method is case-oriented. QCA techniques were used to find conjunctural causation in the analyzed cases. Developing a conception of causality, there is an opportunity for complexity to arise in QCA or referred to as multiple conjunctural causations (Rihoux and Ragin, 2009). These multiple conjunctural causations represent equifinality or different paths that can lead to the same outcome. Besides explaining a complex pattern, QCA also broadens the scope in the analysis of causality commonly used by relaxing several common assumptions (ibid). Thus, this method provides two other solutions, namely parsimonious and intermediate, in addition to complex solutions. These two solutions are a more concise and more straightforward explanation of a particular phenomenon of interest while still providing an appropriate allowance for causal complexity with certain assumptions. The complex solution is a subset of the intermediate one, and the intermediate solution is a subset of the parsimonious one. The intermediate solutions are produced when different subsets of the remainders used to create the parsimonious solution are incorporated.

3.1. Research framework

This thesis used the QCA to identify patterns of conditions across thirty-four provinces, which interpreted and further explored in the specific province represented by the pattern (Verweij and Trell, 2019). One reason for choosing the QCA method was the number of cases that met the ideal range for analysis, namely 5 <N <100, a medium-sized research design with the number of cases in that range can contribute both to theory testing and development (Marx and Dusa, 2011). If the number of cases is too small, there will be limited diversity which will be a challenge to get a pattern/configuration that can explain the causal relationship between conditions and outcome; on the other hand, other methods such as configural frequency analysis (CFA) may give more precise results with too many cases (Caren and Panofsky, 2005). Data from the whole population, thirty-four provinces, were collected, calibrated, and analyzed. Nevertheless, the main reason for

choosing QCA is because it settles the focus on the rich details of individual in-depth study with a focus on identifying causal patterns cross cases; thus, QCA offers more solutions that are epistemologically coherent and consistent (Gerrits and Verweij, 2018). Moreover, because QCA relies heavily on data, it is essential to carefully consider how to determine the criteria and indicators for measuring conditions for each case. It began by preparing a case study database and then compiled criteria and indicators. Data collection techniques were carried out by literature studies and secondary data collection from related sources. After the comparative analysis, this study was followed by selecting cases for in-depth study with zooming into cases representing the respective solution.

The stage after the data was collected and sorted is data calibration. In this calibration process, the data was transformed into crisp or fuzzy data sets using an examination of the data and external knowledge (Schneider and Wagemann, 2012). After the data was calibrated, the next step is to conduct a cross-case analysis to get an overview of the condition's configuration and its effect on the outcome. The fsQCA software 3.0 was used for the data analysis because it is compatible with the crisp set and fuzzy set memberships. The next steps was to analyze the cases based on the QCA results and analyze the existing cases' causal mechanism. The later stage was an in-depth study of the comparative analysis results, analyzing the types of solutions and counterfactual inferences and conducting a case study. In this case study, representative cases were analyzed how the configuration affects the cases covered by the same solution term. Cases were obtained based on the QCA results selected and explored to get a more accurate picture regarding the effect of the condition on the expected outcome.

3.2. Measurement

This section aims to explain the measurements of the outcome and explanatory factors as the conditions. These conditions are the relevant attributes of the cases. The research examines these conditions on how these units, per se or in combination, may lead to the outcomes (Caren and Panofsky, 2005). Spatial violations as an indicator of the outcome (space utilization control) were measured using the number of spatial violation cases in 2018 and 2019 that were fully audited in 2020 because the data for 2020 had not been audited when this thesis was compiled. The data came from the Ministry of Agrarian Affairs and Spatial Planning. Hence, it was processed as a crisp set because what would be examined was the change in the number of violations between 2018-2019. The Indonesian government does not have categorization of spatial violation cases based on the number, currently only based on the typology of violations with reference to the Regulation of the Minister of Agrarian and Spatial Planning No.17/2017 concerning Spatial Audit Guidelines. Classification based on typology was not used in this study because it did not represent weak controls related to frequent violations. Categorization based on the loss value also could not be done because, referring to the same regulation, the audit data on spatial planning violations are confidential.

In the spatial plan factor, the plans' availability was measured based on whether a spatial plan that has been passed in Regional Regulations is available in the province. Meanwhile, the completeness was measured by the extent to which the spatial plan includes RTH, KRB, and KP2B. This content's measurement was not shown partially based on each substance's presence but

used a summary of the three that the ministry had processed (Direktorat Jenderal Pengendalian Pemanfaatan Ruang dan Penguasaan Tanah, 2019). The ministry uses three categories for the comprehensiveness of the substance, namely: good, medium, and poor. The availability of a spatial plan in the form of a Regional Regulation has outweighed the content's completeness because referring to the Regulation of the Minister of Agrarian and Spatial Planning No.8 / 2017 concerning Guidelines for the Granting of Substance Approval in the framework of Stipulation of Regional Regulations concerning Provincial Spatial Plans and Regency Spatial Plans/Cities, spatial planning plans that are enacted have passed the minimum standard of substances required to be eligible to become Regional Regulations. The completeness of RTH, KRB, and KP2B will improve the quality of the spatial plan.

Next, the regulation section measured how complete the legal products related to planning, guidance, utilization, and control. The legal product related to planning is the regulation which accompanies the spatial plan that has been legalized in a Regional Regulation. On the other hand, the legal product of guidance is the Regent/Mayor Decree's availability as proof that the district/city has TKPRD. Similar with the three previous legal products, utilization's legal product sees the presence or absence of a related product, namely the RPJMD. The last one is a legal product related to control that measures the availability of instrument controls. What distinguished it from the control instrument factor was that this section only looks at the instrument's availability as a legal product, while the control instrument section looks at its application as a factor. Since the outcome is focusing on the weakness, province with incomplete legal products got a full score and vice versa.

After regulation, the next factor is guidance, measured from communication, information, and public involvement. Communication was measured from two things: coordination (seen from the implementation of meetings) and dissemination (direct coaching activities in the spatial planning sector). Both data coordination and dissemination, were set with three categories: good - if it has been done to the regional apparatus organization *and* the community, medium - if it has been done to the regional apparatus organization *or* the community, and poor - if it has not been done. Meanwhile, information was measured by the availability of information systems supported by innovation, and information publication through the media (indirectly); and the last one is public involvement, measured by community groups' availability (POKMAS) as evidence of social participation in planning.

Furthermore, as previously mentioned, the control instrument as factor is measured from the extent or how well the application of these instruments. The application of zoning regulations was measured from the issuance of technical recommendations referred to the zoning regulations. Likewise, other instruments such as permits, incentives-disincentives, and sanctions are also measured by their application in the regulations. To measure the control instrument, apart from the tools used, the presence of PPNS (investigator) as the controlling actor, in this case, is also considered. PPNS is measured based on the adequacy of its availability in each province (minimum requirement is three persons).

Lastly, each province's contextual conditions, as a factor, represented by three indicators: land status, APBD, and the corruption case. The data for each indicator use quantitative data from the relevant institutions. With the unit of analysis consisting of factors that are part of the spatial

planning process and the contextual environment, QCA analysis is expected to explain how the space utilization control is carried out, considering the contextual environments' complexity (Gerrits and Verweij, 2018). Although the three contextual indicators cannot directly justify the direction of their relationship with the spatial violation, their relationship can indicate the direction of the calibration. For example, corruption often appears and affects the determination of RTRW at the provincial and district levels in the form of bribes or gratification of land (Parsa, 2015).

3.3. Data collection process

The data used for this study came from two sources: literature and secondary data. The literature was used as a reference in determining explanatory factors and measuring the data. Meanwhile, data related to explanatory factors, both indicators and sub-indicators, were collected from secondary data obtained from the central government: the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency and Ministry of Finance, and non-governmental organizations (Indonesia Corruption Watch) (Figure 4). Some of the raw data is confidential; thus, the data shown has been prepared for processing. Moreover, some of the initial data consists of data per district/city, so it needs to be processed per province by looking for the mean value (Figure 5).

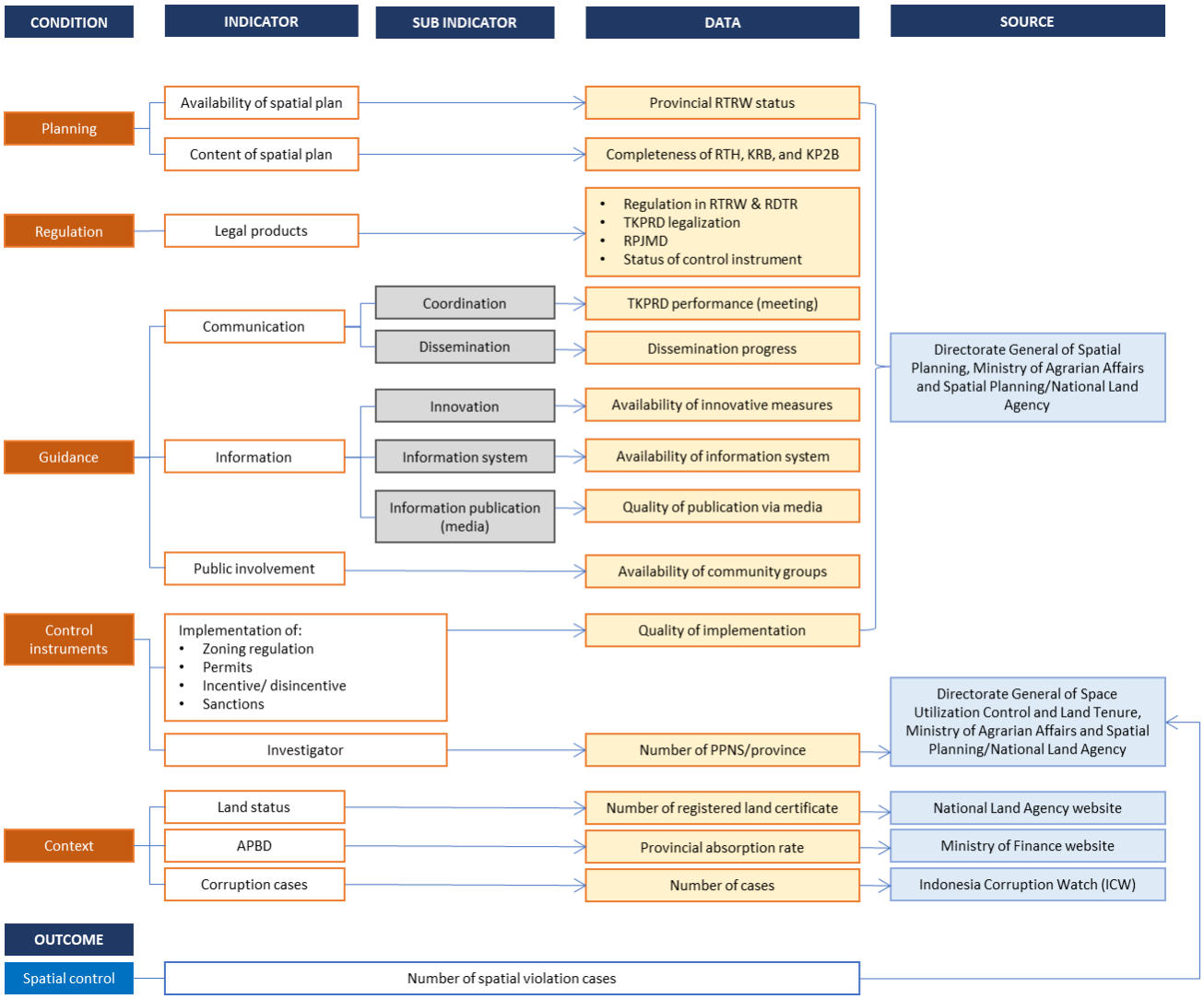

Figure 4. Data collected and the sources

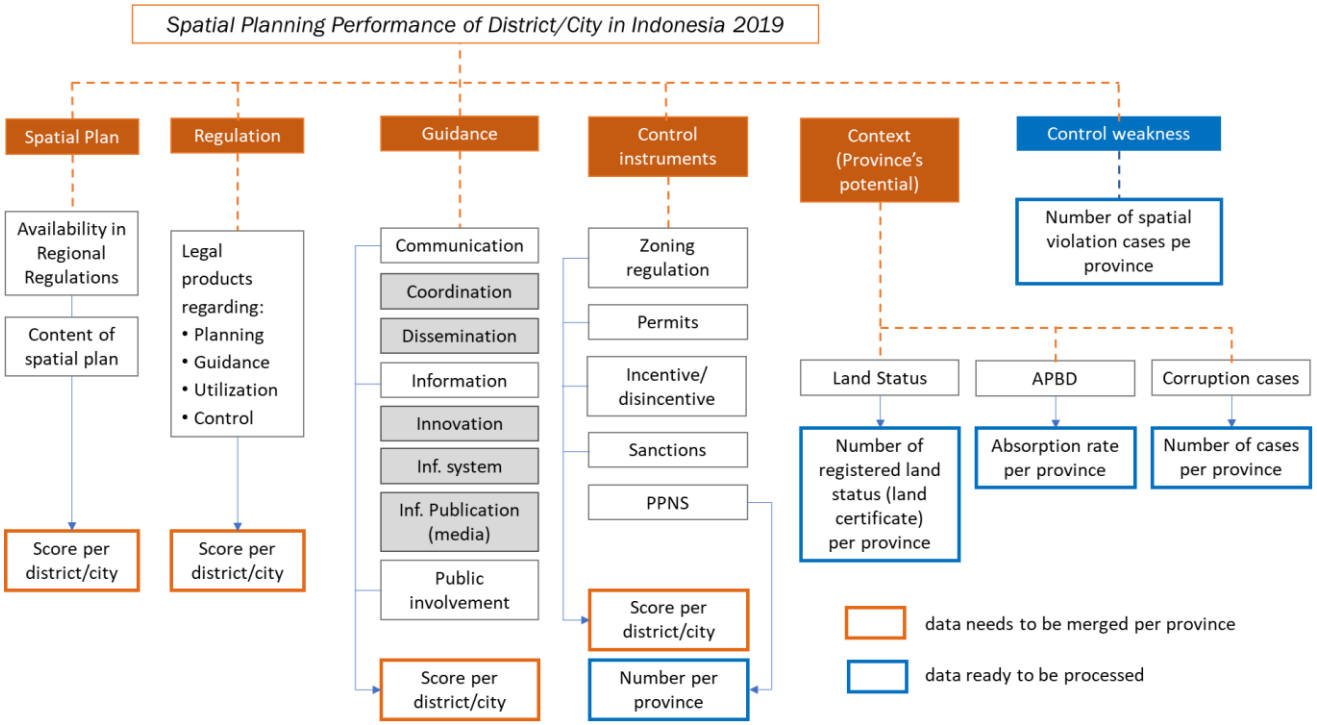

Figure 5. Operationalization of data

The results of data collection are equalized to the provincial level so that they are comparable as cases. Details of raw data in labels and scores are attached in Appendix A. Table 2 and Table 3 in the next pages show the results of the prepared data. The scores listed in the Spatial Plan, Regulation, Guidance, and Control Instruments conditions in each case are the average values of the districts/cities in the province. Meanwhile, the calculation for each district/city uses the scoring system used in the Technical Supervision (which is carried out by the Ministry of Agrarian Affairs and Spatial Planning). The government carries out technical supervision through a census with questionnaires and in-depth interviews on the implementation of spatial planning in districts/cities, assisted by the Technical Supervision Information System (SIWASTEK). Meanwhile, the Context contains the number of certified lands, the absorption rate of the APBD, and the number of corruption cases in each case (province).

Based on the data prepared, one of the indicators of the Spatial Plan, namely Availability in Regional Regulation, does not show any variation. This sameness makes this indicator unable to show the pattern of the relationship that occurs. Therefore, the indicators used for the condition of the Spatial Plan are only the completeness of contents.

Table 2. Processed data: Spatial Plan, Regulation, and Guidance (score per province)

No	Case	Case ID	Explanatory Factors							
			(1) Spatial Plan	(2) Regulation	(3) Guidance					
					Communication		Information			Public Involvement
			Content	Availability of legal products	*Coordination*	*Dissemination*	*Innovation*	*Information systems*	*Information publication (media)*	
1	Aceh	AC	85	70	35	17	9	26	43	9
2	North Sumatera	Nsum	70	62	28	36	13	13	38	0
3	West Sumatera	Wsum	82	76	68	58	32	32	74	5
4	South Sumatera	Ssum	76	65	47	24	29	12	29	18
5	Jambi	JB	86	69	36	41	9	0	27	9
6	Lampung	LP	73	68	53	20	13	7	20	0
7	Bengkulu	BE	75	71	45	25	0	10	40	0
8	Riau	RI	0	40	33	13	8	8	0	0
9	Riau Islands	Ris	57	74	50	21	43	43	57	29
10	Banten	BA	94	80	88	69	75	88	88	38
11	DKI Jakarta	JAK	100	100	100	100	100	100	100	100
12	West Java	WJ	96	76	59	50	56	67	78	30
13	Central Java	CJ	91	74	64	61	69	66	74	26
14	East Java	EJ	89	79	53	53	42	53	82	13
15	D.I Yogyakarta	DIY	80	80	60	70	100	100	100	20
16	Bali	BL	89	79	72	67	78	33	67	11
17	Central Kalimantan	CK	68	62	64	46	21	21	29	7
18	West Kalimantan	WK	82	69	39	46	29	50	50	14
19	East Kalimantan	EK	70	73	30	15	10	40	50	10
20	North Kalimantan	NK	80	74	50	60	60	20	60	0
21	South Kalimantan	SK	88	72	69	58	38	54	77	15
22	Bangka Belitung Islands	BBis	64	77	86	43	57	29	71	29
23	Central Sulawesi	Csul	54	74	42	30	15	31	23	8
24	South Sulawesi	Ssul	75	69	33	38	25	33	58	8
25	North Sulawesi	Nsul	77	66	43	13	13	27	33	7
26	West Sulawesi	Wsul	75	58	17	0	17	33	33	0
27	Southeast Sulawesi	Sesul	47	51	21	26	24	29	35	0
28	Gorontalo	GO	58	80	83	40	50	83	67	67
29	East Nusa Tenggara	ENT	57	59	21	43	10	19	43	0
30	West Nusa Tenggara	WNT	90	73	60	80	40	30	100	10
31	Maluku	MA	72	56	39	22	33	22	33	11
32	North Maluku	NMA	55	59	30	40	30	20	50	0
33	Papua	PA	57	53	20	14	5	0	27	14
34	West Papua	WPA	45	47	5	5	0	10	0	20

Table 3. Processed data: Control Instruments and Context (score per province)

No	Case ID	Explanatory Factors							
		(4) Control Instruments					(5) Context		
		Zoning Regulation	Permits	Incentives/ disincentives	Sanctions	PPNS (Investigator)	Land Status (Land Certificate)	APBD (% absorption rate)	Corruption Case
1	AC	39	37	0	26	31	1,295,396	100.7	4
2	Nsum	34	53	3	16	30	2,135,521	95.2	13
3	Wsum	68	74	0	37	21	985,233	96.6	3
4	Ssum	65	62	12	35	12	2,173,700	103.9	9
5	JB	91	73	0	36	10	1,249,553	100.9	1
6	LP	13	20	0	7	25	2,562,147	96.2	3
7	BE	50	80	0	10	37	901,398	94.7	3
8	RI	75	83	0	25	14	1,659,077	101.4	9
9	Ris	86	71	0	29	15	644,541	101.8	6
10	BA	88	88	0	88	8	2,986,086	101.0	2
11	JAK	100	100	0	100	45	1,429,685	83.3	7
12	WJ	89	85	15	67	36	10,460,296	107.7	10
13	CJ	86	84	6	46	54	13,989,793	101.4	17
14	EJ	82	74	13	50	30	11,244,185	102.9	16
15	DIY	100	70	20	80	11	2,264,328	102.5	0
16	BL	89	100	22	67	22	1,829,883	93.8	4
17	CK	50	79	0	7	8	1,025,562	98.3	5
18	WK	50	57	0	29	20	1,992,438	102.4	2
19	EK	70	50	0	40	17	1,130,615	111.6	5
20	NK	60	70	0	80	4	216,000	99.5	0
21	SK	85	54	0	23	17	1,367,241	106.9	6
22	BBis	57	79	0	14	7	412,839	102.9	4
23	Csul	62	69	0	46	25	998,505	107.8	3
24	Ssul	63	83	0	58	46	2,292,617	98.0	9
25	Nsul	47	63	0	27	50	617,039	98.3	3
26	Wsul	17	67	0	50	10	476,949	100.2	2
27	Sesul	29	59	0	18	32	1,048,767	98.0	5
28	GO	100	67	50	67	14	334,828	99.3	2
29	ENT	71	52	0	29	17	1,329,511	98.7	7
30	WNT	100	100	0	90	27	1,554,467	98.7	3
31	MA	67	67	0	33	17	353,781	95.7	4
32	NMA	70	70	20	10	15	393,532	96.8	3
33	PA	18	18	0	9	23	477,241	97.8	4
34	WPA	0	35	0	0	2	251,084	117.7	1

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Data Calibration

4. Data Calibration

4.1. The Outcome: Space utilization control

Space utilization control (**SCON**) is a management function whose order is right after space is utilized in the spatial planning process cycle. The indicator used to measure the weakness of control over space use is the change in the number of cases of violation of space utilization in the span of one year (2018-2019). The direction of the calibration is a high score for a weak indication of control. Then the scoring uses a crisp data set with a value of 0 for cases where the change in the number of cases decreases and a value of 1 for cases with no change (stagnant) or increasing. The cross over point used for calibration is 0.5. Based on data processing from 34 cases, there are 6 cases that get a score of 0 and 28 cases that get 1. In comparison, the number of cases that show an increase or stagnant in violations is more than the decrease ones (almost five times). This comparison is in line with the explanation at the beginning, which explained that currently, it is necessary to strengthen control over spatial use to prevent more violations in Indonesia.

4.2. Explanatory Factors

The direction of the calibration for the five explanatory factors is also in line with the outcome. Value of 1 is given on the conditions leading to the outcome, and 0 otherwise. Spatial plan (**SPLAN**) and Regulation (**REG**) use a crisp set, while Guidance (**GUID**), Control instruments (**CONINST**), and Context (**CTXT**) use a fuzzy set. The dichotomization of conditions and threshold is carried out based on theoretical or substantive grounds (Rihoux and Ragin, 2009). For several indicators that do not have a basis for categorization that can be used, the technical criteria considers the distribution of cases using cluster analysis.

4.2.1. Spatial Plan

KRB, RTH, and KP2B, which are complementary contents to spatial planning documents (RTRW and detailed plans), have the same weight in improving the quality of the plans. Based on the assessment used by the Ministry of Agrarian Affairs and Spatial Planning to carry out technical oversight, the rating label is divided into *Poor* for score of <50, *Medium* for >= 50 and <80, and *Good* for>= 80 (Direktorat Jenderal Pengendalian Pemanfaatan Ruang dan Penguasaan Tanah, 2019). Before moving into comparative analysis with other conditions, the data are calibrated first. A value of 1 is given to cases that lead to outcomes, weak space utilization controls, namely cases labelled *Medium* and *Poor*. Meanwhile, the *Good* gets a score of 0 because the expectation is that a comprehensive plan is inversely proportional to the outcome.

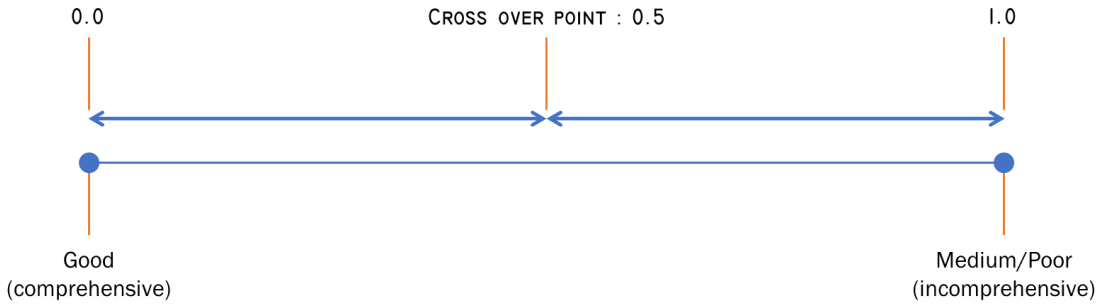

Figure 6. Explanation of the cross-over and anchor point of SPLAN

4.2.2. Regulation

Spatial planning is a process where there is policy integration between sectors and between administrative boundaries (Stead and Nadin, 2008). This integration reduces detrimental competition and creates policy coherence. With a large scope of responsibilities, spatial planning cannot stand alone. A spatial plan can function properly if it is supported by the availability of complete, harmonious, and good quality spatial planning regulations in form of legal products (BPHN, no date). This legal products include products related to planning, guidance, utilization, and control. Full membership for the incompleteness of these legal products gets a value of 1 because the direction of the calibration is towards the number of violations. Conversely, completeness gets a value of 0. Just like SPLAN, REG is a crisp set with a threshold of 0.5.

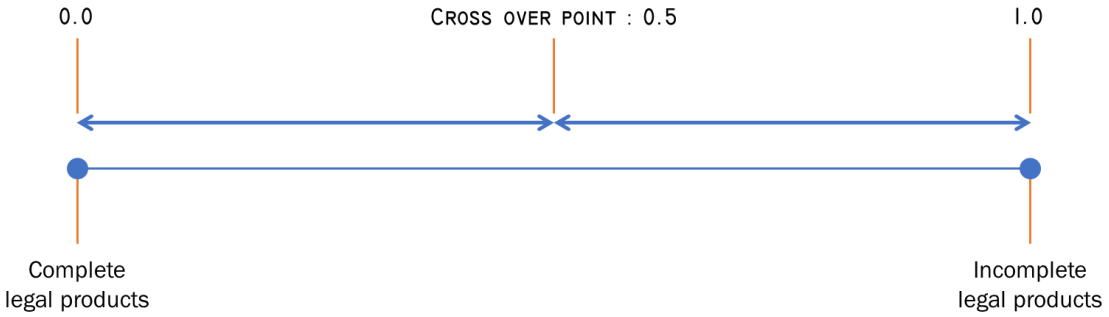

Figure 7. Explanation of the cross-over and anchor point of the REG

4.2.3. Guidance

GUID is a condition with three indicators: *Communication*, *Information*, and *Public Involvement*. First, the scoring is carried out for each indicator based on the sub-indicator label. Labelling for scores uses the same formula as SPLAN. The first indicator, *Communication*, consists of two sub-indicators: *Coordination* and *Dissemination*. These two sub-indicators have an equally important role in determining the success of guiding, both two-way and one-way (Direktorat Jenderal Pengendalian Pemanfaatan Ruang dan Penguasaan Tanah, 2019). Therefore, the weights of both are the same. The scoring for each label is given as follows *Poor* = 2, *Medium* = 1, and *Good* = 0 (Table 4) because the better communication in guidance is assumed to be further away from the

outcome. After each sub-indicator has a score, both are combined to get a **total score**. The combination of *Medium-Poor* with a **score of 3** and *Poor-Poor* with a **score of 4** get a **full score of 1 for poor communication** (leading to violations), while a **total score of 0 until 2** from a combination of *Medium-Medium*, *Medium-Good*, *Good-Good* or *Good-Poor* **gets 0** (Table 5).

Table 4. Total score from Coordination and Dissemination

No	Case ID	Coordination	Dissemination	Total score	No	Case ID	Coordination	Dissemination	Total score
1	AC	2	2	4	18	WK	2	2	4
2	Nsum	2	2	4	19	EK	2	2	4
3	Wsum	1	1	2	20	NK	1	1	2
4	Ssum	2	2	4	21	SK	1	1	2
5	JB	2	2	4	22	BBis	0	2	2
6	LP	1	2	3	23	Csul	2	2	4
7	BE	2	2	4	24	Ssul	2	2	4
8	RI	2	2	4	25	Nsul	2	2	4
9	Ris	1	2	3	26	Wsul	2	2	4
10	BA	0	1	1	27	Sesul	2	2	4
11	JAK	0	0	0	28	GO	0	2	2
12	WJ	1	1	2	29	ENT	2	2	4
13	CJ	1	1	2	30	WNT	1	0	1
14	EJ	1	1	2	31	MA	2	2	4
15	DIY	1	1	2	32	NMA	2	2	4
16	BL	1	1	2	33	PA	2	2	4
17	CK	1	2	3	34	WPA	2	2	4

Table 5. Scoring for Communication

Total score Coordination and Dissemination	Label (combination)	Score for Communication as indicator	Definition
0 - 2	*Medium-Medium* *Medium-Good* *Good-Good* *Good-Poor*	0	Good communication
3 - 4	*Medium-Poor* *Poor-Poor*	1	Poor communication (expected to lead to violations)

The second indicator is *Information*. *Information* has three sub-indicators, namely: *Innovation*, *Information Systems*, and *Information Publication (media)*. Like *Communication*, each sub-indicator has an equally significant role. The scoring still uses the same rule: *Poor* = 2, *Medium* = 1, and *Good* = 0 (Table 6). What distinguishes is that in *Communication*, there are two sub-indicators with the highest value of 4, and the limit used is the median (2); thus, the **score 2< get the value of 1**. Meanwhile, in *Information*, the highest value is 6, then the limit is 3 as the median. The combination with a total **score of 3< get the value of 1**, and the remainder is 0 (Table 7).

Table 6. Total score from Innovation, Information Systems, and Information Publication (media)

No	Case ID	Innovation	Information systems	Inform. Publication (media)	Total score	No	Case ID	Innovation	Information systems	Inform. Publication (media)	Total score
1	AC	2	2	2	6	18	WK	2	1	1	4
2	Nsum	2	2	2	6	19	EK	2	2	1	5
3	Wsum	2	2	1	5	20	NK	1	2	1	4
4	Ssum	2	2	2	6	21	SK	2	1	1	4
5	JB	2	2	2	6	22	BBis	1	2	1	4
6	LP	2	2	2	6	23	Csul	2	2	2	6
7	BE	2	2	2	6	24	Ssul	2	2	1	5
8	RI	2	2	2	6	25	Nsul	2	2	2	6
9	Ris	2	2	1	5	26	Wsul	2	2	2	6
10	BA	1	0	0	1	27	Sesul	2	2	2	6
11	JAK	0	0	0	0	28	GO	1	0	1	2
12	WJ	1	1	1	3	29	ENT	2	2	2	6
13	CJ	1	1	1	3	30	WNT	2	2	0	4
14	EJ	2	1	0	3	31	MA	2	2	2	6
15	DIY	0	0	0	0	32	NMA	2	2	1	5
16	BL	1	2	1	4	33	PA	2	2	2	6
17	CK	2	2	2	6	34	WPA	2	2	2	6

Table 7. Scoring for Information

Total score from three sub indicators	Label (combination)	Score for Information as indicator	Definition
0 - 3	*Good-Good-Good* *Good-Good-Medium* *Good-Medium-Medium* *Good-Good-Poor* *Good-Medium-Poor* *Medium-Medium-Medium*	0	Good innovation, information systems and publication through media
4 - 6	*Good-Poor-Poor* *Medium-Medium-Poor* *Medium-Poor-Poor* *Poor-Poor-Poor*	1	Poor innovation, information systems and publication through media (expected to lead to violations)

Public Involvement as the third indicator is more straightforward than the other two. The label is only divided into two: there is Participation or No Participation. According to the theory, without the participation or lack of public involvement in the spatial planning process may lead to incomprehensive plan and improper implementation (Burby, 2003). Therefore, **No Participation get a score of 1 and participation 0** (Table 8).

Table 8. Scoring for Public Involvement

No	Case ID	Public Involvement	Score	No	Case ID	Public Involvement	Score
1	AC	NoParticipation	1.0	18	WK	NoParticipation	1.0
2	Nsum	NoParticipation	1.0	19	EK	NoParticipation	1.0
3	Wsum	NoParticipation	1.0	20	NK	NoParticipation	1.0
4	Ssum	NoParticipation	1.0	21	SK	NoParticipation	1.0
5	JB	NoParticipation	1.0	22	BBis	NoParticipation	1.0
6	LP	NoParticipation	1.0	23	Csul	NoParticipation	1.0
7	BE	NoParticipation	1.0	24	Ssul	NoParticipation	1.0
8	RI	NoParticipation	1.0	25	Nsul	NoParticipation	1.0
9	Ris	NoParticipation	1.0	26	Wsul	NoParticipation	1.0
10	BA	NoParticipation	1.0	27	Sesul	NoParticipation	1.0
11	JAK	Participation	0.0	28	GO	NoParticipation	1.0
12	WJ	NoParticipation	1.0	29	ENT	NoParticipation	1.0
13	CJ	NoParticipation	1.0	30	WNT	NoParticipation	1.0
14	EJ	NoParticipation	1.0	31	MA	NoParticipation	1.0
15	DIY	NoParticipation	1.0	32	NMA	NoParticipation	1.0
16	BL	NoParticipation	1.0	33	PA	NoParticipation	1.0
17	CK	NoParticipation	1.0	34	WPA	NoParticipation	1.0

After each indicator gets a value between 1 or 0, the next step is to perform a calibration to determine the GUID value for each case. Values are calibrated using four categories: 0.00, 0.33, 0.67, and 1.00, corresponding to four quality levels of the GUID. The highest score represents the poor quality which causes violations of space utilization, namely a combination of three values of 1 (Figure 8). Therefore, three values of 1 would get 1.00, two values of 1 would get 0.67 and respectively to 0 (Table 9).

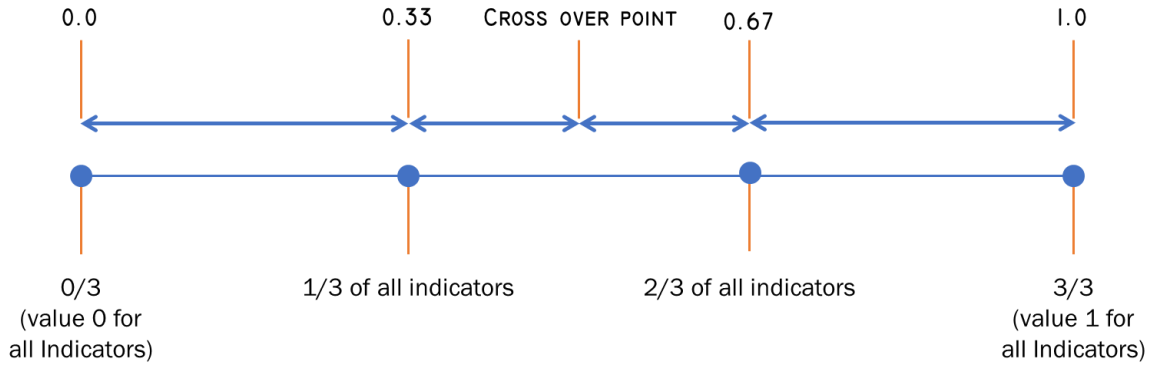

Figure 8. Explanation of the cross-over and anchor point of the GUID

Table 9. Data calibrated for GUID

No.	Case ID	Communication	Information	Public Involvement	Total Score	Calibrated Value
1	AC	1.0	1.0	1.0	3.0	1.00
2	Nsum	1.0	1.0	1.0	3.0	1.00
3	Wsum	0.0	1.0	1.0	2.0	0.67
4	Ssum	1.0	1.0	1.0	3.0	1.00
5	JB	1.0	1.0	1.0	3.0	1.00
6	LP	1.0	1.0	1.0	3.0	1.00
7	BE	1.0	1.0	1.0	3.0	1.00
8	RI	1.0	1.0	1.0	3.0	1.00
9	Ris	1.0	1.0	1.0	3.0	1.00
10	BA	0.0	0.0	1.0	1.0	0.33
11	JAK	0.0	0.0	0.0	0.0	0.00
12	WJ	0.0	0.0	1.0	1.0	0.33
13	CJ	0.0	0.0	1.0	1.0	0.33
14	EJ	0.0	0.0	1.0	1.0	0.33
15	DIY	0.0	0.0	1.0	1.0	0.33
16	BL	0.0	1.0	1.0	2.0	0.67
17	CK	1.0	1.0	1.0	3.0	1.00
18	WK	1.0	1.0	1.0	3.0	1.00
19	EK	1.0	1.0	1.0	3.0	1.00
20	NK	0.0	1.0	1.0	2.0	0.67
21	SK	0.0	1.0	1.0	2.0	0.67
22	BBis	0.0	1.0	1.0	2.0	0.67
23	Csul	1.0	1.0	1.0	3.0	1.00
24	Ssul	1.0	1.0	1.0	3.0	1.00
25	Nsul	1.0	1.0	1.0	3.0	1.00
26	Wsul	1.0	1.0	1.0	3.0	1.00
27	Sesul	1.0	1.0	1.0	3.0	1.00
28	GO	0.0	0.0	1.0	1.0	0.33
29	ENT	1.0	1.0	1.0	3.0	1.00
30	WNT	0.0	1.0	1.0	2.0	0.67
31	MA	1.0	1.0	1.0	3.0	1.00
32	NMA	1.0	1.0	1.0	3.0	1.00
33	PA	1.0	1.0	1.0	3.0	1.00
34	WPA	1.0	1.0	1.0	3.0	1.00

4.2.4. Control Instruments

Control Instruments is a condition that describes each case based on the application of space utilization control instruments based on the Spatial Planning Law 26/2007 and the sufficiency of civil servant investigators (PPNS), actors who play a role in controlling space utilization. The indicators are in the form of four instruments: Zoning Regulations, Permits, Incentives/disincentives, and Sanctions that have same level of contribution as a control instrument (Renald, 2017), and PPNS as the fifth. Following the calibration direction on the other explanatory factors, the scoring is **0.2** per **"not applied well"** of each instrument and the **insufficiency** of the minimum number of PPNS in each case. This CONINST data is in the form of a fuzzy set with cross over point 0.5 ranging from 0.0, 0.2, 0.4, 0.6, 0.8, and 1.0. Value 1 if all indicators are not good and lead to violations (Table 10).

Table 10. Data calibrated for CONINST

No.	Case ID	Zoning Regulation	Permits	Incentives/ disincentives	Sanctions	PPNS (Investigator)	Total Score
1	AC	0.2	0.2	0.2	0.2	0	0.8
2	Nsum	0.2	0.2	0.2	0.2	0	0.8
3	Wsum	0.2	0.2	0.2	0.2	0	0.8
4	Ssum	0.2	0.2	0.2	0.2	0	0.8
5	JB	0	0.2	0.2	0.2	0	0.6
6	LP	0.2	0.2	0.2	0.2	0	0.8
7	BE	0.2	0	0.2	0.2	0	0.6
8	RI	0.2	0	0.2	0.2	0	0.6
9	Ris	0	0.2	0.2	0.2	0	0.6
10	BA	0	0	0.2	0	0	0.2
11	JAK	0	0	0.2	0	0	0.2
12	WJ	0	0	0.2	0.2	0	0.4
13	CJ	0	0	0.2	0.2	0	0.4
14	EJ	0	0.2	0.2	0.2	0	0.6
15	DIY	0	0.2	0.2	0	0	0.4
16	BL	0	0	0.2	0.2	0	0.4
17	CK	0.2	0.2	0.2	0.2	0	0.8
18	WK	0.2	0.2	0.2	0.2	0	0.8
19	EK	0.2	0.2	0.2	0.2	0	0.8
20	NK	0.2	0.2	0.2	0	0	0.6
21	SK	0	0.2	0.2	0.2	0	0.6
22	BBis	0.2	0.2	0.2	0.2	0	0.8
23	Csul	0.2	0.2	0.2	0.2	0	0.8
24	Ssul	0.2	0	0.2	0.2	0	0.6

25	Nsul	0.2	0.2	0.2	0.2	0	0.8
26	Wsul	0.2	0.2	0.2	0.2	0	0.8
27	Sesul	0.2	0.2	0.2	0.2	0	0.8
28	GO	0	0.2	0.2	0.2	0	0.6
29	ENT	0.2	0.2	0.2	0.2	0	0.8
30	WNT	0	0	0.2	0	0	0.2
31	MA	0.2	0.2	0.2	0.2	0	0.8
32	NMA	0.2	0.2	0.2	0.2	0	0.8
33	PA	0.2	0.2	0.2	0.2	0	0.8
34	WPA	0.2	0.2	0.2	0.2	0.2	1

4.2.5. Context

Context is a condition that explains the specific factor that differentiate each case. Context is often referred to as remote factors, generally seen as causal conditions that do not directly yield an outcome but provide circumstances in which proximate conditions open their effect on the outcome (Schneider, 2019). Three factors become indicators in CTXT: *Land Status*, *APBD*, and the number of *Corruption Cases*. At the time of this study, there was no standard categorization of the three based on current Indonesian regulations. Another option is to use international standards for categorization may cause inconsistencies because provincial boundaries are different in one country and another (Chang, 2010).

Therefore, the dichotomization for the three sub-indicators was carried out using cluster analysis with the SPSS program to separate the data. Non-hierarchical methods or K-Means were used in *APBD* (Table 11) and *Corruption Cases* (Table 12) to divide data into two groups: **high (cluster 1)** and **low (cluster 2)**. Whereas for *Land Status*, a hierarchical or agglomerative method was used, which divided the data into four clusters to obtain variations that further describe the condition based on the distance between objects/data (Table 13). Non-hierarchical methods or K-Means were used in APBD and Corruption Cases data because this method uses proximity measurements to the centroid (data center) as the cluster. The data disparity in the APBD and Corruption Cases is quite close in distribution so that this method can be applied and can explain the groupings validly. Meanwhile, the land status was categorized using the hierarchical or agglomerative method because the disparity between the data is far or contrasting; thus, it cannot use the average value system as K-Means but uses a hierarchical system. The first cluster is data with low numbers while the second cluster and next with high numbers.

Land Status is data on the number of lands that have been certified by the National Land Agency. The relationship between the number of registered land certificates and the difference (delta) in the number of cases of violation of spatial use is directly proportional. The more certifications that can be used as a reference for investigations, the PPNS (investigator) will find it accessible to identify violations; thus, the more violations will be recorded in quantity. The scoring for *Land Status* is **1 for cases with a high number** of registered/certified lands and **0 for cases with a low number**.

Furthermore, *APBD* with a high percentage of absorption is assumed to be directly proportional to the high level of development. Moreover, rapid development have many impacts on spatial planning and may lead to increased violations (Priemus and Zonneveld, 2004; Isradjuningtias, 2017; Verhaeghe and Zondag, 2019). Therefore, cases with a high absorption rate also get a score of 1 and vice versa 0. Lastly, the number of *Corruption Cases*, a high number of cases gets a score of 1 like the other two indicators with 0 in the opposite direction. With three indicators that have an even contribution, there is no dominance of influence where one is higher than the other. So, like GUID, the CTXT value is calibrated using four categories: 0.00, 0.33, 0.67, and 1.00. Value 1.00 is if the three indicators hit to score 1 and gradually decrease to 0.00 if all three get a 0.

Table 11. Cluster analysis result for APBD

Cluster Membership APBD Absorption			
Case Number	Province	Cluster	Distance
1	AC	1	0.678
2	Nsum	2	0.25
3	Wsum	2	0.007
4	Ssum	1	0.125
5	JB	1	0.635
6	LP	2	0.069
7	BE	2	0.322
8	RI	1	0.545
9	Ris	1	0.489
10	BA	1	0.626
11	JAK	2	2,290
12	WJ	1	0.528
13	CJ	1	0.544
14	EJ	1	0.285
15	DIY	1	0.358
16	BA	2	0.489
17	CK	2	0.293

Cluster Membership APBD Absorption			
Case Number	Province	Cluster	Distance
18	WK	1	0.385
19	EK	1	1,212
20	NK	2	0.489
21	SK	1	0.397
22	BBis	1	0.296
23	Csul	1	0.561
24	Ssul	2	0.241
25	Nsul	2	0.291
26	Wsul	2	0.625
27	Sesul	2	0.234
28	GO	2	0.467
29	ENT	2	0.351
30	WNT	2	0.357
31	MA	2	0.15
32	NMA	2	0.031
33	PA	2	0.198
34	WPA	1	2,267

Table 12. Cluster analysis result for Corruption Cases

Cluster Membership Corruption Case			
Case Number	Province	Cluster	Distance
1	AC	1	0.144
2	Nsum	2	0.277
3	Wsum	1	0.099
4	Ssum	2	0.692
5	JB	1	0.583
6	LP	1	0.099
7	BE	1	0.099
8	RI	2	0.692
9	Ris	1	0.628
10	BA	1	0.341
11	JAK	1	0.87
12	WJ	2	0.45
13	CJ	2	1,246
14	EJ	2	1,004
15	DIY	1	0.825
16	BA	1	0.144
17	CK	1	0.386

Cluster Membership Corruption Case			
Case Number	Province	Cluster	Distance
18	WK	1	0.341
19	EK	1	0.386
20	NK	1	0.825
21	SK	1	0.628
22	BBis	1	0.144
23	Csul	1	0.099
24	Ssul	2	0.692
25	Nsul	1	0.099
26	Wsul	1	0.341
27	Sesul	1	0.386
28	GO	1	0.341
29	ENT	1	0.87
30	WNT	1	0.099
31	MA	1	0.144
32	NMA	1	0.099
33	PA	1	0.144
34	WPA	1	0.583

Table 13. Cluster analysis result for Land Status

Case	Land certified	Cluster	Value
1:AC	1,295,396	1	0
2:Nsum	2,135,521	2	1
3:Wsum	985,233	1	0
4:Ssum	2,173,700	2	1
5:JB	1,249,553	1	0
6:LP	2,562,147	2	1
7:BE	901,398	1	0
8:RI	1,659,077	1	0
9:Ris	644,541	1	0
10:BA	2,986,086	2	1
11:JAK	1,429,685	1	0
12:WJ	10,460,296	3	1
13:CJ	13,989,793	4	1
14:EJ	11,244,185	3	1
15:DIY	2,264,328	2	1
16:BL	1,829,883	2	1
17:CK	1,025,562	1	0

Case	Land certified	Cluster	Value
18:WK	1,992,438	2	1
19:EK	1,130,615	1	0
20:NK	216,000	1	0
21:SK	1,367,241	1	0
22:BBis	412,839	1	0
23:Csul	998,505	1	0
24:Ssul	2,292,617	2	1
25:Nsul	617,039	1	0
26:Wsul	476,949	1	0
27:Sesul	1,048,767	1	0
28:GO	334,828	1	0
29:ENT	1,329,511	1	0
30:WNT	1,554,467	1	0
31:MA	353,781	1	0
32:NMA	393,532	1	0
33:PA	477,241	1	0
34:WPA	251,084	1	0

Next step, the calibrated data (Table 14) are processed using software fsQCA 3.0 in Chapter 5.

Table 14. Calibrated data matrix

Case ID	Explanatory Factors					Outcome
	(1) Spatial Plan/ SPLAN	(2) Regulation/ REG	(3) Guidance/ GUID	(4) Control Instruments/ CONINST	(5) Context/ CTXT	Spatial Control/ SCON
AC	0.00	1.00	1.00	0.80	0.33	1.00
Nsum	1.00	1.00	1.00	0.80	0.67	1.00
Wsum	0.00	1.00	0.67	0.80	0.00	1.00
Ssum	1.00	1.00	1.00	0.80	1.00	1.00
JB	0.00	1.00	1.00	0.60	0.33	1.00
LP	1.00	1.00	1.00	0.80	0.33	1.00
BE	1.00	1.00	1.00	0.60	0.00	1.00
RI	1.00	1.00	1.00	0.60	0.67	1.00
Ris	1.00	1.00	1.00	0.60	0.33	1.00
BA	0.00	0.00	0.33	0.20	0.67	1.00
JAK	0.00	0.00	0.00	0.20	0.00	1.00
WJ	0.00	1.00	0.33	0.40	1.00	0.00
CJ	0.00	1.00	0.33	0.40	1.00	1.00
EJ	0.00	1.00	0.33	0.60	1.00	1.00
DIY	0.00	0.00	0.33	0.40	0.67	1.00
BL	0.00	1.00	0.67	0.40	0.33	0.00
CK	1.00	1.00	1.00	0.80	0.00	1.00
WK	0.00	1.00	1.00	0.80	0.67	1.00
EK	1.00	1.00	1.00	0.80	0.33	0.00
NK	0.00	1.00	0.67	0.60	0.00	1.00
SK	0.00	1.00	0.67	0.60	0.33	1.00
BBis	1.00	1.00	0.67	0.80	0.33	1.00
Csul	1.00	1.00	1.00	0.80	0.33	0.00
Ssul	1.00	1.00	1.00	0.60	0.67	1.00
Nsul	1.00	1.00	1.00	0.80	0.00	1.00
Wsul	1.00	1.00	1.00	0.80	0.00	1.00
Sesul	1.00	1.00	1.00	0.80	0.00	0.00
GO	1.00	0.00	0.33	0.60	0.00	1.00
ENT	1.00	1.00	1.00	0.80	0.00	1.00
WNT	0.00	1.00	0.67	0.20	0.00	1.00
MA	1.00	1.00	1.00	0.80	0.00	1.00
NMA	1.00	1.00	1.00	0.80	0.00	1.00
PA	1.00	1.00	1.00	0.80	0.00	0.00
WPA	1.00	1.00	1.00	1.00	0.33	1.00

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Data Analysis

5. Data Analysis

5.1. Analysis with fsQCA

The initial step of data analysis is to enter the raw calibrated data matrix into the fsQCA software. Then it calculates the conditions for having memberships of 1 and 0 (for those who have not), assigning 0.5 as the intersection point and coding the condition names to make them easier to read. As used in the discussion of the *Spatial Plan* data calibration coded to SPLAN, *Regulation* is REG, *Guidance* is GUID, *Control Instruments* is CONINST, and the *Context* factor in this method is CTXT. Next, a truth table is created and selected by deleting all rows that do not meet the threshold while maintaining a consistency level of 0.8 (Table 15).

Table 15. Truth table

SPLAN	REG	GUID	CONINST	CTXT	number	SCON	cases	raw consist.	PRI consist.	SYM consist
0	0	0	0	1	2	1	BA, DIY	1	1	1
0	0	0	0	0	1	1	JAK	1	1	1
1	0	0	1	0	1	1	GO	1	1	1
0	1	1	1	0	5	1	AC, Wsum, JB, NK, SK	0.907408	0.907408	0.907407
1	1	1	1	1	4	1	Nsum, Ssum, RI, Ssul	0.870968	0.870968	0.870968
0	1	1	1	1	1	1	WK	0.805054	0.805054	0.805054
0	1	1	0	0	2	0	BL, WNT	0.766667	0.766667	0.766667
1	1	1	1	0	15	0	LP, BE, Ris, CK, EK, BBis, Csul, Nsul, Wsul, Sesul, ENT, MA, NMA, PA, WPA	0.749409	0.749409	0.749409
0	1	0	1	1	1	0	EJ	0.716895	0.716895	0.716895
0	1	0	0	1	2	0	WJ, CJ	0.630522	0.630522	0.630522

The results of the truth table analysis are as follows: 14 cases received a positive outcome in weak control while 20 did not. Following the direction used in the calibration, a 1-1-1-1-1 combination leads to the outcome (1). This expectation is evident in the presence of four cases (Nsum, Ssum, RI, Ssul) with this combination. The unexpected from the initial outlook is that the combination 1-1-1-1-0 (absence of CTXT) has the highest number of cases of 15 and an output of 0 (does not indicate weak control). In addition, there is a combination of 0-0-0-0-1 (presence of CTXT) and even 0-0-0-0-0, which leads to outcome (1), namely BA, DIY, and JAK. This peculiarity makes these three cases need to be studied more deeply.

After obtaining the truth table results, a standard analysis was carried out; thus, the following three results were derived: complex, parsimonious, and intermediate solutions. The results for complex and parsimonious solutions are attached in Appendix B. In this study, intermediate solutions are the most suitable because they use substantive and theoretical knowledge to guide the incorporation of logical remainders and allow only those making sense (Rihoux and Ragin, 2009).

This intermediate solution is more complex than the parsimonious solution but not as complex as the conservative (complex) solution so that it is possible to strike a balance between the two by sorting out only the 'easy counterfactuals' remainders (Gerrits and Verweij, 2018). These remainders are those that are in line with the empirical evidence and current theoretical expectations. Using this intermediate solution simplifies the solution to better match expectations, using knowledge-based assumptions. The assumption is that SCON would occur if SPLAN, REG, GUID, and CONSINST were present and CTXT was absence/presence. High solution consistency in the intermediate solution (0.914052) indicates a strong relationship between conditions and outcomes, as well as solution coverage (Table 16).

Table 16. Intermediate Solution

frequency cutoff: 1				
consistency cutoff: 0.805054				
Assumptions: SPLAN (present) REG (present) GUID (present) CONINST (present)				
solution coverage: 0.478571				
solution consistency: 0.914052				
solution	**raw coverage**	**unique coverage**	**consistency**	**cases with greater than 0.5 membership in term:**
~REG	0.142857	0.124643	1	**BA** (1,1), **JAK** (1,1), **DIY** (1,1), **GO** (1,1)
~SPLAN*GUID*CONINST	0.197857	0.101786	0.899351	**AC** (0.86,1), **WK** (0.86,1), **Wsum** (0.73,1), **JB** (0.65,1), **NK** (0.65,1), **SK** (0.65,1)
GUID*CONINST*CTXT	0.252143	0.154286	0.856796	**Ssum** (0.86,1), **Nsum** (0.73,1), **WK** (0.73,1), **RI** (0.65,1), **Ssul** (0.65,1)

5.2. Comparison and Interpretation

Based on the results of the truth table analysis, the configuration shown from the intermediate solution is as follows:

$$\sim REG + \sim SPLAN*GUID*CONINST + GUID*CONINST*CTXT \rightarrow Y$$

Of the three configurations, no condition becomes the *Necessary Condition* or a condition that always appears in each configuration. What is contained is ~REG as *Sufficient Condition*. The rest, such as ~SPLAN, GUID, CONINST, and CTXT are INUS conditions (**i**nsufficient but **n**ecessary part of a condition which is itself **u**nnecessary but **s**ufficient for the result).

REG conditions on calibration lead to a negative condition, namely the incompleteness of legal products contributing to the outcome. The negation of REG, which is negative-of-the-negative, makes ~REG interpreted as a positive condition where the completeness of the legal product contributes to the outcome in four cases: BA, JAK, DIY, GO. This sufficient condition as configuration contradicts theoretical expectations regarding the contribution of regulations in legal products related to spatial planning to weak control over spatial use. The other two configurations, ~SPLAN*GUID*CONINST and GUID*CONINST*CTXT, have similarities in the presence of GUID and CONINST that lead to the outcome. This presence of GUID and CONINST are in line with the expectation that poor GUID and CONINST conditions result in weak control. In the ~SPLAN*GUID*CONINST configuration with six cases, the poor GUID and CONINST lead to the outcome when the case has a comprehensive spatial plan (regarding additional contents) and good context in terms of quality. Whereas in the GUID*CONINST*CTXT configuration with five cases, poor GUID and CONINST leading to the outcome occurs in cases with a poor context in terms of quality. One case, WK, appears in both ~SPLAN*GUID*CONINST and GUID*CONINST*CTXT solutions. The WK membership in the ~SPLAN*GUID*CONINST (0.86.1) is higher than that of the GUID*CONINST*CTXT (0.73.1).

5.3. Case Selection

In selecting cases to be explored more closely in terms of their condition contributing to the outcome, several things need to be considered. First, the uniqueness of this case, JAK with a score of 0, which means good quality in all conditions, produces an outcome, weak control. Next, one case is selected from each solution term representing the same configuration (Table 17). There were seven groups of cases; groups (2), (3), (6) consisted of one case in each group, while groups (1), (4), (5) had more than one case. For groups with more than one case, the case with the highest membership is selected. For group (5), the representative is Ssum and for the group (4) is AC. WK is also discussed because it is a member of two terms of solution. In term 1 (~REG), BA-DIY, JAK, and GO have different configurations but have the same solution and outcome. Three cases are discussed in the discussion of solutions, namely JAK, DIY, and GO. JAK because of its configuration-outcome combination that is contrary to theoretical expectations. DIY because it is a special region (daerah istimewa) that has differences in terms of context and regulations compared to other cases to be explored (Iqbal *et al.*, 2020). The last one is GO because among the four cases under the same terms, it is the only one located outside Java Island, besides its configuration different from others (1-0-0-1-0).

Table 17. Groups for case selection

Configuration of condition	**Term 1** ~REG	**Term 2** ~SPLAN*GUID*CONINST	**Term 3** GUID*CONINST*CTXT
0-0-0-0-1	(1) BA, DIY		
0-0-0-0-0	(2) JAK		
1-0-0-1-0	(3) GO		
0-1-1-1-0		(4) AC, Wsum, JB, NK, SK	
1-1-1-1-1			(5) Ssum, Nsum, RI, Ssul
0-1-1-1-1		(6) WK	

5.4. Case Analysis

Term 1: ~REG

Four out of thirty-four cases showed ~REG as a sufficient condition to produce an outcome. If interpreted, this condition is read as good quality related to regulation (complete legal products) causes weak control. When viewed from the theory of QCA as an analytical method to find direct causal relationships (Schneider and Wagemann, 2012), these results show a counterintuitive relationship. Based on theoretical studies, like other proximate conditions in the spatial planning cycle, good quality regulations are expected to lead to strong control (cf. Firman, 1997). This expectation is due to regulations related to spatial planning function as a reference and provides formal authority to the party responsible for the planning process (Jordan, Wurzel and Zito, 2013). Thus, when viewed from the direction of the outcome (weak control), which is marked by stagnant/increasing violations of space utilization cases, the condition expected to contribute is REG (poor condition of regulation).

However, the appearance of the ~REG configuration can also be explained by other reasons. This result becomes logical because QCA is also a method of observing cases holistically (Rihoux, Rezsöhazy and Bol, 2011). QCA is a case-oriented method, so the results that emerge from the comparison can be a summary of patterns rather than causes (Fauzi, 2019). Based on this view, it can be assumed that contradictory solution (with theories) such as ~REG occurs due to a summary of the pattern from the data observed. Moreover, to determine whether ~REG arises just because of the pattern or another factor influencing the condition, representative cases of this solution are studied more depth. The cases are DIY, JAK, and GO. Based on these three cases, this study examined whether some other factors may affect the regulation as a condition.

DIY: Special Region of Yogyakarta

The justification for good regulation (~REG) causes weak control over space utilization in the DIY case is the special privilege of DIY. DIY is one of the provinces in Indonesia that the central government gives special privileges based on its history, making DIY different from other provinces. With this privilege, DIY has the authority to make an exception in its domestic affairs, including spatial planning. One of the privileges in spatial planning is sultanate land and duchy land under the auspices of the sultan, who also serves as governor of DIY. This land status can lead to overlapping land ownership and the vagueness of legal explanations regarding land functions (Idhom, 2015). The overlapping and vagueness are due in the Privileges Law. According to the law, the lands of the Yogyakarta Palace and the Duchy of Pakualaman are located throughout DIY. Nevertheless, de facto, some of the lands in DIY have become the legal property of individual citizens (ibid).

The core of the (~REG) problem in DIY is dualism in the overarching regulations, namely the agrarian/land regulations used (Law No. 5/1960 on Agrarian Principles) and the Privileges Law. This Privileges Law was later revealed in a Special Regional Regulation (*Perdais*) on land and spatial planning. A clear boundary is needed between *Perdais* and initial regulations (*Perda*) related to spatial planning. With ambiguity in boundaries, problems such as falsification of certificates using the name of the sultanate land or problems with land use permits will continue to emerge (Iqbal *et al.*, 2020). The problem of falsifying land certificates and violating land use permits makes the availability of complete regulations ineffective to prevent violations or weak control.

JAK: Jakarta

There are two justifications for good regulation (~REG) causes of weak control over space utilization in the JAK case, namely overlapping interests and the presence of a land mafia. The trigger for the emergence of overlapping interests in JAK was rapid development. The rapid development has caused almost all provinces in Java Island to experience scarcity of land resources, which further results in space competition (Verhaeghe and Zondag, 2019). Competition for the right to use space occurs in big cities, including in Jakarta (JAK). Regarding land scarcity, JAK, as the capital of Indonesia, becomes a place for many interests to collide, national and provincial. Each party has the authority to intervene in spatial planning. One of the interventions that can be done is through regulation. This intervention creates policy differences in regulations and a lack of coordination between stakeholders, the central government, and the JAK provincial government itself in the spatial concept (ICEL, 2020).

The validation of this problem was regarding the issuance of Presidential Regulation Number 3/2016 concerning the Acceleration of National Strategic Projects (PSN), which stated that PSN could adjust the Spatial Plan in the form of a Regional Spatial Plan (RTRW), Detailed Spatial Planning (RDTR) or Zoning Plans for Coastal Areas and Small Islands if the PSN location does not allow to be moved. Even though JAK already has the RDTR, the document references the overall development plan in the Jakarta area (ICEL, 2020). This overlapping problem makes violations of space utilization in JAK continue to occur and even increase. Problems related to the regulation make the space utilization control affected. This ripple effect is because, regarding JAK spatial problems, all aspects are closely related (Mungkasa, 2020a). Alignment with policies at different levels, specifically on legal products related to spatial planning, will clarify development directions.

Besides overlapping, another factor explaining the relationship between good regulation and weak control in JAK is the existence of the land mafia. The land mafia is a land syndicate that can paralyze the authentication power of land ownership documents (Sihaloho, Suparman and Djono, 2020). The government has made various efforts related to this, but it is still troublesome because of the many internal actors (Kirana, 2019; Rahman, 2021). This land mafia is a factor outside the scope of the planning cycle and is often not considered but has a close influence on complete regulation. Good regulation raises the outcome of spatial violations because the application being misused by the apparatus with weak integrity and being "controlled" by the land mafia (Sihaloho, Suparman and Djono, 2020).

GO: Gorontalo

Similar to JAK, the justification for good regulation (~REG) causes the weak control over space utilization in GO is overlapping interests. Even though the regulations are complete, same as the problem in JAK, the direction of national policies in terms of controlling the conversion of land functions, for example, often collides with GO local government policies, which prioritize local interests and regional policies (Wantu, 2011). This regulatory conflict related to spatial planning occurs because GO is one of the National Strategic Areas (KSN). In Indonesia, KSN is an area whose spatial planning is prioritized because it significantly influences state sovereignty, state defense, security, economy, social, culture, and/or environment (Ministry of PUPR, 2014; Mungkasa, 2020b). The central government wants to use GO to benefit the national interest, while the provincial government wants to spur development that benefits the province. Thus, policy and regulation which are not synchronized create violations of space utilization in the long run.

Based on the three case representatives (DIY, JAK, and GO), the good regulation (~REG) becomes the condition causing the weak control as an outcome due to the intervention on regulation in these cases. The causes that often arise are national and provincial authority conflicts in the regulations, followed by other factors such as land ownership problems and land mafia. These causal factors make up the logical reasoning behind the counterintuitive ~REG configuration. Statement from Savini, Majoor and Salet (2015) strengthens these justifications that in practice, regulation has tended to become highly standardized and overlapped with, instead of replacing, more stringent laws governing land use in a given area.

Term 2: ~SPLAN*GUID*CONINST

The ~SPLAN*GUID*CONINST solution explains that even though a case has a comprehensive plan, without proper guidance and adequate application of control instruments, space utilization control will remain weak, and violations will continue to occur. This solution indicates the importance of a combination of guidance and control instruments in preventing weak control. A comprehensive spatial plan is certainly important. However, this well-contained plan can be blunt in its implementation or misuse. This misuse of a good plan is because spatial planning is influenced by many interrelated factors (Nadin, 2006), including plans with guidance and control instruments. Guidance is an effort to improve the performance of spatial planning organized by the government to subordinate agencies or governments to the community (Mungkasa, 2020b). If the guidance is not optimal, the directions that have been neatly arranged in the spatial plan cannot be conveyed and appropriately implemented. Likewise, control instruments help ensure the proper implementation of the spatial plan. If these instruments are not well applied, it will be challenging to identify whether the spatial plan has deviated and the extent of the deviation.

There are two cases selected as representatives to explain this solution, namely AC and WK. Both were chosen because of their high consistency value. In QCA, a high consistency value means it can better explain the configuration that occurs. Moreover, WK is a case that is in two solutions. Nonetheless, because the consistency of WK is higher in this solution than in the other, WK is analyzed to describe this solution.

AC: Aceh

The ~SPLAN*GUID*CONINST configuration appears in the case of AC because AC has a deficiency in the implementation of the guidance and control instrument, which affects the application of the spatial plan. Based on the raw data, AC has a severe condition for guidance (GUID). All indicators, even sub-indicators, are in poor condition plus no public involvement. The absence of public involvement is due to AC's status as a special region and specific region. The specificity of AC is regulated in Law No. 11/2006, which states that the state recognizes and respects regional government units that are special or specific as regulated by laws related to autonomy as a constitutional obligation. With this status, AC has derivative regulations such as *qanuns* (regulations based on religious teachings) which have not involved the society in their preparation (Arma, 2013). Without public involvement, public awareness about the importance of spatial planning is lacking. This lack of awareness then becomes an obstacle in strengthening the control function (Ikmal, 2017).

Likewise, with the implementation of control instruments, albeit the number of PPNS owned, as one of the indicators, is sufficient, all control instruments are not implemented properly. In most cases, the control instrument is the key to successfully implementing the plan (Pamungkas, Rini and Cahyo, 2016). Implementation of these instruments is not optimal due to the lack of public awareness to comply with existing instruments such as permits or zoning regulations. This result is still related to the lack of guidance as a connection between the government and the public.

Although AC has a good spatial plan in terms of completeness, without public involvement, this plan becomes a domain dominated by parties who understand and are interested in spatial planning, not inclusive. The spatial planning process does not involve the public in all steps, making the comprehensive spatial plans prone to misuse.

WK: West Kalimantan

Like AC, WK has a comprehensive spatial plan, but the lack of optimal guidance and application of control instruments makes the control function weak. The value on each indicator is also poor, almost the same as AC. Therefore, this discussion elaborated on why the non-optimal implementation of these two conditions (guidance and control instruments) and a complete plan can lead to spatial violations.

WK is a province with a plantation sub-sector that plays a major role in supporting the regional economy with a contribution of 10.71% and contributes to an increase in the Gross Regional Domestic Product (GRDP) of the province (Tejaningrum, Ardiansyah and Widiatmaka, 2019). Unfortunately, this increase in plantation area expansion is not balanced with guidance to land users and control through existing instruments. The rapid expansion of plantations has led to the massive conversion of forest land to plantation land uses (ibid). This privilege/prioritization in the plantation sector gave birth to ego-sectoral, taking sides with the plantation rulers and dismissing the involvement of small communities (Yuntho, Munandar and Isa, 2013). Small communities lost information related to the use of space in their area. On the other hand, big players in plantations seem to be immune to sanctions and get facilities related to land permits.

A comprehensive spatial plan has become a vulnerable point to be misused without the support of guidance and application of control instruments. The big players and unscrupulous actors in the government seek to benefit them because they understand the ins and outs better than the public. Instruments that are applied inappropriately, related to permits, for example, support the spatial violation by big players to reap the maximum profit.

Term 3: GUID*CONINST*CTXT

Ssum: South Sumatra

Ssum is the representative case for the GUID*CONINST*CTXT solution with the highest consistency value. With four other cases (including WK), Ssum proves the theoretical expectation that the conditions that arise cause the outcome. Regarding the solution, the most influential condition is a combination of guidance, control instruments, and context. Thus, the discussion focuses on the relationship between the three in generating outcomes, spatial violations.

Ssum is one of the provinces in Indonesia that has experienced severe environmental damage due to improper land-use conversion (Tasmalinda, 2018; Khasim, 2019). Ssum problem with guidance is the lack of public involvement due to the poor communication and delivery of

information systems. The new integrated information system started at the end of 2019 (Apridhani, 2019; Febriansyah, 2019) (data used from the end of 2019, so the system has not been fully implemented). Nonetheless, a long process is still needed to ensure the accessibility of this system for all groups considering that there is still limited online access for middle and lower-class people. Inadequate implementation of control instruments such as the lack of strict sanctions and permits that are too permissive, yielding uncontrollable development and disasters to the environment (Tasmalinda, 2018). Weaknesses in instrument guidance and control are exacerbated by high corruption as an indicator of abuse of authority and high APBD as an indicator of development. The combination of large funds for development with high levels of corruption makes the control even weaker.

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Conclusion

6. Conclusion

6.1. Answer to secondary research questions

- *How is control of spatial use conceptualized from a theoretical perspective?*

Based on the theoretical perspective, the control of space utilization gets a lot of influence from conditions that are directly related (proximate) or not (remote) (cf. Schneider and Wagemann, 2006). These conditions affect the strength and weakness of the control level. The weaker the control, the more cases of violations that occur. Therefore, strengthening the control function must pay attention to these conditions by looking at the relationship between them. The causal relationship between the conditions and the resulting outcome will provide the direction and influence of the relationship so that it can be a reference for determining preventive or curative steps against violations of space use.

Several conditions that are expected to affect the weakness of spatial use control are spatial plans, regulations, guidance, control instruments, and context. Spatial plans that are not available in a form that has been ratified in the Regional Regulation and an incomplete content are considered to lead to high violations (Renald, 2017). However, based on the processed data, the availability of plans in the Regional Regulations does not show any variation, so for further data analysis, it was eliminated. Like the spatial plan, the regulation also sees the incompleteness of legal products as an indicator that leads to violations (Firman, 1997). Meanwhile, the guidance and control instruments look at the level of quality of their implementation. The worse it is, the more it has the potential to cause a violation. The last is context, with three indicators: the number of registered/certified lands, the APBD, and the number of corruption cases as indicators of the weak integrity of the apparatus. The higher the context level also leads to the more potential for a case (province) to have inadequate control.

Based on the results of the analysis, several conditions answered according to theoretical expectations in combination with other conditions. But some are not, and this does not necessarily mean that it is against the expectations of the theory. With further analysis through an in-depth study per case, it is known that other factors influence this condition to deviate from expectations.

- *How do the existence and completeness of spatial plan affect space utilization control?*

Based on the study results, the spatial plan's completeness does affect space utilization control, while because there is no variation in the data regarding the existence of the spatial plan, this indicator cannot be used to explain further. The complete content of the spatial plan represents the good quality of a plan. The theory expects that a good spatial plan will prevent or reduce violations and further strengthen the control function. However, the analysis result shows that this good quality condition will be easily influenced to give the opposite effect when it is not accompanied by proper guidance and well application of control instruments. Regarding guidance, this reversal is because the complete information contained in the plan was not conveyed or was not well received by the public. Meanwhile, the control instruments are expected to supervise so that the plan's implementation does not deviate. If the application of this instrument is not adequate, it will result in a comprehensive plan that is difficult to work according to its purpose; hence it becomes vulnerable to violations.

- *How do existing legal products affect space utilization control?*

Legal products, which are indicator of regulation, affect space utilization control significantly, even without other conditions. Nonetheless, their existence is very prone to be infiltrated by external factors, making it generates the opposite effect. Thus, despite strengthening space utilization control, complete legal products often lead to spatial violations. According to theory, complete legal products as a parameter of good quality regulation are expected to strengthen space utilization control and prevent violations. This expectation is because the regulation gives more authority to the responsible party. Nevertheless, unexpectedly, QCA analysis in thirty-four provinces shows that the completeness of these legal products can lead to violations without other conditions. As a follow-up to the results of the QCA analysis, the case study reveals regulation as a condition that is easily influenced by various problems, such as conflict of interests or lack of integrity of the apparatus (land mafia). Due to its significant yet vulnerable existence, a slight disturbance in this condition causes it not to function as expected.

- *How does the government's guidance towards the institutional level below and society affect space utilization control's weakness?*

The relationship between guidance and space utilization control is unidirectional. The study result shows that when the quality of the guidance implementation is poor, the space utilization control will also weaken, indicated by the presence/increase of violations. This result is following the expectations of the theory. The results of the QCA analysis explain that although it does not present solely as a condition to cause a violation, the role of guidance is quite vital. It can cause a good plan not to be optimally implemented and the provincial situation (context) with infraction potential into a violation. When described from the indicators that construct it, the guidance consists of communication, information, and public involvement. Thus, all three are areas that bridge the gap between government and the public, planning and implementation. When the bridge is not functioning properly, misinterpretation might occur. This role of indicators answers how poor guidance can cause good plans to deviate.

- *Are the application of control instruments and availability of investigators sufficient to support the implementation of space utilization control?*

The application of control instruments and availability of investigators are necessary to support the implementation of space utilization control but not sufficient. Both are indicators for the condition of the control instruments (CONINST). Necessary because the results of the QCA analysis show that in cases with poor control instruments, violations tend to occur. However, it is not sufficient because for violations to occur, this condition is not coming up alone. In QCA, this condition is referred to as INUS conditions, which means that poor control instruments can result in weak control, and vice versa, when there are other accompanying conditions. Based on the analyzed data, the condition that always appears along with the control instruments is guidance. Furthermore, the next sub-chapter discusses on how the combination of the two affects weak control.

- *How do differences in context between each province affect the weakness of control at the provincial level?*

Based on the analysis at the provincial level, the context examined shows that the greater the potential in the province for deviations in spatial planning, the weaker the space utilization control

is. According to the theory, contextual conditions are essential in spatial planning and can affect other conditions (Sykes, 2008; Solly *et al.*, 2020). The definition of this context is extensive because it requires a selection with theoretical arguments about which context is representative to explain the causal relationship of the selected conditions with the outcome. In this study, the three selected indicators represent three things: land, economy, and the integrity of the apparatus. The land is a crucial part when talking about spatial planning (Burcu Yavuz Kumlu and Tüdeş, 2017), so is the financial condition of a province as a representation of development, and the level of corruption as a representation of how a province's human resources behave.

In this QCA study, data processing results show that the context does not appear individually to lead to violations. There are two accompanying conditions, namely poor guidance, and suboptimal application of control instruments. A hypothesis can explain this situation: the provincial context is related to guidance and control instruments' implementation. For example, land status (as one of the context's indicators) explains how concerned the public is in registering their land. Building this awareness requires guidance from the government to deliver the correct and sufficient information. Furthermore, corruption cases representing the weakness of government guidance and supervision at a higher level for the apparatus under its auspices. These three things are interrelated in generating outcomes.

6.2. Answer to main research questions

Which configurations of conditions explain the weak control on space utilization in Indonesia?

There are three configurations of conditions explaining the weak control on space utilization in Indonesia. Each configuration describes a different causal relationship:

~REG: this solution contains only one condition and returns an unexpected result. However, this solution shows that regulation in legal products regarding spatial planning in Indonesia plays a vital role. Even in a complete condition, regulations are vulnerable to intervention which causes deviations in the implementation of spatial planning. This result is shown in four cases. In all four, it appears that this regulation is prone to wavering when it receives intervention from other factors such as conflict of interests, low integrity of the apparatus, or exception such as privileges.

~SPLAN*GUID*CONINST: This configuration of conditions as a solution explains that a comprehensive spatial plan is not optimal and even vulnerable to abuse without proper guidance and application of control instruments. The existence of guidance and control instruments acts as a guard to ensure that a comprehensive plan is carried out properly. Deficiencies in both make a complete plan end up in a spatial violation.

GUID*CONINST*CTXT: this solution shows that in causing weak control, the poor quality of guidance and control instrument is be determined by the context. Guidance and control instruments appear together in two solutions, showing that they support each other in causing violations. Nevertheless, the existence of the two alone is not enough. In this solution, context becomes the third condition that makes the configuration sufficient raises the violation because it adds a vulnerable point in terms of land, economy, and the integrity of the apparatus.

The ~REG solution, ~SPLAN conditions, and CTXT conditions measure the **existence of objects** related to spatial planning, namely: legal products, spatial plans, and provincial conditions. Meanwhile, GUID and CONINST measure the **implementation by subjects** related to spatial

planning, such as innovation, information delivery, involvement, supervision by investigators, and control instrument applications. This similarity between GUID and CONINST is considered to cause them to appear together in the two solutions. Object-related conditions are more prone to abuse (except CTXT, presumably because it is a remote condition), while subject-related conditions are more likely to cause problems. The relationship between conditions can be seen in Figure 9.

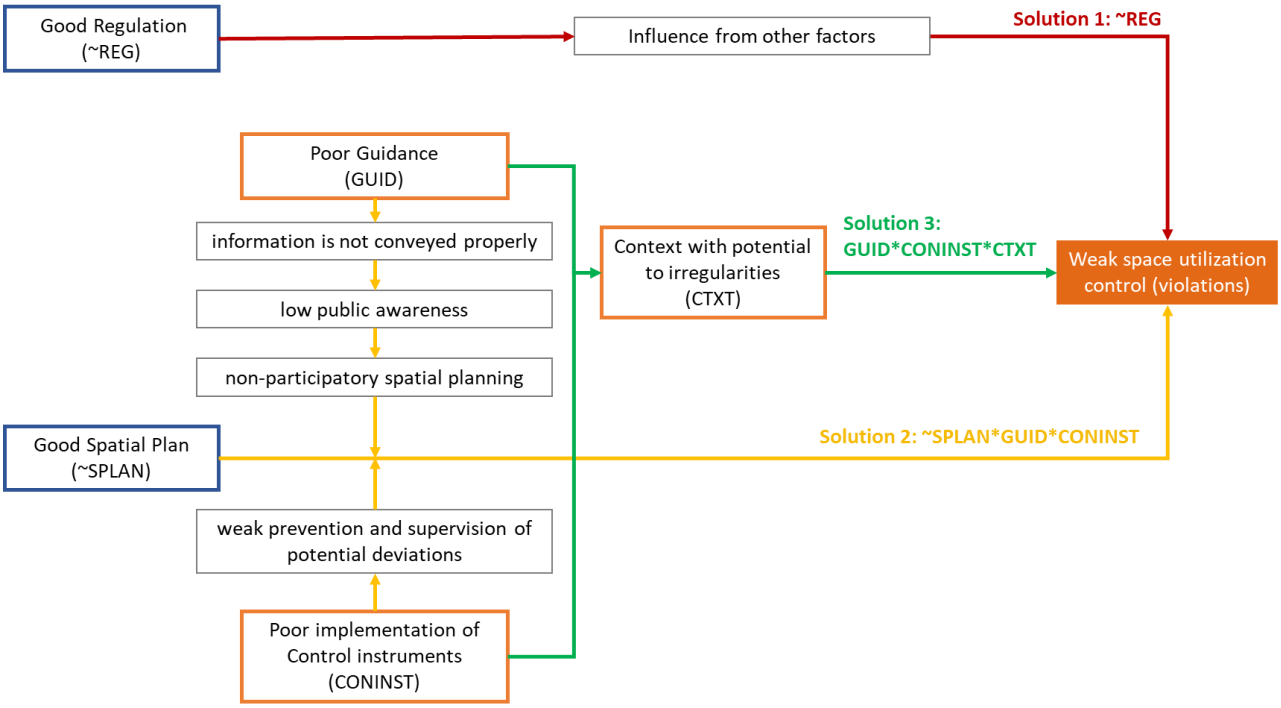

Figure 9. The relationship between conditions based on analysis result

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Discussion

7. Discussion

The conclusion of this study opens a broader perspective in looking at the causes of spatial planning problems that occur in Indonesia compared to other studies with similar topics because this study does not only observe one causal relationship or one explanatory factor. For instance, the literature shows complete legal products or reasonable regulations to help implement spatial plans better (cf. Firman, 1997; Jordan, Wurzel and Zito, 2005), but it turns out that there is the opposite possibility as in this study. The writing by Payne (2000), which describes regulation as a product of an overly rigid bureaucratic process, can explain why this condition (regulation) is prone to abuse or problems when there is a conflict (cf. Faludi, 2012; ICEL, 2020). Same with other conditions, spatial plans with complete content are expected to lead to no violations (Renald, 2017). Nonetheless, this study also shows that other conditions are needed to support these expectations. Furthermore, on the other side, the other three conditions meet the expectations of the theory discussed in the theoretical framework chapter where the worse the quality leads to the occurrence of violations.

The findings in this study provide a different explanation from the theory discussed earlier because the methodology used in this study is comparative. By comparing many cases (34 provinces), which results in the emergence of patterns, the role of each condition being discussed can be different. For example, again, is the regulation. When examined partially in the literature by Firman (1997), it has a role in supporting control; but the data comparison shows the opposite. However, the data used in this study is crucial in determining the pattern that emerges. The data observed in this study is data in 2019, which means that this conclusion explains the relationship between factors in that period, not in general. This result interpretation can be different from case studies that describe only one condition as a reference with a more extended time (cf. Wantu, 2011; Arma, 2013; Tasmalinda, 2018; Khasim, 2019; Iqbal *et al.*, 2020). The differences in methods and data that lead to these differences in results interpretation implicitly direct next research to further elaborate on the two approaches to complement each other. Research with this kind of approach helps find empirical patterns and quick explanations behind patterns. When combined with case-by-case studies that have been done related to spatial planning violations so far, more relationships between conditions can be explored and explained. This study has become a forerunner to fill the existing gap on holistic studies (Syahadat and Subarudi, 2012) and answer theoretical expectations regarding the conditions discussed in the conclusion chapter.

Nonetheless, like research in general, this study still has limitations, especially in terms of data. Some conditions showed slight variations across cases during the analysis; thus, it has less analytical meaning. From a QCA-perspective, several options can be done, such as adding data, changing conditions, or recalibration (Gerrits and Verweij, 2018). Moreover, the option taken in this study was recalibration. This option was chosen for reasons of limited data available. If this research is continued or developed, more varied data or extended periods can enrich the scope of research.

In addition to the scientific relevance discussed in the previous paragraphs, this study also has implications for planning practice. The implications given are different depending on the role of the stakeholders.

- *For spatial planners*: this study shows that two important things to note when making plans are the substance of the plan and the delivery. It is necessary to think early on how to make plans that are easy to convey and accept. For example, reflecting on the AC case, the planner must consider a plan that is more in line with the social or religious values held by the community. Non-technical things like these values are often overlooked, albeit they play an essential role (Flyvbjerg, 2006).
- *For policymakers*: this study provides the most significant input for this stakeholder group because the policymaker is the determinant for the conditions that affect spatial planning. Therefore, policymakers need to know the relationship between these conditions and the desired results. This study provides an overview to policymakers about the role of each condition (especially regulation) and the interaction between conditions towards the emergence of spatial violations. This overview is helpful as information on how to formulate policies that maximize the role and overcome the shortcomings of the conditions.
- *For managers*: this study provides insight for managers, who are always oriented towards achieving objectives, to empower conditions that influence each other—for example, the guidance and control instrument into the spatial plan. Guidance can be a vulnerable point from planning to implementation. This issue is a consideration for managers in taking steps or decisions.

In addition to practitioners, return to academics, especially students researching the same field or with the same method. The strengths and drawbacks of this research can be input or considerations that enrich future research that will be carried out. For example, how to determine the data collected and used, how to calibrate, interpret the results, and others.

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Appendices

9. Appendices

Appendix A1: Details of raw data in scores

No.	Case ID	Explanatory Factors																
		(1) Spatial Plan		(2) Regulation	(3) Guidance						(4) Control Instruments					(5) Context		
		Availability	Content	Availability of legal products	Communication		Information			Public Involvement	Zoning Regulation	Permits	Incentives/dis incentives	Sanctions	PPNS (Investigator)	Land Status (certified)	APBD (% absorption rate)	Corruption Case
					Coordination	*Dissemination*	*Innovation*	*Information systems*	*Inform. publication (media)*									
1	AC	1	85	70	35	17	9	26	43	9	39	37	0	26	31	1,295,396	100.7	4
2	Nsum	1	70	62	28	36	13	13	38	0	34	53	3	16	30	2,135,521	95.2	13
3	Wsum	1	82	76	68	58	32	32	74	5	68	74	0	37	21	985,233	96.6	3
4	Ssum	1	76	65	47	24	29	12	29	18	65	62	12	35	12	2,173,700	103.9	9
5	JB	1	86	69	36	41	9	0	27	9	91	73	0	36	10	1,249,553	100.9	1
6	LP	1	73	68	53	20	13	7	20	0	13	20	0	7	25	2,562,147	96.2	3
7	BE	1	75	71	45	25	0	10	40	0	50	80	0	10	37	901,398	94.7	3
8	RI	1	0	40	33	13	8	8	0	0	75	83	0	25	14	1,659,077	101.4	9
9	Ris	1	57	74	50	21	43	43	57	29	86	71	0	29	15	644,541	101.8	6
10	BA	1	94	80	88	69	75	88	88	38	88	88	0	88	8	2,986,086	101.0	2
11	JAK	1	100	100	100	100	100	100	100	100	100	100	0	100	45	1,429,685	83.3	7
12	WJ	1	96	76	59	50	56	67	78	30	89	85	15	67	36	10,460,296	107.7	10
13	CJ	1	91	74	64	61	69	66	74	26	86	84	6	46	54	13,989,793	101.4	17
14	EJ	1	89	79	53	53	42	53	82	13	82	74	13	50	30	11,244,185	102.9	16
15	DIY	1	80	80	60	70	100	100	100	20	100	70	20	80	11	2,264,328	102.5	0
16	BL	1	89	79	72	67	78	33	67	11	89	100	22	67	22	1,829,883	93.8	4
17	CK	1	68	62	64	46	21	21	29	7	50	79	0	7	8	1,025,562	98.3	5
18	WK	1	82	69	39	46	29	50	50	14	50	57	0	29	20	1,992,438	102.4	2
19	EK	1	70	73	30	15	10	40	50	10	70	50	0	40	17	1,130,615	111.6	5
20	NK	1	80	74	50	60	60	20	60	0	60	70	0	80	4	216,000	99.5	0
21	SK	1	88	72	69	58	38	54	77	15	85	54	0	23	17	1,367,241	106.9	6
22	BBis	1	64	77	86	43	57	29	71	29	57	79	0	14	7	412,839	102.9	4
23	Csul	1	54	74	42	30	15	31	23	8	62	69	0	46	25	998,505	107.8	3
24	Ssul	1	75	69	33	38	25	33	58	8	63	83	0	58	46	2,292,617	98.0	9
25	Nsul	1	77	66	43	13	13	27	33	7	47	63	0	27	50	617,039	98.3	3
26	Wsul	1	75	58	17	0	17	33	33	0	17	67	0	50	10	476,949	100.2	2
27	Sesul	1	47	51	21	26	24	29	35	0	29	59	0	18	32	1,048,767	98.0	5
28	GO	1	58	80	83	40	50	83	67	67	100	67	50	67	14	334,828	99.3	2
29	ENT	1	57	59	21	43	10	19	43	0	71	52	0	29	17	1,329,511	98.7	7
30	WNT	1	90	73	60	80	40	30	100	10	100	100	0	90	27	1,554,467	98.7	3
31	MA	1	72	56	39	22	33	22	33	11	67	67	0	33	17	353,781	95.7	4
32	NMA	1	55	59	30	40	30	20	50	0	70	70	20	10	15	393,532	96.8	3
33	PA	1	57	53	20	14	5	0	27	14	18	18	0	9	23	477,241	97.8	4
34	WPA	1	45	47	5	5	0	10	0	20	0	35	0	0	2	251,084	117.7	1

Appendix A2: Details of raw data in labels

No.	Case ID	Explanatory Factors																
		(1) Spatial Plan		(2) Regulation	(3) Guidance						(4) Control Instruments					(5) Context		
		Availability	Content	Availability of legal products	Communication		Information			Public Involvement	Zoning Regulation	Permits	Incentives/dis incentives	Sanctions	PPNS (Investigator)	Land Status (certified)	APBD (% budget)	Corruption Case
					Coordination	*Dissemination*	*Innovation*	*Information systems*	*Inform. publication (media)*									
1	AC	Yes	Good	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	1	2
2	Nsum	Yes	Medium	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	2	2	1
3	Wsum	Yes	Good	Incomplete	Medium	Medium	Poor	Poor	Medium	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	2	2
4	Ssum	Yes	Medium	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	2	1	1
5	JB	Yes	Good	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	Applied Well	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	1	2
6	LP	Yes	Medium	Incomplete	Medium	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	2	2	2
7	BE	Yes	Medium	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	Applied Well	NotAppliedwell	NotAppliedwell	Sufficient	1	2	2
8	RI	Yes	Poor	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	Applied Well	NotAppliedwell	NotAppliedwell	Sufficient	1	1	1
9	Ris	Yes	Medium	Incomplete	Medium	Poor	Poor	Poor	Medium	NoParticipation	Applied Well	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	1	2
10	BA	Yes	Good	Complete	Good	Medium	Medium	Good	Good	NoParticipation	Applied Well	Applied Well	NotAppliedwell	Applied Well	Sufficient	2	1	2
11	JAK	Yes	Good	Complete	Good	Good	Good	Good	Good	Participation	Applied Well	Applied Well	NotAppliedwell	Applied Well	Sufficient	1	2	2
12	WJ	Yes	Good	Incomplete	Medium	Medium	Medium	Medium	Medium	NoParticipation	Applied Well	Applied Well	NotAppliedwell	NotAppliedwell	Sufficient	3	1	1
13	CJ	Yes	Good	Incomplete	Medium	Medium	Medium	Medium	Medium	NoParticipation	Applied Well	Applied Well	NotAppliedwell	NotAppliedwell	Sufficient	4	1	1
14	EJ	Yes	Good	Incomplete	Medium	Medium	Poor	Medium	Good	NoParticipation	Applied Well	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	3	1	1
15	DIY	Yes	Good	Complete	Medium	Medium	Good	Good	Good	NoParticipation	Applied Well	NotAppliedwell	NotAppliedwell	Applied Well	Sufficient	2	1	2
16	BL	Yes	Good	Incomplete	Medium	Medium	Medium	Poor	Medium	NoParticipation	Applied Well	Applied Well	NotAppliedwell	NotAppliedwell	Sufficient	2	2	2
17	CK	Yes	Medium	Incomplete	Medium	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	2	2
18	WK	Yes	Good	Incomplete	Poor	Poor	Poor	Medium	Medium	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	2	1	2
19	EK	Yes	Medium	Incomplete	Poor	Poor	Poor	Poor	Medium	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	1	2
20	NK	Yes	Good	Incomplete	Medium	Medium	Medium	Poor	Medium	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	Applied Well	Sufficient	1	2	2
21	SK	Yes	Good	Incomplete	Medium	Medium	Poor	Medium	Medium	NoParticipation	Applied Well	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	1	2
22	BBis	Yes	Medium	Incomplete	Good	Poor	Medium	Poor	Medium	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	1	2
23	Csul	Yes	Medium	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	1	2
24	Ssul	Yes	Medium	Incomplete	Poor	Poor	Poor	Poor	Medium	NoParticipation	NotAppliedwell	Applied Well	NotAppliedwell	NotAppliedwell	Sufficient	2	2	1
25	Nsul	Yes	Medium	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	2	2
26	Wsul	Yes	Medium	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	2	2
27	Sesul	Yes	Poor	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	2	2
28	GO	Yes	Medium	Complete	Good	Poor	Medium	Good	Medium	NoParticipation	Applied Well	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	2	2
29	ENT	Yes	Medium	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	2	2
30	WNT	Yes	Good	Incomplete	Medium	Good	Poor	Poor	Good	NoParticipation	Applied Well	Applied Well	NotAppliedwell	Applied Well	Sufficient	1	2	2
31	MA	Yes	Medium	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	2	2
32	NMA	Yes	Medium	Incomplete	Poor	Poor	Poor	Poor	Medium	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	2	2
33	PA	Yes	Medium	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	Sufficient	1	2	2
34	WPA	Yes	Poor	Incomplete	Poor	Poor	Poor	Poor	Poor	NoParticipation	NotAppliedwell	NotAppliedwell	NotAppliedwell	NotAppliedwell	InSufficient	1	1	2

Appendix B1: The results for complex solutions

frequency cutoff: 1				
consistency cutoff: 0.805054				
solution coverage: 0.438929				
solution consistency: 0.907011				
solution	**raw coverage**	**unique coverage**	**consistency**	**cases with greater than 0.5 membership in term:**
~SPLAN*~REG*~GUID*~CONINST	0.08	0.08	1	**JAK** (0.86,1), **BA** (0.73,1), **DIY** (0.65,1)
~SPLAN*REG*GUID*CONINST	0.181429	0.101786	0.891228	**AC** (0.86,1), **WK** (0.86,1), **Wsum** (0.73,1), **JB** (0.65,1), **NK** (0.65,1), **SK** (0.65,1)
REG*GUID*CONINST*CTXT	0.233929	0.154286	0.847348	**Ssum** (0.86,1), **Nsum** (0.73,1), **WK** (0.73,1), **RI** (0.65,1), **Ssul** (0.65,1)
SPLAN*~REG*~GUID*CONINST*~CTXT	0.0232143	0.0232143	1	**GO** (0.65,1)

Appendix B2: The results for parsimonious solutions

frequency cutoff: 1				
consistency cutoff: 0.805054				
solution coverage: 0.4875				
solution consistency: 0.915493				
solution	**raw coverage**	**unique coverage**	**consistency**	**cases with greater than 0.5 membership in term:**
~REG	0.142857	0.12	1	**BA** (1,1), **JAK** (1,1), **DIY** (1,1), **GO** (1,1)
GUID*CTXT	0.265714	0.163214	0.863109	**Ssum** (0.95,1), **Nsum** (0.73,1), **RI** (0.73,1), **WK** (0.73,1), **Ssul** (0.73,1)
~SPLAN*GUID*CONINST	0.197857	0.101786	0.899351	**AC** (0.86,1), **WK** (0.86,1), **Wsum** (0.73,1), **JB** (0.65,1), **NK** (0.65,1), **SK** (0.65,1)