The Use of Ostrom's Concept on Rules-in-Use in the Analysis of Regulation of Natural Tourism Utilization in Gunung Gede Pangrango National Park

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Abstract. This study aims to analyze the regulations weaknesses and the gap between rule in form and rule in use in the context of institution of nature tourism utilization in protected areas. The research was in Gunung Gede Pangrango National Park. The research used semi-structured interviews with key informants and analysis of regulations governing the contractual relationship with the business license for the nature tourism provision facilities (IUPSWA). The rules were analyzed using Ostrom's Concept on Rules-in-Use, then the gap between rules in form and rules in use was explained in the IUPSWA business flow. Regulation weaknesses in the use of natural tourism found are (1) a gap in the use of cooperation agreement regulations as licensing permits; (2) inconsistency of environmental permit regulations; (3) lack of government capacity in controlling information to control the fulfillment of obligations in the payment of non-tax state revenue collection of business results for the provision of nature tourism facilities, (4) the absence of sanctions. Based on the gap between rule in form and rule in use in the Institutional Analysis Development Framework, imperfections of rule in form can result in participants using information and power in their interactions which result inconsistency with its objectives.

1. Introduction
Along with the increasing trend of tourism, especially for protected areas, National Parks, Natural Tourism Parks, and Forest Parks have great potential to be developed into natural tourism destinations. National Parks are nature conservation areas with native ecosystems managed by a zoning system used for research, science, education, cultivation, tourism, and recreation purposes. In terms of property rights, the national park area is state property [1]. Suppose the government determines resources as state property. In that case, the characteristics of the goods and services resources provision will follow characteristics of Common Pool Resources with all their advantages and disadvantages [2].

Currently, phenomena that indicate the performance of the use of nature tourism in protected areas in Indonesia include (1) conflicts over the use of natural tourism zone, (2) a cooperation agreement scheme usage as a substitute for the provision of tourism infrastructure permits, (3) inconsistencies in environmental permits, (4) non-operated company after obtaining a permit, (5) no benefit for the local
government from nature tourism in the protected area, (6) non-transparent companies in reporting its profits to pay non-tax state revenue collection levies on the results of the natural tourism provision facilities of 10% of the profits, which reduces the power of state financing to manage natural resources in protected areas. These problems are institutional problems [3].

One institutional analysis instrument that has received wide international recognition is the Ostrom Institutional Analysis Development (IAD) framework. The IAD framework is established and robust. In the framework, rules in use are one of the exogenous factors that influence the decision-making and actions of individuals or organizations in the arena of action [4]. In institutional analysis, understanding the rules individuals use in making decisions (rules in use) is an important step. Rules in use are rules that participants refer to if they are asked to explain and justify their actions [5]. Regulations at formal institutions (rules in form) are always the primary reference in decision-making processes. Institutional analysis is often used to analyze the impact of regulatory changes and find solutions to the negative performance of action situations, considering that changing regulations is more accessible than changing the biophysical conditions and characteristics of the community [6]. According to Cole [7], understanding formal legal rules is needed to understand social interactions and individual behavior.

This study aims to analyze the substantial weaknesses of the regulations and the gap between rule in form and rule in use in the institutional context of nature tourism in protected areas. The analysis of this research is limited to articles relating to the regulation of the use of natural tourism in Wildlife Sanctuaries, National Parks, Natural Tourism Parks, and Forest Parks, with a case study in Gunung Gede Pangrango National Park.

2. Methodology

2.1. Theoretical Framework and Research Approach
In the IAD framework in figure 1, Ostrom explained that participants in the surrounding situation, together with exogenous factors, would influence their behaviour patterns, resulting in performance (outcomes). Furthermore, there could be a reciprocal relationship where outcomes would affect participants and action situations, potentially influencing exogenous factors. Evaluation criteria are for assessing system performance by examining interaction patterns and outcomes [5,8]. The rule in use is one of the exogenous factors that would affect the action situation and subsequently affect performance (outcomes).

Ostrom [5] divides rules in use into seven elements, which are position rules, boundary rules, choice rules, aggregation rules, information rules, scope rules, and cost-benefit rules. These seven elements relate to the action structure (participant, position, choice of action, control, information, outcome, and cost-benefit) in the arena of action. The relationship between the seven elements of rules-in-use and the action situation is in figure 2. These seven elements of rules-in-use are policy instruments that could be used to see improvement of interaction patterns in the arena of action to create the desired outcomes [9].

2.2. Data Collection and Analysis Methods
The research carried out in Situgunung resort, Gunung Gede Pangrango National Park. The conducted research was from November 2019 to August 2021. Dunn [10] states that conducting policy analysis is necessary to examine the causes, effects, and performance of public policies and programs that involve (1) regulatory review, (2) interviews with key actors, and (3) field verification. In this study, the regulations studied were Government Regulation no. 36 of 2010 regarding Natural Tourism Businesses in Wildlife Sanctuaries, National Parks, Grand Forest Parks, and Natural Tourism Parks, Ministry of Environment and Forestry Regulation Number P.8/MENHUT/SETJEN/KUM/3/2019 regarding Natural Tourism Businesses in Wildlife Sanctuaries, National Parks, Grand Forest Parks, and Natural Tourism Parks, Ministry of Environment and Forestry Regulation Number 25/MENLHK/Setjen/Kum.17/2018 regarding Guidelines for Determining Types of Business Plans and, or Activities Required to Have Environmental Management Efforts and Environmental Efforts, and the derivates of Regulations of the Director-General.
This research was conducted with a qualitative study approach using primary and secondary data. The collected research data were from semi-structured interviews with key informants and analysis of regulations governing the principal-agent contractual relationship in the business license. The precedent study used in-depth interviews with the main actors in the licensing process for the use of natural tourism and its implementation in Gung Gede Pangrango National Park (GGPNP). Furthermore, the regulations were analyzed using the concept of rules-in-use [5] by identifying the characteristics of the contents of the regulations, and the gaps between rule in form and rule in use and their impact on the arena of institutional action for the use of natural tourism in GGPNP.

3. Results and Discussion

3.1 Seven elements of Ostrom's concept on rules-in-use in regulations for the use of nature tourism in national parks

Ostrom (2005) suggested classifying the rules into seven broad types based on the ‘Aim’ element.

a. Position Rules regulate the presence of participants who occupy each position in an action arena. For example, in the utilization of nature tourism in national parks, the existing positions are (1) the license issuer (principal) which are the Ministry of Environment and Forestry (MoEF), (2) the technical recommendation issuer, which is GGPNP (3) the technical recommendation in the tourism sector issuer, which is the Tourism Local Government Office, (4) Environmental permit issuer, which is the Environment and Forestry local government office, (5) holder of business license for the nature tourism provision facilities (IUPSWA) is also as an agent, (6) holders of business license for the nature tourism service provider (IUPJWA), (7) the community providing natural tourism services and other users, who are local communities around the national park.

b. Boundary Rules determine eligibility to enter a position, determining eligible participants who may (or must) enter the position and the process of exiting (may or must) from any position [5]. Membership in the institutional use of nature tourism in national parks regulates in two ways. Firstly, the MoEF and the regional government, the entry and exit of participants into the action arena, directly related to the positions and organizational structures of the two government institutions. Secondly, for non-government elements, there are two licensing mechanisms, which are business licenses for the nature tourism provision facilities and business licenses for the nature tourism service provider. The entry and exit of participants are whether the criteria for permit requirements or not is met or not and the requirements for fulfilling obligations in the implementation is met or not. For local communities depend on the permit from the national park.

c. Choice Rules determine what actions are required, permitted, or prohibited by participants occupying certain positions in the decision-making process. The actions or authority for each participant position are in table 2.
Table 1. The ‘Aim’ component of seven elements of the rule.

| Type of rule | Basic ‘Aim’ verb | Regulated component of an action situation |
|--------------|------------------|------------------------------------------|
| Position     | Be               | Positions                                |
| Boundary     | Enter or leave   | Participants                             |
| Choice       | Do               | Action                                   |
| Aggregation  | Jointly affect   | control                                  |
| Information  | Send or receive  | Information                              |
| Pay off      | Pay or receive   | Costs/benefits                           |
| Scope        | Occurrence       | Outcomes                                 |

Source: Adapted from Ostrom [5] and Bastakoti dan Shivakoti [12].

Table 2. Participants and Institutional Actions Utilization of nature tourism in GGPNP.

| No. | Participants | Action/Authority |
|-----|--------------|------------------|
| 1.  | Ministry of Environment and Forestry | Validate zoning/blocking, validate site design; Verifying the suitability and correctness of the licensing requirements; approving the Nature Tourism Business Plan; Grant/revoke permission; Supervising, coaching, and evaluating; Giving a sanction |
|     |              | develop Park zone; Preparing site design; Issuing technical considerations for a business license for the nature tourism provision facilities; Issuing business license for the nature tourism service provider |
| 2.  | National Park | Issuing tourism technical considerations |
|     |              | Issuing environmental permits (Mandatory for Environmental Impact Analysis (Indonesian: AMDAL) or Environmental Management Efforts (Indonesian: UKL) - Environmental Monitoring Efforts (Indonesian: UPL), Monitoring post-permit environmental management |
| 3.  | Tourism Office | Fulfill the IUPSWA licensing requirements, which are (1) technical considerations of NP, (2) technical considerations of the Tourism Office, (3) marking of business area boundaries, (4) making a map of business areas, (5) environmental permits, (6) preparing of a Nature Tourism Concession Plan, (7) pay the non-tax revenue contribution; Develop a Five-Year Activity Plan (Indonesian: RKL) and Annual Activity Plan (Indonesian: RKT); Realizing the construction of natural tourism facilities, conserving nature and securing visitors; waste management; Rehabilitating damage caused by IUPSWA; involving conservation and nature tourism experts; Submitting financial reports and business reports; Paying non-tax revenue from business through nature tourism facilities (10% net profit) |
| 4.  | Ministry of Environment and Forestry | Holders of business license for the nature tourism provision facilities (IUPSWA) |
|     |              | conserving nature; Implementing visitor security; Keeping the environment clean; Rehabilitating damage caused by IUPJWA activities; Submitting a report on its service business activities |
| 5.  | Holders of business license for the nature tourism service provider (IUPJWA) | Local community and other tourism service providers |
|     |              | conserving nature |
|     |              | Keeping the environment clean |

d. Aggregation Rules are certain types of actions taken at the decision-making stage. Aggregation rules are concerned with the decision process determining whether one participant or a group of participants can take any action [5]. For example, in the use of nature tourism in protected areas, if there is a dispute in the contractual relationship between the principal and the IUPSWA agent, the central government as the principal will decide.

e. Information Rules regulate the available information level, authorize information channels, establish obligations, permissions, or prohibitions for communicating with participants at certain decision
stages, and specify the language used in communication. Information about the rights and participants' obligations is contained in the nature tourism regulations in protected areas. However, information about the area condition in planning natural tourism, zoning, and site design is fully controlled by the national park manager.

f. Pay-off Rules are how the required, permitted, or prohibited benefits and costs are distributed to participants. The rules of costs and benefits among the participants are in Table 3.

| No. | Participants | Costs | Benefits |
|-----|--------------|-------|----------|
| 1.  | Ministry of Environment and Forestry | Managing protected areas (Protection, preservation of biodiversity, community empowerment) Monitoring, Supervision, Guiding, and evaluating the implementation of licensing | Obtaining contribution to financing conservation area management from non-tax revenue indirectly through national budget implementation |
| 2.  | National Park | Arranging zone, preparing of site design, monitoring of biodiversity, monitoring of water resources, empowering community (including conflict resolution), coordinating with local government, monitoring/ supervising of visitors (non-tax revenue collection for entrance tickets and activities) | Obtaining contribution to financing conservation area management from non-tax revenue indirectly through national budget implementation |
| 3.  | Local Government of Tourism division | - | Achievement of performance in the number of tourist destinations and visitors |
| 4.  | Local government on Environment and Forestry division | - | Achievement of performance in environmental monitoring |
| 5.  | Holders of business license for the nature tourism provision facilities (IUPSWA) | Marking and develop Map of business area; preparing environmental documents license (AMDAL/ UKL-UPL), pay non-tax revenue licence; Levying non-tax revenue (10% x net profit); Public Accountant Services for financial statement audits; consultant services for nature conservation and tourism experts; community development; Rehabilitation in case of damage | Advantages of running a tourism business |
| 6.  | Holders of business license for the nature tourism service provider (IUPJWA) | Non-tax revenue contribution Non-tax revenue levies | Advantages of providing tourism services |
| 7.  | Local community and other tourism service providers | - | Advantages of providing tourism services |

g. Scope Rules govern actions or circumstances that affect outcome variables that “should,” “should not,” or “may,” be affected due to actions taken in a situation. The regulation purpose in the use of natural tourism in protected areas is to improve the economic welfare of the community while maintaining the preservation of the function of the protected area. Within the rule scope, the actions that may participate in the contractual agreement between the principal and the IUPSWA agent can be achieved with high transaction costs, or these goals can be achieved without transaction costs.

3.2 Analysis of rule in form and rule in use gaps and their impact

Based on the content analysis of the regulations, the business process in the IUPSWA principal-agent contractual consists of four stages, which are planning, fulfillment of licensing requirements (ex-ante), implementation of licensing (ex-post), and monitoring and evaluation (controlling). The analysis of the rule in form and rule in use gaps and their impact on the institutional action arena for the use of nature tourism based on the business process is as follows:
3.2.1. Planning. Since the issuance of Government Regulation number 36 of 2010 and followed by Ministry of Forestry Regulation number 48 of 2010 regarding Natural Tourism Exploitation in Wildlife Reserve Areas, National Parks, Forest Parks, and Nature Tourism Parks, the use of natural tourism in protected areas is carried out through two types of permits, which are IUPSWA and IUPJWA. The IUPSWA is only allowed in the utilization zone, and by site design, it is in the business space. Furthermore, IUPJWA is permitted in all zones, except for the core zone, and by site design, the site is in a public space. This, according to Nugroho 2016 in Christian et al. [2], is influenced by the characteristics of the provision of goods and services for national park resources, which have the characteristics of Common Pool Resources (CPRs). With the characteristics of CPRs resources, IUPSWA and IUPJWA have two types of transfer of rights between the principal (the government) and agents [13]. The types of bundles of rights in the IUPSWA and IUPJWA contractual implementations are shown in table 4.

GGPNP is one of the first national parks to prepare a site design with the issuance of the Regulation of the Director-General of PHKA number P3/IV-SET/2011. The utilization zone at the Situgunung resort covers an area of 207 ha following SK.72/PJLKKHL-3/2013 divided into a public space of 12.2 ha and a business space of 194.8 ha. In 2017, a private business entity applied to build a natural tourism facility in Situgunung. The application for natural tourism facilities is directed at a cooperation agreement to strengthen the function of the national park. This collaboration was carried out between GGPNP and the private business entity with the number PKS 138/BBTNGGP/KBTU/KS/05/2017 and number 18/FAV-3/2017. In addition, utilization of tourism is carried out with IUPJWA with SK 173/BBTNGGP/KABIDTEK/Tek.P2/6/2017.

The space used to build natural tourism facilities with the cooperation agreement based on the 2013 site design includes public and business spaces. With its position and information, GGPNP has taken actions to transfer rights that are not following the spatial layout. There is no transfer of rights in the cooperation agreement because both parties agree to carry out activities to achieve common goals. Cooperation agreements on utilization zones are carried out in public spaces. Natural tourism facilities built through cooperation agreements must be granted to National Parks to become state property. With IUPJWA, private business entities as agents do not have the right to exclude other parties from utilizing tourism facilities built in public spaces. Mistakes in choosing the type of permit and building natural tourism facilities through a cooperation agreement indicate that the agent does not have sufficient information about regulations and site design in planning the utilization of natural tourism facilities through concessions. Institutionally, this problem is referred to as asymmetric information. The impact of asymmetric information can cause high transaction costs to exclude other parties from utilizing natural tourism buildings built at the expense of the private business entity. As explained by Williamson [14], information asymmetry between principal and agent increases transaction costs. The principal usually knows more about the characteristics of the object so that the agent incurs search and monitoring costs to identify the desired object characteristics. These transaction costs could be reduced if principals provided the correct information [15]. GGPNP, in this case, does not provide sufficient information about the different consequences of the cooperation agreement and the IUPSWA.

3.2.2. Fulfillment of Licensing Requirements (ex-ante). The gap between the rule in form and the rule in use at the stage of fulfilling licensing requirements can be described in table 5. As explained in the planning stage, GGPNP, with the position of providing technical considerations for IUPSWA, has taken action to direct the request of private business entities to build natural tourism facilities through a cooperation agreement. For the use of natural tourism facilities, an IUPJWA is issued. In the contractual relationship between principal and agent, there is a significant difference in the transfer of rights between IUPSWA and IUPJWA. The transfer of rights from the principal to the agent in an IUPJWA is only in the form of access rights and utilization in public spaces. Meanwhile, the IUPSWA agent obtains the transfer of access and utilization rights, the right to manage, and the right to exclude other parties from using natural tourism facilities, including in the business space. The agent did not obtain adequate information about the regulations and the consequences that must be borne between the Cooperation
agreement and the IUPSWA. Inappropriate transfer of rights has also resulted in conflicts over public space use because other IUPJWA holders from the local community and tourism service providers have long used public space for their business.

| Rights Type         | The owner (Ministry of Environment and Forestry) | Proprietor (Holders of IUPSWA) | Proprietor (Holders of IUPJWA) |
|---------------------|--------------------------------------------------|--------------------------------|--------------------------------|
| Access and utilization | x                                                 | x                              | x                              |
| Management         | x                                                 | x                              | -                              |
| Exclusion          | x                                                 | x                              | -                              |
| Diversion          | x                                                 | -                              | -                              |

Source: Adapted from Schlager dan Ostrom [13]

| No. | Regulations                          | Participants        | Rule in form                                  | Rule in use                                      | Outcomes                                                                 |
|-----|--------------------------------------|---------------------|----------------------------------------------|-------------------------------------------------|--------------------------------------------------------------------------|
| 1.  | MoEF Regulation no. 8 of 2019        | GGPNP               | Issuing IUPSWA technical considerations       | Signing a cooperation agreement regarding the development of natural tourism facilities | Improper transfer of rights from different types of licenses has implications for high transaction costs for agents to obtain management rights and rights to exclude other parties |
| 2.  | MoEF Regulation no. 8 of 2019        | Tourism Office      | Issuing technical considerations within 30 days | Issuing technical considerations by requiring neighbouring environmental permits | High coordination costs for socialization to sub-district heads, village heads, community leaders, and local communities |
| 3.  | Government Regulation no. 36 of 2010, MoEF Regulation no. 8 of 2019, MoEF Regulation no. 25 of 2019 | Environmental Office | Issuing environmental permits according to Government Regulation 36/2010 and MoEF Regulation no. 8 years 2019 is sufficient for using only UKL/UPL, while according to MoEF Regulation no. 25 years 2019, AMDAL is mandatory | Require the application for the mandatory AMDAL exemption to be able to UKL/UPL | Differences in the implementation of regulations result in business entities not being able to fulfill the permit fulfillment time promptly, so that there is the potential for high transaction costs because negotiations usually occur |
| 4.  | MoEF Regulation no. 8 of 2019        | Holders of IUPSWA   | Developing a Nature Tourism Business Plan    | Hiring a consultant to develop a Nature Tourism Business Plan | Often, it is not used as a reference because it is considered as a fulfillment of administrative requirements |

The absence of mastery of information on regulations of natural tourism utilization in Protected Areas by local government Environmental and Forestry, the mandatory AMDAL has been enacted. The discussion about the two types of environmental permits between mandatory AMDAL or UKL/UPL result in a longer time to fulfill permits which has implications for high transaction costs. The organizational economics literature mostly examines signals as a cost-saving answer to the problem of information asymmetry in institutional contexts where regulatory agencies are assumed to work effectively [14].
3.2.3. Implementation of Licensing (Ex post). The rule in form and rule in use gaps at the licensing implementation stage are in table 6. Outcomes occur due to the gap between rule in form and rule in use at the implementation stage of the IUPSWA, among others, the natural tourism facilities construction before the issuance of the IUPSWA in 2020. Utilization of natural tourism facilities using the IUPJWA since 2018. The implications of these two permits are for a business entity as an agent to incur high costs in its implementation. The PNBP levy, which is the principal's right, is only paid in the IUPJWA scheme. PHUPSWA PNBP, which is 10% of the net profit, had not been paid because, based on the IUPSWA, which was just issued in 2020, this condition has only been running for one year and is considered not yet profitable. The principal does not have information about the profit of the business entity as the basis for calculating levies on the results of business activities for nature tourism facilities because a public accountant audits no financial report. The absence of mastery of information by the principal about the profits of the Business Entity causes the principal to lose control to obtain the right to pay levies on the results of business activities for nature tourism facilities. From the cost and benefits element, the principal (the government) loses the source of income (PNBP) to finance the conservation area from the IUPSWA. In this regard, Fu et al. [16] found that information asymmetry is correlated with transaction costs. Furthermore, Cai et al. [17] stated that companies with more significant information asymmetry tend to have less intensive information monitoring. According to Kanagaretnam et al. [18], the level of mature governance has lower information asymmetry.

| No. | Regulations | Participants | Rule in form | Rule in use | Outcomes |
|-----|-------------|--------------|--------------|-------------|----------|
| 1.  | Government Regulation no. 36 of 2010 dan MoEF Regulation no. 8 years 2019 | First agent (holders of IUPSWA) | Realizing the construction of natural tourism facilities, no later than one year after the permit is issued | The construction of natural tourism facilities has been built before the permit is issued | Conflict of obligations implementation between IUPSWA and the cooperation agreement |
| 2.  | MoEF Regulation no. 8 of 2019 | Holders of IUPSWA | Provide the company's monthly report no later than the 10th of the following month | Late submission of monthly reports | The principal did not get information to control the agent |
| 3.  | MoEF Regulation no. 8 of 2019 and MoEF Regulation no. 25 of 2018 | Holders of IUPSWA | Performing environmental management and monitoring every semester | Performing environmental management and monitoring every term with a focus on water quality only | Having not enough information to monitor of ecosystem condition |
| 4.  | MoEF Regulation no. 8 years 2019 | Holder of IUPSWA | Provide financial reports based on public accountant audit | Financial reports based on public accountant audits are late in submission | The principal did not obtain information to control over agents related to PHUPSWA payment obligations |
| 5.  | Government Regulation no. 12 of 2014 dan MoEF Regulation no. 8 years 2019 | Holders of IUPSWA | Pay PNBP PHUPSWA levies (10% of IUPSWA Net Profit) | The PNBP levy of 10% of the IUPSWA net profit has not been paid. However, the agent pays the PNBP levy from IUPJWA | The principal did not get levies on the results of business activities for nature tourism facilities (PHUPSWA), right |

According to Ostrom [5], the absence of sanctions for late submission of reports or non-delivery of messages by agents results in principals losing information that can be used to control agents in carrying out their obligations. However, the high transaction costs that the agent must bear can also cause the agent to take moral hazard actions. This is in line with Klein et al. [19], which states that without adequate information, moral hazard arises because of high transaction costs because the principal may incorrectly describe and provide information.
3.2.4. **Controlling.** The rule-in-form and rule-in-use gaps and their outcomes at the monitoring, coaching, and evaluation stages are in Table 7.

### Table 7. Gap rules in form and rules in use in controlling.

| No. | Regulations | Participants | Rule in form | Rule in use | Outcomes |
|-----|-------------|--------------|--------------|-------------|----------|
| 1.  | MoEF Regulation no. 8 of 2019 | Gunung Gede Pangrango National Park Directorate General | Supervising and coaching at least once a year | There was no monitoring and coaching report | Central Ministry of Environment and Forestry did not obtain information to control agents |
| 2.  | MoEF Regulation no. 8 of 2019 | | The Director-General establishes to evaluate at least once every two years | The evaluation has not been carried out because the new permit was issued in 2020. The business entity operates using the Cooperation Agreement and IUPJWA | There has been no action to resolve the conflict between the cooperation agreement, IUPJWA, and IUPSWA |
| 3.  | Government Regulation no. 36 of 2010 and MoEF Regulation no. 8 of 2019 | Minister of Environment and Forestry | Giving sanctions | Sanctions could not be given because there had been no report on the results of supervision and guidance, and evaluation | Agents must fulfill the obligations of the cooperation agreement, IUPJWA, and IUPSWA |

Based on the gap between the rules in form and the rules in use, there are impacts on the arena of action, including (1) abuse of authority by the Technical Implementing Unit that uses a cooperation agreement as a substitute for a permit, has implications for the existence of conflicts in the use of space and high exclusion costs, (2) differences in regulations regarding environmental permits have the potential to cause high transaction costs, (3) asymmetric information between principals and agents cause high transaction costs for agents, and principals to lose control over agents, especially in obtaining PHUPSWA rights and monitoring environmental sustainability, (4) the absence of sanctions has caused the principal not to master the information to exercise control over the agent. According to Gibson et al. [20], sanctions and regular rules monitoring are necessary for effective management. Furthermore, according to Andersson et al. [21], an essential factor in forest resource institutions is making rules, monitoring, and imposing sanctions. Diamond & Verrecchia [22] also stated that information asymmetry results in the misallocation of resources, so it is vital to understand which factors can reduce the problem of information asymmetry. However, as stated by Ostrom [5] through the IAD framework, policy performance is not only influenced by the completeness and quality of regulations. Still, it is also influenced by exogenous factors, which are the characteristics of resources, and community attributes, which are the participants' characteristics.

### 4. Conclusion

Based on the research, it can be concluded that Ostrom's concept on rules-in-us is useful to find a gap between the purpose of the regulation and the resulting performance so that it becomes feedback to identify regulatory weaknesses. The gaps in regulations for the use of natural tourism environmental services in conservation areas include (1) opportunities to misuse the cooperation agreement regulations to change permits; (2) inconsistency of environmental permit regulations; (3) regulation on the information control to control the permit holders by the government; (4) the absence of sanctions.

From the research, there are several suggestions, which are (1) improving regulations as a statement institution by involving interested parties and incorporating elements that authorize information, sanctions, and incentive systems; (2) conducting further research to analyze other factors in the IAD framework to improve institutional use of natural tourism in conservation areas.
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