Chapter 13
Aggregation and Representation in Knowledge Coproduction: Lesson Learned from the Indonesian Sustainable Palm Oil Scheme

Faris Salman and Akihisa Mori

Abstract A context-based approach and pluralism are often the main principles of knowledge coproduction (KCP), in addition to goal-oriented and interactive approach. To keep the original context and plurality from the knowledge source, knowledge in KCP can be bridged, scaled-up, or represented. Representation in KCP can distort results; however, it can also be beneficial especially for difficult-to-reach group members. Further, improving the structure of KCP can improve governance in instances where coproduced knowledge is used for governing processes. By conducting a case study of the Indonesian Sustainable Palm Oil (ISPO), this chapter explores how the representation of citizens affects coproduction and how it impacts environmental governance in Indonesia. We utilize the principles of KCP for sustainability and the operationalization of knowledge for improving governance. We found that government-dominated development and implementation should be shifted to networked public participation to reconcile conflicting objectives of social acceptance. To improve public participation, non-government actors can play key representing roles in making the process more collaborative, and bridging and aggregating knowledge produced by stakeholders with diverse interests. Initial establishment of the ISPO endorsed the government's predetermined agenda and suffered operationalization problem. The shift from government-dominated development and implementation to a networked and public KCP facilitated ISPO policy strengthening. The networked, public KCP formed stages where knowledge is aggregated and bridged to a higher tier of discussion through representation. Our result also provided insight that representation in KCP may not be avoided in certain situations, such as with time and economic cost constraint. The network used for KCP can benefit environmental governance, as it helps government-dominated governance incorporate civil society.

F. Salman (✉) · A. Mori
Graduate School of Global Environmental Studies, Kyoto University, Kyoto, Japan
e-mail: mori.akihisa.2a@kyoto-u.ac.jp

A. Triyanti et al. (eds.), *Environmental Governance in Indonesia*, Environment & Policy 61, https://doi.org/10.1007/978-3-031-15904-6_13

Keywords KCP · Governance · Representation · Palm oil · ISPO · Indonesia

13.1 Introduction

One of the goals of utilizing coproduced knowledge in governance is to enable governance that produces necessary knowledge to support sustainability and the social dynamics to act on governance processes (Miller & Wyborn, 2020). The governance processes may be affected by knowledge and power imbalances that affect the construction of new goals and objectives. Successful knowledge coproduction is context-based, pluralistic, goal-oriented, and interactive (Norström et al., 2020). In addition, frequent and sustained engagement with knowledge stakeholders—especially indigenous stakeholders—is a salient principle in the KCP literature (Zurba et al., 2021). However, when discussing KCP, it is necessary to pay attention to indigenous representation and indigenous knowledge integration (Latulippe & Klenk, 2020; Norström et al., 2020). Past views of knowledge in KCP are sometimes extractional, separating the knowledge from the context (Latulippe & Klenk, 2020). Successful KCP tries to avoid using indigenous knowledge as "data" by putting indigenous knowledge and actor *in* the process (Latulippe & Klenk, 2020; Maclean et al., 2021).

Past research on KCP and environmental governance commonly emphasizes bottom-up approaches. The guiding principles of KCP start at a low level. For example, various small sets of issues define the contexts of KCP or disaggregated indigenous knowledge as sources of knowledge (Indrawan & Sofjan, 2021; Zurba et al., 2021). Specific knowledge or context often requires bridging for KCP to occur, and for coproduced knowledge to be used for better governance (Florin & Lindhult, 2015; Howlett & Ramesh, 2016; Norström et al., 2020). This bridge can be boundary works, organizations (Clark et al., 2016; Zurba et al., 2019), or boundary objects (Rathwell et al., 2015). However, it is possible for coproduced knowledge to be the boundary object (Zurba et al., 2021). Coproduced knowledge can also be "scaled-up" through nested levels (e.g., governance levels), such as in polycentric governance (Jordan et al., 2018; Wyborn et al., 2019), and can solve some environmental governance issues (Jordan et al., 2018).

However, a lack of proper operationalization capacity brings about governance failure that can hollow out the ability to enforce regulations (Howlett & Ramesh, 2016). Improving governance hierarchy through effective operationalization is one way to improve governance capacity (Howlett & Ramesh, 2016). Moreover, if coproduced knowledge is to be used to improve governance, it requires effective operationalization (Howlett & Ramesh, 2016; Sorrentino et al., 2018).

Indonesian Sustainable Palm Oil is seen as a method for overcoming the existing cost, stringent challenges, and limitations associated with the Roundtable on

Sustainable Palm Oil (RSPO) certification. The development of ISPO policy suits the less stringent and emerging palm oil market in Global South (Higgins & Richards, 2019; Ruysschaert & Salles, 2014). Indonesian palm oil governance is still considered less stringent compared to RSPO. It also has a weak administrative structure and is constrained by performance issues, such as low compliance from private actors and lacking coordination across different levels of governments (Higgins & Richards, 2019; Pacheco et al., 2018a; Schouten & Bitzer, 2015). The weak structure hollows out standard enforcement and coordination (Astari & Lovett, 2019; Hidayat et al., 2018; Putri et al., 2022). The Indonesian government recently improved the ISPO regulations by establishing Presidential Decree No. 44/2020 (Choiruzzad et al., 2021). This presidential decree has a higher governmental authority than the previous minister's regulations, and covers multiple government agencies on both the national and local levels. It aims to increase the acceptance and competitiveness of Indonesian palm oil products in national and international markets (Choiruzzad et al., 2021). Four years after the deployment of the ISPO, 127 out of 763 plantations in Indonesia obtained ISPO certification. None of these plantations were smallholders. After the implementation of additional regulations complementing ISPO, including the presidential decree, the number of certified plantations increased to 494. Fourteen of them are palm oil smallholder cooperatives (Lestari, 2021).

A policy paper is one of the mandatory requirements for proposing a regulatory draft as an official regulation in Indonesia. To draft the policy paper, various stakeholders were invited and to participate in Focused Group Discussion (FGD), SWOT analysis, and workshops on palm oil plantation that were conducted and managed by the Indonesian Ministry of Planning (Bappenas). The policy paper document was the final product of the FGD, SWOT, and workshops.

Against this backdrop, this chapter aims to investigate how the representation of citizens affects coproduction (Cepiku & Giordano, 2014; Latulippe & Klenk, 2020), and impacts environmental governance in Indonesia, taking ISPO as a case. In doing so, we examine the policy paper (*naskah kebijakan*) that formed part of the basis for establishing the ISPO as a state regulation. Specifically, we examine how this policy paper was made, who was involved (Montana, 2019), and how the policy paper formation and actors involved impacted the environmental governance process, especially ISPO governance. To analyze this policy paper, we utilize the principles for successful KCP (Norström et al., 2020). Our analysis suggests that government-dominated development and implementation should be shifted to public participation to reconcile conflicting objectives of social acceptance. To increase public participation, non-government actors can play key representing roles in making the process more collaborative, and bridging and aggregating knowledge produced by stakeholders with diverse interests.

13.2 Theoretical Argument: Representation in Coproduction, Operationalization, and Governance

13.2.1 Representation in Knowledge Coproduction

We define KCP as the "iterative and collaborative processes involving diverse types of expertise, knowledge and actors to produce context-specific knowledge and pathways toward a sustainable future" (Norström et al., 2020). KCP is ideal to pursue inclusivity to produce knowledge benefitting the knowledge producers because it allows diverse type of expertise, knowledge, and actors (Latulippe & Klenk, 2020;Norström et al., 2020 ; Zurba et al., 2021). This chapter uses representation as a flat relation "between KCP participants and those outside of the process" (Montana, 2019). Developing countries often display a flat relation for representation in KCP.

Incorporating representation into KCP can help involve difficult-to-reach group members. However, the involvement strongly depends on whom they represent and how similar they are with the target group (Eriksson, 2019). Representation in KCP also appears in the form of chosen members from external communities, as participation in KCP is selective while diverse (Cepiku & Giordano, 2014; Montana, 2019). In such situations, the representation strongly depends on the selection process and criteria (Cepiku & Giordano, 2014). The selection process is vulnerable to manipulation by powerful actors, such as selection criteria (Montana, 2019). Representation in KCP enables the utilization of knowledge from networked members outside of the group (Eriksson, 2019; Montana, 2019).

Government can act as a resourceful actor for KCP, allowing multi-stakeholder interaction (Sorrentino et al., 2018). There are several contextual differences that differentiate coproduction in developing countries. A coproduction evolves into a partnership with many stakeholders (including global institutions). Moreover, coproductions are launched by donors and lack coordination (Cepiku & Giordano, 2014). Undertaking a coproduction in the ideal way can also present technical barriers such as high economic cost and time consuming (Oliver et al., 2019). On the other hand, coproduction enhances diversity (Norström et al., 2020), frequent and sustained engagement, shared understanding, and stakeholder empowerment (Zurba et al., 2021). While representation in coproduction can harm the quality of a coproduction (Latulippe & Klenk, 2020), representation may be necessary for inclusiveness (Cepiku & Giordano, 2014).

13.2.2 KCP and Knowledge Operationalization for Improving Governance

Cultivating trust, capacity, and knowledge flows among diverse actors conforms to the concepts of pluralism and interactivity in coproducing high-quality knowledge for sustainability (Norström et al., 2020; Zurba et al., 2021). Achieving pluralism

necessitates the involvement of multiple actors across various sectors and backgrounds to generate knowledge products and develop shared perspectives and understandings. The interactive coproduction process involves frequent interactions among participants, including designing the process and jointly using and disseminating generated knowledge. In addition, an active capture and engagement with civil society (e.g., through a series of dialogs) can facilitate inclusive multi-stakeholders' discussions on KCP processes (Indrawan & Sofjan, 2021).

The coproduction process involves multiple stakeholders cooperating and aiming to formulate shared perspectives and understandings; it bridges problems, benefits stakeholders, and promotes shared responsibility (Florin & Lindhult, 2015; Habermas, 1990; McCulloch, 2015). It facilitates flexible and adjustable "sustainable practices" and improves compliance (Higgins & Richards, 2019). This holds especially where coproduced knowledge is situated in a particular context and is designed to be goal-oriented (Norström et al., 2020). The contexts of coproduction processes can be place-based.

However, this context must be restricted to a defined set of issues that intersect with the unique needs and interests of different stakeholder groups. The effect of choosing an appropriate context is reflected in whose problems are being solved or priorities whose being addressed. Determining a goal (ranging from short-term to long-term goals) in coproduction depends on how the goal is shared, understood, and agreed upon collectively.

Coproduced knowledge requires operationalization to improve governance. Successful KCP can cover the analytical, managerial, and—to some extent—political competencies. That is, improving policy capacity in analytical competences can be done by having better knowledge of policy substances, better institutions, and opportunities for knowledge generation. Managerial competencies can benefit from robust coordinated actions between stakeholders and engaging policy networks. Political competencies can be improved through understanding of the needs of different stakeholders, inter-organizational trust, and two-way communication with non-state actors (Howlett & Ramesh, 2016). As improvement in policy capacity intersects with the practice of successful KCP, the generation of coproduced knowledge can impact policy capacity and governance. In addition, effective administrative structures, processes, coordination, and political support are keys to effective operationalization (Sorrentino et al., 2018).

13.3 Methodology

13.3.1 Case Selection

A recent study on the palm oil governance complex explored major gaps in capacity, cooperation, compliance, and credibility of the governance of the palm oil sector (Pacheco et al., 2018a). These gaps accrue to the existing problems affecting the palm oil governance complex, such as the relatively uneven allocation of resources,

access to land, resources, and markets; uneven power distribution among palm oil stakeholders, and environmental landscapes; decentralized and opaque decision-making processes combined with intertwined interest; and land allocation transparency. In addition, Indonesian palm oil governance suffers from ineffective governance at the local and regional levels due to persistent structural challenges (Putri et al., 2022).

The regulatory side of palm oil governance analyzed the environmental governance that focuses on the Indonesian government (Putri et al., 2022) and other stakeholders involved in the palm oil value chain (such as plantation owners, farmers, civil societies, and civil society organizations, etc.) (Pacheco et al., 2018b). Changes to stakeholder interactions through KCP and operationalization of coproduced knowledge by the government are associated with the change in the performance of governance.

13.3.2 Methodology

We explored why the ISPO is underperforming and how the governance of ISPO has been improved. A case study is a relevant method for exploring "how" question and when the observation has no control over behavioral events (Yin, 2017). We used the establishment of the ISPO as a case study and treated the implementation of ISPO regulation as a policy action resulting from KCP for governance (Table 13.1). We analyzed the Bappenas policy paper used for ISPO regulation as a form of

Table 13.1 Application of the principles of knowledge coproduction in sustainability research (Norström et al., 2020) in Indonesian Sustainable Palm Oil (ISPO) case study

Principles	Explanation	Application in ISPO case
Context-based	Coproduction process situated in an embedded context of particular problems and challenges	Coproduction process to improve palm oil governance and solve relevant environmental problems around palm oil production in Indonesia
Pluralistic	Involvement of academics (from various disciplines) and stakeholders from other sectors (government, business, civil society, and local and indigenous community) to generate an enriched understanding of the problem	Involvement of academics, government (regional and local level), plantation managers, smallholder farmers, and civil society members to achieve a shared understanding of environmental problems surrounding palm oil production
Goal-oriented	Develop a collective understanding among all participants and agreed-upon measures of success	Develop agreed-upon measures and milestones to govern Indonesian palm oil production and navigate current environmental problems
Interactive	Frequent interactions among participants throughout the process, from framing and research to using and disseminating the generated knowledge	Stakeholders actively engage and interact through repeated conversations or events to create, use, and disseminate coproduced knowledge

Source: Author interpretation

coproduced knowledge using principles of a successful sustainability research (Norström et al., 2020).

We conducted an interview with members of the Indonesian Biodiversity Foundation (KEHATI) on February 23, 2022. The KEHATI Foundation is leading the Strengthening Palm Oil Sustainability (SPOS) Indonesia program. To guide the interview, we use open-ended questions about involved actors, actor's roles and contributions, and knowledge assembly process. The questions are: (1) Were the participants and stakeholders invited or elected to contribute to the policy paper and public consultation? How was this initiated, and how were the processes carried out?; (2) How was the process of summarizing policy papers and public consultation results carried out?; and (3) How were the public consultation, workshops, and FGD was scheduled? How were they executed?

We also searched for news articles related to ISPO and palm oil to support this case study. We used the Lexis Database to browse news articles containing keywords "ISPO" and "kelapa sawit" (oil palm). We used the Indonesian language because the ISPO is a regulation specific to Indonesia, and such terms should provide more information about the case. We narrowed our search to news articles published between January 1, 2010 and December 31, 2020, to cover news articles related to changes in ISPO policy. Specifically, we focused on news articles covering the process of KCP as well as actors' and stakeholders' responses to changes in ISPO regulations.[1] In total, we found 17 news articles. In analyzing the case study, we also used additional sources such as scientific publications and other supporting documents from gray literature, such as reports and media briefings.

13.4 The ISPO as Coproduced Knowledge and Sustainable Governance

The ISPO is an environmental governance tool that was initiated by a ministerial decree in 2011; subsequently, it was refined in 2015 and strengthened in 2020 (Putri et al., 2022). It is known that the ISPO is a regulatory tool created in response to RSPO certification (Wijaya & Glasbergen, 2016), an act of authority claims from private sustainability standards such as RSPO (Higgins & Richards, 2019; Schouten & Bitzer, 2015), or a measure to complement private sustainability standards (Pacheco et al., 2018b). The ISPO was created after the Indonesian government carried out a "watch and see" strategy and participated in RSPO activities to provide technical and regulatory expertise for creating national interpretation of RSPO for industries and smallholders (Wijaya & Glasbergen, 2016). This involvement provided state actors with sufficient information about sustainability standards and

[1] From the interview we conducted, we learned that there are three main government regulations regarding ISPO: Minister of Agriculture Decree No. 19/Permentan/OT.140/3/2011, Minister of Agriculture Decree No. 11/Permentan/OT.140/3/2015, Presidential Decree No. 44/2020.

certification procedures and established a state regulation for sustainable palm oil (Wijaya & Glasbergen, 2016).

13.4.1 The ISPO as Coproduced Knowledge

The ministerial decree[2] mandates that regulation, established under the agricultural ministry, such as the ISPO, must accompany the regulation draft alongside i) a policy paper, ii) a digital copy of the regulation draft, iii) minutes of the internal discussion on the draft and a list of attendees, and iv) minutes of public discussion on the draft and a list of attendees. The policy paper and public discussion involve public stakeholders, including farmers and agricultural businesses (Wijaya & Glasbergen, 2016). The policy paper includes a literature study and is the product of multi-stakeholder interactions, including FGD, discussions, and seminars. The procedure for creating the policy paper is in-line with KCP requirements, as it involves diverse actors trying to address challenges and influences actions that can contribute to sustainability (Norström et al., 2020; Zurba et al., 2021).

13.4.2 The Context of ISPO Creation

The process of the ISPO regulatory draft began from four general issues surrounding Indonesian palm oil industries: technology, economy, social aspects of local farmers, and the environment. While each issue involves different stakeholder constellations, the main stakeholders include smallholder plantations and private plantations or palm oil manufacturers.

The issues listed in the policy paper (Table 13.2) encompass a variety of stakeholders and were generated from an interpretation of studies used in the policy paper. Most of the contexts in the problem mentioned in the policy paper were related to domestic development or certain issues. For example, regarding technological issues, the productivity gap between smallholder plantations on the one hand and private and government plantations on the other came from an earlier study (Roesdiana, 2009) and data from the Statistics Indonesia (BPS, 2009). Added-value opportunities were derived from interpreting the ratio of the exported amount of crude palm oil (CPO) export versus CPO derivatives and the types of derivatives. Regarding economic and social problems, low productivity issues were related to other factors, such as aging plants, limited access to capital and resources, and market structure. For environmental issues, the report reinforced the findings of a previous study (Teoh, 2010) regarding the palm oil plantations' relationship to

[2]Minister of Agriculture Decree No. 25/Permentan/OT.010/7/2017 about Procedures for Establishing Laws and Regulations within the Ministry of Agriculture.

Table 13.2 List of issues related to sustainable palm oil development in the policy paper supporting Indonesian Sustainable Palm Oil (ISPO) creation

	Related stakeholders	Issues
Issue categories		
Technology	Smallholders and private plantation	Productivity gap between smallholders and private plantations
		Lack of industries downstream from crude palm oil and opportunities of added value
Economy	Smallholders, private plantations, NGOs, and roundtable on sustainable palm Oil (RSPO)	Low productivity at smallholder plantations due to aging and intensification difficulties related to capital and resources
		International competition with other vegetable oil producers and related international NGOs promoting RSPO
Social aspects of local farmers	Smallholders, private plantations, funding institutions (banks), and palm oil association	Land use, land use rights, and land ownership conflicts among smallholder plantations
		Institutional barriers preventing smallholders from accessing funding and market information
Environment	Smallholders, private plantations, and local governments	Deforestation, climate change, and biodiversity loss
		Concession management and politics
		Information transparency problems leading to conflicts

Source: Author's interpretation of policy paper document (Bappenas, 2010)

deforestation and biodiversity loss as well as its impact on climate change. Some RSPO-certified plantations are considered to have fewer environmental problems than non-certified plantations. Additionally, the policy paper acknowledged the possibility that deforestation can occur due to procedural problems, such as contradictions of regulations related to converting forest land into land for other uses (Nurrochmat et al., 2020; Putri et al., 2022).

In contrast to nationally focused issues in technology, and the social aspects of farmers, economic issues of Indonesian palm oil pay attention to both national and international context, that is competition among other vegetable oils. From approximately 2005–2007, exports of CPO and refined palm oil to the European market increased due to an increased demand for biodiesel, decreasing local vegetable oil production (such as rapeseed oil and sunflower oil, which are substitutes to palm oil), and for palm oil in the food industry (Rifin, 2010a). Simultaneously, the Indonesian government planned to build a large-scale palm oil plantation. The establishment would have potentially displaced 1.8 million ha of forest ("Palm oil exports", 2009). However, the plan was abandoned after considering the geographic location and soil conditions. Nevertheless, the plans had already been made public, and in response, nongovernmental organizations (NGOs) launched environmental

campaigns against the establishment. The news coverage and campaigns negatively affected the competitiveness of the Indonesian palm oil market (Rifin, 2010a). Reflecting on this decreasing competitiveness, the policy paper argued that since palm oil productivity is higher than that of soybean and rapeseed, tariffs should not be imposed to improve its international competitiveness (Pratiwi, 2021; Rifin, 2010b).

In short, according to the policy paper, the contexts of ISPO creation are decreasing international competitiveness, low productivity for farmers with limited access to funding and seeds, the productivity gap between plantations and smallholders, and forest conversion.

13.4.3 The Goal of ISPO Creation

The policy paper states that the ISPO aimed to increase Indonesian palm oil competitiveness and its value-added sustainably. This direction came from the previous policy suggestions contained in the *Oil Palm Road Map* published in 2009 and 2010 (Road Map *Kelapa Sawit*). The roadmaps dealt with the application of technology to palm oil cultivation and palm oil production and its derivatives. However, such attention to cultivation and production technology may not align well with recent changes in international markets that have affected Indonesian palm oil exports.

The policy paper suggested attaching the attribute of "sustainable" to Indonesian palm oil products through certification. Incorporating sustainability certification into government regulation discussed about the state's environmental problem, how to promote Indonesian palm oil as sustainable product, and advocate for the application of the RSPO principle and criteria. A scheme similar to RSPO could generate economic, social, and environmental benefits. This scheme should be the new strategy for incorporating sustainability through policy alternatives (Table 13.2) as an added value, and it should lead the global palm oil market.

13.4.4 The Plurality of ISPO Creation

When the paper dealt with identifying policy alternatives to support the predetermined goal, multi-stakeholder involvement was visible. Bappenas proposed eight policy alternatives (Table 13.3), summarized from government-held workshops on Strategic Environmental Studies (KLHS) and FGD. There were no lists of workshops or mentions of FGD attendees in the policy report. External stakeholders then ranked the eight policy alternatives according to their alignment with Indonesian palm oil development goals.

The invited stakeholders—including government bureaus (Bappenas and Directorate General for Plantation), a state university (IPB University), a state research body (Riset Perkebunan Nusantara), a palm oil producers association (GAPKI), and social and environmental NGOs—are considered important

Table 13.3 List of policy alternatives supporting Indonesian Sustainable Palm Oil (ISPO) and its rank

Policy alternatives	Rank
Development of downstream industries and added values for palm oil	1
Transparency regarding palm oil plantation establishment information	2
Promotion, advocation, and public campaigning for the palm oil industry	3
Supporting RSPO principles and criteria	4
Development of a conflict resolution mechanism	5
Improving smallholders' access to information and funding	5
Strengthening and enforcing the ISPO and concession licensing management	6
Control the conversion of forest and peat land into palm oil land	7

Source: Bappenas (2010)

stakeholders in the state's palm oil production. While the policy paper did not specify specific companies, news outlets mentioned several large plantations, such as Government Palm Oil Plantations (PT Perkebunan Nusantara), Subsidiaries of SMART (SinarMas Group, Multinational), Sime Darby (Multinational), Astra Agro Lestari (Indonesia), Wilmar (Multinational), and Sampoerna (Indonesia). Large plantations were also involved in the ISPO field testing (Wijaya & Glasbergen, 2016). Further, it is unknown whether smallholder farmers were involved, or which NGOs were invited.

Several issues related to multi-stakeholder involvement, especially those involving smallholders, were identified: conflict resolution mechanisms, access to information and funding, and focusing on increasing palm oil products from smallholders. Access to funding was centered on subsidies or lowering the interest rate for the replanting and rejuvenation processes. Improvement in information access was discussed in terms of providing technical or organizational assistance to palm oil cultivators. The policy paper discussed a general approach for conflict resolution, such as public consultation. Previous research found that this approach did not facilitate balanced negotiations between stakeholders (Hidayat et al., 2018).

13.4.5 The Interactions during ISPO Creation

The development of the ISPO consisted of discussions (strategic environmental assessments and KLHS workshops), pilot tests, FGDs, and finalization (Wijaya & Glasbergen, 2016; Bappenas, 2010). KLHS workshops are a law-mandated activity[3] that includes the participation of all relevant stakeholders. The pilot test included

[3] Indonesian Law No. 23/2009 about Protection and Environmental Management.

interactions between independent auditors, the government, and palm oil companies (Wijaya & Glasbergen, 2016), while FGD served as a platform for creating policy alternatives and ranking them. There are no records of other interactions between stakeholders in the policy paper.

13.4.6 Operationalization of ISPO for Environmental Governance

The lack of operational capability of the state in mobilizing the ISPO is reflected in the small number of certifications. Four years after the deployment of ISPO, 127 out of 763 plantations obtained the ISPO certificate. None of them were smallholders. Recently, two additional regulations were added to complement ISPO: the Decree of Ministry of Agriculture No. 11/2015 and No. 38/2020. These regulations helped increase the number of certified plantations to 494. Among them, 14 were palm oil smallholder cooperatives (Lestari, 2021).

The small number of certifications accrued to two factors. First, it was deemed mandatory for select categories of palm oil establishments when the ISPO was established as a state regulation (Putri et al., 2022) (R. Suprapto, personal communication, February 23, 2022). Second, the ISPO is ambiguous, confuses actors, and inhibits coordinated actions (Choiruzzad et al., 2021).

This implies that the problem of operationalization is not necessarily related to the knowledge produced but the operational capabilities of the knowledge produced, namely the regulation infrastructure and palm oil industrial structure in Indonesia (Hidayat et al., 2018; Putri et al., 2022). As a governance platform, the ISPO also has weak vertical coordination capacity, such as local government autonomy benefitted the local government's interest instead of local oil palm farmers (Hidayat et al., 2018). During the deployment of the ISPO, the lack of governmental resources hampered certification processes. Local governments had difficulties to access ISPO-certified plantations. The ISPO commission also did not have enough authority to enforce sanctions. Due to past decentralization policies, the authority instead belonged to local governments (either the governor, regents, or city mayor). Last, those in the European market doubted the credibility of the ISPO.

13.4.7 Increasing Public Participation in Strengthening the ISPO Policy: Public Consultations for Presidential Decree No. 44/2020

In a letter from Coordinating Ministry for Economic Affairs, letter number 54/2016, the Indonesian government established a strengthening team for the ISPO certification system. This team was comprised of members of government agencies (e.g.,

representatives from the Ministry of Agriculture, Ministry of Environment and Forestry, and Coordinating Ministry for Economic Affairs), and NGOs (e.g., ISPO Alliance [ASLI], KEHATI Foundation, Kaoem Telapak, and Sustainable Palm Oil Development Forum). The invited non-governmental team members had participated in previous cooperative initiatives with government agencies at the national, regional, and local levels. These organizations also had experience in managing public consultations in the past (I. Bakhtiar, personal communication, February 23, 2022).

The strengthening team was tasked with proposing a policy suggestion for strengthening the ISPO certification system and drafting a presidential decree. Public consultations focusing on palm oil-producing regions (Central Kalimantan, Riau, Sulawesi, and West Papua) were conducted to obtain feedback from the public on the ISPO certification system (Bakhtiar et al., 2018). Public consultation sessions were arranged with the cooperation of NGOs (ASLI, Kaoem Telapak, and Independent Forest Monitoring Network), utilizing their existing social networks and infrastructure. Feedback from public consultations was obtained in writing and collected by the cooperating NGOs; subsequently, it was used as discussion material to improve the regulation draft. In improving the draft, members of the strengthening team discussed the contents and context of the public feedback before finalizing it. One of the major changes to the regulations was the inclusion of civil society in the ISPO committee, through the establishment of Presidential Decree No. 44/2020 (I. Bakhtiar, personal communication, February 23, 2022).

While the program to strengthen the ISPO certification system was initiated by the Indonesian government, it developed into a part of a program from UKCCU and KEHATI Foundation (SPOS Indonesia). One of the main focuses was to obtain ground-level data on smallholder palm oil farmers and plantations, especially in terms of mapping and registration. The data obtained during this project contributed to creating government regulations, one of which was Presidential Decree No. 44/2020 (R. Suprapto, personal communication, February 23, 2022). However, there were limitations regarding the public consultations. To save money and time, the areas had to be grouped into regions, and public consultations were held once in each respective region. Additional efforts, such as obtaining public feedback through an online form, did not attract input (I. Bakhtiar, personal communication, February 23, 2022).

13.4.8 Public Participation in Knowledge Coproduction: Lesson Learned from ISPO

Our case study of KCP regarding the ISPO gives two implications. First, government-dominated development and implementation should be shifted to networked public participation to reconcile conflicting objectives of social acceptance. The ISPO scheme was a process dominated by the government or government bureaus meant

to advance the state's predetermined agenda of promoting Indonesian palm oil products. However, in response to increasing criticism from scholars (Hidayat et al., 2018; Pacheco 2018a, b) and NGOs (Nanggara et al., 2017), the government decided to strengthen the ISPO policy to "increase the acceptance and competitiveness of Indonesian palm oil products in national and international markets" (Choiruzzad et al., 2021). One of these efforts was to increase public participation during the drafting and public consultation stages. Our findings differ from previous studies in that the representative was an organization representing an aggregation of groups of individuals. This constitutes another non-traditional form of interaction in KCP (Sorrentino et al., 2018).

Second, non-government actors can play key representing roles in making the process more collaborative, and bridging and aggregating knowledge produced by stakeholders with diverse interests. Technology can be used to overcome spatial barriers related to coproduction processes in Indonesia (Indrawan & Sofjan, 2021). However, in our case, the online questionnaire did not attract much input; instead, it had to rely on social network. Even after creating local spaces for public consultation, representation is still required for cost and other practical reasons. The aggregated knowledge from the public consultation sessions was bridged to a higher tier of dialog by NGOs. Furthermore, our interview results suggested that representation by NGOs plays a vital role in coproduction, and it plays a particularly important role in avoiding extraction and misrepresentation (Latulippe & Klenk, 2020).

Our case also demonstrated that representation is necessary for improving the feasibility of public participation. This is particularly true when considering the spatial scale, time required, and costs of ISPO public consultation. Further, this means increasing the participation NGOs at various levels of governance, from local to the national level. The network used to elicit public participation may also contribute to environmental governance.

Nonetheless, external actors may not be always politically neutral nor powerful enough to represent stakeholders in diverse interests, coproduce knowledge and improve environmental governance. In the case of ISPO, the non-state actors have enough investments in the form of social network and experience working with government in past projects. These factors made them likely to be chosen as partner in increasing public participation. In addition, the involvement of foreign institution (UKCCU) also contributed to governance improvement (Cepiku & Giordano, 2014).

13.5 Conclusion

This chapter explored the ISPO as a form of coproduced knowledge in governing Indonesian palm oil to achieve sustainability. We asked how the representation of citizens affects coproduction and impacts environmental governance. First, we found that government-dominated development and implementation should be shifted to networked public participation to reconcile conflicting objectives of social acceptance. In addition to the existing operationalization problem, the ISPO was a

form of knowledge that endorses the government's predetermined agenda. The government-dominant contribution combined with low operationalization explained the performance problem prior to the ISPO regulation strengthening initiative. There were plans to improve the governance of the ISPO by increasing its degree of authority from ministerial decree to presidential decree. In doing so, government-initiated civil participation is included in the regulation. Public consultation marked a shift from government-dominated development and implementation to a networked, public KCP through strengthening the ISPO initiatives. Second, non-government actors can play key representing roles in making the process more collaborative, and bridging and aggregating knowledge produced by stakeholders with diverse interests. Representation created stages where aggregated knowledge from public consultations needed to be bridged to a higher tier of discussion. We expect that the network used to engage public participation and aggregate knowledge can benefit from environmental governance.

We have yet to discuss whether representation distorts represented knowledge or shifts power constellations. There were also some questions left unanswered. For example, we did not answer why some online public consultations succeeded and others failed. This might have to do with the target audience, time required, or infrastructure availability. In Indonesia, palm oil smallholders and plantations are often located in remote areas with limited internet access. These are vital considerations, especially when dealing with unexpected events, such as the COVID-19 pandemic.

Acknowledgments We thank the editors and peers for providing feedback in improving this article. Special thanks to our interviewees from KEHATI Foundation for providing their expertise in Indonesian oil palm policy through interviews.

Notes

Lists of news articles used from Lexis Nexis news database:

Publisher	Publication date	Title
Antara	October 28, 2010	ISPO diprioritaskan bagi perkebunan sawit besar
Antara	November 9, 2010	Indonesia siapkan ISPO untuk panduan perkebunan sawit
Koran tempo	November 14, 2010	Menteri Pertanian perjuangan agar standar sawit Indonesia diakui dunia
Koran tempo	November 14, 2010	Persyaratan RSPO dinilai tak adil bagi Indonesia
Antara	December 10, 2010	Indonesia akan berlakukan ISPO dalam perdagangan CPO
Antara	January 21, 2011	ISPO siap diberlakukan pada tahun ini
Koran tempo	January 24, 2011	PTPN III siap ISPO tahun ini
Antara	February 4, 2011	Pengusaha harapkan penerapan ISPO sebelum 2014
Antara	February 4, 2011	GAPKI minta biaya ISPO di bawah RSPO

(continued)

Publisher	Publication date	Title
Antara	February 9, 2011	Pemerintah fasilitasi penerapan ISPO
Antara	March 29, 2011	Standar minyak sawit lestari Indonesia dicanangkan Rabu
Antara	March 20, 2014	Lahan sawit tersertifikasi ISPO 378 ribu ha
Antara	December 10, 2014	Kementan dorong industri sawit lakukan sertifikasi
Antara	November 22, 2015	Menuju standar lebih tinggi sawit berkelanjutan
Antara	April 9, 2017	GAPKI: Sertifikasi ISPO bersifat wajib
Tempo	July 16, 2020	Pemerintah percepat sertifikasi ISPO Lahan kelapa sawit
Koran tempo	September 22, 2021	Capaian minim sertifikasi Lahan sawit

References

[Bappenas]. (2010). National Development Planning Agency of Indonesia Badan Perencanaan Pembangunan Nasional. 2010. *Naskah Kebijakan (Policy Paper) Kebijakan dan Strategi dalam Meningkatkan Nilai Tambah dan Daya Saing Kelapa Sawit Indonesia Secara Berkelanjutan dan Berkeadilan* [Policy Paper: Policy and strategy for sustainable and equitable Indonesian palm oil in increasing added value and competitiveness]. Bappenas.

[BPS]. (2009). Statistics Indonesia Badan Pusat Statistik. In *Statistik Perdagangan Luar Negeri Indonesia – Ekspor*. Badan Pusat Statistik.

Astari, A. J., & Lovett, J. C. (2019). Does the rise of transnational governance "hollow-out" the state? Discourse analysis of the mandatory Indonesian sustainable palm oil policy. *World Devevelopment, 117*, 1–12. https://doi.org/10.1016/j.worlddev.2018.12.012

Bakhtiar, I., Suradiredja, D., Santoso, H., Sanjaya, A., & Saif, I. (2018). *Sawit Rakyat: Pemetaan kerangka kebijakan, kondisi nyata, dan aksi lapangan*. [Smallholder palm oil: mapping, policy framework, field verification, and reality]. KEHATI Foundation.

Cepiku, D., & Giordano, F. (2014). Co-production in developing countries: Insights from the community health workers experience. *Public Management Review, 16*(3), 317–340.

Choiruzzad, S. A. B., Tyson, A., & Varkkey, H. (2021). The ambiguities of Indonesian sustainable palm oil certification: Internal incoherence, governance rescaling and state transformation. *Asia Europe Journal*, 1–20.

Clark, W. C., van Kerkhoff, L., Lebel, L., & Gallopin, G. C. (2016). Crafting usable knowledge for sustainable development. *Proceedings of the National Academy of Sciences of the United States of America, 113*(17), 4570–4578.

Eriksson, E. M. (2019). Representative co-production: Broadening the scope of the public service logic. *Public Management Review, 21*(2), 291–314.

Florin, U., & Lindhult, E. (2015). Norms and Ethics: Prerequisites for Excellence in Co-production. *Högskola Och Samhälle I Samverkan HSŚ15, 28* May 2015*, Kalmar, Sweden*. https://www.diva-portal.org/smash/record.jsf?pid=diva2:1010093

Habermas, J. (1990). Discourse ethics: Notes on a program of philosophical justification. In J. Habermas (Ed.), *Moral consciousness and communicative action* (p. 43). MIT Press. https://play.google.com/store/books/details?id=fmYjgiUMy7EC

Hidayat, N. K., Offermans, A., & Glasbergen, P. (2018). Sustainable palm oil as a public responsibility? On the governance capacity of Indonesian Standard for Sustainable Palm Oil (ISPO). *Agriculture and Human Values, 35*(1), 223–242. https://doi.org/10.1007/s10460-017-9816-6

Higgins, V., & Richards, C. (2019). Framing sustainability: Alternative standards schemes for sustainable palm oil and South-South trade. *Journal of Rural Studies, 65*, 126–134. https://doi.org/10.1016/j.jrurstud.2018.11.001

Howlett, M., & Ramesh, M. (2016). Achilles' heels of governance: Critical capacity deficits and their role in governance failures. *Regulation & Governance, 10*(4), 301–313. https://doi.org/10.1111/rego.12091

Indrawan, M., & Sofjan, D. (2021). Co-production of knowledge and transformative learning towards a sustainable Asia. *APN Science Bulletin, 11*(1), 125–133.

Jordan, A., Huitema, D., van Asselt, H., & Forster, J. (Eds.). (2018). *Governing climate change*. Cambridge University Press.

Latulippe, N., & Klenk, N. (2020). Making room and moving over: Knowledge co-production, indigenous knowledge sovereignty and the politics of global environmental change decision-making. *Current Opinion in Environmental Sustainability, 42*, 7–14. https://doi.org/10.1016/j.cosust.2019.10.010

Lestari, R. (2021, October 17). Tahun Ini, 139 Perkebunan Sawit Terima Sertifikat ISPO [This year, 139 palm oil plantations obtained ISPO certificate]. *Bisnis.com*. https://ekonomi.bisnis.com/read/20210922/99/1445447/tahun-ini-139-perkebunan-sawit-terima-sertifikat-ispo

Maclean, K., Woodward, E., Jarvis, D., Turpin, G., Rowland, D., & Rist, P. (2021). Decolonising knowledge co-production: Examining the role of positionality and partnerships to support indigenous-led bush product enterprises in northern Australia. *Sustainability Science, 17*, 333–350. https://doi.org/10.1007/s11625-021-00973-4

McCulloch, T. (2015). Beyond compliance: Participation, co-production and change in justice sanctions. *European Journal of Probation, 7*(1), 40–57. https://doi.org/10.1177/2066220315575669

Miller, C. A., & Wyborn, C. (2020). Co-production in global sustainability: Histories and theories. *Environmental Science & Policy, 113*, 88–95. https://doi.org/10.1016/j.envsci.2018.01.016

Montana, J. (2019). Co-production in action: Perceiving power in the organisational dimensions of a global biodiversity expert process. *Sustainability Science, 14*(6), 1581–1591. https://doi.org/10.1007/s11625-019-00669-w

Nanggara, S. G., Rosalina, L., Kartika, R. Y., & Setyawan, A. A. (2017). *Enam Tahun ISPO: Kajian terkait penguatan instrumen ISPO dalam merespon dampak-dampak negatif seperti deforestasi, kerusakan ekosistem gambut, kebakaran hutan dan lahan, serta konflik tenurial* [Six years of ISPO: a study of strengthening ISPO instruments to respond to negative impacts, deforestation, deteriorating peat ecosystem, land and forest fire, and tenurial conflict] (C. Purba & A. Ruwindrijarto, Eds.). Forest Watch Indonesia.

Norström, A. V., Cvitanovic, C., Löf, M. F., West, S., Wyborn, C., Balvanera, P., Bednarek, A. T., Bennett, E. M., Biggs, R., de Bremond, A., Campbell, B. M., Canadell, J. G., Carpenter, S. R., Folke, C., Fulton, E. A., Gaffney, O., Gelcich, S., Jouffray, J.-B., Leach, M., et al. (2020). Principles for knowledge co-production in sustainability research. *Nature Sustainability, 3*(3), 182–190. https://doi.org/10.1038/s41893-019-0448-2

Nurrochmat, D. R., Boer, R., Ardiansyah, M., Immanuel, G., & Purwawangsa, H. (2020). Policy forum: Reconciling palm oil targets and reduced deforestation: Landswap and agrarian reform in Indonesia. *Forest Policy and Economics, 119*(102291), 102291.

Oliver, K., Kothari, A., & Mays, N. (2019). The dark side of coproduction: Do the costs outweigh the benefits for health research? *Health Research Policy and Systems, 17*(1), 33.

Pacheco, P., Levang, P., Dermawan, A., & Schoneveld, G. (2018a). The palm oil governance complex: Progress, problems and gaps. In *Achieving sustainable cultivation of oil palm volume 1: Introduction, breeding and cultivation techniques*. Burleigh Dodds.

Pacheco, P., Schoneveld, G., Dermawan, A., Komarudin, H., & Djama, M. (2018b). Governing sustainable palm oil supply: Disconnects, complementarities, and antagonisms between state regulations and private standards. *Regulation & Governance, 14*, 568–598. https://doi.org/10.1111/rego.12220

Palm oil exports at risk from overseas buyers boycott. (2009, May 18). *The Jakarta Post*. https://www.thejakartapost.com/news/2009/05/18/palm-oil-exports-risk-overseas-buyers-boycott.html

Pratiwi, I. (2021). The predictors of Indonesia's palm oil export competitiveness: A gravity model approach. *Journal of Intercultural Studies, 14*(3), 250–262.

Putri, E. I. K., Dharmawan, A. H., Hospes, O., Yulian, B. E., Amalia, R., Mardiyaningsih, D. I., Kinseng, R. A., Tonny, F., Pramudya, E. P., Rahmadian, F., & Suradiredja, D. Y. (2022). The oil palm governance: Challenges of sustainability policy in Indonesia. *Sustainability: Science Practice and Policy, 14*(3), 1820. https://doi.org/10.3390/su14031820

Rathwell, K. J., Armitage, D., & Berkes, F. (2015). Bridging knowledge systems to enhance governance of environmental commons: A typology of settings. *International Journal of the Commons, 9*(2), 851. https://doi.org/10.18352/ijc.584

Rifin, A. (2010a). Export competitiveness of Indonesia's palm oil product. *Trends in Agriculture Economics, 3*(1), 1–18. https://doi.org/10.3923/tae.2010.1.18

Rifin, A. (2010b). The effect of export tax on Indonesia's crude palm oil (CPO) export competitiveness. *ASEAN Economic Bulletin, 27*(2), 173–184.

Roseesdiana. (2009). "*Sustainable production in Indonesia*". Presentation at the China International Oil and Oilseeds Summit 2009, 8–10 July 2009

Ruysschaert, D., & Salles, D. (2014). Towards global voluntary standards: Questioning the effectiveness in attaining conservation goals: The case of the Roundtable on Sustainable Palm Oil (RSPO). *Ecological Economics: The Journal of the International Society for Ecological Economics, 107*, 438–446. https://doi.org/10.1016/j.ecolecon.2014.09.016

Schouten, G., & Bitzer, V. (2015). The emergence of Southern standards in agricultural value chains: A new trend in sustainability governance? *Ecological Economics: The Journal of the International Society for Ecological Economics, 120*, 175–184. https://doi.org/10.1016/j.ecolecon.2015.10.017

Sorrentino, M., Sicilia, M., & Howlett, M. (2018). Understanding co-production as a new public governance tool. *Policy and Society, 37*(3), 277–293. https://doi.org/10.1080/14494035.2018.1521676

Teoh, C. H. (2010). *Key sustainability issues in the palm oil sector*. International Finance Corporation.

Wijaya, A., & Glasbergen, P. (2016). Toward a new scenario in agricultural sustainability certification? The response of the Indonesian National Government to Private Certification. *Journal of Environment & Development, 25*(2), 219–246. https://doi.org/10.1177/1070496516640857

Wyborn, C., Datta, A., Montana, J., Ryan, M., Leith, P., Chaffin, B., Miller, C., & van Kerkhoff, L. (2019). Co-producing sustainability: Reordering the governance of science, policy, and practice. *Annual Review of Environment and Resources, 44*(1), 319–346. https://doi.org/10.1146/annurev-environ-101718-033103

Yin, R. K. (2017). *Case study research and applications: Design and methods*. SAGE Publications.

Zurba, M., Maclean, K., Woodward, E., & Islam, D. (2019). Amplifying indigenous community participation in place-based research through boundary work. *Progress in Human Geography, 43*(6), 1020–1043. https://doi.org/10.1177/0309132518807758

Zurba, M., Petriello, M. A., Madge, C., McCarney, P., Bishop, B., McBeth, S., Denniston, M., Bodwitch, H., & Bailey, M. (2021). Learning from knowledge co-production research and practice in the twenty-first century: Global lessons and what they mean for collaborative research in Nunatsiavut. *Sustainability Science, 17*, 449–467. https://doi.org/10.1007/s11625-021-00996-x

Faris Salman is a PhD student at the Graduate School of Global Environmental Studies, Kyoto University, Japan.

Akihisa Mori is an associate professor at the Graduate School of Global Environmental Studies, Kyoto University, Japan, and an ex-vice president of the Asian Association of Environmental and Resource Economics. His current research focus is sustainability transitions and multidimensional impacts of China's Belt and Road Initiative. He is the author of numerous papers in journals and book chapters, and has written or edited fifteen books, including China's Carbon-Energy Policy and Asia's Energy Transitions (Routledge, Abingdon, 2022).