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INTEGRATED POLICIES AND INSTITUTIONAL MODELS FOR REDUCING PRODUCTIVE COWS SLAUGHTERING IN DRYLAND AGRICULTURE OF INDONESIA

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ABSTRACT

Policy implementation (controlling productive cow slaughtering) and institutions are not yet integrated and effective on each line. Objectives: a) Analyze the effectiveness of policy implementation, b) Formulate general strategies in the form of integrated policies, and c) Organize institutional and partnership models to support policy implementation. Method: Survey of related parties in the effort to implement the policy. Data from production (in village, Line I), trade (in transportation, Line II), and slaughtering (in abattoir, Line III). Data were analyzed descriptively and other qualitative approaches. Analysis of the success of the model through analysis of the effectiveness of policy implementation. Results: Pergub and Perbup as derivatives of the UU and Permentan are not optimal because of weaknesses. Important articles and verses concerning fines and confinement sanctions are not included (the red thread of regulations is interrupted). Pergub has inserted verses that weaken prevention efforts. The implementation of the policy is not integrated between stakeholders. As a result, slaughtering remains high and uncontrolled. Conclusions: 1) Implementation of policies is not effective because of legal, socio-cultural, economic, and technical constraints; 2) Integrated policy strategy is a prerequisite for the revitalization of regulations in the context of regional autonomy; and 3) Institutional and partnership models based on specific roles and mutual support do not yet exist. Recommendations: 1) Revised Pergub and issuance of Perbup that are not multiple interpretations; and 2) Designing an integrated model of policies and institutions that are standard with the structure and SOP of each related party.

KEY WORDS

Model, policy, institutional, reduce slaughter, productive cow.

Slaughter of productive cows (PCs) is significantly occurred in all production center areas ranging from 40.0–80.0%. PCs butchering in the City/Regency Kupang abattoir is around 80.0–89.7%, thus threatening business sustainability (Yusuf and Nullik, 2009). Uncontrolled PCs slaughter has the effect of reducing its population (Pally, 2019; Soejosopoetro, 2011; Rianto, 2020). Excessive and uncontrolled PCs abolition will weaken the livestock breed base and undermine the essential strength of the domestic livestock industry, and at the same time will continue to encourage and strengthen the level of import dependence (Paly, 2019; Rezitis and Stavropoulos, 2010). If PCs lives longer and has the opportunity to give more calves (optimization), then in turn it can increase the population (Paly, 2019; Khan, 2017; Larson and Berglund, 2008). In the program for self-sufficiency in beef, efforts towards beef self-sufficiency can be achieve through optimizing PCs, delaying PCs slaughter, and limiting imports (Bunmee, 2018; Aritonang, 2017; Han *et al*, 2016; Olmo *et al*, 2016).

The implementation of the PCs slaughter control policy in the form of Law 18/2009 (UU), Agricultural Ministry Regulation 35/2011 (Permentan), and NTT Governor Regulation 25/2012 (Pergub) turned out to be not integrated and ineffective, so PCs slaughter remained high. Failure to implement the policy results in a decline of PCs population, low pregnancy, low calve production, and a slight population growth (Devendra, 2007; Gosalamang *et al*, 2012). Low production due to inadequate management in the implementation of the natural mate intensification policy and the failure of the artificial insemination policy. So that not all PCs can be pregnant and give more calves (Lole *et al*, 2013; Wirdahayati, 2010; Ibragimov



et al, 2016). Policies that are not integrated can reflect the conditions of stakeholders who have not been integrate (Nxumalo and Oladele, 2013; Zhu and Yang, 2012). Efforts to involve stakeholders require policies that are proportionally relate, so that they can be implement properly and effectively (Isyanto and Iwan, 2016; Poddaturi *et al*, 2020).

The problem is whether the application of policies and institutional participation in efforts to control PCs butchering had been integrated and effective in various aspects and lines; reduce slaughter; increase pregnancy, calves production, population, and cattle supply; and increase farmers' income and welfare? The objectives of the study are: a) Analyzing the effectiveness of the implementation of PCs butchering control policies, b) Formulating a general model of integrated PCs abatement reduction policies, and c) Organizing institutional models and stakeholder partnership networks to support the implementation of PCs abatement reduction policies.

METHODS OF RESEARCH

Survey of parties related to the implementation of policies/regulations, in this case covering all stakeholders. Primary data were obtained through individual in-depth interviews and stakeholder group discussions (interested parties) including breeders, village-level livestock traders, sub-district/district-level livestock traders, inter-island livestock traders, cattle slaughter traders (abattoir), village heads, field extension officer, farmer groups/ farmer groups association, business units/ cooperatives, animal husbandry services (provincial, district, and sub-district), professional organizations, traders' organizations, control posts, animal markets, etc.; guided by the open-ended questions in the questionnaire. Secondary data were obtained from various institutions related to the development and control of PCs livestock.

Thus, data is obtained from various parties related to production activities (parties in the village which are included in the First Line or Line I), trade (parties in transportation and trade activities which are included as the Intermediate Line or Line II), and withholding PCs (parties in the abattoir who are covered as the Last Line or Line III). Tracing stakeholders as livestock trade actors is carried out using the snowballing technique, namely by following the flow of PCs movements from farmers to slaughterhouses (abattoir and non- abattoir). In addition, based on the type, it consists of qualitative data and quantitative data, which in this study are of course very dominated by qualitative data because of the nature of policy research itself. Policy research data collection requires a description or assessment and assessment of a certain aspect of the implemented policy. Data were analyzed by descriptive analysis and other qualitative approaches. To analyze the indicators of the success of the model through an analysis of the effectiveness of community-based policy implementation (Dunn 2012; Suharto 2010; Nugroho 2009).

RESULTS AND DISCUSSIONS

The results of the study provide information about the composition of cattle based on the age period of cattle per sex. The results of the analysis also provide an overview of the implementation of related policies along with their advantages and disadvantages. Furthermore, an integrated strategic policy model is formulated that involves various stakeholders to maximize the level of achievement of efforts to prevent/reduce PCs deductions in the field.

Regarding the trend of slaughtering cows (including PCs), the results of the study in Table 1 show the composition of the cattle population based on livestock groups in the last two years. It turns out that the dominant number of livestock in the field at this time is cows consisting of cows calves, young cows, and adult cows (both PCs, disabled cows, majir cows, and old/rejected cows). The fact that the slaughter of PCs is very dominant in the abattoir and non abattoir, requires close supervision in order to avoid PCs slaughter. A special regulation is needed so that the slaughtered cows are classified as adult cows in the categories of disabled cows, majir cows, and old/rejected cows. The government's role is



very much needed in regulation, in addition to supervision carried out by relevant government agencies, NGOs, universities, and professional organizations.

Table 1 – Estimation of the composition of the cattle population in NTT based on sex and age category (2020)

Cattle composition	Age (year)	Heads	Percentage		Description
			Per total	Per sex	
Calf bulls	0–1	122.048	10,3	32,3	Ready to cut in year t+2
Yearling bulls	>1–2	134.826	11,3	35,69	Ready to cut in year t+2
Adult bulls	>2	120.852	10,2	31,99	Ready to cut in year t
<i>Total bulls</i>	-	<i>377.726</i>	<i>31,8</i>	<i>100,0</i>	Percentage of total cattle
Calf cows	0–1	124.781	10,5	15,4	Become a parent in year t +2 or ready to cut in year t+8
Yearling cows	>1–2	143.781	12,1	17,7	Ready to cut in year t+7
Adult cows (total)	>2	542.694	45,6	66,9	Productive and non productive
Productive cows	>2	386.967	32,5	47,7	Represents 71.3% of the total mature cows
<i>Total cows</i>	-	<i>811.256</i>	<i>68,2</i>	<i>100,0</i>	Percentage of total cattle
Total beef cattle	-	1.188.982	100.0	-	

Sources: Mixed data with Livestock Office and others.

Implementation of Law 18/2009 (juncto Law 41/2014), Permentan 35/2011, and Pergub 25/2012 are ineffective and have legal, socio-cultural, economic, and technical obstacles in the field. The fact that slaughtering of PCs by employers (in abattoir) and the community (in non-abattoir) are against the law. Generally, entrepreneurs have reasons for economic benefits as well as a lack of concern for the sustainability of germplasm, populations, livestock businesses, and livestock farmers' income (Lole, 2009; Bettencourt, 2015; Kemi, 2016). Therefore, prevention is needed as early as possible since productive cows are still in the hands of farmers (Line I), in the hands of traders (Line II), up to the hands of abattoir entrepreneurs (Line III).

Prevention of slaughtering PCs should be done from Line I (in the village), Line II (in traders, transportation, post, and markets), to Line III (in abattoir/non-abattoir). In the First Line (Line I) there are mechanisms/procedures that have not been integrated. Pergub inhibiting factors: a) PCs do not have a livestock card; b) Village head permit without seeing the condition of PCs; c) Not all PCs get a health certificate; d) License for PCs has not been accompanied by specific information; e) Farmers are not yet members of the cooperatives group; and f) The sale of PCs individually results in low prices. Mechanisms and procedures must be improved in an integrated manner. This is in line with research on the important role of institutions in livestock conservation and increasing farmer income (Khan and Iqbal, 2010; Ibrahim *et al*, 2013); Siswoyo *et al*, 2017; Siswijono *et al*, 2014).

In the Intermediate Line (Line II) there are mechanisms/procedures that have not been integrated. Pergub inhibiting factors: a) PCs with a letter can pass in the surveillance post to abattoir. b) the PCs without letters can pass the surveillance post. c) Surveillance posts are only sub-district officials; e) PCs without letters pass to the market and produce a letter, so that conditions and ownership of animals can be manipulated to the slaughterhouse; and f) Village permit does not specify the health condition of PCs. As a result, healthy PCs may be tortured to disability during the journey to the abattoir. This is in line with research on the role of various institutions in the beef production system and supply chain (Han *et al*, 2016; Rianto *et al*, 2020; Tiro and Lalus, 2012; Nendissa *et al*, 2018).

At the Last Line (Line III) there are several mechanisms/procedures that have not been integrated. Pergub inhibiting factors: a) There is no detailed information on the origin and condition of PCs so that the abattoir officers approve the slaughtering of PCs, even though abuse may occur; b) Weak control has the potential to exchange bulls with healthy PCs/pregnant cows by butchers; d) The supervisor has not involved the relevant parties. This is in line with the results of research on the risk of reproductive diseases (Muflihanah *et al*, 2013; Reka *et al*, 2018) and research on the management of livestock slaughter supervision in abattoirs (Rianto, 2020).

Table 2 shows the composition of cattle slaughtered which is dominated by PCs, namely in abattoir 80.0% (78.0–85.0%) and non abattoir 20.0% (15.0–22.0%) and is evidence that the Pergub is not effectively implemented. Many reasons for butchers when



they breaking the rules. It is reflect that the butcher does not feel responsible for the existence (population and condition) of PCs at this time, especially for future sustainability.

Table 2 – Number of cattle slaughter per age category in RPH and non-RPH (May 2020)

Age category	Abattoir ^a		Non Abattoir ^b		Total	
	n	%	n	%	n	%
Yearling bulls	12	0,94	0	0,00	12	0,74
Adult bulls	108	8,44	40	11,40	148	9,08
Defective bulls	22	1,72	8	2,28	30	1,84
Sterile bulls	17	1,33	11	3,13	28	1,72
Old bulls	15	1,17	9	2,56	24	1,47
<i>Bulls</i>	<i>174</i>	<i>13,60</i>	<i>68</i>	<i>19,37</i>	<i>242</i>	<i>14,85</i>
Yearling cows	10	0,78	0	0,00	10	0,61
Productive cows	1.028	80,38	247	70,37	1.275	78,22
Defective cows	28	2,19	20	5,70	48	2,94
Sterile cows	19	1,49	11	3,13	30	1,84
Old cows	20	1,56	5	1,42	25	1,53
<i>Cows</i>	<i>1.105</i>	<i>86,40</i>	<i>283</i>	<i>80,63</i>	<i>1.388</i>	<i>85,15</i>
Total	1.279	100,00	351	100,00	1.630	100,00
	<i>Abattoir</i>	<i>78,47</i>	<i>Non Abattoir</i>	<i>21,53</i>		

Sources: ^aFrom Abattoir Oeba-Kupang City, Soe-TTS, and Atambua-Belu, ^bFrom several samples of traditional ceremonies, funerals, and marriages.

Pergub and Perbup as a derivative of the UU and Permentan have not been implemented optimally due to various weaknesses in the policy document.

Weakness of the Pergub NTT 25/2012:

- The Pergub does not include the fines and criminal sanctions in Chapter VII Article 15 Paragraph 2 (specifically Article 86 Paragraph 2 in UU 18/2009 and Article 91B in UU 41/2014). Even though the paragraphs in Articles 86 and 91B are the power of implementation and law enforcement;
- Pergub no strict sanctions for traders/butchers who bring PCs (pregnant or not pregnant) in abattoir (not yet slaughtered). Whereas PCs should be confiscate without compensation, because it is proven that there is already an intention to break the law;
- Pergub has included Article 2 of Article 11, which is not consistent with law enforcement. Moreover, this paragraph does not exist in the Act, consequently weakening the implementation of the Act. The point of the verse is that for PCs owners in the market without a permit (original village), they can take care of the technical service in the market area. This verse has the potential to pass PCs without letters and legalize the sale of PCs resulting from crime;
- Pergub has not yet included a special chapter on implementing organizations and partnerships starting at the provincial, district/city, sub-district and village levels.

Pergub needs to be revising by adding new verses and canceling verses that are disturbing and have an ineffective effect when implemented. This is in line with studies related to improving policies/regulations in the development process (including livestock) (Dunn, 2012; Devendra, 2017). Some changes in this case:

- Enter the sentence of confinement and fines in Chapter VII Article 15 Paragraph 2 of the Pergub and become a guideline in law enforcement. The related party only needs to hold one regulatory document (Pergub/Perbup) with detailed sanctions. Sometimes the parties only see the verses in Perbup, because they do not feel it is important to refer the verses to higher regulations (Pergub, Permentan, and UU). The important thing is that the description of administrative and criminal sanctions in the Pergub does not go beyond the sanction limit in the Act;
- Include the verse that every PCs found de facto in the abattoir (not yet slaughtered) must be confiscate in full without compensation. Sanctions are carry out because it has been proven the intention of slaughtering PCs (violating);
- Including criminal sanctions for slaughtering PCs (pregnant or not pregnant) can be



increase by confiscation of carcasses/meat without compensation and weighting with fines. Sanctions are increase based on the number of PCs that have been slaughtered (or will be slaughter) and there is strong evidence that the crime has been repeated;

- Revoke Paragraph 2 of Article 11 concerning making letters for PCs without documents that are already in the animal market. This is to close opportunities for manipulation of PCs health and/or to avoid buying PCs from the proceeds of crime (theft of public/private cows or embezzlement of cows from government/NGO programs);
- Include special chapters on implementing organizations and partnerships starting at the provincial, district/city, sub-district and village levels. This is important because efforts to monitor the slaughter PCs require serious attention and involve many parties in an integrated manner. Implementing and partnership organizations are formed as new units/sub-units or in the form of additional roles of existing organizational functions.

For the effective implementation of policies/regulations, in addition to the revised Pergub/Perbup, comprehensive and integral work mechanisms need to be develop in the form of an integrated policy system or model. The integration is to synchronize the role/function and effectiveness of the implementation of policies and related institutions in the effort to prevent slaughter of PCs. This is in line with research on the importance of developing a dynamic model of the meat availability system which requires an integrated and dynamic inter-institutional collaboration (Siswijono, 2014; Lole, 2020). In addition, other studies expect there is an economic impact of livestock production on society at large (Kemi, 2016).

The integrated policy and institutional model is base on the results of the study. There are many stakeholder relevant information/data sources for analysis. The model includes several stakeholder groups with different roles and responsibilities but need each other structurally and functionally. The above is in accordance with the study of the effects of motivations of farmers who have formed groups to participate in small-scale cattle production (Zhu and Yang, 2012; Guntor and Priyadi, 2012). In this context, stakeholder groups are the Policy Stakeholder Group, the First Line Group, the Intermediate Group, the Last Line Group, and the Stakeholder Group (Figure 1).

Revision of the Governor's Regulation can be implemented easily and effectively. Through organizational structures and partnerships with specific positions and roles, the control process can be carried out in a compact and firm manner based on the authority and function. Thus, a formal structure supported by strategic partners will strengthen efforts to control and supervise PCs mutations and deductions.

Clear and detailed sanctions greatly facilitate prosecution for violations. It requires a combination of administrative sanctions (written warnings, operational termination, and revocation of permits), the imposition of fines (according to the level and frequency of violations), and imprisonment (according to the level and frequency of violations).

Line Group of Policy Maker Stakeholder (Line of Policy Maker): includes central/regional government institutions (Ministry of Agriculture, Directorate General of Livestock, Police, Legislator, Governor, Regent, Animal Officer, Village Head, etc.) and non-government organizations (Aspidi, Aspindo, Pepehani, ISPI, PPSKI, PDHI, HILPI, Persepsi, Perhepi, etc.). The institution plays a role in formulating policies/strategies/ programs and related laws/regulations for the development of livestock and preventing PCs slaughter.

Regional level policies/programs that need to be strengthened and revitalized or that need to be formed as a whole (Morales, 2011; Siswijono *et al*, 2014; Siswoyo *et al*, 2017; Lole *et al*, 2013), include: livestock card policies, more operational productive slaughter control policies, reproductive disease control policies, SIWAB development policies, policy of synchronization, development policies livestock cooperatives, etc. Legal products produced by policy makers: UU, Permentan, Director General Decree, Pergub, Perbup, Kadisnak Decree, Perdes, etc.).

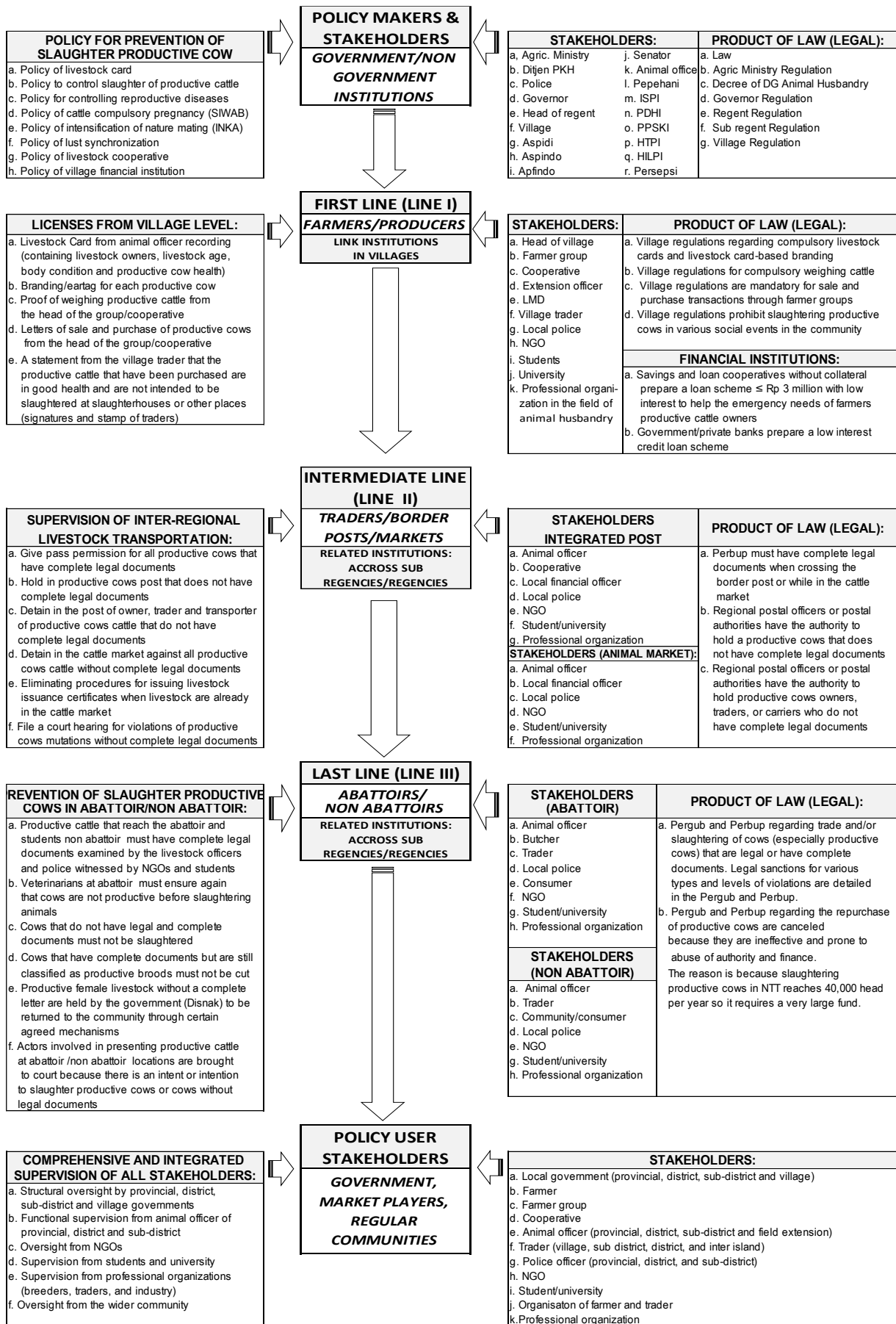


Figure 1. Model of integrated policies and institutions for control of slaughtering of productive cows in NTT.



First Line Group (Line I): includes farmers and institutions in the village, includes: village heads, groups, cooperative, extension officer, LMD, traders, sector police, NGOs, students/university, professional organizations, etc. Institutions in this group interact directly with farmers. These parties certainly influence the creation, implementation, supervision and law enforcement in the village (Nxumalo and Oladel, 2013; Olmo *et al*, 2016; Siswijono, 2013). Related legal products in this case are: Perdes mandatory livestock cards and cattle-based branding, Perdes mandatory weighing livestock, Perdes mandatory transactions through farmer groups/cooperative, Perdes prohibition/restrictions on slaughtering productive cattle in social events, etc.

The activities for implementing Perdes: use of livestock cards from extension officer (containing owner information and ownership mutations, age, pedigree records, exterior characteristics, body and health conditions, disease and drug/vaccination records); branding/eartag, weighing and buying and selling letters from the cooperative group, the village head's permission, and the merchant's statement that the productive cattle are healthy and not for slaughter.

Efforts to control the sale of productive cattle can be do in terms of providing cash for farmers (Siswijono *et al*, 2014; Ibragimov, 2016; Ajetomobi, 2010). Cooperative savings and loans without collateral can provide a loan scheme skema ≤Rp3 million with low interest to help address the emergency needs of cash from productive cow owners. Government/private banks can prepare credit schemes with low interest rates and long repayment periods.

Intermediate Line Group (Line II): includes traders, transporters, control posts, and markets. Officers in the post and market come from: animal officer, monetary officer, cooperative, sector police, NGOs, students/university, professional organizations, etc. The legal products in this Intermediate Line: a) Marketing of PCs must have documents when crossing the post or market, b) The postal officer has the authority to hold PCs without complete documents, c) The postal officer has the authority to arrest the owner/trader/transporter of the PCs without complete documents, and d) Animal husbandry officers are authorized to submit cases of violations/crimes of PCs mutations without documents.

The supervision of transportation of animal is needed (Morales, 2011; Yusuf and Nulik, 2009). Several supervision at border posts are in the form of: a) grants permission for each PCs with supporting documents, b) holds in the post against PCs without documents, c) holds in the post against the owner/trader/carrier of PCs without documents, d) holds on the market for all PCs without complete documents, e) omitting the procedure for granting permits for PCs without documents even though they are already on the market, and f) submitting a court hearing for violations of PCs mutations without complete documents.

Last Line Group (Line III): includes abattoir and non-abattoir stakeholders: animal husbandry officer, butchers, traders, police sector, consumers, NGOs, students/university, and professional organizations. Legal product: Pergub/Perbub concerning prevention of PCs slaughtering, where legal sanctions for the type and level of violation are describe in detail and decisively (Rezitis and Stavropoulos, 2010; Morales, 2011).

Efforts should be made to prevent slaughtering of PCs in both abattoir and non-abattoir by the government and other related parties (Palii *et al*, 2020; Soejosopoetro, 2011; Rianto *et al*, 2020. In this case, in order to prevent slaughtering of PCs in abattoir and non- abattoir, it is necessary to do: a) PCs in abattoir and non- abattoir must have legal documents examined by Livestock and Polsek witnessed by NGOs and students; b) Doctors/paramedics in abattoir must ensure that cows are no longer productive; c) the PCs that do not have legal documents must not be slaughtered; d) the PCs that have documents must not be slaughtered; e) the PCs without a government retained letter (animal officer) to be returned to the community through a mechanism; and f) The perpetrators who present PCs at abattoir/non-abattoir locations are brought to court because there is an intention or intention to slaughter PCs or cows without legal documents.

Line Group of Policy User Stakeholder (Line of Policy Users): includes government, market participants, and the wider community. This interest group is very much needed its active role in efforts to prevent the slaughter of PCs widely (Rezitis and Stavropoulos, 2010;



Morales, 2011). In this case, the stakeholders can be specified as follows: Local government (provincial, district, sub-district and village), breeders, groups, cooperative, Animal officer (provincial, district, sub-district, and extension officer), traders (village, sub-district, district and inter-island), The National Police (Polda, Polres and Polsek), concerned NGOs (international, national and local), students/ university, livestock breeding and trade organizations, and professional organizations in the field of animal husbandry.

The comprehensive and integrated supervision of all stakeholders are needed: a) structural supervision by provincial, district, sub-district and village governments; b) functional oversight from provincial, district and district of the animal officer; c) supervision from NGOs, d) supervision from students and universities, e) supervision from professional organizations (breeders, traders, and industry), and f) supervision from the wider community (individuals and groups).

CONCLUSION

Conclusions: 1) Implementation of policies is not effective because of legal, socio-cultural, economic, and technical constraints; 2) Integrated policy strategy is a prerequisite for the revitalization of regulations in the context of regional autonomy; and 3) Institutional and partnership models based on specific roles and mutual support do not yet exist.

Recommendations: 1) Revised Pergub and issuance of Perbup that are not multiple interpretations; and 2) Designing an integrated model of policies and institutions that are standard with the management structure and standard operational procedure (SOP) of each related party.

CONFLICT OF INTERESTS

We certify that there is no conflict of interest with any financial, personal, or other relationships with other people or organizations related to the material discussed in the manuscript.

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