

Evaluation of Climate Policy Integration into Development: A Case Study in North Sumatra, Indonesia

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Abstract: This paper evaluates the extent of climate policy integration into development, using the regional development plan of North Sumatra in Indonesia as a case study. Five criteria, (1) inclusion, (2) consistency, (3) weighting, (4) reporting, and (5) resources are used to query the extent of integration. While previous studies applied expert judgment to the above criteria, the present study aims at ‘capturing various perspectives of multiple stakeholders and actors holding different views,’ as emphasized in the latest report of the IPCC, by using questionnaires in a multiple-choice format, where they are asked to score the extent of integration against the five criteria on a scale from 0 to 3 or 4 according to the requirements associated with each possible score. The statistical analyses of the results of the questionnaires indicate that the integration of climate policy into development is viewed as more limited at the regency than at the provincial level. While the above questionnaires are used to assess vertical integration, so-called ‘budget tagging’ is also conducted to assess horizontal integration by examining how climate policy integration has affected budget allocation for conventional development programs, and it does not indicate any significant impact on development budgets. The performance indicators for climate policies are examined as well. This has revealed the necessity of re-assessment of the indicators, taking account of the projected climate change and its impacts. Thus, the present study finds that, despite the effort being taken by the provincial government, there is still room for further improvement for climate policy integration in both vertical and horizontal directions. The current study also finds budget tagging as useful for assessment where climate policy is not intended to be independent of, but integrated into development.

Keywords: Climate policy integration, budget tagging

1. INTRODUCTION

The importance of integration of climate change policy considerations into development has long been recognized and discussed. The latest report of the Intergovernmental Panel on Climate Change (IPCC) also states that ‘effective implementation depends on policies and cooperation at all scales, and can be enhanced through integrated responses that link adaptation and mitigation with other

societal objectives’ (IPCC, 2014, p. 26). This paper will evaluate the extent of climate policy integration into development, using the Regional Medium-term Development Plan (*Rencana Pembangunan Jangka Menengah Daerah*: RPJMD) of the province of North Sumatra in Indonesia, as a case. North Sumatra was chosen because it is one of the provinces committed to integrating climate policy into development. Five criteria as developed by Kivimaa and Mickwitz (2006): (1) inclusion, (2)

consistency, (3) weighting, (4) reporting, and (5) resources, are used to query the extent of climate policy integration. While previous studies (Brouwer et al, 2013; Roy and Chan, 2014) have applied expert judgment to the above criteria to assess climate policy integration, the present study will use questionnaires for ‘capturing various perspectives of multiple stakeholders and actors holding different views,’ as emphasized in the latest report of the IPCC (Mimura et al, 2014, p. 889). This study will also conduct so-called ‘budget tagging’ to assess how climate policy integration has affected budgets for conventional development programs. This paper will start with background information on (1) evaluation criteria of climate policy integration, (2) the province of North Sumatra, (3) the RPJMD of the province and climate change considerations. It will then describe the method and present the results, which will be followed by a discussion and conclusion.

2. BACKGROUND

2.1 Evaluation criteria of climate policy integration

Climate policy integration is defined by Mickwitz et al. (2009, p. 19) as (1) ‘the incorporation of the aims of climate change mitigation and adaptation into all stages of policy-making in other policy sectors’; and (2) ‘complemented by an attempt to aggregate expected consequences for climate change mitigation and adaptation into an overall evaluation of policy, and a commitment to minimize contradictions between climate policies and other policies.’ According to Mickwitz et al. (2009), it is classified into horizontal and vertical policy integrations. While horizontal integration refers to cross-sectoral measures, vertical integration is the integration of climate policies throughout different government levels, such as national, regional, and local. The current study applies five criteria of Kivimaa and Mickwitz (2006), (1) inclusion, (2) consistency, (3) weighting, (4) reporting, and (5) resources, as presented in Table 1 and described by Mickwitz et al. (2009, p. 22-23) respectively as follows: The first criterion is ‘the inclusion of

Table 1 Criteria to assess climate policy integration (from Mickwitz et al, 2009)

Criteria	Key questions
Inclusion	To what extent have direct as well as indirect climate change mitigation and adaptation been covered?
Consistency	Have the contradictions between the aims related to climate change mitigation and adaptation and other policy goals been assessed, and have there been efforts to minimize revealed contradictions?
Weighting	Have the relative priorities of climate change mitigation and adaptation compared to other policy aims been decided, and are there procedures for determining the relative priorities?
Reporting	Are there clearly stated evaluation and reporting requirements for climate change mitigation and adaptation ex ante, and have such evaluation and reporting happened ex post? Have indicators been defined, followed up, and used?
Resources	Is internal as well as external know-how about climate change mitigation and adaptation available and used, and are resources provided?

climate change aims.’ A certain degree of inclusion is a prerequisite for the other criteria to be considered.

The second is 'the consistency of the integrated climate change aspect in relation to others.' When integrating a policy, it is essential for different policy aims and instruments to be consistent with each other. The third is 'weighting of the integrated climate change aspect with respect to other aspects.' When there are conflicts between different policy aims, some conflicts may be resolved by creating win-win options, while in other cases political choices must be made. In these cases, the weight given to climate aims is essential to promote climate policy integration. The fourth criterion, 'reporting,' is based on the recognized importance of evaluation and feedback for policy implementation. Finally, the fifth criterion is 'resources for integrating climate change aspects,' as policy integration requires knowledge and resources in the form of personnel, money, and/or time.

2.2 Province of North Sumatra

North Sumatra, with more than 13 million inhabitants, is the fourth most populous province in Indonesia and the largest outside the island of Java. Its population is geographically concentrated in the eastern coastal area. With a land area of over 70,000 km² and a coastline of 1,300 km, it faces the Indian Ocean on the west and the Malacca Straits on the east. It has more than 400 islands, roughly half of which are named. Lake Toba, the largest freshwater lake in Indonesia, lies in the middle of the province. Its topography is varied: lowlands in the east, highlands in the center, and undulating plains in the west. The altitude varies from 0 to 2,200 m above sea level (BPS North Sumatra 2010). As Aldrian and Susanto (2003) indicate, in terms of intra-annual rainfall pattern, North Sumatra follows the equatorial pattern marked by two peaks in a year: one from October to November, and the other from March to May. With regards to inter-annual climate variations, the geographical location of North Sumatra makes it

prone to the impacts of the Indian Ocean Dipole (IOD), whilst being mostly unaffected by the El Niño-Southern Oscillation (ENSO). In a study based on the 20 km mesh climate model of the Meteorological Research Institute of Japan, Kitoh et al. (2010) found that the total annual rainfall is projected to increase in the coastal area and decrease in the highlands in the northern part of Sumatra. According to this study, the frequency and intensity of climate anomalies are also projected to increase in northern Sumatra.

2.3 RPJMD of North Sumatra and climate change considerations

The Indonesian government consists of national, provincial and regency/city levels. The respective governments formulate their development plans according to Law No. 25/2004 on national development planning. As illustrated in Figure 1, the national development plans are comprised of (1) National Long-term Development Plan (*Rencana Pembangunan Jangka Panjang Nasional: RPJPN*), (2) National Medium-term Development Plan (*Rencana Pembangunan Jangka Menengah Nasional: RPJMN*), (3) National Government Work Plan (*Rencana Kerja Pemerintah Nagari: RKP*), (4) Ministerial Strategic Plan (*Rencana Strategis Kementerian/Lembaga: Renstra*), and (5) Ministerial Work Plan (*Rencana Kerja Kementerian/Lembaga: Renja*). The RPJPN outlines the vision, mission, and direction of development policies for a 20-year period. The RPJMN reflects the priority policy objectives that the President wishes to achieve under her or his five-year term. The RKP is the annual implementation plan. The sectoral plans for five and one year periods, Renstra and Renja, are formulated according to RPJMN and RKP respectively. The national budgeting processes are linked with the development system. The formulation of the development plans is under the authority of the

National Development Planning Agency (*Badan Perencanaan Pembangunan Nasional: BAPPENAS*).

Similarly, the regional development plans include (1) Regional Long-term Development Plan (*Rencana Pembangunan Jangka Panjang Daerah: RPJPD*), (2) RPJMD, and (3) Regional Government Work Plan (*Rencana Kerja Pemerintah Daerah: RKPD*), which cover twenty, five and one year periods respectively. They are formulated under the authority of the Regional Development Planning Agency (*Badan Perencanaan Pembangunan Daerah: BAPPEDA*). The current RPJMD of North Sumatra covers the period from 2013 to 2018, which is identical to the term of the current provincial governor. The RPJMD determines the direction of regional development policies and strategies for five years. It is linked with the local budgeting process, and establishes performance indicators for monitoring and evaluation of the progress of

programs and activities. It also serves as a basis reference for development planning at regency/city level. The RPJMD was formulated based on the vision, mission and policy directions contained in the provincial RPJPD 2005-2025, as well as with reference to the RPJMN and other relevant national policies. It was devised with inputs by experts in relevant fields, which were compiled in a so-called background study for development planning. A participatory approach was also taken by involving stakeholders in development planning meetings (*Musrenbang*).

The current RPJMD contains two major climate change considerations that need to be taken in a cross-sectoral manner. One is the Regional Action Plan for Greenhouse Gas Emission Reduction (*Rencana Aksi Daerah Penurunan Emisi Gas Rumah Kaca: RAD-GRK*), and the other is Governor Decree No. 188.54/05/INST/2012 on adaptation of rice production to climate extremes. These two have

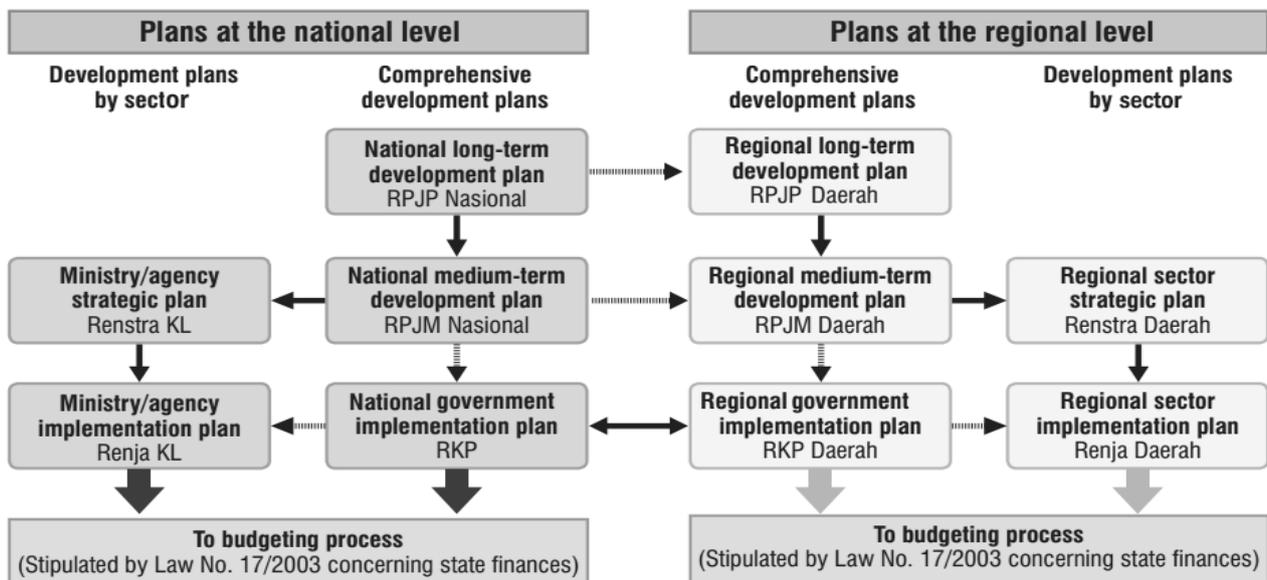


Figure 1 National and regional/local development planning system in Indonesia (BAPPENAS, 2012, p. 49)

been developed in response to instructions provided by the relevant national policies: the National Action Plan for Greenhouse Gas Emission Reduction

(*Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca: RAN-GRK*), and Presidential Instruction No. 5/2011 on adaptation of rice

production to climate extremes, respectively.

The RAD-GRK aims to contribute to the achievement of the national voluntary commitment to reduce greenhouse gas (GHG) emissions by 26% from a business-as-usual scenario (BAU) by 2020. It contains mitigation measures in six sectors: agriculture, forestry, industry, energy, transport, and waste. As indicated in Table 2, the RAD-GRK is not an independent program on its own under the RPJMD. In many cases, mitigation actions under the RAD-GRK originate from other conventional programs. Some actions for the forestry sector, for example, had been identified by other development programs, such as forest protection and conservation, as well as forest and land rehabilitation, both of which are under the responsibility of the provincial agency of forestry. They are then reformulated as mitigation actions under the RAD-GRK. Likewise, some actions for the energy sector derive from another development program, namely the electricity and renewable energy development program, under the responsibility of the provincial agency of energy and mineral resources. The performance indicators have been reframed under the RAD-GRK, and stated in terms of tons of CO₂ equivalent to be reduced from the BAU. While this is considered as a win-win situation between climate and development policies, the adequacy of the BAU may need to be re-examined given the above relationship, and this is beyond the scope of the present study.

The Governor Decree on adaptation of rice production to climate extremes is not an independent program on its own, either. It contains four policy directions: (1) achieving self-sufficiency for rice, corn, and soybean through increased production, (2) increasing food availability and

access, (3) stabilizing food prices through improved distribution, and (4) enhancing food diversity. These are all linked with other conventional food and agricultural development programs, such as those on (1) increasing food crop production, and (2) enhancing food security. The Governor Decree applies the criteria and indicators that have been used in these programs. As shown in Table 2, for example, increasing paddy production from 5.02 ton/ha in 2013 to 5.28 ton/ha in 2018 under the Governor Decree is exactly the same as has been used in the program of increasing food crop production under the responsibility of the provincial agency of agriculture. The availability of energy and protein per capita is another example. The same indicators as used in the program on enhancing food security, under the responsibility of the agency of food security, have been applied to the Governor Decree.

3. METHOD

The present study builds upon Kivimaa and Mickwitz (2006), Mickwitz and Kivimaa (2007), and Mickwitz et al. (2009), which presented objective criteria to help replication. The indicators were developed for each criterion, partly supported by Brouwer et al. (2013). The current study extended the earlier methodology with the use of stakeholder questionnaires to ask them to evaluate the RPJMD against five criteria as defined in Table 1, and score on a scale from 0 to 3 or 4, according to the general conditions that merit the assignment of different scores as described in the Appendix. After the RPJMD was officially launched, a follow-up meeting was organized by the Governor's Office of the provincial government of North Sumatra in October 2014 in Medan, the provincial capital of North Sumatra. The invitations were extended to the relevant agencies at both provincial

and regency levels. The meeting was attended by about a hundred officials. Some of them were heavily involved in the consultation process towards the completion of the document of RPJMD, while others were only recently appointed. Irrespective of the level of prior knowledge or experience, these participants are considered to be the immediate stakeholders for implementation of the RPJMD. The aim of the questionnaire was to comprehend the views of the immediate stakeholders on the extent of integration of climate policy into the RPJMD. The participants at the above meeting were therefore sampled in a purposive manner (Miles and Huberman, 1994, p 27; McGuirk and O'Neill, 2010, p 205). With prior consent by the Governor's Office and the BAPPEDA of the provincial government, questionnaires were distributed to the participants at the beginning of the session, and collected at the end. In total, 79 responses were compiled, with 9 from the national, 32 from provincial, 26 from regency governments, and 12 from NGOs. The questionnaire was prepared in a multiple-choice format, as shown in the Appendix, and was translated into Indonesian. Respondents were asked to indicate the organizations they belong to. Then, they gave scores according to the extent of climate policy integration into the RPJMD with reference to the evaluation criteria, on a scale from 0 ('I don't know') to 3 or 4 according to the requirements associated with each possible score. The answers to the above questionnaire were analyzed by independent-sample *t*-test, which was performed at an alpha value of 0.05 between two data sets: one is the scores by participants from the provincial government ($n_1 = 32$) and the other from regency governments ($n_2 = 26$) to comprehend the significance of difference in views between the different government levels. The *t*-test was also performed between the participants from the

provincial government ($n_1 = 32$) and NGOs ($n_3 = 12$).

While the above questionnaires were used to assess vertical integration, 'budget tagging' was conducted to assess horizontal integration by examining how climate policy integration affected budget allocation for conventional development programs at the provincial level. Under the current study, budget tagging was focused on the integration of the Governor Decree on adaptation of rice production to climate extremes, and consisted of the following steps: (1) to identify all the conventional programs relevant to the Governor Decree, (2) to find their respective program/budget codes, as determined by the government, (3) to track a change in budget allocation for the programs by code from 2012, when the Governor Decree was issued, to 2014. These steps need to be taken because the Governor Decree is not an independent program on its own, as indicated in section 2.3, and therefore does not have its own program/budget code. The Governor Decree is intended to be integrated into the relevant conventional development programs, which have their respective codes and responsible sector agencies. The impact of the Governor Decree on the provincial government budget can be examined by looking at a change in budget allocation for these relevant sector programs. Budget tagging was conducted under the current study by desktop review of the provincial development plans (BAPPEDA North Sumatra, 2012; 2013b; 2014), as described in section 2.3, which also include budget information for the relevant sectors.

4. RESULTS

Figure 2 illustrates the frequency of scores indicated by the respondents to questionnaires in

the five criteria. The answers to questions 2 to 4 are more evenly distributed than those to questions 1 and 5, indicating that no dominant view exists to date among stakeholders for the criteria ‘consistency,’ ‘weighting,’ and ‘reporting.’ Independent-sample F-test and *t*-test at an alpha value of 0.05 between the scores by participants from the provincial and regency governments find that the mean scores among participants from regency governments are significantly lower than those from the provincial government for ‘consistency’ and ‘reporting.’ It is also found that their variances in scores for ‘reporting’ are

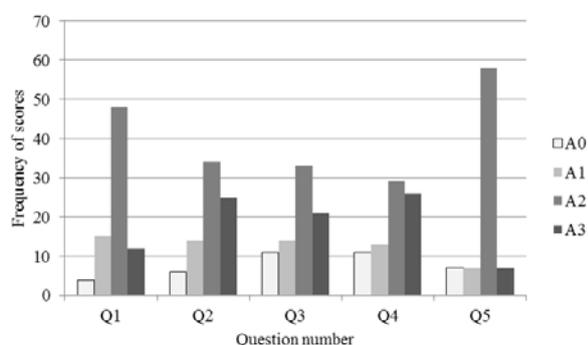


Figure 2 Frequency of scores (A0 to A3 indicate the frequency of scores of 0 to 3 respectively to questions 1 to 5: Q1 to Q5. While Q2 has five choices from 0 to 4, no respondent chose A4)

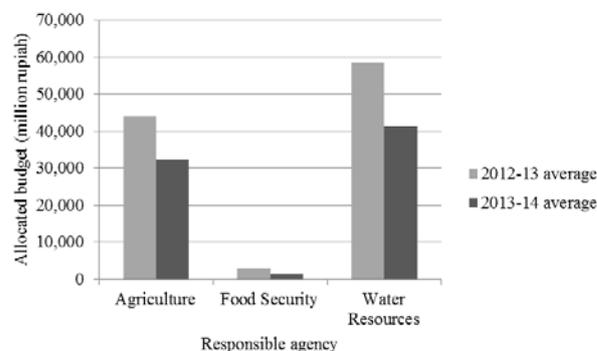


Figure 3 Budget allocation for the development programs associated with the Governor Decree on adaptation of rice production to climate extremes

Table 3 Development programs associated with the Governor Decree on adaptation of rice production to climate extremes, their respective code numbers, and relevant years

Responsible agency	Program title	Code number	Year		
			2012	2013	2014
Agriculture	Improving farmer welfare	2.01.2.01.01.15	x	x	x
	Improving food security	2.01.2.01.01.16	x	x	
	Developing agribusiness (*)	2.01.2.01.01.24	x	x	x
	Increasing food crop production	2.01.2.01.01.28			x
Food Security	Enhancing food security	1.21.1.21.01.16	x	x	x
Water Resources	Developing Irrigation networks (**)	1.03.1.03.2.24	x	x	x
	Developing water resources	1.03.1.03.2.25	x	x	x

(Notes) * The code number was changed to 2.01.2.01.01.25 in 2014.

** The program title was slightly revised in 2013 without change in the code number.

significantly larger. Another *t*-test between the participants from the provincial government and NGOs finds that the participants from NGOs gave a significantly lower score for ‘reporting’ than those

from the provincial government.

Budget tagging identifies the sector programs relevant to the Governor Decree and their

respective codes, as shown in Table 3. It then tracks a change of budget allocation for these programs by code with the result as depicted in Figure 3, where the budgets for the relevant programs are summed by responsible agencies, and the amounts for two consecutive years are averaged to smooth out any potential irregularities in each year.

5. DISCUSSION

The questionnaire results presented above indicate that divergent views exist among stakeholders, in particular between those who come from the provincial and regency governments in relation to the criteria 'consistency' and 'reporting.' Those from regencies gave significantly lower scores than those from the provincial government on these two criteria. It is also found that views are significantly more divergent between different regencies. These findings suggest that the integration of climate policy into development is viewed as more limited at the regency than the provincial level. This may originate from the information or knowledge gap between the provincial and regency levels. The provincial RPJMD may not have been sufficiently disseminated to the regencies, even if they are the immediate stakeholders for its implementation. The results of budget tagging, on the other hand, do not indicate any significant impact of the Governor Decree on the budget allocation for the relevant conventional development programs. Thus, the present study finds that, despite the effort being taken by the provincial government, there is still room for further improvement for climate policy integration in both vertical and horizontal directions.

The performance indicators, as described in section 2.3, also exemplify a lack of deliberation. In the case of the Governor Decree on adaptation of rice production to climate extremes, for example, it

is indicated that conventional agricultural policies and measures, such as the programs for increasing food crop production as well as increasing food security, have been reframed as climate change adaptation. The performance indicators under the Governor Decree have been adopted without adjustment from these sector programs. With the projected climate change and its impacts (Kitoh et al, 2010), however, a baseline development scenario without any adaptation actions is likely to be different from the one that was elaborated under the conventional programs. This will result in over-inflated or deflated performance indicators under the Governor Decree. The re-assessment of performance indicators, taking account of the projected climate change and its impacts, would therefore become necessary.

6. CONCLUSION

This paper evaluated the extent of climate policy integration into development, using the RPJMD of North Sumatra in Indonesia as a case study. Five criteria, (1) inclusion, (2) consistency, (3) weighting, (4) reporting, and (5) resources were used to query the extent of climate policy integration. While the previous studies applied expert judgment to the above criteria, the present paper attempted to capture multiple views of stakeholders by using questionnaires in a multiple-choice format, where the respondents were asked to score the extent of integration against the five criteria on a scale from 0 to 3 or 4, according to the requirements associated with each possible score. The statistical analyses of the questionnaire results indicate that significantly divergent views exist among stakeholders, in relation to the criteria 'consistency' and 'reporting.' While the above questionnaires were used to assess vertical integration, budget tagging was also conducted to assess horizontal integration by examining how

climate policy integration affected budget allocation for conventional development programs. The results did not indicate any significant impact on the budget allocation for the relevant programs. The performance indicators for the climate policies were also examined, which revealed that performance indicators needed to be reassessed to take into account the projected climate change and its impacts. Thus, the present study finds that, despite the effort being taken by the provincial government, there is still room for further improvement for climate policy integration in both vertical and horizontal directions.

The five evaluation criteria used under the current study were based on prior research, not selected by the stakeholders themselves. The stakeholders might have selected different criteria which they considered more important. Further research will be necessary to consider the types of evaluation criteria that are meaningful, fair, or acceptable for stakeholders themselves as regards climate policy integration. The current study also finds budget tagging as useful for assessment where climate policy is not intended to be independent of, but integrated into development. The detailed procedure, however, needs to be tailored to specific contexts.

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APPENDIX

The questionnaire format used in the present study (based on Kivimaa and Mickwitz, 2006; Mickwitz and Kivimaa, 2007; Mickwitz et al, 2009, in reference to Brouwer et al, 2013)

Q. 0 (Please circle the number that states your affiliate most appropriately)

0. National government
1. Provincial government
2. Government at regency, city, or sub-regency level
3. Non-government (NGOs, private sector, or other)

Q. 1 (Please circle the number that states your view most appropriately)

To what extent have climate policy objectives and/or impacts been considered in the RPJMD 2013-2018?

0. I don't know.
1. Climate change objectives and/or impacts are not considered.
2. Climate change objectives and/or impacts are partially considered.
3. Climate change objectives and/or impacts are extensively considered.

Q. 2 (Please circle the number that states your view most appropriately)

Have the contradictions between climate policy objectives and sectoral goals been identified in the

RPJMD 2013-2018? Have there been efforts to minimize these contradictions? (For example, a potential trade-off between increase in paddy fields to ensure food security under the changing climate on one hand, and expansion of oil palm plantation, or forest conservation on the other)

0. I don't know.

1. Contradictions are not considered.

2. Contradictions are considered, but efforts to minimize them are not made.

3. Contradictions are considered, and some efforts to minimize them are made.

4. Contradictions are considered, and extensive efforts to minimize them are made.

Q. 3 (Please circle the number that states your view most appropriately)

Have the relative priorities of climate change policy objectives over other policy aims been decided in the RPJMD 2013-2018? In other words, in the case of overlap, which will be prioritized, climate change policy objectives or other policy aims?

0. I don't know.

1. The relative priorities between climate policy aims and other policy aims are not decided.

2. Climate policy aims and other policy aims are explicitly or implicitly prioritized against each other, and non-climate considerations are usually more important.

3. Climate policy aims and other policy aims are explicitly or implicitly prioritized against each other, and climate change considerations are usually more important.

Q. 4 (Please circle the number that states your view most appropriately)

Are there clearly stated evaluation and reporting requirements for climate change policy in the RPJMD 2013-2018? Have indicators been defined?

0. I don't know.

1. Monitoring and reporting requirements are not stated.

2. Monitoring and reporting requirements are stated, but indicators are not identified.

3. Monitoring and reporting requirements are stated, and indicators are also identified.

Q. 5 (Please circle the number that states your view most appropriately)

Is know-how about climate change policy available for the development and implementation of the RPJMD 2013-2018? Have resources (personnel, money, and/or time) been provided?

0. I don't know.

1. Know-how is not available.

2. Know-how is available, but resources are limited.

3. Know-how is available, and resources are provided.

Table 2 Performance indicators and targets of the RAD-GRK and the Governor Decree on adaptation of rice production to climate extremes under the RPJMD 2013-2018 of North Sumatra (BAPPEDA North Sumatra, 2013a)

Performance indicator	Status (2013)	Target (2018)	Related development program	Responsible provincial agency
RAD-GRK				
GHG emission reductions from BAU (million tons of CO ₂ equivalent)				
Agriculture	1.8	4.2	Program for agricultural technology development, etc.	Agriculture
Forestry and peatland	1.9	23.0	Program for forest protection and conservation; Program for forest and land rehabilitation	Forestry
Industry	0	3.3	Program for industrial structural management; Program for development of small and medium-sized enterprises	Trade and Industry
Energy	0	4.3	Program for electricity and renewable energy development	Energy and Mineral Resources
Transport	0	4.5	Program for transport development; Program for transport facilities and infrastructure; etc.	Transport
Waste	0	2	Program for environmental sanitation; Program for pollution control and nature conservation	Environment
Total	3.7	41.3		
Governor Decree on adaptation of rice production to climate extremes				
Paddy productivity (ton/ha)	5.02	5.28	Program for increasing food crop production	Agriculture
Food energy (kcal/day/capita) and protein (g/day/capita)	3,868 76	4,068 96	Program for enhancing food security	Food Security