



Forum Komunikasi DAS Cidanau (FKDC) conducting verification process with farmers. Photo: Rekonvasi Bhumi

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CHAPTER 35

Role of intermediaries in the Payment for Environmental Services scheme: Lessons learnt in the Cidanau watershed, Indonesia

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Highlights

- PES intermediaries not only facilitate transactions but also link PES to broader development agenda.
- PES intermediary must accommodate various interests of actors in the landscape.
- The non-government actors is more flexible to act as the intermediary.
- Official supports from actors and decision makers is crucial to maintain the program sustainability.

35.1 Introduction

The role of intermediaries in facilitating the transaction between ecosystem service buyers and sellers is particularly important^{1,2}. The Payment for Environmental Services (PES) intermediary can come from the government, NGOs, private firms, or multistakeholder agencies. The role of PES intermediary includes information exchange, program design and planning, mediation, negotiation, and program monitoring and evaluation³.

One of the first and longest PES initiatives in Indonesia takes place in the Cidanau watershed, Banten Province. The forests in the middle and upper stream of Cidanau have been deforested and converted into agriculture areas, degrading the watershed and impacting the water users downstream^{4,5}. Rekonvasi Bhumi, a local NGO, then mobilized the local stakeholders to establish *Forum Komunikasi DAS Cidanau* (FKDC). FKDC is a multistakeholder forum to enable different actors to work together under the integrated watershed management.

Since 2004, FKDC has initiated the PES program in Cidanau and successfully engaged Krakatau Tirta Industri (KTI), a water provider company in the downstream area to compensate agroforest smallholders in the upstream for their sustainable land-use management.

PES in Cidanau has reached the third phase in 2015, and this progress could not have been achieved without the role of FKDC as the intermediary, linking and facilitating fair negotiations between watershed stakeholders. Supported by the World Agroforestry Centre (ICRAF) and other external actors, FKDC has been improving the PES implementation by providing scientifically-sound negotiation tools from the selection to the monitoring and evaluation.

This chapter discusses the lessons learnt from the PES implementation in Cidanau, particularly the experience of FKDC in facilitating and expanding the multistakeholder collaboration and providing an enabling environment for PES in the Cidanau watershed. The discussion in this chapter will answer the following questions: 1) What is the rationale of FKDC as a multistakeholder forum to initiate PES in the Cidanau watershed; 2) How is the PES scheme initiated and developed over the years; 3) What are the roles of FKDC as the intermediary to facilitate the PES; and 4) What is the policy and institutional impact of PES implementation in Cidanau?

35.2 Ecological and economic importance of Cidanau

The Cidanau watershed covers a 22,620 hectare area in two districts on the western coast of Java: Serang and Pandeglang. In the midstream plateau of Cidanau lies 2,500 ha of the Rawa Danau Natural Reserve, the only mountainous swamp-forest ecosystem remaining in Java. The protected natural reserve provides a home for at least 131 swamp ecosystem species, and functions as the natural reservoir area that regulates the hydrological function in the Cidanau watershed⁶.

Cidanau plays an important role as the main water supply for the two districts and Cilegon City. The industrial city of Cilegon highly depends on the Cidanau water supply for its industrial operation. KTI manages water provision in Cilegon, channelling the water from Cidanau River to 80% of the industries in Cilegon. The water clients of KTI include PDAM, a state water provider company, and Indonesia Power, an energy company that provides electricity to Java and Bali. There are approximately 120 industrial factories operating in Cilegon, with a total capital investment in 2014 of US\$25 billion^{7,8}.

35.3 Problems in Cidanau

The environmental problems in Cidanau are mostly human induced, stimulated by poverty. The residents in Cidanau upstream area are low-income smallholder farmers who highly depend on natural resource extraction⁸.

In the 1990s, the upstream area of Cidanau experienced a rapid conversion of drylands and swamp forests into agricultural paddy fields and settlement areas. The increasing encroachment of the Rawa Danau Reserve, the state protected area, contributed to the land-use conversion and biodiversity reduction^{8,9}. Initial efforts to halt the encroachment by the authorities through re-settlement, reforestation, and a patrol and monitoring program were carried out with limited success. The failure of those programs was mainly caused by a lack of consultation and integrated planning between the key stakeholders, with limited attention to social⁹.

More than 50% of Cidanau consists of land with more than a 15% slope, which makes the watershed prone to erosion and sedimentation. The agricultural practices in the upstream contribute to erosion and high-nutrient loads, which stimulate the growth of weeds in downstream waterways¹⁰. The eroded soil contributes to the high erosion and sedimentation rates of 71,000 ton/year and 75.7cm/year respectively¹¹. These problems impact the operation of KTI as each year they have to deal with the blockage problem in their water-pipe channels and pumps^{4,12}.

35.4 Stakeholders engagement in Cidanau watershed management

In the late 1990s, the stakeholders saw that the impacts of the conservation efforts in the Cidanau watershed were insignificant and temporary. Each stakeholder separately carried out its program, which resulted in the occasional overlapping and conflicting roles between actors^{9,10,13}. The stakeholders agreed that they needed better planning and coordination for the management of the watershed.

In 1998, the local government and a non-governmental organization (NGO) in Cidanau, Rekonvasi Bhumi, established the Cidanau watershed Communication Forum (*Forum Komunikasi DAS Cidanau*). The FKDC aimed to strengthen collaboration in the management of the Cidanau watershed. The members are from government offices that concern themselves with environmental protection (planning, agriculture and forestry, environment, and the watershed management body), the private sector (KTI, State Water Company in Cilegon and Serang, State Forest Company), and NGOs. FKDC activities were initially focused on raising awareness about the importance of the Cidanau watershed¹⁰, before jumping into conservation and livelihoods.



Rawa Danau Swamp area, in the midstream of Cidanau. Photo: Rekonvasi Bhumi

35.5 PES development in Cidanau

In 2002, the German Technical Cooperation Agency (GTZ, now GIZ) introduced the concept of PES to FKDC. A year later, GTZ invited a member of FKDC to learn about the implementation of PES in Costa Rica. The two-month visit to Costa Rica provided the knowledge and inspiration to apply PES in Cidanau. At that time, the incentive-based approach offered by PES was different from the command-and-control and top-down approach that have been undertaken in Cidanau with limited success. The FKDC members believed that, through PES, farmers can be provided with the opportunity to be actively involved in environmental conservation and economic development, and started to initiate the program. In 2004, the International Institute for Environment and Development (IIED) and GTZ supported FKDC and LP3ES, a national NGO, to develop the PES pilot scheme in Cidanau. Facilitated by Rekonvasi Bhumi, in 2008 ICRAF started the collaboration with FKDC to undertake research on the hydrology, socio-economy, and governance that can improve the PES mechanism in Cidanau (see Figure 35.1).

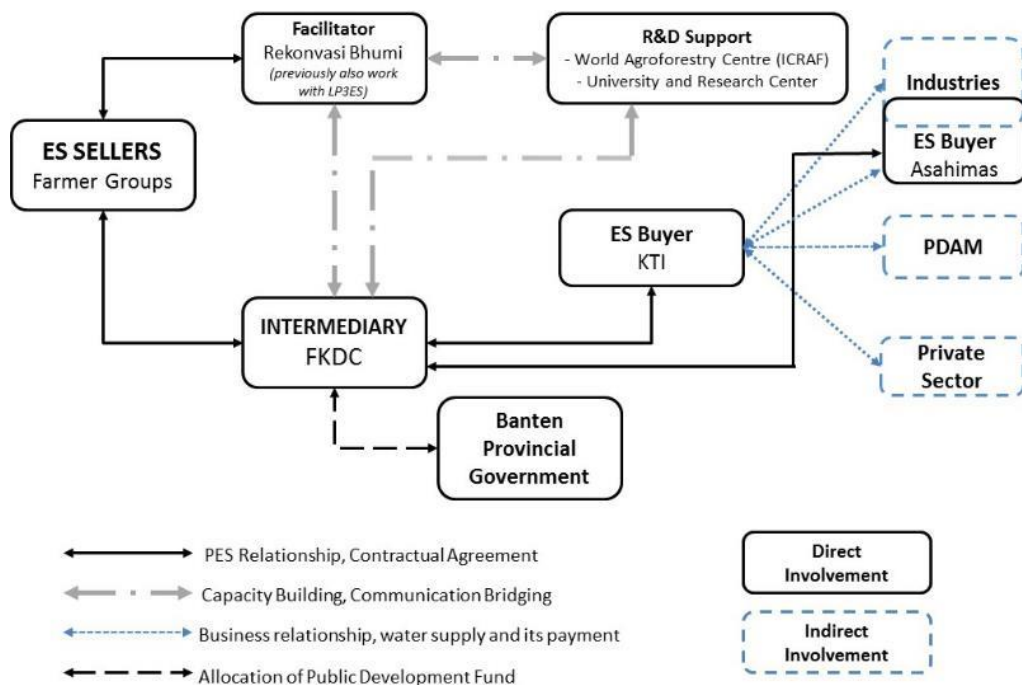


Figure 35.1 The governance of PES in Cidanau (modified from Leimona et al 2010⁹)

35.6 Identification and involvement of Cidanau ecosystem services buyer

The potential buyer of ecosystem services (ES) in Cidanau watershed was relatively easy to identify, as KTI manage most of the commercial water supply from Cidanau. In 2004, FKDC approached KTI to join the PES scheme. The negotiation was carried out through a series of meetings to raise awareness and understanding about PES, combined with a joint field visit to see the real condition of farmers and the upstream watershed.

The biggest challenge during the initial negotiation was to make the potential buyer understand PES. At that time, there was no comparison to a similar incentive-based mechanism. The potential buyers initially perceived that the responsibility for conservation falls to the government because the potential buyers have already paid for this with taxes and corporate social responsibility. The perception was gradually changed by the intensive campaign and advocacy that pointed out the importance of conserving the Cidanau watershed for KTI's business operations.

After one year of intensive negotiation, FKDC succeeded in promoting a tripartite agreement between: 1) KTI as the buyer or beneficiaries of the Cidanau watershed services; 2) FKDC, as the intermediary, and the representatives from Banten Province, Serang and Pandeglang District Governments, KTI, Rekonvasi Bhumi, and the farmers were also to become members; and 3) the farmer groups, as the sellers of watershed services².

Parallel to the negotiations with KTI, FKDC mainstreamed the PES concept for watershed management at the strategic level of government in the province and district. The absence of formal regulations on the PES from the provincial government at that time provided uncertainty that made the potential buyers hesitant to participate and left KTI as the only

buyer. KTI has remained the only buyer for almost ten years, before the Banten provincial government and Asahimas Chemical, an industrial water user in Cilegon, agreed to contribute to the PES program in Cidanau (Table 35.1).

Table 35.1 Buyers of ecosystem services in PES Cidanau

Contract phase	Contract period	ES buyers&co-investors	Company business	Total amount (in US\$)*
1	2005 - 2007	Krakatau Tirta Industri	Water provider	56,900
	2008 - 2009			19,000
2	2010 - 2014	Banten Provincex	Provincial government	119,500
	2014			17,200
3	January-Sept 2015	Asahimas Chemical	Chemical industry	3,000
		Krakatau Tirta Industri	Water provider	25,500
		Banten Provincex	Provincial government	8,100
Total amount of contribution 2005-September 2015				249,200
3	2016 - 2018	Asahimas Chemical	Chemical industry	12,000
	2016 - 2019	Krakatau Tirta Industri	Water provider	126,500
Total Amount of Contribution 2005-2019				387,700

* 1US\$ equal to Rp10,000

* Grant from the provincial government to FKDC activities

Source: FKDC (2014)

35.7 Selection of the Cidanau ecosystem services provider

FKDC and LP3ES initially defined the potential PES target area based on three criteria: 1) sedimentation vulnerable area, indicated in the Critical Land Map of Cidanau from Bogor Agricultural University (IPB); 2) high deforestation rate area; and 3) private property located nearby the settlement/village⁴. After the target area was identified, FKDC selected the farmer group in the area that had a good track record. The top-down selection continued until the second phase of the contract.

In 2014, FKDC collaborated with the World Agroforestry Centre (ICRAF) to conduct the selection of farmer groups for the third phase of PES in Cidanau (2015-2019). FKDC developed a map of potential PES areas in Cidanau based on five criteria: 1) upstream areas of Cidanau watershed; 2) outside of the state forest, conservation forest, settlement, and paddy field areas; 3) slope above 15%; 4) above 200masl; and 5) village areas at least 50 hectares in size. Based on the criteria, 3360 hectares of land in 30 upstream villages are identified as potential PES areas in Cidanau (see Figure 35.2).

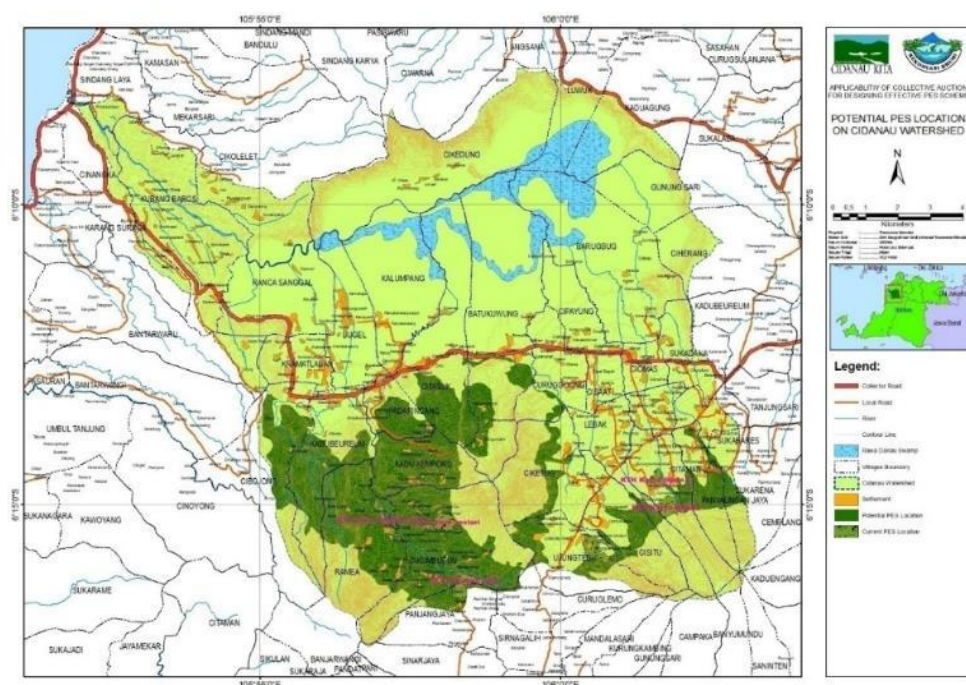


Figure 35.2 Potential PES areas in the Cidanau watershed

Reflecting on the first and second phase group selection, Lapeyre et al. (2015)¹² argued that the selection process of ES sellers in Cidanau was based on the highly-subjective decision of the intermediary, and an understanding of the ramifications of the PES contracts have a limited dissemination to elite members of farmer groups. Referring to that, in the third phase PES group selection, FKDC collaborated with ICRAF to improve farmer groups' comprehension of the PES scheme through capacity building and facilitation.

For the third phase, the potential farmer groups have to submit proposals that elaborate: 1) the organizational structure of the group; 2) the land management and conservation plan based on the identified problems in the farmer group area; and 3) the benefit sharing plan, such as payment distribution and payment utilization. Rekonvasi Bhumi facilitated the process of proposal preparation to submission for about two months, and helped the farmers to identify environmental and socio-economic problems with the solution plan^{8,13}. This process was necessary to ensure that each group has the same level of understanding and opportunity to join the PES. Based on the assessment and availability of resources, six farmer groups with the highest assessment score were selected out of 30 groups that submitted a proposal. Up to 2015, the PES in Cidanau has engaged 611 farmers with 353 hectares of land (see Table 35.2).

Table 35.2 Farmer group sellers of ecosystem services in Cidanau

No	Farmer group	Sub-district*	Members (persons)	Contract Duration		Area (Ha)	Contract Amount (in US\$)**		
				Begin	End		\$/Ha/ year	Total/ year	Total Contract
1	Karya Muda II	Ciomas	43	2005	2010	25	120	3,000	15,000
2	Maju Bersamax	Padarincang	34	2005	2008	25	120	3,000	7,200
3	Alam Lestari	Mandalawangi	60	2008	2013	25	120	3,000	15,000
4	Agung Lestarix	Gunungsari	30	2008	2009	25	120	3,000	2,100
5	Karya Muda Ily	Ciomas		2010	2015		175	4,400	21,800
6	Karya Muda III	Ciomas	61	2010	2015	25	120	3,000	15,000
7	Harapan Maju	Mandalawangi	77	2011	2016	27	120	3,200	16,000
8	Karya Bhakti	Ciomas	36	2011	2016	26	120	3,100	15,500
9	Alam Sejahtera	Mandalawangi	58	2011	2016	25	120	3,000	15,000
10	Alam Lestari	Padarincang	58	2015	2019	25	140	3,500	17,500
11	Barokah	Padarincang	25	2015	2019	25	140	3,500	17,500
12	Gosali Indah	Padarincang	25	2015	2019	25	140	3,500	17,500
13	Cibunar	Cisitu	25	2015	2019	25	140	3,500	17,500
14	Harapan Jaya	Ciomas	53	2015	2019	25	140	3,500	17,500
15	Sinar Harapan II	Mandalawangi	26	2015	2019	25	140	3,500	17,500
16	Karya Muda Ily	Ciomas		2015	2019		175	4,400	21,800
17	Karya Muda Ilyy	Ciomas		2016	2020		120	3,000	17,500
18	Harapan Majuy	Mandalawangi		2016	2020		120	3,200	17,500
19	Karya Bhakti	Ciomas		2016	2020		120	3,100	17,500
20	Alam Sejahteray	Mandalawangi		2016	2020		120	3,000	17,500
Total estimation to 2020			611			353			319,400

* All sub-districts are located in Serang District, except Mandalawangi in Pandeglang District;

** 1US\$ equal to Rp10,000

^x The group contract was terminated due to violation of rules;

^y Contract extension with payment raise; group members and area size refer to the 1st contract

Source: FKDC (2014)

35.8 PES Contract, price setting, and payment allocation

In the first negotiation, KTI requested that the payment should be distributed to the farmer groups through FKDC. In response to that, FKDC formed an ad-hoc team to facilitate the negotiations between KTI (the buyer) and the farmer groups (seller). The negotiations resulted in two contracts of agreement between FKDC and KTI, and between FKDC and farmers (See Figure 35.3).

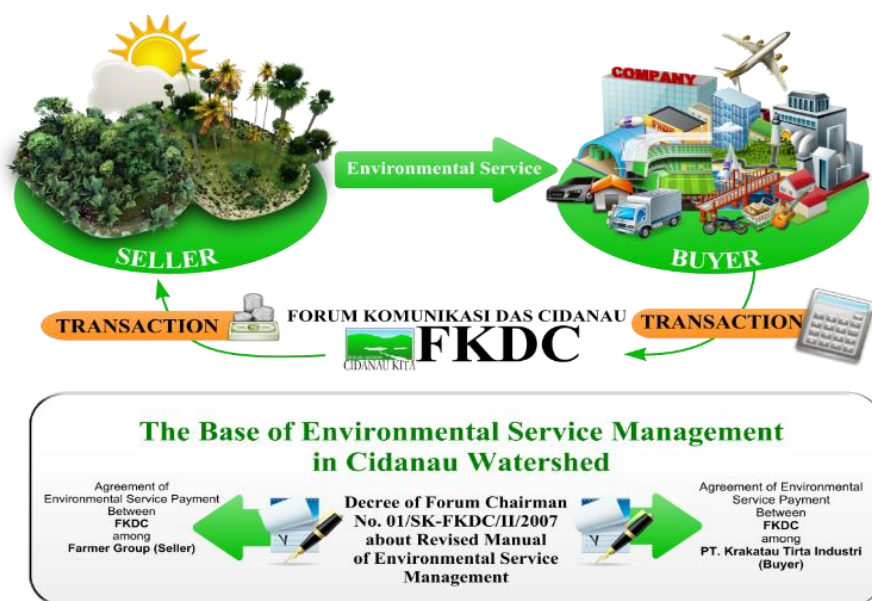


Figure 35.3 Illustration of PES mechanism in Cidanau

Initially FKDC and KTI agreed to the total amount of US\$350/ha/year for four years that consists of payment for farmers, transaction costs, and taxes. The team used the budget reference from a government restoration program called GERHAN for the operational and transaction costs, while the government is entitled to 6% in taxes⁹. As a follow-up of the agreement with KTI, FKDC negotiated with farmers regarding the incentive payment. This resulted in the amount of US\$120/ha/year for five years with a minimum of 25 hectares of farmland contracted per group. Then FKDC re-allocated the four-year payment from KTI to cover the five-year contract with the farmers⁹.

The latest report¹⁴ showed that until September 2015 approximately 50% of the funds are dedicated to payments while 18% of the funds are allocated for transaction costs to cover the expenses related to meetings, monitoring and verification, campaigns and advocacy to engage more buyers, and capacity building for farmers and FKDC staff. The 6% government tax was also included in the payment from KTI to FKDC. The remaining balance is used as the buffer budget to cover the contract payment for farmers in the near future (Table 35.3).

Table 35.3 Budget allocation of FKDC in PES Cidanau from 2005 to September 2015

Budget	US\$**	Proportion of buyers' payment (%)
PES payment to farmers up to August 2015	123,000	49.4
Transaction costs	45,900	18.5
Tax (6% of transaction and farmers' payment)	10,200	6
Balance upto Sept 2015	70,100	28.1
Total ES buyers payment up to Sept 2015	249,200	100

** 1US\$ equal to Rp10,000,-
Source: FKDC (2015)

The PES contract stated the farmer groups must maintain at least 500 trees/ha during the contract period. The farmers must do the replanting if there are any contracted trees being cut. If any group member violates the agreement, all members of the group will receive the sanction, and the possibility of contract termination.

Initially, other than maintaining and replanting trees, there was no obligation for the farmers to do anything specific for the plan to utilize the payment and undertake land management activities. The third phase farmer group selection in 2014 added the condition that the groups have to work on conservation and livelihood activities, such as erosion reduction, livestock development, and home-industry activities.

FKDC disburses the PES payment to farmers based on the results of semi-annual monitoring and verification of the farmers' plot. In the first phase, FKDC terminated the contract of two farmer groups due to their failure to maintain the trees in the contracted land, and the remaining payment fund was re-allocated to the groups in the second phase.

35.9 The role of FKDC as a PES intermediary

Watershed management in Indonesia involves various actors with different interests in managing or obtaining ecosystem services. This condition often complicates the negotiation process to manage the watersheds^{5,15}.

As a hub for watershed management in Cidanau, FKDC facilitates and mediates the interests of various actors from different administrative boundaries (Serang, Pandeglang, and Cilegon). This function is strengthened by official acknowledgement from the Banten provincial government through Governor Decree No. 124.3/kep.64/Huk/2002 about the establishment of FKDC. The decree was updated with the Governor Decree No. 614/Kep.211-Huk/2006 that re-established FKDC in its present form (see Figure 35.4).

FKDC use PES as one of the mechanisms to manage the Cidanau watershed. However, the coordination function from watershed management made a priority. In general, there are six roles of FKDC in PES Cidanau¹¹:

1. **facilitate multistakeholders cooperation and synergy** to develop integrated watershed management;
2. **advise the local government** and **facilitate conflict resolution**;
3. **communicate and promote the ES of Cidanau watershed** to the potential seller and buyer;
4. **bridge the interests of sellers and buyers** in the implementation of PES;
5. **monitor, evaluate and verify** the performance of PES activities periodically;
6. stimulate and support the process to **establish an ecosystem services management organization** in Cidanau;

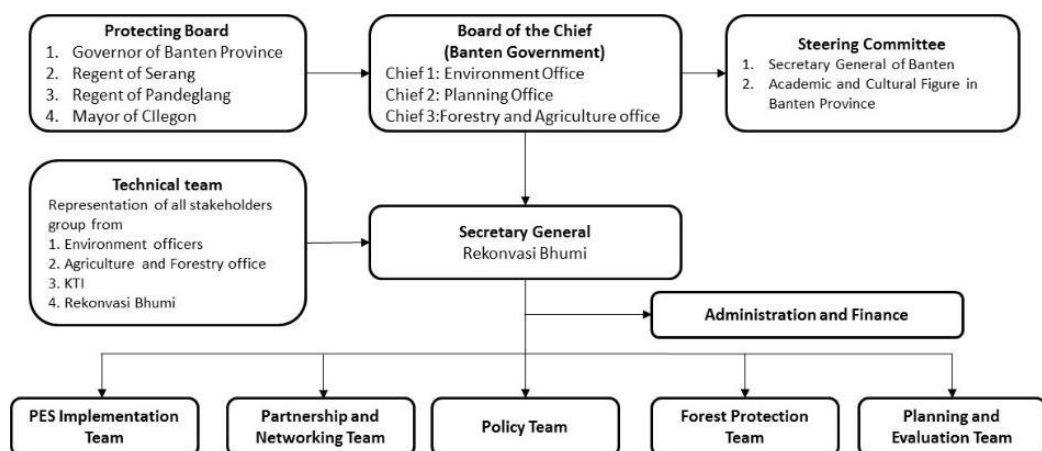


Figure 35.4 FKDC Organization Structure (FKDC, 2014)

35.10 Link of PES to policy and development Programs

At the beginning, the policy that regulates the PES was not available. At that time, FKDC used the regulations on watershed management to engage all actors from the government, private, and smallholders for the watershed development, including the governor decrees that acknowledge FKDC as the coordination forum for the Cidanau watershed.

In 2007, FKDC and the Banten Province Environment Office established the guidelines on the PES management in Cidanau through the FKDC Chairman Decree No.1/SK-FKDC/II/2007. This guideline was then used as one of the references for the enactment of national regulations of PES as the development instrument, namely Law 32/2009 on Environmental Management, Law 37/2014 on Soil and Water Conservation, and Government Regulation 37/2012 on Watershed Management.

In the PES implementation, FKDC bridges the actors in Cidanau, not only the ES buyers and sellers but also the decision-makers, and provides them with the information needed for decision making. This information provides the opportunity for collaboration on programs and funding for watershed management, particularly from the authorities (see Table 35.4). Further, FKDC continues to expand the collaboration network towards external actors, such as Development Agencies (LP3ES, GTZ) and research centres (national and international Universities, ICRAF).

Not all of the shared programs are directly related to PES. The shared programs, such as capacity building, nursery development, and social support, can complement PES. The participation of farmers in PES exposes their needs to the government members of FKDC and, based on the local problems and issues in the area, FKDC members can link their program to the issues.

Although the farmers initially joined the program because of the incentive scheme offered by the program^{9,12}, the additional livelihood benefit of US\$120/ha/year only added 3% to the farmers' total household income. Hence, the program continues and more farmers are interested in joining as the incentives still give them benefits in terms of additional income.

Table 35.4 Several development programs and funding sharing in the FKDC PES Area

No	Institution, member of FKDC	Level of authority	Sharing of program and funding	Year
1	Environment Office	Banten Province	<ul style="list-style-type: none"> • FKDC formal establishment & legalization • Contribution to FKDC's operations 	2001-2002 2002-now
2	Planning and Development Office	Banten Province	<ul style="list-style-type: none"> • Cidanau digital map update • Development of Cidanau strategic plan • Contribution to FKDC's operational costs 	2011 2007 2010-now
3	Forestry and Plantation Office	Banten Province	<ul style="list-style-type: none"> • Development of Cidanau ES strategic plan • Contribution to FKDC's operational costs 	2007 2010 - now
4	Environment Office	Pandeglang District	<ul style="list-style-type: none"> • Capacity building for farmers in the PES area • Monitoring and verification of PES program 	2008 - now 2008 - now
5	Forestry Office	Pandeglang District	<ul style="list-style-type: none"> • Seedling provision for PES farmer groups • Capacity building for farmers in the PES area 	2010 -now 2011
6	Environment Office	Serang District	<ul style="list-style-type: none"> • Capacity building for farmers in the PES area • Monitoring and verification of PES program 	2008 - now 2008 - now
7	Agriculture Office	Serang District	<ul style="list-style-type: none"> • Nursery development in the PES area • Social community support 	2008 - 2009 2010-2012
8	Watershed Management Body – Citarum-Ciliwung	National government	<ul style="list-style-type: none"> • Nursery development in the PES area • Development of Cidanau watershed characteristics • Contribution to FKDC's operational cost 	2008-2009 2011 2011 -now
9	Krakatau Tirta Industri (KTI)	Private company	<ul style="list-style-type: none"> • Rawa Danau rehabilitation • Payments for ecosystem services in Cidanau 	2008-2010 2005-now
10	Rekonvasi Bhumi	Non-governmental organization	<ul style="list-style-type: none"> • Initiation of FKDC • Initiation of PES Cidanau • Networking with research centre for PES • Water and sanitation facilities in Cidanau • ES seller selection process (with ICRAF) 	2002 2004 2004-now 2004-now 2014

Source: Modified from FKDC (2014)

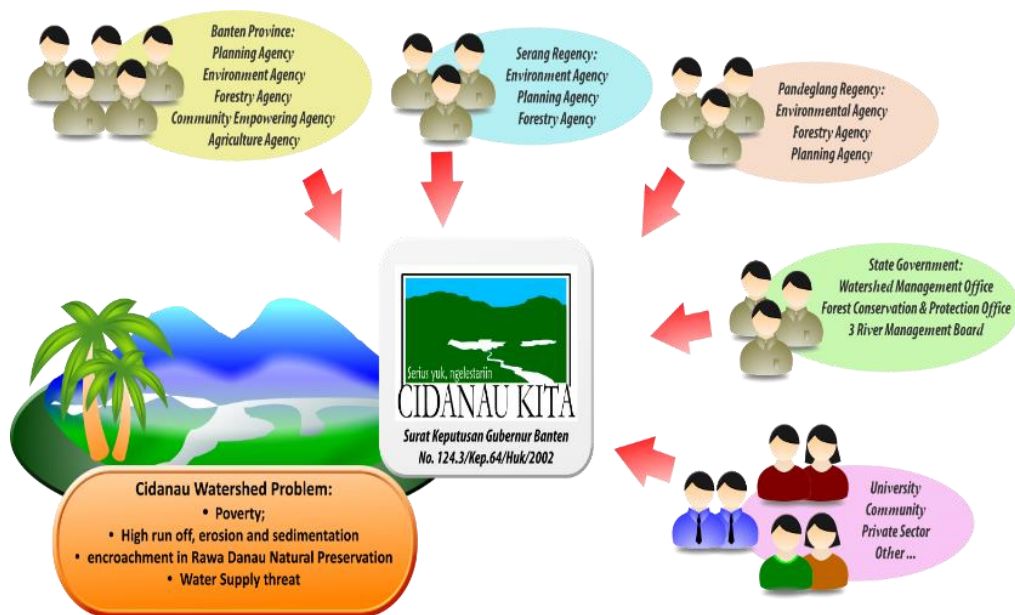


Figure 35.5 Synergy and integration between actors in the Cidanau watershed management (FKDC, 2014)

The collaboration with external actors outside of Banten Province provides advantages as many parties from the government and private sectors from the national and global communities continuously visit Cidanau for sharing and learning. The presence of the NGO Rekonvasi Bhumi as the secretariat of FKDC helped broaden the network, particularly with development agencies, universities, and research centres that can provide FKDC with the necessary information to engage more stakeholders in the management of the Cidanau watershed. Table 35.5 shows the development of the PES mechanism in Cidanau, with notable differences between the first and second phase (2004-2009, 2010-2014) with the third phase (2014-2019).



Kalpataru Awards for Cidanau conservation actors. Photo: Rekonvasi Bhumi

Table 35.5 The comparison of PES implementation in Cidanau, before and after 2014

No	PES Cidanau implementation	2004-2014 (1 st -2 nd phase)	2014-present (3 rd phase)
1	Provincial funding support	Indirect, for FKDC operational cost, not specific for PES implementation	Direct specifically for the PES implementation
2	Farmer-group selection process	FKDC selected the group based on: 1. private land located in the critical area with high deforestation rates, as indicated from the map provided by Bogor Agricultural University; 2. track record of farmer groups in the previous government program. Less intensive group facilitation during the selection process	FKDC selected the group based on: 1. the village is located within the potential PES area map developed by FKDC; 2. content of the proposal submitted by the potential farmer group. More intensive group facilitation by Rekonvasi Bumi/FKDC
3	Number of total ES buyers	Krakatau Tirta Industri	Krakatau Tirta Industri Asahimas Chemical
4	Number of total ES sellers (farmer groups)	8 farmer groups (1 group received the contract for two periods)	6 farmer groups
5	Contract price (US\$/ha/year)	US\$ 120/ha/year, 5-year contract. 1 group was awarded a contract extension for another 5 years at US\$175/ha/year	US\$135/ha/year, 5-year contract
6	Conditions	<ul style="list-style-type: none"> • maintain and replant 500 trees/ha • Cutting and thinning trees is forbidden • Did not require any proposal 	<ul style="list-style-type: none"> • maintain and replant 500 trees/ha • Cutting and thinning trees is allowed in some cases • Specific plan on land management for soil conservation and benefit sharing must be stated in the selection proposal
7	PES performance monitoring and verification	Manual, ground check and verification on the farmers' contracted land	Manual, FKDC in collaboration with ICRAF start to develop methodology to measure the performance of PES in Cidanau using canopy density and remote sensing

35.11 Conclusion

Among the first initiatives in Indonesia, PES in Cidanau is one that still remains active with continuous support from FKDC, a multistakeholder forum that acts as the PES intermediary. The incentive-based approach of PES, in which the farmers are directly involved in conservation and economic activities, is different from the top-down and command-and-control approaches that were previously applied.

FKDC aims to develop an integrated watershed management in Cidanau and its establishment was meant to address the classic problem of coordination between development sectors. FKDC sees PES as one of the important tools that has a significant role bringing the actors together in watershed management.

In the implementation of PES, FKDC: 1) facilitates multistakeholders' cooperation, synergy and conflict resolution; 2) communicates and promotes the ES of Cidanau watershed to the potential seller and buyer; 3) bridges the interests of sellers and buyers in the implementation of PES; 4) monitors, evaluates and verifies the performance of PES activities periodically; and

5) supports the process of establishing the Ecosystem Services Management Organization in Cidanau.

The interviews with local farmers, KTI, and FKDC members revealed a positive environmental impact of the PES program, such as the better micro-climate, slight reduction of sedimentation, and improvement of water supply in the upstream villages, although the environmental impact of PES in Cidanau still needs to be scientifically measured^{2,9,10,12}. The small economic impact of PES compensation received by farmers is compensated for by the social recognition and exposure to other development programs, which make the program still attractive.

FKDC links PES to a larger agenda with different actors in the watershed through their policies and program. By involving various stakeholders, FKDC managed to gain the crucial support of the policy and decision makers, and the private sector, that is needed to maintain the sustainability of PES. The contribution of Rekonvasi Bhumi, the NGO, as a secretary general that manages the day-to-day operations and promotes FKDC to a broader network also cannot be ignored. As an NGO, Rekonvasi has the flexibility that private and government actors do not have, such as in collaboration and field action, that support FKDC in managing their activities.

As a development tool, PES must not be considered as a panacea for all the problems. However, with the proper design that involves the appropriate actors, PES can stimulate and provide the link to the proper solutions. PES in Cidanau provides a good example for the role of PES as an intermediary stimulant for development. In PES governance, the intermediaries ideally not only facilitate the ecosystem service transactions between the buyers and sellers, but also link the transactions to the broader development of actors, policies, and programs to achieve improved public welfare.

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