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**Measuring Social Value of a Community Water CSR Program
through SROI: A Functionalist Case Study**

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Abstract: This study measures the social value created by HIPAM, a community water program funded through the corporate social responsibility (CSR) of PT Pertamina EP and managed by a village-owned enterprise (BUMDes) in Tuban, Indonesia, and examines how the program strengthens local governance. A functionalist, convergent mixed-methods case study combined a Social Return on Investment (SROI) analysis of 2017–2021 financial records and household data with a thematic analysis of interviews and focus groups. An investment of IDR 396.48 million generated a present value of IDR 691.99 million in household water savings and BUMDes income, yielding an SROI ratio of 1.75:1 that remains above 1:1 unless deadweight and attribution jointly exceed 43%. Qualitative evidence shows that formal bookkeeping, participatory tariff setting, and social trust sustain these monetized outcomes. The study contributes to sustainability accounting by making SROI's paradigmatic assumptions explicit and linking monetized social value to institutional capacity.

Keywords: Social Return on Investment, Corporate Social Responsibility, Sustainability Accounting, Functionalist Paradigm, Village-Owned Enterprise

Introduction

Corporate social responsibility (CSR) has become a strategic instrument for companies in the energy sector to secure their legitimacy and social licence to operate. In Indonesia, CSR is mandatory for companies that explore or manage natural resources under Article 74 of Law Number 40 of 2007 and Government Regulation Number 47 of 2012. Although CSR can take environmental, philanthropic, and economic forms (Rela et al., 2020; Schnurbein et al., 2016; Wang & Wang, 2016), extractive companies increasingly channel it into community development programs that address basic needs in the villages surrounding their operations. Because these programs are mandatory and publicly scrutinized, companies are increasingly

expected to demonstrate not only how much they spend, but what social value their spending creates.

Access to clean water is among the most pressing of these basic needs. In many rural areas of Indonesia, communities face recurring shortages during the dry season. In Rahayu Village, Soko District, Tuban, East Java, water scarcity has long undermined public health and imposed financial burdens, as households were compelled to purchase water at high prices during droughts. In response, PT Pertamina EP Asset 4 Sukowati Field (hereinafter PT Pertamina), which operates in the area, initiated a CSR program that established the *Himpunan Penyedia Air Minum* (HIPAM), a community-based drinking-water organization managed by the village-owned enterprise (*Badan Usaha Milik Desa*, BUMDes). The program evolved from the formation of HIPAM in 2017, through structured mentoring in 2018, expansion of water sources in 2019, and diversification into agricultural irrigation in 2020, to institutional strengthening through improved administrative and financial management in 2021.

HIPAM therefore exemplifies a practical challenge faced by many CSR programs. Its outcomes are multidimensional: social (reliable access to water), economic (lower household expenditure and new village income), health (reduced exposure to unsafe water), and institutional (stronger village governance). These outcomes accrue to different stakeholders, occur over several years, and are recorded in different forms or not recorded at all. Conventional CSR reports typically list inputs and outputs, such as funds disbursed or meters installed, and therefore cannot show whether these multidimensional outcomes justify the investment (Corvo et al., 2022; Hall et al., 2015). The difficulty lies in identifying which outcomes matter, valuing them in a common unit, and translating them into a measure of social value relative to the CSR investment.

Social Return on Investment (SROI) was developed in the mid-1990s by the Roberts Enterprise Development Fund in the United States to address this problem (Nicholls, 2017). SROI combines stakeholder narratives with quantitative data and translates social outcomes into monetary terms by using financial proxies, so that the value created can be compared with the resources invested (Banke-Thomas et al., 2015; Leck et al., 2016; Nicholls et al., 2012). It has been widely applied to CSR, social enterprises, and public programs, including in Indonesia (Damtoft et al., 2023; De Leon, 2021; Suryawati et al., 2024; Yana & Nainggolan, 2023).

However, three gaps remain. First, SROI is mostly applied as a technical procedure without an explicit ontological and epistemological foundation. Critics show that this leaves key choices, such as the selection of financial proxies and the setting of deadweight and attribution coefficients, open to unacknowledged subjectivity, which threatens comparability and credibility (Arvidson et al., 2013; Maier et al., 2015; Solórzano-García et al., 2019). Making the paradigmatic assumptions explicit provides criteria for these choices and clarifies what SROI can and cannot claim. Second, SROI studies tend to report a ratio without explaining the institutional mechanisms that produce and sustain the monetized value, particularly in community-based enterprises in emerging economies (Corvo et al., 2021; Saenz, 2021). Third, SROI research invokes stakeholder, legitimacy, and institutional theories separately rather than as an integrated framework (Chen & Roberts, 2010; Fernando & Lawrence, 2014).

This study addresses these gaps by applying SROI within the functionalist paradigm of Burrell and Morgan (1979), which assumes that social reality is objective and can be known through systematic measurement. The paradigm fits the HIPAM case because the program is a structured intervention designed to solve a concrete problem and to restore the functioning of a community system. Specifically, the study aims to measure how much social and economic value HIPAM creates relative to PT Pertamina's investment by using an SROI analysis whose valuation choices are grounded in objectivist ontology and positivist epistemology (RQ1), and to explain how HIPAM, as a community-based enterprise, strengthens local governance and institutional capacity in ways that sustain this value (RQ2).

The study makes three contributions. Empirically, it provides a transparent SROI impact map and sensitivity analysis for a community water program funded by CSR in Indonesia. Theoretically, it offers an integrated framework in which stakeholder, legitimacy, and institutional theories operate together under the functionalist paradigm, and it shows how paradigmatic assumptions discipline SROI valuation choices. Practically, it shows how financial proxies can be used to measure and report social value in corporate sustainability accounting.

Literature Review

The Functionalist Paradigm

Burrell and Morgan (1979) classify social research along two dimensions: assumptions about the nature of social science (subjective–objective) and assumptions about the nature of society (regulation–radical change). Their intersection produces four paradigms: functionalist, interpretive, radical humanist, and radical structuralist. The functionalist paradigm combines an objective view of social science with a sociology of regulation. It assumes that social reality exists independently of the researcher, that it can be studied through quantitative methods, indicators, and metrics, and that research should explain how social order is maintained and offer practical solutions to organizational problems (Hopper & Powell, 1985). In the HIPAM context, the paradigm is relevant because the CSR program is conceived as a mechanism that restores social stability through the provision of clean water.

Objectivist Ontology and SROI

Ontology concerns the nature of reality, that is, what exists (Burrell & Morgan, 1979). On the subjective–objective dimension, Burrell and Morgan contrast realism, which holds that the social world consists of hard, tangible structures that exist independently of individual perception, with nominalism, which holds that social reality is no more than the names, concepts, and labels people use to structure it. Morgan and Smircich (1980) describe the same contrast as a continuum from reality as a concrete structure (objectivism) to reality as a projection of human imagination (subjectivism).

Chua (1986) shows that mainstream accounting research rests on the objectivist end of this continuum. Its ontology is realist, assuming that empirical reality is objective and external to the subject, and its epistemology is positivist, relying on hypothetico-deductive testing and quantitative measurement. Chua contrasts this mainstream view with interpretive and critical alternatives, which assume that social reality is subjectively created and objectified through

human interaction. Realism and classical positivism therefore belong to objectivist ontology, whereas subjectivist ontology is associated with nominalism and interpretivism.

SROI is philosophically aligned with objectivist ontology. It treats social outcomes, such as cost savings, income growth, and improved quality of life, as entities that exist independently of the evaluator and can be identified, quantified, and monetized. Its input–output–outcome logic assumes orderly causal relationships between resources invested and impacts generated. SROI nonetheless contains subjective elements, because stakeholders help define which outcomes matter and the analyst chooses proxies and filters (Arvidson et al., 2013; Nicholls et al., 2012). This study therefore adopts a moderate objectivist stance: outcomes are treated as real and measurable, while stakeholder input is used to identify them and qualitative evidence is used to verify them.

Positivist Epistemology and SROI

Epistemology concerns the nature, sources, and validity of knowledge (Guba & Lincoln, 1994). Burrell and Morgan (1979) contrast positivism, which seeks to explain and predict social phenomena by searching for regularities and causal relationships, with anti-positivism, which holds that social phenomena can only be understood from the point of view of the participants. In accounting and sustainability studies, this distinction determines whether social impact is treated as a measurable phenomenon or as a subjective construct (Chua, 1986).

Positivist epistemology provides the foundation for applying SROI to HIPAM. By emphasizing empirical observation, quantitative measurement, and systematic verification, it justifies treating outcomes such as household savings and BUMDes income as observable facts that can be measured from records and surveys. It also sets the standard for SROI's valuation choices: proxies should be based on observable market prices or recorded transactions, and impact filters should be justified by evidence rather than assumption (Solórzano-García et al., 2019). This standard is applied in the methods and results of this study.

Social Return on Investment (SROI)

SROI is a methodological framework designed to measure and monetize the social value created by programs, projects, or organizations. Emerging from cost–benefit analysis and social accounting, it extends conventional financial evaluation by incorporating social, environmental, and community outcomes into a structured measurement system (Nicholls, 2017). It reflects the growing demand in sustainability accounting and CSR for tools that demonstrate accountability, transparency, and legitimacy to stakeholders (Corvo et al., 2021).

The SROI method follows six stages (Nicholls et al., 2012): (1) establishing scope and identifying stakeholders; (2) mapping outcomes through an impact map that links inputs, outputs, and outcomes; (3) evidencing outcomes and assigning them value through financial proxies; (4) establishing impact by applying deadweight (what would have happened anyway), attribution (the contribution of other actors), and drop-off (the decline of outcomes over time); (5) calculating the SROI ratio; and (6) reporting, using, and embedding the results. Systematic reviews show that SROI is widely used in health, social enterprise, and CSR

evaluation, but that practice varies considerably in the transparency of proxies and filters (Banke-Thomas et al., 2015; Corvo et al., 2022).

Debates persist about reducing complex social phenomena to monetary values. Critics argue that monetization may oversimplify or commodify intangible outcomes such as empowerment, dignity, and cultural identity, and that ratios are often compared inappropriately across contexts (Arvidson et al., 2013; Maier et al., 2015). Recent studies therefore recommend transparent impact maps, sensitivity analyses, and the combination of SROI with qualitative evidence (Banke-Thomas et al., 2015; Saenz, 2021). This study follows these recommendations.

Integrated Theoretical Framework

Stakeholder, legitimacy, and institutional theories are often presented as competing explanations of CSR. However, accounting scholars argue that they are complementary perspectives on the organization–society relationship that operate at different levels of analysis (Chen & Roberts, 2010; Fernando & Lawrence, 2014). This study integrates them under the functionalist paradigm, which views society as a system of interdependent parts and organizations as mechanisms that contribute to social order.

Stakeholder theory holds that organizations must account for the interests of all parties affected by their activities, not only shareholders (Freeman, 2010). It is relevant to SROI because SROI begins by identifying stakeholders and mapping the outcomes that matter to them (Hall et al., 2015). Its validity in this study rests on whether the stakeholders and outcomes can be identified empirically, which is examined through documents, interviews, and surveys.

Legitimacy theory posits that organizations seek to ensure that their actions are perceived as desirable, proper, or appropriate within a socially constructed system of norms and values (Suchman, 1995). Organizations disclose social information, including monetized social value, to gain, maintain, or repair legitimacy (Deegan, 2019). It is relevant because an SROI ratio is a form of accountability that can legitimize the corporate sponsor and the managing organization. Its validity is examined through stakeholders' perceptions of HIPAM and its sponsor.

Institutional theory explains how organizational practices become similar and stable through coercive, mimetic, and normative pressures (DiMaggio & Powell, 1983) and through regulative, normative, and cultural-cognitive structures (Scott, 2014). It is relevant because HIPAM operates within formal rules, such as the CSR regulations and the BUMDes mandate under Village Law Number 6 of 2014, and because the sustainability of social value depends on whether new practices, such as bookkeeping and tariff rules, become institutionalized. Its validity is examined through evidence of formalized routines.

Table 1 synthesizes the three theories. Stakeholder theory explains for whom value is created and guides the scoping and outcome-mapping stages of SROI. Legitimacy theory explains why the corporation invests in and accounts for social value and links to the reporting stage. Institutional theory explains *how* value-creating practices become embedded and therefore persist, linking to the evidencing and embedding stages. Together they connect the

quantitative question of how much value is created (RQ1) with the institutional question of how this value is sustained (RQ2).

Table 1. **Conceptual Matrix: Integrating Stakeholder, Legitimacy, and Institutional Theory under the Functionalist Paradigm**

Dimension	Stakeholder Theory	Legitimacy Theory	Institutional Theory
Core question	Whose outcomes count and for whom is value created?	Why does the firm invest in and account for social value?	How do value-creating practices become stable and embedded?
Level of analysis	Firm–stakeholder relationships (micro)	Firm–society relationship (meso)	Organizational field and rules (macro)
Functionalist assumption	Stakeholders are identifiable components of a social system whose needs must be met for equilibrium	Social order depends on congruence between corporate conduct and societal expectations	Regulative, normative, and cognitive structures stabilize behaviour over time
Role in SROI stages	Stages 1–2: scoping, stakeholder identification, outcome mapping	Stages 5–6: calculating, reporting, and using the ratio as an account of value	Stages 3–4 and 6: evidencing outcomes in records; embedding SROI in routines
Expected evidence in HIPAM	Value distributed to households, BUMDes, and village government	SROI ratio and community perception legitimize PT Pertamina and BUMDes	Formal bookkeeping, tariff rules, and BUMDes mandate institutionalize water governance
Link to RQ	RQ1	RQ1 and RQ2	RQ2

Methods

Research Paradigm and Design

This study is positioned within the functionalist paradigm (Burrell & Morgan, 1979), which combines objectivist ontology and positivist epistemology. Consistent with this position, HIPAM is treated as a real entity whose functions (water distribution, institutional strengthening through BUMDes, and income generation) exist independently of the researcher's interpretation, and knowledge about its impact is generated through quantifiable indicators verified by multiple sources.

The study adopts a single case study design (Yin, 2018), with the HIPAM program in Rahayu Village as the bounded case and the unit of analysis. The case was selected because it is a mature CSR program (2017–2021) with recorded financial data, a clear institutional manager (BUMDes), and outcomes that span social, economic, and institutional dimensions. Within the case, the study uses a convergent parallel mixed-methods design with quantitative priority (QUAN + qual) (Creswell & Plano Clark, 2018). Quantitative data for the SROI analysis (RQ1) and qualitative data on governance and institutional capacity (RQ2) were collected in the same period, analysed separately, and then merged at the interpretation stage through a joint display. The qualitative strand also serves to verify the outcomes and the impact filters used in the SROI.

Data Collection

Quantitative data comprised: (1) financial records of HIPAM and BUMDes for 2017–2021, providing information on program inputs, operating costs, revenues, and profit; (2) BUMDes meter records showing the number of connected households each year; (3) a household survey of 284 HIPAM subscribers that measured water consumption and expenditure before and after HIPAM; (4) CSR program reports of PT Pertamina documenting the investment; and (5) health centre data on waterborne illnesses.

Qualitative data were collected through semi-structured interviews with 11 key informants (BUMDes administrators, village government officials, and PT Pertamina CSR officers) and four focus group discussions with 32 community members. Informants were selected purposively on the basis of their direct involvement in managing, overseeing, or benefiting from HIPAM, and data collection continued until no new themes emerged (Hennink & Kaiser, 2022). Interviews lasted 45–60 minutes and were documented through field notes. Table 2 summarizes the data sources, participants, and selection criteria.

Table 2. **Data Sources, Participants, and Selection Criteria**

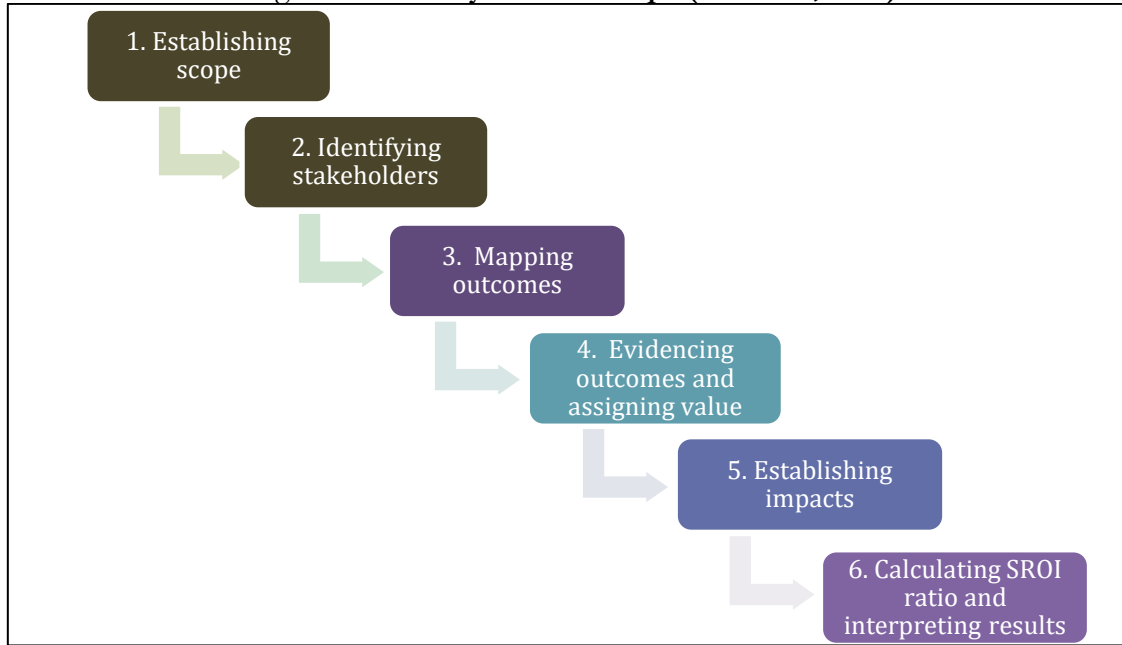
Data source / group	Technique	Number	Selection criteria
HIPAM subscriber households	Structured survey (water expenditure before and after HIPAM)	284 households	Proportional stratified random sampling from the BUMDes subscriber list (N = 980 households; Slovin formula, 5% margin of error)
BUMDes Rahayu administrators and HIPAM operators	Semi-structured interview	5	Purposive: directly involved in HIPAM management for at least 2 years
Rahayu Village Government	Semi-structured interview	3	Purposive: village head and officials responsible for BUMDes oversight
PT Pertamina EP Sukowati Field CSR officers	Semi-structured interview	3	Purposive: officers responsible for planning and monitoring HIPAM
Community members (beneficiaries)	Focus group discussion	4 groups; 32 participants	Purposive with variation in hamlet, gender, and subscription period; saturation criterion (Hennink & Kaiser, 2022)
Documents	Document analysis	12 documents	HIPAM/BUMDes financial statements 2017–2021, CSR program reports, meter records, village budget (APBDes), health centre data

Note: Fieldwork was conducted in August–October 2023

Analytical Strategy

The SROI analysis followed the six stages of Nicholls et al. (2012) and Nicholls (2017), as shown in Figure 1. The analysis is evaluative (summative), measuring outcomes that were realized between 2017 and 2021.

Figure 1. SROI Systematic Steps (Nicholls, 2017)



The net impact of each monetized outcome i in year t was calculated as shown in Equation (1):

$$Impact_{i,t} = Q_{i,t} \times P_i \times (1 - DW_i) \times (1 - AT_i) \times (1 - DO_i)^k \quad (1)$$

where $Q_{i,t}$ is the quantity of outcome i in year t (for example, the number of connected households), P_i is the financial proxy per unit, DW_i is deadweight, AT_i is attribution, and DO_i is drop-off applied for k years after the outcome first occurs. Because the impacts were realized in different years, they were converted to present value with a discount rate (r) of 3.5%, the HM Treasury Green Book rate commonly adopted in SROI practice (Nicholls et al., 2012), as shown in Equation (2):

$$PV = \sum_{t=2017}^{2021} \frac{\sum_i Impact_{i,t}}{(1 + r)^{t - t_0}} \quad (2)$$

where $t_0 = 2016$, the year before the first investment, so that impacts realized in 2017 are discounted by one period and those realized in 2021 by five periods. The SROI ratio is the present value of impacts divided by the total investment, as shown in Equation (3):

$$SROI = \frac{PV}{Total\ investment} = \frac{691,994,775}{396,475,000} \approx 1.75 \quad (3)$$

To test the robustness of the result, a sensitivity analysis recalculated the ratio under alternative deadweight and attribution assumptions and identified the break-even point at which the ratio falls to 1:1 (Banke-Thomas et al., 2015).

Interview and focus group data and documents were analysed thematically following Braun and Clarke (2006): familiarization, initial coding, theme generation, theme review, and theme definition. Coding was guided by three sensitizing dimensions derived from the integrated framework (Table 1) governance and administrative capacity, community participation, and

institutional legitimacy and trust. Codes were compared across informant groups and checked against documents to strengthen credibility.

The two strands were merged in a joint display that links each monetized SROI component with the qualitative theme that explains how it is produced and sustained (Creswell & Plano Clark, 2018). Convergence was used to verify outcomes and filters, and divergence was used to identify value that the SROI ratio does not capture.

Findings

The findings are presented in two parts that correspond to the research questions. The first part reports the SROI analysis following its six stages (RQ1). The second part reports the qualitative themes on governance and institutional capacity (RQ2). The two strands are integrated in the Discussion.

The analysis covers the HIPAM program in Rahayu Village across the 2017–2021 roadmap and focuses on realized impacts from the key activities: well drilling, meter expansion, construction of storage tanks, maintenance, and administrative strengthening under BUMDes management. Its objective is to measure the social value related to access to clean water, household cost savings, village income, and relief of the village government's service burden.

Stakeholders were defined as actors directly or indirectly affected by HIPAM (Table 3). Following the SROI principle of including only material and verifiable outcomes (Nicholls et al., 2012), two stakeholders were monetized: households and BUMDes Rahayu. The village government was included in the impact map because the program relieved its obligation to provide clean water, but this outcome was not monetized because no verifiable budget estimate was available. PT Pertamina is the source of the investment, and its reputational benefits were not monetized to avoid double counting. Secondary beneficiaries (farmers and health services) were identified but not monetized because their outcomes were not recorded separately; this conservative choice may understate total value. Households are represented by one household per water meter; the number of connected households used in the valuation rose from 100 in 2017 to 220 in 2020 (Table 5).

Table 3. Stakeholders of the HIPAM Program and Inclusion in the Valuation

No.	Stakeholder	Role	Valued	Rationale
1	Households of Rahayu Village (HIPAM subscribers)	Primary beneficiaries	Yes	Direct, material change in water cost and access
2	Village-Owned Enterprise (BUMDes) Rahayu	Program manager and institutional beneficiary	Yes	New, recorded income stream from the HIPAM unit
3	Rahayu Village Government	Authorizing authority and accountable party	No	Relief of service obligation mapped, but no verifiable budget estimate; reported qualitatively
4	PT Pertamina EP Asset 4 Sukowati Field	Corporate sponsor (investor)	No	Provides the input; reputational benefits are not monetized to avoid double counting

No.	Stakeholder	Role	Valued	Rationale
5	Farmers using HIPAM water for irrigation (from 2020)	Secondary beneficiaries	No	Outcome not separately recorded; excluded to avoid over-claiming
6	Local health services	Secondary beneficiaries	No	Change in waterborne illness cannot be attributed with available data; reported qualitatively

Table 4 presents the impact map, which links inputs, outputs, outcomes, indicators, and financial proxies for each stakeholder. For households, the bore well, additional meters, water tank, and maintenance produced a reliable clean-water supply at a lower cost, especially during the dry season, when water scarcity previously undermined household well-being. For BUMDes Rahayu, HIPAM became a new business unit that diversifies its revenue streams and strengthens its role in local economic development. For the village government, the program relieved its obligation to provide clean water, because BUMDes assumed operational responsibility for the service; this outcome was mapped but not monetized. Health improvements, the use of HIPAM water for irrigation, and governance capacity were also mapped but not monetized; Part B of Table 4 states the reason for each exclusion.

Table 4. **SROI Impact Map of the HIPAM Program (2017–2021)**

Stakeholder	Inputs and outputs	Outcome	Indicator and source	Financial proxy (A) / Reason not monetized (B)
A. Outcomes monetized in the SROI ratio				
Households	CSR funds; 2 bore wells and 1 additional bore well, 5 km pipeline extension, 100 water meters, 3 storage tanks, facility maintenance	Reliable clean water at lower cost, especially in the dry season	Connected households per year (one meter per household; program records); 13 m ³ /household/month (interviews, program reports)	Tariff differential (IDR 6,000 – IDR 1,500 = IDR 4,500/m ³) × 13 m ³ × 12 = IDR 702,000 per household per year
BUMDes Rahayu	HIPAM business unit; bookkeeping and reporting system (2021)	Additional village enterprise income	Net profit of the HIPAM unit (BUMDes financial data)	Recorded net profit (IDR 241,613,220)
B. Outcomes mapped but not monetized				
Village Government	Delegation of water service to BUMDes	Relief from the obligation to finance clean-water provision	Interviews with village officials	No verifiable budget estimate of avoided expenditure
Households	Clean water supply	Improved health and hygiene	Waterborne illness cases (health centre)	Change cannot be attributed to HIPAM with available data; reported qualitatively
Farmers	Diversification into agricultural irrigation (2020)	Access to irrigation water	Program reports	Use not recorded separately; excluded to avoid over-claiming

Stakeholder	Inputs and outputs	Outcome	Indicator and source	Financial proxy (A) / Reason not monetized (B)
BUMDes and community	Mentoring and institutional strengthening	Governance capacity, participation, social trust	Interviews, FGDs, documents	Intangible outcome; analysed qualitatively in RQ2

Note: Input = IDR 396,475,000 invested by PT Pertamina in 2017–2021 (annual amounts in Table 5), which forms the denominator of the SROI ratio. FGDs = focus group discussions.

Each outcome was evidenced by indicators drawn from records and the survey (Table 4). Household savings were valued by the difference between the clean-water price households paid before HIPAM (IDR 6,000 per m³) and the HIPAM tariff (IDR 1,500 per m³), that is, IDR 4,500 per m³, multiplied by an average consumption of 13 m³ per household per month, as shown in Equation (4):

$$P_{HH} = \Delta T \times C \times 12 = 4,500 \times 13 \times 12 = 702,000 \quad (4)$$

This yields IDR 702,000 per connected household per year, which was multiplied by the number of connected households each year; for 2021, only the ten months up to the end of the evaluation period (October 2021) were counted. The consumption and price figures were derived from interviews and program activity reports. BUMDes outcomes were valued at the net profit of the HIPAM unit recorded in BUMDes financial data (IDR 241,613,220), recognized in 2021. Because these proxies are based on observed prices and recorded transactions, they are consistent with the positivist requirement for empirical verifiability. Table 5 presents the annual values.

Table 5. Calculation of the Present Value of HIPAM Outcomes (IDR)

Year	Households	Months	Household savings	BUMDes profit	Total impact	CSR investment	DF*	Present value of impact
2017	100	12	70,200,000	–	70,200,000	182,975,000	0.9662	67,826,087
2018	150	12	105,300,000	–	105,300,000	54,850,000	0.9335	98,298,677
2019	180	12	126,360,000	–	126,360,000	98,650,000	0.9019	113,969,480
2020	220	12	154,440,000	–	154,440,000	50,000,000	0.8714	134,585,538
2021	150	10	87,750,000	241,613,220	329,363,220	10,000,000	0.8420	277,314,993
Total			544,050,000	241,613,220	785,663,220	396,475,000		691,994,775
SROI ratio (691,994,775 / 396,475,000)								1.75 : 1

Note: Household savings = households × IDR 4,500/m³ × 13 m³ × months; the evaluation period ends in October 2021 (10 months). BUMDes profit is the net profit of the HIPAM unit recorded in BUMDes financial data and recognized in 2021. Deadweight, attribution, and drop-off = 0%. Sources: PT Pertamina program records and BUMDes data. *DF = discount factor 1/(1.035)^{t-2016}.

Deadweight, attribution, and drop-off were assessed for each outcome on the basis of triangulated evidence rather than assumption alone. Deadweight was set at 0% because the household proxy already nets out the counterfactual: it values only the difference between the price households paid for clean water before HIPAM and the HIPAM tariff, so the value that would have occurred anyway is excluded by construction. This was corroborated in the interviews, in which almost all informants and beneficiaries stated that, before HIPAM, no piped water service or other clean-water program was available in Rahayu Village and that households had to purchase water during the dry season. Attribution was set at 0% because PT Pertamina was the only contributor of investment to HIPAM during 2017–2021 (Table

4). Almost all informants and beneficiaries likewise reported that no other organization provided water infrastructure in the village during this period. Household savings are already measured net of the tariff paid to BUMDes, so the operating contribution of BUMDes is not counted twice. *Drop-off* was not applied because the analysis is evaluative: each year's value is calculated from the actual number of connected households and recorded profit in that year, so any decline in outcomes would already be reflected in the data.

Because a 0% filter is unusual in social interventions and may signal overestimation (Solórzano-García et al., 2019), the robustness of the result was tested with a sensitivity analysis (Table 6). The ratio remains above 1:1 under all moderate scenarios, falling to 1.41 when both deadweight and attribution are set at 10% and to 1.12 when both are set at 20%. The ratio falls below 1:1 only when deadweight and attribution together reduce the value of outcomes by more than 42.7%, for example 25% each. Given the absence of alternative water providers, such high values are implausible, so the conclusion that HIPAM creates more value than it costs is robust.

Table 6. Sensitivity of the SROI Ratio to Deadweight and Attribution Assumptions

Scenario	Deadweight	Attribution	Present value (IDR)	SROI ratio
Base case	0%	0%	691,994,775	1.75
A. Moderate deadweight	10%	0%	622,795,298	1.57
B. Moderate attribution	0%	10%	622,795,298	1.57
C. Moderate deadweight and attribution	10%	10%	560,515,768	1.41
D. High deadweight	30%	0%	484,396,343	1.22
E. High deadweight and attribution	20%	20%	442,876,656	1.12
F. Stress test	25%	25%	389,247,061	0.98
Break-even (combined reduction)	combined 42.7%		396,475,000	1.00

Note: Filters are applied uniformly to all monetized outcomes; total investment = IDR 396,475,000.

The total investment provided by PT Pertamina between 2017 and 2021 amounted to IDR 396,475,000, covering infrastructure (bore wells, water tanks, and distribution meters), operational support, and maintenance. The present value of the monetized outcomes, discounted at 3.5%, amounted to IDR 691,994,775 (Table 5). Applying Equation (3) gives an SROI ratio of 1.75:1: every IDR 1 invested in HIPAM generated approximately IDR 1.75 of social value for households and BUMDes.

The ratio is modest compared with ratios reported for some CSR programs, partly because only two stakeholders and directly recorded outcomes were monetized, while village government relief, health, irrigation, and governance benefits were excluded. From a functionalist perspective, the ratio provides empirical evidence that the program restores the functioning of the community system: households obtain affordable water, BUMDes consolidates its institutional role, and the village government is relieved of a service burden.

The thematic analysis produced three themes that explain how HIPAM strengthens local governance and institutional capacity in Rahayu Village.

HIPAM's integration into the BUMDes structure improved financial transparency and accountability. The improvement of administrative and financial bookkeeping in 2021, the final stage of the program roadmap, marked a shift from informal management to formal procedures in which HIPAM revenues and profit are recorded as a BUMDes business unit. BUMDes administrators described this formalization as the basis for reporting HIPAM's performance to the village government and the community. Stakeholders emphasized that these practices increased community trust in HIPAM as a reliable and legitimate provider of an essential service.

Beneficiaries reported greater involvement in decisions on water distribution and tariff setting, which they contrasted with their earlier dependence on purchasing water during the dry season. Participants highlighted that HIPAM created a sense of collective ownership, reduced dependency on external actors, and reinforced the community's capacity to manage its own resources, including shared responsibility for maintaining the infrastructure.

Interviews with BUMDes administrators, village officials, and PT Pertamina CSR officers indicated that HIPAM's performance enhanced the legitimacy of local institutions. The program was perceived not only as a technical solution to water scarcity but also as evidence of effective collaboration between the company, the village government, and the community. Village officials emphasized that delegating water services to BUMDes allowed the village government to meet its responsibility for residents' welfare without managing the service directly. This legitimacy contributed to broader social trust, which supports collective action and compliance with program rules, such as timely payment of tariffs.

Discussion

This study measured the social value created by HIPAM and explained how the program strengthens local governance. The discussion first integrates the quantitative and qualitative findings, then interprets them through the integrated theoretical framework and the functionalist paradigm, and finally sets out implications for sustainability accounting and policy.

Table 7 shows how the two strands explain each other. First, the BUMDes income component of the SROI could be measured reliably only because the HIPAM unit adopted formal bookkeeping. Administrative capacity is therefore not only an outcome of the program but also a precondition for measuring and reporting social value. Second, the stability of household savings over the years, which justified the absence of drop-off, is explained by participatory tariff setting and collective ownership, which keep tariffs affordable and households subscribed. Third, the relief of the village government's service obligation, although not monetized, reflects the institutional legitimacy of BUMDes: the village government can delegate water provision only to an organization it trusts. Finally, interview evidence that no alternative water provider existed supports the low deadweight and attribution assumptions, while the sensitivity analysis shows that the conclusion holds even if these assumptions are relaxed.

The 1.75:1 ratio is therefore not an isolated figure but the monetary expression of a functioning governance arrangement. Where administrative capacity, participation, and trust are weak, the same investment would be less likely to generate persistent and measurable

value. This finding extends SROI research that reports ratios without explaining their institutional foundations (Corvo et al., 2021; Saenz, 2021).

Table 7. Joint Display of Quantitative (RQ1) and Qualitative (RQ2) Findings

SROI component (RQ1)	Qualitative theme (RQ2)	Convergence / explanation	Meta-inference
BUMDes income from the HIPAM unit	Enhanced administrative capacity (formal bookkeeping since 2021)	Formal records made BUMDes value verifiable; profit is retained and reinvested	Institutional capacity is a precondition for measurable, reportable social value
Household savings (connected households × IDR 702,000)	Community participation in distribution and tariff setting	Participatory tariffs sustain affordability and continued subscription, supporting stable year-to-year outcomes	Governance quality explains the persistence (zero drop-off) of monetized benefits
Village government relief (mapped, not monetized)	Institutional legitimacy and social trust	Village government delegates water provision to a trusted BUMDes, releasing budget for other priorities	Legitimacy converts a CSR project into a public service arrangement
Overall ratio 1.75:1 and sensitivity (Table 6)	Collective ownership; low dependence on external actors	Absence of alternative water providers supports low deadweight and attribution	The ratio is a credible but partial account; intangible value remains outside it

The findings support the integrated framework. Consistent with stakeholder theory (Freeman, 2010), HIPAM distributes value across several stakeholders: households save on water, BUMDes gains income, and the village government is relieved of a service obligation. By mapping outcomes for each group and monetizing those that can be verified, SROI operationalizes stakeholder theory and makes the distribution of value visible (Hall et al., 2015).

Consistent with legitimacy theory (Deegan, 2019; Suchman, 1995), the SROI ratio provides PT Pertamina with monetized evidence that its mandatory CSR spending creates social value. For a state-owned enterprise in an extractive industry often scrutinized for its environmental and social impacts, such evidence supports its social licence to operate. Legitimacy also operates at the local level, because the community perceives BUMDes and the village government as effective and trustworthy service providers.

Consistent with institutional theory (DiMaggio & Powell, 1983; Scott, 2014), HIPAM institutionalized new practices. Regulative structures (the CSR regulations and the BUMDes mandate) enabled the program, normative structures (participatory tariff setting and collective ownership) guided it, and the formalization of bookkeeping in 2021 embedded it in routine. These institutional mechanisms explain why the value measured by SROI persisted over five years. The three theories thus operate together: stakeholder theory identifies whose value is created, legitimacy theory explains why it is measured and reported, and institutional theory explains how it is sustained (Chen & Roberts, 2010; Fernando & Lawrence, 2014).

Philosophically, the findings are consistent with objectivist ontology and positivist epistemology: the main outcomes are recorded quantities and prices that exist independently of the researcher and can be verified across sources. Within the functionalist paradigm,

HIPAM functions as a mechanism that restores and maintains the equilibrium of the community system. At the same time, the study shows that functionalist measurement requires qualitative evidence to identify outcomes and justify filters, which supports a moderate rather than a strict objectivist stance.

For sustainability accounting, the study shows how financial proxies can translate social outcomes into a common monetary unit that can be measured and reported alongside financial information. A transparent impact map (Table 4), an explicit calculation (Table 5), and a sensitivity analysis (Table 6) give users of sustainability reports the information needed to assess the credibility of social value claims. Such disclosure can support reporting on local community engagement and development programs, for example under GRI 413 (Local Communities) and in sustainability reports prepared under Financial Services Authority Regulation (POJK) Number 51 of 2017.

On the basis of the findings, the following recommendations are proposed. First, *PT Pertamina and other extractive companies* should report the social value of community development programs using transparent impact maps, evidence-based filters, and sensitivity analyses, rather than reporting expenditure or a single ratio. Second, *BUMDes and HIPAM managers* should maintain formal bookkeeping and record outcome data, such as the number of connections, consumption, and service interruptions, because these records are the basis for both accountability and future valuation. Third, *village and district governments* should formalize the delegation of water services to BUMDes through village regulations and allocate the budget savings to other priorities, while monitoring tariffs to protect affordability. Fourth, *regulators and CSR assessors* should develop minimum disclosure standards for SROI in CSR reporting, including the justification of proxies, deadweight, and attribution, to improve comparability and prevent overstatement.

Conclusion

This study measured the social value of the HIPAM community water program and explained how it strengthens local governance. An investment of IDR 396,475,000 by PT Pertamina between 2017 and 2021 generated a present value of IDR 691,994,775 in household water savings and BUMDes income, yielding an SROI ratio of 1.75:1 that remains above 1:1 unless deadweight and attribution jointly exceed 42.7%. The qualitative findings show that formal bookkeeping, community participation, and institutional legitimacy are the mechanisms that produce and sustain this value. The study contributes to sustainability accounting by grounding SROI valuation choices in explicit ontological and epistemological assumptions and by integrating stakeholder, legitimacy, and institutional theories to link monetized social value with institutional capacity.

The study has limitations that point to future research. First, it examines a single case, so its findings cannot be generalized statistically; comparative studies across community-based enterprises and regions are needed. Second, health, irrigation, and governance outcomes were not monetized, so the ratio is a partial account of HIPAM's value; longitudinal data on these outcomes would allow more complete valuation. Third, the functionalist paradigm and SROI share an emphasis on objectivity, measurability, and quantification that sits in tension with the multidimensional nature of social value. Monetization risks oversimplifying or commodifying intangible human experiences, such as dignity, empowerment, social cohesion, and changes in community relationships, by reducing them to economic proxies,

and it may privilege outcomes that are easy to price over those that matter most to beneficiaries. Future studies could therefore complement SROI with interpretive approaches that capture lived experience and with critical perspectives that examine power and the distribution of benefits within CSR programs.

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