

# COMMUNICATION-BASED ENVIRONMENTAL LITERACY STRATEGY TO ADDRESS POLLUTION IN SANGIR BATANGHARI

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## Abstract

This research aims to identify environmental literacy-based communication strategies that can overcome pollution in Sangir Batanghari. In this framework, environmental literacy-based communication development strategies become crucial to provide knowledge about environmental protection and increase participation and active involvement of the community in sustainable development. This research used a qualitative method using in-depth interviews, participatory observation, and document analysis as data collection techniques. The findings of this research show that local community involvement invites local communities to participate in development planning and decision-making and collaborate with non-governmental organizations. The results of this research provide an important contribution to understanding environmental pollution in providing knowledge and communication strategies for sustainable development in supporting empowerment in the Subdistrict of Sangir Batanghari. Communication strategy is an effort to overcome environmental pollution through several stages, namely, the assessment stage, the planning stage, the message production stage, and the reflection stage.

**Keywords:** *Communication, Environmental Literacy, Pollution.*

### Abstrak

Penelitian ini bertujuan untuk mengetahui bagaimana strategi komunikasi berbasis literasi lingkungan untuk mengatasi pencemaran di Sangir Batanghari. Dalam kerangka ini, strategi pengembangan komunikasi berbasis literasi lingkungan menjadi penting untuk memberikan pengetahuan tentang perlindungan lingkungan dan meningkatkan partisipasi dan keterlibatan aktif masyarakat dalam pembangunan berkelanjutan. Dalam penelitian ini, metode kualitatif digunakan dengan menggunakan wawancara mendalam, observasi partisipatif, dan analisis dokumen sebagai teknik pengumpulan data. Temuan dari penelitian ini menunjukkan bahwa Pelibatan Masyarakat Lokal adalah mengajak masyarakat lokal dalam perencanaan pembangunan dan pengambilan keputusan serta berkolaborasi dengan lembaga swadaya masyarakat. Hasil penelitian ini memberikan kontribusi penting terhadap pemahaman pencemaran lingkungan dalam memberikan pengetahuan dan strategi komunikasi pembangunan berkelanjutan dalam mendukung pemberdayaan di Kecamatan Sangir Batanghari. Strategi komunikasi sebagai upaya penanggulangan pencemaran lingkungan dengan beberapa tahapan yaitu, tahap pengkajian, tahap perencanaan, tahap produksi pesan, dan tahap refleksi.

**Kata Kunci:** *Literasi lingkungan, Komunikasi, Pencemaran.*

### A. Introduction

In the midst of the post-truth era and the proliferation of lies, environmental literacy is increasingly important in preserving natural sustainability. Environmental literacy is defined as literacy that consists of ecological knowledge, human impact on nature, environmental strategies, affective tendencies in sensitivity, attitudes, responsibility, control, values, and outlook on life and behavior that can be expressed through certain activities or the ability to act.<sup>1</sup>

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<sup>1</sup>Latifa Mirzatika Al-Rosyid et al., "Pendampingan Literasi Lingkungan Pengelolaan Sampah Di Panti Asuhan Putri Aisyiyah Jember," *Jurnal Pengabdian Teknologi Informasi Dan Kesehatan (DLANKES)* 1, no. 2 (2023): 37-43, <https://doi.org/10.47134/diankes.v1i2.9>; Fitriyanto Aji, Subiyanto, and

Environmental literacy is still considered the domain of environmental organizations, the nature-loving community, and government agencies. However, the environment is one of the leading global concerns that individuals and local communities need to address. Moreover, Indonesia, the third most biodiverse country in the world, experiences environmental degradation every year, such as deforestation, plastic waste, illegal mining, and marine pollution.<sup>2</sup>

The rate of damage and pollution in Indonesia is very fast. The main cause is that decision-making at the central and regional levels often ignores the interests of environmental conservation. For this reason, disasters and natural damage occur on land, sea, and air. In Indonesia, pollution and environmental issues are severe and must be resolved.<sup>3</sup> In the Subdistrict of SangirBatang Hari, South Solok Regency, in particular, is a mining area, which, of course, will damage the environment. Therefore, resolving issues of damage caused by the mining sector requires a strategic policy and concept.<sup>4</sup> Furthermore, the increase in environmental damage is

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Kusrina Tity, “Kemampuan Literasi Lingkungan Hidup Pada Masyarakat Dusun Kebojjo Petarukan,” *CIVET (Civic Education and Ethnography)* X, no. 1 (2022): 1–9.

<sup>2</sup>Pradipta Dirgantara, Gayes Mahestu, and Abdul Fadli K, “Mendorong Literasi Lingkungan Berbasis Komunitas Melalui Lokakarya Terpadu Di Jawa Barat,” *Charity* 4, no. 2a (2021): 27, <https://doi.org/10.25124/charity.v4i2a.4212>; Masruroh et al., “Peran Literasi Dalam Mendorong Kesadaran Lingkungan,” *Journal Of Khairun Community Services (JKC)* 4, no. 1 (2024): 2809–1647.

<sup>3</sup>Siti Maesaroh, Bahagia Bahagia, and Kamalludin Kamalludin, “Strategi Menumbuhkan Literasi Lingkungan Pada Siswa,” *Jurnal Basicedu* 5, no. 4 (2021): 1998–2007, <https://jbasic.org/index.php/basicedu/article/view/1048>; Nike Anggraini and Khoiron Nazip, “Kemampuan Literasi Lingkungan Mahasiswa Pendidikan Biologi Menggunakan Skor Nela,” *Journal of Education Action Research* 6, no. 4 (2022): 552–57, <https://doi.org/10.23887/jear.v6i4.46975>; Sri Yuliana, “Pelanggaran Hak Manusia Dalam Mempertahankan Lingkungan Hidup Menurut Undang – Undang Nomor 32 Tahun 2009 Tentang Perlindungan Dan Pengelolaan Lingkungan Hidup,” *Justicia Sains: Jurnal Ilmu Hukum* 7, no. 1 (2022): 41–62, <https://doi.org/10.24967/jcs.v7i1.1661>.

<sup>4</sup>(Desrizal, 2019)

also due to the increase in human exploitation of nature, which is an epidemic that increases the risk of disasters.<sup>5</sup> The level of environmental damage becomes one of the important factors greatly affecting the high-low risk of disasters in a region, especially in an archipelagic country like Indonesia.<sup>6</sup>

Illegal mining activities along the Batanghari River have caused water contamination with mercury that exceeds the safe limit. This is very dangerous for the health of the people who depend on the river for their daily needs, including drinking water, irrigation, and fisheries. In addition to pollution problems, illegal mining also damages the physical environment. Large pits and mounds of sand and rock miners leave cause severe land degradation. These activities also hurt forest cover in the region, accelerating deforestation and threatening local ecosystems. To address this problem, several community empowerment efforts have been undertaken. One is a forest conservation and preservation program involving local communities in more sustainable activities such as agroforestry and ecotourism.<sup>7</sup> These programs aim to provide alternative, more environmentally friendly livelihoods for communities previously involved in illegal mining.<sup>8</sup>

Pollution is a condition that has changed from its original form to a worse condition and an undesirable change in the environment that is primarily the result of human activities. Ecosystem or habitat changes can be physical, chemical, or bacteriological and affect human life, species, beneficial biota,

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<sup>5</sup>Agung Manghayu, "Penanggulangan Resiko Bencana Berbasis Kearifan Lokal Masyarakat," *Manajemen Bencana*, no. 2008 (2017): 3; Maesaroh, Bahagia, and Kamalludin, "Strategi Menumbuhkan Literasi Lingkungan Pada Siswa."

<sup>6</sup>Rudy Pramono, "Perspektif Sosiologis Dalam Penanggulangan Bencana," *Jurnal Masyarakat Dan Budaya* 18, no. 1 (2016): 81–96, <http://jmb.lipi.go.id/index.php/jmb/article/view/342>; Dkkk Gogot Suharwoto, Nurwin, "Modul Manajemen Bencana Di Sekolah," 2015.

<sup>7</sup>Boby Rahman, Astri Pratiwi, and Sania Fitri Sa'idah, "Studi Literatur: Peran Masyarakat Terhadap Konservasi Hutan," *Pondasi* 25, no. 1 (2020): 50, <https://doi.org/10.30659/pondasi.v25i1.13036>.

<sup>8</sup>(Massiri, 2022)

industrial processes, living conditions, and cultural assets. In addition, ecosystem changes are due to human activities that damage or waste natural resources.<sup>9</sup>

Some prominent cases of environmental pollution and degradation as a side effect of the development process are the destruction of forest resources due to increased illegal logging and timber smuggling practices, widespread forest, and land fires, increased demands on land and forest resources that are out of place, widespread encroachment and conversion of natural resources, and increased unauthorized mining.<sup>10</sup>

Regarding environmental management policy, the government issued Law Number 23 of 1997, which was improved through the issuance of Law Number 32 of 2009, which concerned environmental protection and management. The issuance of Law Number 32 of 2009 is intended to strengthen further the environment's planning and law enforcement aspects, as can be seen from the structure of the law, which is more dominant in regulating these aspects.<sup>11</sup> However, Law No. 32/2009 has a significant gap, namely the absence of articles and paragraphs that

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<sup>9</sup>Ninla Elmawati Falabiba, "Analisis Pencemaran Lingkungan," no. 20 (2019): 9–27; Ii, Teori, and Moderasi, "Kajian Teori ى نلا ش.".

<sup>10</sup>A, an Efendi, "Penyelesaian Kasus Pencemaran Lingkungan Dari Aspek Hukum Lingkungan," *Risalah Hukum* 7, no. 1 (2011): 72.

<sup>11</sup>Hendra Wijaya, Budi Santoso, and Muhamad Azhar, "Pertanggungjawaban Pidana Korporasi Atas Pencemaran Lingkungan Hidup," *Notarius* 14, no. 1 (2021): 206–20, <https://doi.org/10.14710/nts.v14i1.38863>; Mufrod teguh Mulyono, "Studi Analisis Tentang Pelaku Pencemaran Dan Pengerusakan Lingkungan Menurut Islam Dan Undang-Undang No 23 Tahun 1997 Dalam Pengelolaan Sumber Daya Alam," *Jurnal UIN Walisongo* 12 (2011): 49–70, <https://journal.walisongo.ac.id/index.php/wahana/article/view/2258/1564>; Imron Rosyadi and Isnaini Putri Wulandari, "Penegakan Hukum Lingkungan Terhadap Pencemaran Udara Akibat Aktivitas Industri Di Kabupaten Gresik," *Al-Qanun: Jurnal Pemikiran Dan Pembaharuan Hukum Islam* 24, no. 2 (2021): 279–307, <https://doi.org/10.15642/alqanun.2021.24.2.279-307>.

mention stakeholders' commitment to slowing down, stopping, and reversing the rate of environmental destruction.<sup>12</sup>

However, the success of this empowerment program is highly dependent on effective law enforcement against illegal mining activities. Law enforcement still has weaknesses, including the alleged involvement of law enforcement officials who complicate enforcement efforts (Mongabay.co.id). Overall, empowerment efforts in Sangir Batanghari aim to reduce dependence on illegal activities that damage the environment and direct communities towards more sustainable practices.

The emergence of the development communication paradigm is marked by the realization that the communication process in development must be guided by the community's ability to plan, implement, and evaluate development. In this case, the community is not the object of development but the subject of development; therefore, community participation is a very important factor.<sup>13</sup> Communication is carried out in a convergent manner; communication interaction is carried out in a more democratic and participatory manner. Communication activities are not giving and receiving but rather "sharing" and "dialoguing."<sup>14</sup> So

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<sup>12</sup>Rudri Musdianto Saputro, "Penegakan Hukum Lingkungan Di Indonesia Ditinjau Dari Teori Keadilan Aristoteles," *JISIP (Jurnal Ilmu Sosial Dan Pendidikan)* 7, no. 1 (2023): 25–32, <https://doi.org/10.58258/jisip.v7i1.3970>; Bachtiar Marbun, "Konsep Pemulihan Dalam Pencemaran Lingkungan Hidup (Studi Pada Putusan Pengadilan Negeri Jakarta Utara Nomor 735/PDT.GLH/2018/PN.Jkt.Utr)," *LITRA: Jurnal Hukum Lingkungan, Tata Ruang, Dan Agraria* 1, no. 1 (2021): 91–100, <https://doi.org/10.23920/litra.v1i1.545>.

<sup>13</sup>Slamet Mulyana and Meria Octavianti, "Komunikasi Pembangunan Partisipatif Dalam Pemberdayaan Purna Pekerja Migran," *Jurnal Ilmu Politik Dan Komunikasi* 8, no. 2 (2018), <https://doi.org/10.34010/jipsi.v8i2.1266>; Yuli Setyowati, "Komunikasi Pemberdayaan Sebagai Perspektif Baru Pengembangan Pendidikan Komunikasi Pembangunan Di Indonesia," *Jurnal Komunikasi Pembangunan* 17, no. 2 (2019): 188–99, <https://doi.org/10.46937/17201926849>; Joko Sutarso et al., *Pemberdayaan Masyarakat: Perspektif Komunikasi, Organisasi, Budaya Dan Politik*, 2018.

<sup>14</sup>Andi Azikin and Soma Atmaja H., "Analisis Peran Pemerintah Daerah Dalam Penanggulangan Dampak Pembangunan Kota Baru Dan

far, community involvement has only been seen in a narrow context, meaning that the community is only seen as the recipient of development innovations without being involved in planning and decision-making, not being developed creatively from within, and having to listen to decisions that their own parties have already made. The result is the creation of community dependence on other parties, not empowerment and independence.<sup>15</sup>

The presence of development communication is intended to contribute significantly to the development process and accelerate the diffusion of innovation. The diffusion of innovations in development is an effort to meet the demands of modernization. Therefore, development is often equated with the term modernization. One of the indicators of modernization is the presence of very fast-developing communication technologies. Communication technology created to facilitate human work ultimately does not place human beings as subjects but as objects of technology.<sup>16</sup> The helplessness of individual human beings when confronted with communication technology illustrates the failure of human-centered development and social change processes. People are often powerless to stem the hegemony of communication technology. Therefore, empowerment communication becomes a new perspective in development communication education with the spirit of voicing the voiceless.

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Perubahan Sosial Di Kabupaten Tangerang Provinsi Banten,” *Jurnal Ilmiah Wahana Bhakti Praja* 9, no. 2 (2019): 123–33; Desa Pondok, “Komunikasi Partisipatif Warga Pada,” 2009.

<sup>15</sup>Indardi, *Komunikasi Pemberdayaan Masyarakat*, 2016; Dini Hardianti, “Iain Palopo,” *Core.Ac.Uk*, (2019). <https://core.ac.uk/download/pdf/198238758.pdf>.

<sup>16</sup>Rany Safitri, Asmawi Asmawi, and Ernita Arif, “Difusi Inovasi Program Pemerintah: Studi Komunikasi Pembangunan Pada Kelompok Wanita Tani Anugrah Kabupaten Padang Pariaman,” *JISPO Jurnal Ilmu Sosial Dan Ilmu Politik* 9, no. 2 (2019): 502–13; Rika E. Nurhidayah et al., *Membangun Komunitas Dalam Pengembangan Masyarakat, Paper Knowledge . Toward a Media History of Documents*, 2022.

## **B. Method**

Based on the problem under study, this type of research is qualitative descriptive. Descriptive qualitative research is research that can capture a variety of qualitative information with a thorough and nuanced description (Soetopo, 2006); the research strategy used is a single-case study because this research is directed at a target with one characteristic located in one location (Yin, 1987). Creswell (1998) states that the focus of the case study is the specificity of the case in an event, whether it includes individuals, cultural groups, or a portrait of life. This type of case research strategy can also be called embedded case study research because the problem and focus of the research have been determined from the beginning (Soetopo, 2006). Data was collected using in-depth interviews, observation, focus group discussions (FGDs), and documentation. According to Miles and Haberman (1984), this analysis model consists of three components: data reduction, data presentation, and conclusion drawing. The activities of these three components are carried out in an interactive form, with the data collection process as a cyclical process. Data were validated by using triangulation of sources and methods.

## **C. Results and Discussion**

Environmental degradation in Indonesia shows the environmental illiteracy of the people who use the environment. BAPPENAS said three factors cause natural damage: human activities, technology choices, and institutional structures (BAPPENAS, 2004). Human activity factors that damage the environment include: (1) low public awareness, understanding, and concern; (2) overutilization; (2) illegal collection and trade; (3) conversion of natural habitats; (4) monoculturalism in cultivation and utilization; (5) population pressure; and (6) poverty and greed. <sup>17</sup> BAPPENAS ranks low community awareness and concern for the environment number one among other factors.

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<sup>17</sup>Riza Sativani Hayati, "Pendidikan Lingkungan Berbasis Experiential Learning Untuk Meningkatkan Literasi Lingkungan," *Humanika* 20, no. 1 (2020): 63–82, <https://doi.org/10.21831/hum.v20i1.29039>; RB Primack et al.,



Some people lack awareness and understanding of biodiversity's importance for their daily lives and as a development asset. This lack of understanding leads to indifference, which in turn leads to destruction. This shows that the Indonesian people still lack environmental literacy, which is needed in order to maintain environmental sustainability.<sup>18</sup>

*The Campaign for Environmental Literacy* (2011) in (RIEEA, 2016) defines environmental literacy as the capacity of individuals to act successfully in their daily lives with a broad understanding of how individuals and communities relate to each other and natural systems and how they can do so sustainably.<sup>19</sup> This requires sufficient awareness, knowledge, skills, and attitudes to consider the environment in everyday decisions about consumption, lifestyle, career, and citizenship and to engage in environmental action, both individually and collectively. Based on the above understanding, the components of environmental literacy can be interpreted into four, namely ecological knowledge, affect (e.g., pro-environmental attitudes, environmental sensitivity, self-efficacy), cognitive skills (e.g., problem analysis and problem-solving), and environmental *behavior, mainly when little time is available for evaluation since environmental literacy.*<sup>20</sup>

Environmental education is currently the focus of theoretical and practical attention of many scholars, and concerns about environmental issues have brought environmental education

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“Konservasi Biologi,” 1998; Muhamad Parhan et al., “Education As an Attempt to Ward Off Islamophobia Virus in Strengthening Nationalism and Indonesian Spirituality,” *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 1, no. 1 (2021): 47–68, <https://doi.org/10.21154/cendekia.v1i1.2337>.

<sup>18</sup>S M P Negeri, Indonesia Universitas, and PGRI Semarang, “Analisis Literasi Lingkungan Siswa SMP,” *JPPS (Jurnal Penelitian Pendidikan Sains)* 10, no. 02 (2021): 1976–82; I Putu Oktap Indrawan et al., “Penumbuhan Literasi Lingkungan Di Sekolah Dasar,” *Jurnal Ilmiah Pendidikan Profesi Guru* 5, no. 1 (2022): 21–31, <https://doi.org/10.23887/jippg.v5i1.47385>.

<sup>19</sup>Hayati, “Pendidikan Lingkungan Berbasis Experiential Learning Untuk Meningkatkan Literasi Lingkungan.”

<sup>20</sup>hayati; Anisa Listiyani Et Al., “( Environmental Literacy ) Pada Mahasiswa Angkatan 2021 Dan 2022 Pendidikan Biologi,” 2023.

to the center of public opinion. As one of the answers to environmental problems, environmental education has many challenges. These challenges include effectively integrating mainstream information sources, broad learning opportunities, and effective communication from the environment to the community (Hudson M, 2001). Firth (1998) (Bjorkland & Pringle, 2001) argue that existing environmental education is still soft and controlled with ineffective communication from the environment to the public. Firth suggests that education is most effective if it is combined with discovery. Environmental education is not just a study of nature, conservation, or resource management, but experiential learning, using all human, natural, and physical resources of schools and communities as educational collaborators (Bell, 2019). This will increase students' awareness, appreciation, understanding, and motivation, giving them the skills needed to maintain or change the ecosystem for the better.

A person's environmental awareness is based on his environmental knowledge. A person with good environmental literacy is also considered to have good environmental awareness. This is important in this century, not only because of the demand for progress and paradigm shifts.<sup>21</sup> However, it also helps solve existing problems and instill disciplined and wise attitudes toward the environment. Both environmental literacy and environmental awareness often face challenges in their application.<sup>22</sup>

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<sup>21</sup>Ruqoyyah Nasution, "Analisis Tingkat Literasi Lingkungan Mahasiswa FKIP Universitas Mulawarman Dengan Transformasi Skor NELA (National Environmental Literacy Assessment)," *Jurnal Ilmiah BioSmart (JIBS)* 7, no. 1 (2021): 38–51, <https://doi.org/10.30872/jibs.v1i1.423>.

<sup>22</sup>Syavira Indriyani, Afandi Afandi, and Eko Sri Wahyuni, "Literasi Lingkungan Dan Kesadaran Lingkungan: Potensi Dan Tantangan Dalam Pendidikan Abad 21," *Prosiding Seminar Nasional Pendidikan 2020*, no. March (2020): 239–45, [https://www.researchgate.net/publication/353016532\\_Literasi\\_Lingkungan\\_Dan\\_Kesadaran\\_Lingkungan\\_Potensi\\_Dan\\_Tantangan\\_Dalam\\_Pendidikan\\_Abad\\_21](https://www.researchgate.net/publication/353016532_Literasi_Lingkungan_Dan_Kesadaran_Lingkungan_Potensi_Dan_Tantangan_Dalam_Pendidikan_Abad_21); Rini Aulia Fitri and Hadiyanto Hadiyanto, "Kepedulian Lingkungan Melalui Literasi Lingkungan Pada Anak Usia Dini," *Jurnal Obsesi: Jurnal*

Environmental problems in Indonesia certainly cannot be solved by saving and responding to disasters alone. Collective awareness is needed to protect the environment jointly. Thus, more serious efforts are needed to build and improve human concern for the environment so that environmental quality damage and degradation do not occur.<sup>23</sup>

### Impact of Illegal Mining

Kristanto (2004) explains that impact is any change that occurs in the environment due to human activities. Here, it is not mentioned because of the existence of projects, which are often interpreted as physical buildings only. There are many projects whose physical buildings are relatively small or non-existent, but the impact is large.<sup>24</sup> So, the object of discussion is not only the impact of the project on the environment but also the impact of the environment on the project. Mining impact is a change in the environment caused by exploitation activities, both social, economic, cultural, health, and natural environment changes. PETI activities have positive and negative impacts on local communities' ecological and socioeconomic aspects. PETI activities, in general, are not environmentally friendly because they are concerned with short-term interests such as how to make money. This is caused by the lack of awareness of preserving the environment. The impacts caused by this PETI are described as follows:

#### 1. Environmental Impacts and Disasters

Gold mining activities are non-renewable natural resource exploitation activities where mining activities can impact the destruction of ecosystems. A damaged ecosystem means an

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*Pendidikan Anak Usia Dini* 6, no. 6 (2022): 6690–6700, <https://doi.org/10.31004/obsesi.v6i6.3485>.

<sup>23</sup>Uud Wahyudin, “Strategi Komunikasi Lingkungan Dalam Membangun,” *Jurnal Common* 1, no. 2 (2017): 130–34, <https://ojs.unikom.ac.id/index.php/common/article/download/576/425>.

<sup>24</sup>Wira Fuji Astuti, Ivanovich Agusta, and Mahmudi Siwi, “Dampak Aktivitas Pertambangan Emas Tanpa Izin Terhadap Kesejahteraan Rumah Tangga Gurandil,” *Jurnal Sains Komunikasi Dan Pengembangan Masyarakat [JSKPM]* 1, no. 3 (2017): 317–38, <https://doi.org/10.29244/jskpm.1.3.317-338>.

ecosystem that cannot perform its functions optimally, such as land protection, water management, weather regulation, and other functions in regulating environmental protection. For many years, Illegal or artisanal gold mining has caused negative impacts and environmental disasters.

The environmental impacts that arise as a result of this illegal gold mining activity are generally a decrease in the quality of the environment with various pollution and land damage. The state of the environment and damaged land will result in a decrease in land productivity.<sup>25</sup> The International Panel on Climate Change states that forest destruction and degradation caused by illegal mining, especially in developing countries, produces 18% of the world's carbon dioxide emissions. Miners carry out deforestation to carry out excavation. The existence of illegal mining pits and excavations is left unattended when the soil is reforested. These mining pits make the soil condition unstable and at risk of landslides and erosion.<sup>26</sup>

The landslide disaster in BolaangMongondow, South Sulawesi Province, is one of the disasters caused by illegal mining in Indonesia. A landslide can also occur due to the procedure of stockpiling rocks and materials from the mine. Another risk of gold mining is land subsidence, which causes damage to infrastructure, such as cracking roads and houses or even destroying them. Illegal gold mining, in which the refining process uses mercury, pollutes the environment because the waste settles on the riverbed.<sup>27</sup>

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<sup>25</sup>Nur Efendi et al., "Pertambangan Emas Tanpa Izin (Peti): Dampak Lingkungan, Sosial Dan Ekonomi Serta Peranan Hukum Lingkungan," *Jurnal Ilmiah Multidisiplin Nusantara (JIMNU)* 1, no. 3 (2023): 123–28, <https://doi.org/10.59435/jimnu.v1i3.57>.

<sup>26</sup>Rossi Maunofa Widayat, "Analisis Dampak Keberadaan Pertambangan Emas Liar Masyarakat Terhadap Lingkungan (Studi Kasus Di Desa Lunyuk Rea Kecamatan Lunyuk Kabupaten Sumbawa)," *Jurnal GaneSvara* 11, no. 2 (2017): 80–84.

<sup>27</sup>Surahma Asti Mulasari, "Gangguan Kesehatan Akibat Pencemaran Merkuri (Hg) Pada Penambangan Emas Ilegal Health Problems Due to Mercury (Hg) Contamination in Illegal Gold Mining," *Jurnal Kesehatan Terpadu (Integrated Health Journal)* 12, no. 1 (2021): 8–15.

Combining gold grains with mercury can contaminate the environment with mercury (Hg) contamination.<sup>28</sup> The Global Mercury Assessment estimates that illegal gold mining emits an average of 727 tons of mercury annually (United Nations Environment Programme, 2012). Decomposing gold from rocks and excavations from illegal mining generally uses cyanide, which releases cyanide gas and nitric acid. Illegal gold processing waste emits mercury, cyanide, arsenic, manganese, and other heavy metals that significantly reduce flora habitat and decrease fauna populations due to deaths from exposure to contaminants from these wastes.<sup>29</sup>

## 2. Socioeconomic Impacts

Socioeconomic impacts have been the most researched and studied topic in the study of illegal mining. Many researchers and world organizations have issued scientific publications on the socioeconomic impacts of illegal mining, such as the World Bank, the International Institute for Environment and Development (IIED), and the International Labor Organization (ILO). The World Bank explains that illegal and artisanal mining is an important source of income for poor countries. According to the World Bank's research, illegal gold mining provides for the survival of millions of families in remote areas of developing countries.<sup>30</sup>

An estimated 100 million people (miners, family members, and communities) depend on illegal gold mining, with 7 million of them being miners. According to Oblokuteye (2010), the existence of illegal mining activities in the region minimizes the movement of people from rural to urban areas. This statement is reinforced by the World Bank, which states that illegal mining in the region cuts

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<sup>28</sup>Efendi et al., "Pertambangan Emas Tanpa Izin (Peti): Dampak Lingkungan, Sosial Dan Ekonomi Serta Peranan Hukum Lingkungan."

<sup>29</sup>Indriyani, Afandi, and Wahyuni, "Literasi Lingkungan Dan Kesadaran Lingkungan : Potensi Dan Tantangan Dalam Pendidikan Abad 21."

<sup>30</sup>Dona Fauziah, "Ekonomi Politik: Relasi Pemerintah Daerah Dan Masyarakat Dalam Kasus Pertambangan Emas Tanpa Izin Di Desa Petapahan Kecamatan Gunung Toar Kabupaten Kuantan Singingi Tahun 2013-2015," *Jom FISIP* 4, no. 1 (2017): 103–11.

down on population migration (World Bank, 2013). Another socioeconomic impact is the change of workers from farmers to miners, with increased income for residents (Sari et al., 2013). Illegal mining contributes around 20% of the world's production, including 80% of precious stones, 20% of the world's diamond supply, and 25% of tin.<sup>31</sup>

This illegal mining also provides raw materials for the mineral-based cosmetic industry. Among them are kolin for paint and cosmetic powder manufacturers, salt for pharmaceutical products, mica for the ceramic industry, and gold for jewelry production. However, the influx of new miners in a new mining area, in an effort for the community to escape poverty and become rich, has given rise to a new culture that is sometimes detrimental to the local community. Neighborhoods dominated by miners and male workers become fertile ground for prostitution and promiscuity in the community. Another impact is the increase in students who skip classes and quit school because they prefer to follow gold miners. This is due to increased illiteracy and low education among school children.<sup>32</sup>

### 3. Law Enforcement in Combating Illegal Mining

Law enforcement is the actualization of legal objectives that are still in the ideal stage and are realized in society by the ideals or objectives of the law itself. The law's purpose is to state a rule to guarantee the certainty of the law. In addition to ensuring legal certainty, it is also important to maintain a sense of justice in the community that expects there to be legal justice in itself. It is no less important that in addition to maintaining legal certainty and

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<sup>31</sup>Muh Dwiky Novendra, "Dampak Pertambangan Emas Bagi Kehidupan Ekonomi Masyarakat Bolaang Mongondow Timur Dikota Bunan Kecamatan," *Jurnal Ilmiah Society* 1, no. 1 (2021): 4, <https://ejournal.unsrat.ac.id/index.php/jurnalilmiahociety/article/view/35817>.

<sup>32</sup>Minsumbang i, Sumbangan Baja, and Iqbal Sultan, "Penerimaan Informasi Dampak Penambangan Pasir Bagi Kerusakan Lingkungan Hidup Di Kalangan Penambang Pasir Ilegal Di Das Jeneberang Kabupaten Gowa," *Jurnal Komunikasi KAREBA* 3, no. 2 (2014): 114.

justice, it is also in the interest of obtaining the benefits of the law to organize the community's social life.<sup>33</sup>

The existence of PETI has a positive economic impact, namely creating employment opportunities that significantly affect the community's economic development. However, in its development, PETI has also caused several negative impacts, among which are. First, the occurrence of environmental damage as a result of the management of mining that is used will damage the water ecosystem where it becomes polluted due to the chemical substances used in its management so that the river water can be used for daily needs and the fish in it also become dangerous for consumption. This is due in no small part to the impact of pollution by altering the chemicals used.<sup>34</sup>

The mining of pastes is an act prohibited by law. Affected communities have the right to obtain a prosperous life, to live in and obtain a good and healthy environment, and to obtain health services as stated in Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia. In addition, Law Number 32 of 2009 concerning Environmental Protection and Management (PPLH Law) also regulates the prohibition of unlicensed mining (PETI). Article 3 of the Law states that the protection and management of the environment aim to protect the territory of the Unitary State of the Republic of Indonesia from pollution and/or destruction of the environment, to ensure safety, health, and human life, and to ensure the survival of living things and the preservation of ecosystems. Article 3 also stipulates that the protection and management of the environment aims to maintain the preservation of environmental functions, achieve harmony, guarantee the fulfillment and protection of

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<sup>33</sup>D I Citorek, Kidul Kabupaten, and Lebak Banten, "Proceedings Series Master of Management Program Business Adaptability, Change Management and Technopreneur Conferences e-ISSN: 0000-0000," 2021, 77–89.

<sup>34</sup>Novia Rahmawati A Paruki and Ahmad Ahmad, "Efektivitas Penegakan Hukum Tambang Ilegal," *Batulis Civil Law Review* 3, no. 2 (2022): 177, <https://doi.org/10.47268/ballrev.v3i2.966>.

environmental rights as part of human rights, control the utilization of natural resources wisely, realize sustainable development, and anticipate global environmental issues (Putri, 2020).<sup>35</sup> The PPLH Law also regulates the criminal provisions for environmental pollution as regulated in Article 98, which states that the punishment threat for every person who deliberately commits an act that results in the exceeding of ambient air quality standards, water quality standards, seawater standards, or environmental damage criteria, is imprisonment for a minimum of 3 years and a maximum of 10 years, and a fine of at least Rp. 3,000,000,000. 3,000,000,000.00 and a maximum of Rp. 10,000,000,000.00. Paragraph (2) of the article states that if the act injures a person and/or changes human health, the punishment is imprisonment for a minimum of 4 years, a maximum of 12 years, and a fine of at least Rp. 4,000,000,000.00 and a maximum of Rp. 12,000,000,000,000.00. If the act results in serious injury or death, the penalty is imprisonment for a minimum of 5 years, a maximum of 15 years, and a fine of at least Rp. 5,000,000,000.00 and a maximum of Rp. 15,000,000,000.00" (Putri, 2020). The role of the government apparatus, especially the agencies that deal directly with legal issues, must continuously improve their work to achieve maximum results. A good law will certainly be useless if it is not enforced. Therefore, quality resources and supporting infrastructure are needed. In addition, the support of the wider community is a prerequisite for realizing equitable law enforcement.<sup>36</sup>

Environmental communication itself is a plan and strategy through communication processes and media products to support the effectiveness of policy-making, public participation, and

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<sup>35</sup>M. Rafli Maulana and Arif Firmansyah, "Penegakan Hukum Terhadap Pelaku Usaha Yang Menambang Di Kawasan Hutan Tanpa Izin," *Jurnal Riset Ilmu Hukum*, no. 2 (2023): 11–16, <https://doi.org/10.29313/jrih.v3i1.1839>.

<sup>36</sup>Hana Aulia Putri, "Penegakan Hukum Terhadap Pertambangan Emas Tanpa Izin Oleh Kepolisian Sektor Kecamatan Singingi," *Jurnal Lex Renaissance* 5, no. 4 (2020): 863–76, <https://doi.org/10.20885/jlr.vol5.iss4.art8>.



implementation on the environment (Oepen, 1999). In this understanding, environmental communication becomes an integrated component in policy.

Furthermore, Robert Cox, in his book *Environmental Communication and the Public Sphere*, argues that environmental communication is a dramatic and constitutive means of providing the public with an understanding of the environment as it relates to the universe. It is a symbolic medium used to create environmental problems and negotiate different responses to environmental problems that occur. In other words, communication is used to create understanding about environmental problems.<sup>37</sup>

The right communicator must execute the communication strategy. Furthermore, research, an ongoing monitoring process, and evaluation are important parts of the planning. The objectives of audience segmentation for each type of media also determine the use of media.<sup>38</sup>

Communication strategy is the first step and is decisive in how environmental communication is carried out. Therefore, it is necessary to consider many things, including the supporting factors or factors that hinder it, and to pay attention to the stages and steps in the environmental communication strategy.<sup>39</sup>

First is the assessment stage, which consists of a situation analysis and problem identification, analysis of the parties/actors involved, and communication objectives. The community and industry as the target of environmental communication need to be identified so that the message can be delivered based on the situation and conditions of the community and industry to be addressed. Suppose it turns out that environmental pollution is caused by the behavior of the community and industry, which are

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<sup>37</sup>(Ardian, 2019; Arkansyah et al., 2021)

<sup>38</sup>Sella Maulidya et al., "Komunikasi Lingkungan Komunitas Bank Sampah Wijaya Kusuma Dalam Meningkatkan Semangat Peduli Lingkungan," *Strategi Komunikasi Lingkungan Dalam Membangun Kepedulian Masyarakat Terhadap Lingkungan* 1, no. 2 (2020): 157–76.

<sup>39</sup>Assegaf, Faizin, and Tandio, "Memahami Komunikasi Lingkungan Dan Framing Sebagai Praksis Perubahan Sosial."

still reluctant to behave. There is not much awareness of environmental sustainability. In that case, it is time for the community and industry as the main stakeholders of each environmental communication program to be sweeter if they are placed as actors in preserving the environment. Furthermore, environmental communication needs to be studied properly so that the message can be shaped and adjusted to the purpose of communication.<sup>40</sup>

Second, the planning stage involves developing a communication strategy, motivating and mobilizing the community and industry, and selecting the media. The exemplary communicator must carry out the communication strategy. Next, several types of media can be used in communication. However, each media's advantages and disadvantages need to be considered to suit the situation and conditions of communication. Use interpersonal communication, education, and counseling. In addition, mass media, both print and electronic media, can be used to raise awareness and concern in the community and industry regarding environmental sustainability. Furthermore, social marketing and mobilization should be practiced with environmental communication campaigns.<sup>41</sup>

Mass media has the power to disseminate information. Its reach is also present in various social, economic, and political layers. As one of the sources of information to gain knowledge and insight, mass media can actually be used as an instrument to manage and preserve the environment.<sup>42</sup> This can be done through

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<sup>40</sup>Fahmi, "Komunikasi Lingkungan Dalam Komunikasi Islam"; Hadikurnia, "Strategi Komunikasi Lingkungan Kelompok Masyarakat Peduli Alam Sekitar (Kempas) Dalam Mengelola Ekowisata Mangrove Desa Sebauk Kecamatan Bengkalis Kabupaten Bengkalis."

<sup>41</sup>Primananda and Moekahar, "Komunikasi Lingkungan: Upaya Mewujudkan Arboretum Gambut Sebagai Ekowisata Di Kabupaten Bengkalis"; Siregar and Satriani, *Komunikasi Informasi Wisata Di Media Sosial*.

<sup>42</sup>Jerry Indrawan, Efriza, and Anwar Ilmar, "Kehadiran Media Baru (New Media) Dalam Proses Komunikasi Politik," *Medium* 8, no. 1 (2020): 1–17, [https://doi.org/10.25299/medium.2020.vol8\(1\).4820](https://doi.org/10.25299/medium.2020.vol8(1).4820); Alamsyah Alamsyah, "Model Komunikasi Jejaring Sosial Dan Media Massa Dalam Konteks Pesan

engaging content and news. In line with that, Lippman (in Schramm, 1970) emphasized that the media plays a role in the dissemination of information and can also shape people's perceptions so that through mass media such as newspapers, radio, and TV, people can find out what is happening around them and elsewhere. Therefore, the media provides adequate information space for the environment to be appreciated. Suppose the mass media can display and disseminate information that can build concern for the environment. In that case, it is hoped that the community will have the insight and awareness to protect and preserve the environment.<sup>43</sup>

Third, the message production stage comprises message design and media production steps. Environmental communication messages should focus on efforts to change habits that are not difficult for the environment.<sup>44</sup> For example, socializing about "Don't Dump Garbage And Waste In The Sungai."

Fourth, the action and reflection stage consists of dissemination through the media and documentation, monitoring,

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Publik," *Dialektika Komunika: Jurnal Kajian Komunikasi Dan Pembangunan Daerah* 9, no. 1 (2021): 12–27, <https://doi.org/10.33592/dk.v9i1.1378>; Dedi Kusuma Habibie, "Dwi Fungsi Media Massa," *Interaksi: Jurnal Ilmu Komunikasi* 7, no. 2 (2018): 79, <https://doi.org/10.14710/interaksi.7.2.79-86>.

<sup>43</sup>Bambang Warsita, "Pemanfaatan Program Siaran Televisi Pendidikan Untuk Peningkatan Kualitas Pembelajaran the Utilization of Education Television Program for Improving the Quality of Learning," *Jurnal Teknodik*, 2019, 126–37, <https://doi.org/10.32550/teknodik.v17i3.567>; Husnul Khatimah, "Posisi Dan Peran Media Dalam Kehidupan Masyarakat," *Tasamuh* 16, no. 1 (2018): 119–38, <https://doi.org/10.20414/tasamuh.v16i1.548>; Hamdani Thaha, "Media Massa Dan Masyarakat," *Al-Tajdid* I, no. 1 (2003): 59–74.

<sup>44</sup>Suranto, "Perencanaan & Evaluasi Program Komunikasi," *Journal of Chemical Information and Modeling* 53, no. 9 (2019): 21–25, <http://www.elsevier.com/locate/scp>; Primananda and Moekahar, "Komunikasi Lingkungan: Upaya Mewujudkan Arboretum Gambut Sebagai Ekowisata Di Kabupaten Bengkulu"; Hadikurnia, "Strategi Komunikasi Lingkungan Kelompok Masyarakat Peduli Alam Sekitar (Kempas) Dalam Mengelola Ekowisata Mangrove Desa Sebauk Kecamatan Bengkulu Kabupaten Bengkulu."

and evaluation.<sup>45</sup> Efforts to raise the community's and industry's awareness and concern about the environment through environmental communication are key to the government's priorities and political commitment. In environmental communication, disseminating messages through several media types, a continuous monitoring process, and evaluation are important parts that local governments must carry out.<sup>46</sup> With this approach, development in Sangir Batang Hari can be run more effectively and according to community needs, reducing dependence on illegal activities such as illegal mining.

Applying empowerment theory in development communication in Sangir Batang Hari is crucial to ensure active community participation in the development process. The following are some steps that can be taken to apply empowerment theory in development communication in the area:

- a. Community Participation: The SangirBatang Hari community should be encouraged to be actively involved in developing, implementing, and evaluating development projects. This can be done through participatory meetings, discussion forums, or working groups involving various layers of the community.<sup>47</sup>
- b. Education and Training: Empowering communities requires adequate knowledge and skills. Therefore, education and training programs should be organized to improve people's

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<sup>45</sup>Wahyudin, "Strategi Komunikasi Lingkungan Dalam Membangun."

<sup>46</sup>(Kadarisman, 2015)

<sup>47</sup>Diradimalata Kaehe, Joorie M Ruru, and Rompas Y. Welson, "Partisipasi Masyarakat Dalam Perencanaan Pembangunan Di Kampung Pintareng Kecamatan Tabukan Selatan Tenggara," *Jurnal Administrasi Publik* 5, no. 80 (2019): 14–24; Ricky Wirawan, Mardiyono, and Ratih Nurpratiwi, "Partisipasi Politik Masyarakat Dalam Pemilihan Kepala Kampung (Suatu Studi Di Desa Karetubun Distrik Ayamaru Utara Kabupaten Maybrat)," *Politico: Jurnal Ilmu Politik* 4, no. 2 (2016): 301–12, <https://www.neliti.com/publications/160740/partisipasi-politik-masyarakat-dalam-pemilihan-kepala-kampung-suatu-studi-di-des>; C.S.T KANSIL, "Partisipasi Masyarakat Dalam Pelaksanaan Pembangunan Di Desa Tembuni Distrik Tembuni Kabupaten Teluk Bintuni," *Governance* 5, no. 1 (2003): 90–100.

- understanding of the development process, their rights, and how to participate effectively.<sup>48</sup>
- c. Partnerships with External Parties: In addition to engaging local communities, governments and development agencies must also work with non-governmental organizations (NGOs), community-based organizations (CBOs), and the private sector to support sustainable and inclusive development.<sup>49</sup>
  - d. Transparency and Accountability: Open and honest communication about the development process, budget, and decisions taken is essential. This helps build trust between the government and the community and ensures the community's needs are considered.<sup>50</sup>
  - e. Empowerment of Vulnerable Groups: In empowerment efforts, special attention needs to be given to vulnerable groups such as women, children, people experiencing

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<sup>48</sup>Ismatul Maula et al., "Pendidikan Untuk Pemerataan Pembangunan: Memperjuangkan Hak Semua Anak," *Journal on Education* 05, no. 04 (2023): 13153–65; Dinda Alifatul Laila and Salahudin Salahudin, "Pemberdayaan Masyarakat Indonesia Melalui Pendidikan Nonformal: Sebuah Kajian Pustaka," *Jurnal Pembangunan Pendidikan: Fondasi Dan Aplikasi* 9, no. 2 (2022): 100–112, <https://doi.org/10.21831/jppfa.v9i2.44064>; Dwi Iriani Margayaningsih, "Peran Masyarakat Dalam Kegiatan Pemberdayaan Masyarakat Di Desa," *Jurnal Publiciana* 11, no. 1 (2018): 72–88.

<sup>49</sup>putri Kurniawati, "No Titleالابتزاز الإلكتروني.. طرق تغذية جرائم طفرة على تغذية جرائم الإلكترونية," *Universitas Nisantara PGRI Kediri* 01 (2017): 1–7; Lina Wati, Misnen Ardiansyah, and Himyar Pasrizal, "Peran Organisasi Non Pemerintah Human Initiative Sumatera Utara Terhadap Pemberdayaan Ekonomi Masyarakat Pesisir Kota Medan," *Jurnal Magister Ekonomi Syariah* 1, no. 2 Desember (2023): 73–86, <https://doi.org/10.14421/jmes.2022.012-06>.

<sup>50</sup>Idah Rosidah et al., "Transparasi Dan Akuntabilitas Dalam Pencegahan Fraud Diinstansi Pemerintah (Studi Kasus Kantor Kec. Ciwidey)," *Jurnal Ekonomi Manajemen Bisnis Dan Akuntansi : EMBA* 2, no. 1 (2023): 137–56, <https://doi.org/10.59820/emba.v2i1.110>; F Trisakti et al., "Pentingnya Etika Dan Akuntabilitas Di Indonesia," *Jurnal Ilmu Sosial* 21, no. 1 (2023): 22–31, <http://www.jurnaldialektika.com/index.php/piani/article/view/128%0Ahttps://www.jurnaldialektika.com/index.php/piani/article/download/128/118>.

poverty, and people with disabilities. They are often the most marginalized and need exceptional support to participate effectively in development.<sup>51</sup>

By applying the empowerment approach in development communication, it is hoped that development in Sangiratang Hari will be more sustainable, relevant to the community's needs, and can improve welfare.

Solutions that can be offered in sustainable development in the Sangir Batanghari sub-district focus on development that meets the needs of the present without sacrificing the ability of future generations to meet their own needs. The forest conservation and preservation program involving agroforestry and ecotourism in Sangir Batang Hari is an example of its application. Agroforestry combines agriculture and forestry practices to create a more productive and sustainable land use system.<sup>52</sup> Meanwhile, ecotourism utilizes natural beauty to attract tourists, which can, in turn, provide additional income for local communities without causing environmental damage.<sup>53</sup>

Program Example:

- a. Agroforestry: Communities plant economically valuable crops together with forest trees. This helps conserve soil and water and provides an additional source of income from the

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<sup>51</sup>Aji Dahlan Dakelan, Miftahul Huda, Acmad Murtafi Haris, *Mewujudkan Desa Inklusif*, 2016; Reiki Nauli Harahap, Arnola Septa Maheswara, "Pemberdayaan Kelompok Rentan Difabel Melalui Kemitraan Multipihak," *Jurnal Masyarakat Dan Desa* 1, no. 2 (2021): 164–78, <https://doi.org/10.47431/jmd.v1i2.156>.

<sup>52</sup>Muhammad Rizal Efendi And Arindi, "Dampak Program Agroforestri Terhadap Habitat Asli Fauna Di Desa Batang Duku Kecamatan Bukit Batu Kabupaten Bengkalis," *Seminar Nasional 2: Quo Vadis Restorasi Gambut Di Indonesia*, 2013, 12–26; Bappelitbangda, "Kajian Agroforestry Berbasis Tanaman Unggulan Propinsi Sulawesi Selatan Dalam Areal Kph Untuk Menunjang Ketahanan Pangan Masyarakat Pengarah.," *Penelitian Bappelitbangda*, 2020.

harvest. The active involvement of the Sangir Batanghari Community in preventing pollution caused by illegal gold mining by having a plan to plant cassava on the land after mining.



Sumber: Dokumentasi Rabu 7 Mei 2024

The picture above shows that the shape of the river flow is affected by gold mining, which causes the river water to become dirty. The picture above is one of the seeds that will be distributed in each village in Sangir Batanghari. The distribution of these seeds can divert the community's livelihood because after reviewing the plants that can grow quickly from the mining excavation, the only need is one of the ways from the government to overcome the pollution that occurs in Sangir Batanghari caused by illegal gold mining.

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<sup>53</sup>Reydi Marco Manahampi et al., "Peranan Ekowisata Bagi Kesejahteraan Masyarakat Baho Kecamatan Likupang Barat," *Agri-Sosioekonomi* 11, no. 3A (2015): 1, <https://doi.org/10.35791/agrsosek.11.3a.2015.10181>.

- b. Ecotourism: To attract tourists, local communities develop nature-based tourism destinations, such as protected forests and conservation areas. Tourists can enjoy natural beauty while learning about the importance of conserving forests. Revenue from ecotourism can be used to support conservation activities and improve community welfare.

#### **D. Conclusions**

Environmental literacy and awareness are skills that need to be developed in this era. Implementing environmental literacy and awareness cannot be separated from challenges. One of these challenges is the community's indifference to the importance of protecting the environment. This indifference can be seen in various activities and interactions with nature.

Illegal mining activities along the Batanghari River have caused water contamination with mercury that exceeds the safe limit. This is very dangerous for the health of the people who depend on the river for their daily needs, including drinking water, irrigation, and fisheries. In addition to pollution problems, illegal mining also damages the physical environment. Large pits and mounds of sand and rock miners leave cause severe land degradation. These activities also negatively impact forest cover in the region, accelerating deforestation and threatening local ecosystems. Overall, empowerment efforts in Sangir Batanghari aim to reduce reliance on environmentally destructive illegal activities and direct communities towards more sustainable practices.

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