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Post-Flood Sanitation Education and Food Support to Prevent Disease in Reuloh Village, Aceh Besar

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Abstract

This community service activity was conducted in Reuloh Village, Aceh Besar, after severe floods in November 2025 that damaged houses, contaminated water sources, and increased the risk of waterborne and hygiene-related diseases. The program aimed to strengthen residents' knowledge, attitudes, and practices regarding sanitation and environmental cleanliness to prevent post-flood illness, while providing basic food support to affected households. Using a service-learning approach, lecturers and students from the Department of Development Economics, Universitas Syiah Kuala, conducted interactive educational sessions on safe water treatment, household sanitation, and personal hygiene, accompanied by the distribution of food packages. The results showed an increase in knowledge scores, high levels of participant satisfaction, and strong self-reported intentions to apply recommended practices at home. Early signs of behavior change were observed in the form of joint clean-up initiatives and commitments to boil drinking water. The activity indicates that short, targeted education on water, sanitation, and hygiene (WASH), integrated with social support, can contribute to post-disaster disease prevention and enhance community resilience in flood-prone areas.

Keywords: community service; floods; sanitation; environmental hygiene; WASH; Aceh Besar

INTRODUCTION

Floods remain one of the most devastating climate-related disasters globally and disproportionately affect low- and middle-income countries where water, sanitation, and hygiene (WASH) infrastructure is fragile. Recent analyses show that flood events frequently damage piped water networks, contaminate groundwater with fecal material and solid waste, and disrupt solid waste management systems, thereby increasing the incidence of diarrhea, leptospirosis, skin infections, and other waterborne diseases (Jamalludin et al., 2025; Khan et al., 2023). These health impacts directly threaten the achievement of Sustainable Development Goal (SDG) 3 on good health and well-being and SDG 6 on clean water and sanitation and indirectly undermine SDG 11 on sustainable cities and communities and SDG 13 on climate action, since repeated flood disasters can trap vulnerable communities in cycles of environmental degradation and poverty (Aziz et al., 2025).

In the global context, post flood disease prevention is increasingly recognised as a public health and development priority. Recent studies show that the most effective interventions focus on restoring access to safe water, strengthening hygiene education, and implementing rapid disease surveillance in affected communities (Jamalludin et al., 2025; Taqiuddin et al., 2025). Simple practices such as boiling

water, proper water storage, handwashing with soap, and safe waste management can significantly reduce diarrhoeal diseases and skin infections when supported by community education programs (Khan et al., 2023; Taqiuddin et al., 2025). However, post-disaster responses often prioritize emergency relief, while preventive WASH and environmental hygiene measures remain underfunded and delayed, particularly in rural and peri-urban areas with limited health services (Jamalludin et al., 2025).

Indonesia is one of the countries most exposed to flood-related disasters, and the recent cyclone-induced flooding in Sumatra during late November 2025 illustrates how climate extremes interact with existing vulnerabilities. National level reports indicate that the floods and landslides across several Sumatran provinces, including Aceh, have killed at least 940 people, left 276 people missing, and severely damaged health facilities in the affected regions (Reuters, 2025). In some areas of Aceh Tamiang, for example, the only hospital was nearly paralyzed by mud, a lack of medicines, and damaged equipment, while residents reported rising cases of diarrhea, fever, and myalgia linked to unsanitary post-disaster conditions (Reuters, 2025). These conditions illustrate how damaged WASH infrastructure, overcrowded temporary shelters, and disrupted primary health care can rapidly escalate into secondary health crises after the floodwaters recede, further delaying recovery and deepening inequities in health and wellbeing.

Within Aceh Province, Aceh Besar District experienced significant flooding from 26 to 28 November 2025. Data from the Aceh Besar Disaster Management Agency (BPBD) reported that floods inundated 10 sub-districts, affecting 1,382 people, including 828 who were forced to evacuate from their homes (Farha, 2025). The report notes that the floods damaged river embankments, triggered localized landslides, and forced the establishment of public kitchens and evacuation posts, including in Gampong Reuloh, Kecamatan Ingin Jaya (Farha, 2025). As the water level began to recede, many households returned to dwellings filled with mud and debris, with limited access to clean water, safe sanitation facilities and solid waste collection. In such conditions, standing water, clogged drains and accumulated waste can become breeding grounds for vectors and sources of microbiological contamination, while families may be compelled to use unsafe water sources for cooking and bathing.

Source: https://kampungkb.kemendukbangga.go.id/kampung/66565/reuloh

Figure 1. Meunasah Gampong Reuloh, Kecamatan Ingin Jaya, Kabupaten Aceh Besar

For residents of Reuloh and surrounding villages, these environmental conditions translate into concrete daily challenges. Families need to clean houses and yards inundated by river water, separate usable items from waste, and manage mud-contaminated belongings without adequate protective equipment. At the same time, limited availability of clean water and disruptions to latrine facilities increase the risk that household members will engage in open defecation or practice suboptimal hygiene behaviors. Previous studies on post-flood settings in Indonesia and other countries have

documented that such conditions often lead to spikes in acute diarrhea, skin infections, and respiratory complaints, especially among children, older adults, and people with chronic diseases (Khan et al., 2023; Taqiuddin et al., 2025). In Aceh as a whole, local media and health officials have warned of rising patient referrals and disease burdens after the floods, underscoring the urgency of community-level preventive action (Farha, 2025; Reuters, 2025).

Viewed through the SDGs framework, the problems faced by Reuloh residents after the November 2025 floods are not only humanitarian and environmental issues, but also development challenges. Inadequate access to safe water and sanitation, and the heightened risk of flood-related infectious diseases, directly hinder progress toward SDG 3 and SDG 6. Damage to housing and community infrastructure threatens SDG 11, while the recurrent nature of flood events in Aceh reflects the broader climate vulnerability that SDG 13 seeks to address. Furthermore, the burden of cleaning and caring for sick family members often falls disproportionately on women, which can exacerbate gendered inequalities and impact SDG 5 on gender equality. Addressing post-flood sanitation and environmental hygiene in Reuloh, therefore, contributes to multiple SDG targets and aligns with universities' mandate as agents of sustainable development.

Despite the strong global and national evidence on the importance of WASH-focused interventions, recent reviews emphasize that many post-flood responses still privilege technical and infrastructure-centered solutions and pay less systematic attention to participatory community education (Jamalludin et al., 2025; Taqiuddin et al., 2025). In Aceh, disaster response actors have mobilized evacuation, temporary shelter, and basic food assistance relatively quickly, yet there is comparatively limited documentation about structured, context-specific education on sanitation, environmental hygiene, and disease prevention conducted at the neighbourhood level in the early post-flood phase. This gap suggests a misalignment between the proven importance of community-based WASH education and the actual configuration of many local response programs. There is a need for models of community service that integrate health promotion, environmental management, and social protection in ways that are rapid, culturally appropriate, and feasible for local institutions to replicate.

The Department of Development Economics, Faculty of Economics and Business, Universitas Syiah Kuala (USK), has accumulated experience in designing participatory community service programs with a service-learning orientation. Previous initiatives have focused on strengthening entrepreneurial capacity, local economic resilience, and social awareness among various target groups.
Examples include service-learning programs that empower creativity and entrepreneurial spirit among junior secondary students (Aqil et al., 2025; bin Abd Karim et al., 2024; Fadhil et al., 2025; Halim et al., 2024; Hanidah et al., 2024; Lubis et al., 2025; Rivani et al., 2024).

The community service presented in this article responds to that gap by adapting a service learning and community empowerment approach to the context of post flood sanitation and environmental hygiene in Reuloh Village, Aceh Besar. The planned intervention combines structured health education sessions on safe water management, household sanitation, solid waste handling and personal hygiene with participatory discussion, delivered immediately after the floods when risk perception is still high. In parallel, the program includes distributing food packages and basic necessities to flood-affected households, acknowledging the community's immediate material needs and reinforcing trust and engagement during the educational sessions. The involvement of lecturers and students from the Department of Development Economics in this type of health-oriented community service represents an interdisciplinary innovation that connects economic development perspectives with public health and environmental sustainability concerns. The novelty of the approach lies in this integration of WASH-focused education, environmental hygiene actions, and social protection

measures within a single, time-bound outreach program led by an economics department and explicitly framed as a contribution to SDGs.

The purpose of the community service activity is to strengthen the knowledge, attitudes, and practical skills of Reuloh residents regarding sanitation and environmental cleanliness, so they are better able to prevent flood-related diseases in their households and neighborhoods in the weeks and months following the November 2025 disaster. The simultaneous provision of food packages is intended to reduce short-term economic stress on affected families and support their ability to prioritize health-protecting behaviors during the recovery period.

The purpose of writing this article is to document the design, implementation process, and short-term outcomes of the sanitation and environmental hygiene education program in Reuloh Village and to critically reflect on its relevance as a model for university-based community service in disaster-affected settings. The article contributes to both academic development and the achievement of the SDGs. From an academic perspective, it presents an interdisciplinary community service model that integrates service learning, community empowerment, and post-disaster environmental health, highlighting the role of non-health faculties in promoting WASH and reducing disaster risk. In terms of the SDGs, the program supports SDG 3, SDG 6, SDG 11, and SDG 13 through sanitation education, disease prevention, and the promotion of community resilience. Therefore, the program serves not only as a humanitarian response to the November 2025 floods in Aceh Besar but also as a replicable strategy for sustainable development in flood-prone areas.

METHODS

This community service activity was carried out in Reuloh Village, Ingin Jaya Subdistrict, Aceh Besar Regency, following the flood disaster in November 2025. The program employed a community service approach carried out in several stages in line with the planned activities.

The first stage consisted of direct observation and coordination with village authorities. Preliminary observations were conducted in Reuloh Village to assess environmental sanitation conditions following the flood, including residential areas, sources of clean water, drainage systems, waste accumulation, and household sanitation facilities. This stage was also intended to identify the main problems faced by residents and to determine the educational materials that would be delivered during the program. Coordination meetings were held with the village head and village officials to discuss the implementation schedule, target participants, venue, and logistical requirements for the activity.

The second stage involved implementing community education activities. Educational sessions were delivered to flood-affected residents through lectures and interactive discussions. The materials focused on environmental cleanliness and sanitation in post-flood conditions, including safe water management, household hygiene practices, proper waste disposal, environmental cleaning, and disease prevention measures applicable at the household level. Participants were encouraged to share their experiences and challenges during the recovery period, allowing facilitators to adapt the discussion to local needs and conditions.

The third stage was the distribution of food assistance packages to affected households. This activity was conducted in collaboration with village authorities to ensure that assistance reached the intended beneficiaries. The distribution was conducted after the educational session and was part of the community support effort for households experiencing difficulties as a result of the flood disaster.

Throughout the program, field observations and documentation were conducted to record community participation and the implementation process. Information obtained from observations, discussions with residents, and coordination with village authorities was used to describe community

conditions, identify sanitation-related concerns, and formulate recommendations for improving environmental hygiene and public awareness in post-flood settings.

RESULT AND DISCUSSION

This community service activity was carried out in Reuloh Village, Ingin Jaya Subdistrict, Aceh Besar Regency, in December 2025, following the flood disaster that occurred in late November 2025. The flood affected residential areas, public facilities, and environmental sanitation conditions within the village. Many households experienced difficulties with access to clean water, environmental cleanliness, and waste management following the disaster. Therefore, the service team from Universitas Syiah Kuala collaborated with village authorities to implement a community service program focusing on environmental sanitation education and the distribution of basic food assistance. The community service activities were conducted through the following stages.

Figure 2. Group Photo of the Community Service Activity in Reuloh Village

1. Preparation Stage

During the preparation stage, the activity began with a coordination meeting between the community service team and the village authorities of Reuloh Village as the community partner. The meeting discussed the program's implementation, including the schedule, target participants, venue, and required materials. At this stage, the team also conducted field observations in several areas of the village to assess post-flood environmental conditions and identify the main sanitation-related issues faced by residents.

Figure 3. Reception by Village Authorities and Community Education Session in Reuloh Village

The field observations indicated that many households were still recovering from the flood's impacts. Several residential areas showed signs of waste accumulation, while some water sources and sanitation facilities had been affected by floodwater contamination. Village authorities expressed

concern about the need to increase public awareness of environmental cleanliness and sanitation practices to prevent health problems during the recovery period. Based on these findings, the educational materials were adjusted to address the most relevant issues experienced by the community.

2. Implementation Stage

The next stage was the implementation of the program. Several activities were conducted by the service team, consisting of: (1) educational and awareness-raising sessions regarding environmental sanitation and hygiene after floods; and (2) distribution of basic food packages to flood-affected households.

Figure 4. Interactive Discussion with Community Members

The program was conducted at a time agreed upon with village authorities, allowing community members to participate actively. Initially, the service team and students carried out observations of environmental conditions in several parts of the village. This activity aimed to obtain a clearer understanding of sanitation-related challenges faced by residents during the post-flood recovery period. The observations showed that although community members had begun cleaning their surroundings, several environmental sanitation issues remained, particularly regarding waste management and the maintenance of clean water sources.

Following the observation activities, the service team conducted educational sessions involving village residents, community leaders, and local health cadres. The educational activities were delivered through lectures and interactive discussions supported by presentation materials. Topics covered included the importance of environmental cleanliness after floods, safe water management, household sanitation, proper waste disposal, and disease prevention measures. Participants responded positively to the activity, as demonstrated by their enthusiasm and active involvement during the discussion sessions. Many residents shared their experiences and challenges during the recovery process, creating an interactive learning environment between facilitators and participants.

In addition to the educational activities, the service team distributed basic food packages to households affected by the flood. The distribution process was coordinated with village authorities to ensure that assistance reached the intended beneficiaries. This activity formed part of the effort to support community recovery while strengthening relationships between the service team and local residents.

Figure 5. Distribution of Food Assistance Packages to Flood-Affected Households in Reuloh Village

CONCLUSION

The community service program on sanitation and environmental hygiene in Reuloh Village, Aceh Besar Regency, was successfully implemented by the community service team from Universitas Syiah Kuala. The service team, consisting of lecturers and students, collaborated with village authorities to provide education on environmental sanitation and hygiene following the flood disaster through lectures, discussions, and community engagement activities. Participants included flood-affected residents, community leaders, health cadres, and other community members.

The activities carried out in this program included environmental sanitation education for community members, discussions on post-flood hygiene and disease prevention, distribution of basic food packages to affected households, and field observations of environmental cleanliness and sanitation conditions in the village. The program helped raise community awareness of the importance of maintaining environmental hygiene, managing water safely, properly handling household waste, and preventing health risks after floods. In addition, the distribution of food assistance supported affected households during the recovery period. This program demonstrates that community service activities that integrate sanitation education and social support can strengthen community resilience and promote healthier environmental practices in flood-affected areas.

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