

# Enhancing Financial Literacy through Waste Bank Education as a Sustainable Economic and Environmental Solution

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**Abstract.** This community service program was conducted at a small and medium-sized enterprise (SME) in Padangsambian Klod, Denpasar, with the aim of enhancing financial literacy through waste bank education as a sustainable economic and environmental solution. The activity, carried out in January 2025, was designed as a one-day intervention involving preparation, introduction, practical workshop, financial literacy training, and reflection. The program adopted a participatory approach, ensuring active involvement of SME owners and local community members. Results showed a significant improvement in participants' awareness and attitudes toward waste management and financial practices. Before the program, most participants perceived waste as valueless and had limited understanding of basic financial management. Afterward, they demonstrated better knowledge of waste as an asset, applied simple bookkeeping techniques, and expressed stronger motivation to save and engage actively in community initiatives. The integration of waste bank education with financial literacy proved effective in linking environmental responsibility with economic empowerment. Furthermore, the cultural relevance of the program increased participants' acceptance and ownership, fostering opportunities for replication in other communities. In conclusion, this initiative demonstrates that short, well-structured interventions can generate meaningful changes and contribute to sustainable community development.

**Keywords:** financial literacy, waste bank, community service, sustainability, SME empowerment

## 1. Introduction

Waste management has become one of the most important issues facing both urban and rural communities [1]. The rampant use of plastics and non-biodegradable waste contributes greatly to the degradation of the environment. The accumulation of waste has detrimental effects on the surrounding environment [2]. There is also disruption to the functioning of many ecosystems and it even has adverse impacts on human health. At the same time, the commercial value of the everyday wastes is greatly underestimated. This reality illustrates the need for imaginative solutions that bring together an economically viable proposal with an environmentally sustainable approach.

Low levels of financial literacy is another important problem in many societies [3]. The ability to master financial resources is often lacking. Thus, the ability to spend, invest and earn from small activities is lost. The lack of financial literacy in a community also contributes to the already existing environmental problems. This weakens the ability of the community to cope with problems. This means that community empowerment through financial literacy is important for development in the long run.

A waste bank is an innovative approach that tackles both financial illiteracy and environmental degradation [4]. In this system, waste collected and sorted by households is exchanged for savings and other financial rewards. This idea turns waste from a liability into a valuable financial resource [5]. It also instills in individuals lessons on discipline, saving, and asset management. In this way, the whole community is able to achieve both financial and environmental gains at the same time. The community service aspect of this program is urgent in the sense that it seeks to enhance people's skills in the practical combination of finance and waste management. Waste banks also curtail the volume of uncontrolled waste, and at the same time, they incentivize constructive economic behavior [6]. People in the community start to view waste as an asset rather than a liability. This shift in thinking can change local attitudes and behaviors in a positive way. It improves the community's economic self-sufficiency as well as environmental responsibility.

Moreover, the objectives of waste bank programs fit well with the tenets of sustainable development [7]. They embrace the economic, social, and ecological aspects at the same time. A community that practices waste collection and sorting as a saving method is socialized to the rudiments of financial management [8]. In so doing, they help to conserve the environment as well as promote a clean living environment. Such a fusion is essential in the development of sustainable communities. One of the best educational programs available to students and younger individuals is the waste bank program. They engage with the fundamentals of finance and sustainability and practice the concepts as part of the daily. Such constructive practices allow learners to come to appreciate the ways their practices can be scaled up to effect positive change. More importantly, it nurtures a sense of stewardship and an appreciation for the local environmental issues. It integrates thoughtfully the aspects of conduct which are then utilized to prepare the younger generations for adulthood.

There are other advantages that the program offers to local Micro, Small and Medium Enterprises, MSMEs. Materials that are categorized as waste can be banked and then harvested for recycling and re-made into innovative products [9]. These products will then be advertised as eco-friendly and will carry an enhanced selling price. Enterprises can capitalize on the synergy that exists between eco-friendly waste disposal and enterprise formulation. It is a convenient way to stimulate the local economy and enhance the creative economy. Community and social cohesion is also enhanced with the observance of the waste bank program [10]. It aids the citizens to build positive interactions and sense of communal ownership and responsibility. Collective action on waste collection and management fosters partnerships between members of the community with different social strata. This collaboration increases the level of trust and support amongst the members of the community. This results in the social environmental outcomes and social capital of the community improving.

In this regard, the role of institutions of higher learning is equally important. Anchored in its purpose, the university is able to anchor its students to serve the purpose of bridging the gaps within knowledge, research, and community needs [11]. The university serving the purpose of solving local problems by engaging its students in community service directly benefits the students' education [12]. Therefore, the university fulfills its role by becoming the conduit of social change. The incorporation of financial literacy with environmental education through waste banks even aids in the attainment of the national objectives. It aligns with the Sustainable Development Goals (SDGs), more specifically Goal 12 (Responsible Consumption and Production) and Goal 13 (Climate Action). By participating in waste reduction, financial inclusion, and waste management, communities become active agents in global sustainability [13]. These initiatives illustrate the potential of local actions to drive global change. In this way, the program enhances the connection between local actions and global strategies.

The community was able to benefit with this program because before its introduction, the community members did not see the potential of waste. Things like plastic bags, plastic bottles and other materials were visible, and then discarded without a second thought, with not a single thought of the consequence [14]. Financially, people thought savings was not a valuable concept, and therefore did not spare the effort to. People did not see the connection between waste management and financial planning, which strongly

supports the lack of waste bank education. After the program's completion, observable transformation occurred among the community members. They started to appreciate that waste might have monetary value. Households started practicing discipline by sorting their waste and taking them to the waste bank. They simultaneously acquired basic financial skills, such as transaction recording and savings. These signified advancement in both the financial and ecological domains.

The results of the community service program confirmed the success of experiential and participatory techniques. When practices were performed by the individuals, the learning was purposeful and transformative. The participants learned the intangible financial skills and concepts to the real-world application of waste management. The results inspired them to continue the practices. Therefore, the program was successful in demonstrating that action and inaction knowledge are best coupled. The increased environmental concern was also an important lesson. The community sanitized their surroundings and took pride in the improvement to the environmental quality that the community service activities achieved. They also appreciated the future value associated with proper waste management. People started to exhibit sustained and improved environmentally positive behavior. This behavior shift also strengthened the perception of the waste bank as a community driven ecological initiative.

As stated earlier, the focus of the program was to teach financial literacy within the framework of a waste bank while also solving an ecological problem. The objectives of the program were fulfilled because there was a change in the value, skill, and attitude of people in regard to finance and sustainability. A positive cycle was created in which financial gains were sustained within environmentally sound practices and financial practices were environmentally sound. This shows the value of teaching holistic approaches to the economics, education and community empowerment. This program serves as an example of grassroots sustainable development because of the ease with which it can be adopted and the practicality of the approach.

## **2. Methods**

### *2.1. Location of Activity*

This community service activity was done at a small and medium-sized enterprise (SME) located at Padangsemblian Klod, Denpasar. Location was selected from the perspective of its significance to the community as it portrays the traditional and modern economic activities and the issues of sustainable waste management and financial literacy. The SME works in the sectors pertaining to creative industries, making it a unique location to promote environmental education as well as financial literacy in a manner that can foster both [15]. By placing the program in such context, the team envisaged to showcase the potential role of small enterprises in integrating environmental sustainability and ecological sound finance.

In addition, Padangsemblian Klod has a well-defined social network which is conducive for testing out community based educational programs. The SME selected for this purpose came forward at the time stating their willingness to strategize for the purpose of sustainable development, but they needed help in planning it. Therefore, this activity was designed to fulfill the direct needs of the selected SME but it was also designed to serve the entire community in the downstream. The integration of the waste bank system with the operations of the SME was geared towards demonstrating practical approaches that are adaptable by other small businesses within the region.

### *2.2. Time of Implementation*

The program's implementation was done within the span of one day in the month of January for the year 2025. This period was selected for the purposes of time efficiency while balancing the objectives of the program and ensuring there was practice and reflection within the same day. This structure and methodology optimal for ensuring there is full cycle learning for the participants which includes introduction time, practice time and finally time for evaluation while also guaranteeing that there are focused sessions and the participants are not loaded.

The activity, while being short in time, was designed in a manner that there would motivation to sustain effort and impact in the long term. The idea encapsulated the participants within the program as the flow was continuous and every session built on a previous one. By narrowing duration allocated for each stage to one day, the program was able to sustain motivation, reduce logistical complexities, and foster a feeling of successful accomplishment without the need for relief at the end of the activity. It was for this reason why there was engagement for the lessons for the participants. It was there to help them integrate the lessons into the functional activities of the SME.

### *2.3. Preparation Stage*

The first preparatory meeting Canadian Universities had was with the local SME owner and local stakeholders Padangsemblian Klod. During this meeting, the contact person of the programs discussed the objectives of the conference. They facilitated understanding of the objectives of the program and worked out the logistics of the meeting like scheduling, selecting who will attend, and what materials are needed. Additionally, the team created teaching materials and educational programs to assist primary and secondary students with understanding bank systems and acquiring fundamental skills in financial and SME literacy as systems thinking. When the stakeholders were engaged in the process early on, the stakeholders were more inclined to support and to participate on the day of implementation.

Alongside this as well, the service team which comprised of faculty members, students, and teaching/demonstration volunteers which had to prepare educational materials on the service also had to prepare the internal arrangements. Tea members were clearly designated to either work on the financial aspects of the program or the economic dimensions and systems supporting financial literacy and environmental sustainability literacy. Materials including: scales, containers, recording kneeboard systems, and containers were brought to the venue well in advance. Having these materials ready ensured the seamless and uninterrupted progression of the workshop. Both logistical and shared leadership responsibilities are compulsory in ensuring equitable service delivery.

### *2.4. Implementation Stage*

As the starting phase of the project, the goal of this stage was to create an understanding of the importance of arriving at an equilibrium between environmental protection and financial ecosystem of the area. This introduction led to the concept of a waste bank and the mechanism of its integration to reduce waste and create positive financial impact for micro and small businesses. This was followed by connecting their previous knowledge and experiences with the concepts provided through guided interactive discussions to help the participants would be able to understand the concepts being discussed. This session elucidated the direct impact of suitable waste management practices to sustain the economy of the business, subsequently, the economy of the community.

Following the introduction, participants actively engaged in a workshop where they learnt how to practically sort different types of waste, weigh, and record waste bank ledgers as simulated deposits. This practical session was geared towards teaching participants on how to utilize waste bank devices and couple them to the waste and the monetary value to the bank. The participants were able to pick out the waste materials and value them in a financial context by the end of this activity. With them, they carried the notion of their waste being financially managed and integrated with the processes of a small to medium enterprise.

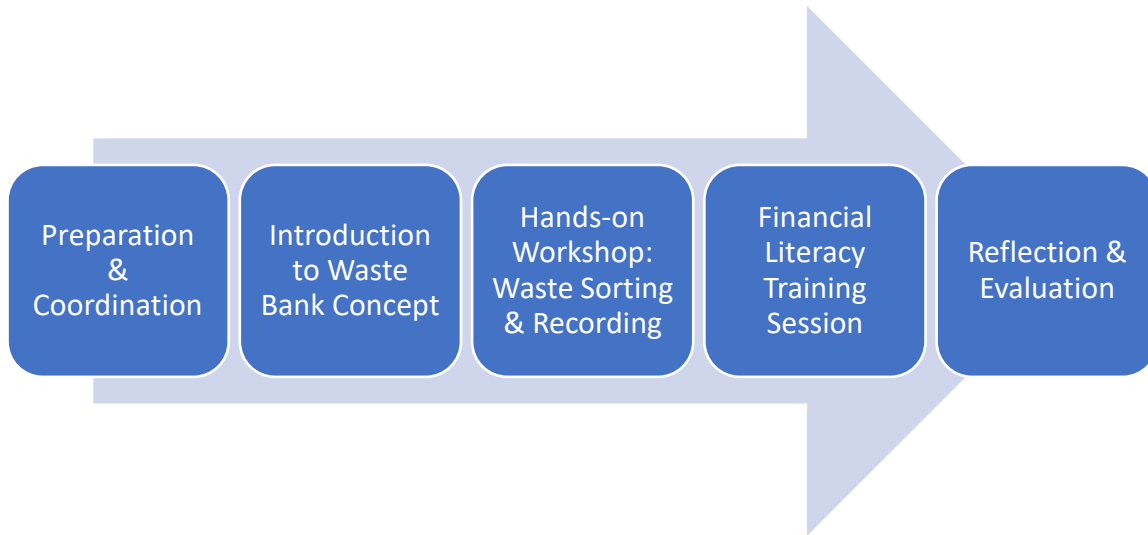
### *2.5. Reflection and Evaluation Stage*

A meeting was then organized where participants were asked to talk about their personal experiences and the lessons they believe were the most significant. This exchange of ideas helped to reinforce the importance of the issues that were covered earlier. The participants thought about how the waste bank model may be applied to the participants' businesses, and how financial literacy may assist them in better resource management. The participants also considered the importance of community and culture to their sustainable development practices.

After the participants shared, there was a brief evaluation consisting of short questionnaires and open discussions about the participants' performance. This was done to assess the participants' knowledge of the session targeted shift in focus to either the environment or finances. This evaluation also served to collect feedback in the form of constructive criticism in order to improve and tailor the course to be used in other situations. Reflection and evaluation bring to an end the activity, allowing for key points to be reinforced, all while providing new ideas that can assist in the development of the activity.

### 2.6. Activity Flowchart

The stages of the activity can be summarized in the following flowchart:



**Figure 1.** Activities Implemented Community Service

This flowchart in Figure 1 represents the structured stages of the program, starting from the initial preparation and coordination with stakeholders, followed by the introduction of waste bank concepts to participants. It then continues with a practical workshop where participants learned waste sorting and recording, which was directly linked to the financial literacy training session. The program concluded with reflection and evaluation to measure participants' understanding, ensuring that the knowledge gained could be applied in daily SME operations while promoting sustainable financial and environmental practices.

## 3. Results and Discussion

The execution of the community service program at Padangsembian Klod, Denpasar, successfully combined waste bank education and literacy in finance within the framework of a single day activity. During this session, Sme owners and local community participants demonstrated a high level of enthusiasm. Introduction of the waste bank concept generated an interest in the linkage of waste management and savings. This showed that, used in short bursts, the integration of environmental education and finance is effective. The participants were able to relate the concepts of the lesson to real life situations.

The objective of the session was to provide participants with the history and significance of waste banks. Quite a number of participants confessed to having an understanding of waste ordering but had no clue as to its direct financial benefit. The facilitators made clear that waste, through a systematic process, can be kept, recorded and eventually exchanged for economic gain. This principal extract set the foundation of active participation in the discourse on environmental accounting and management. It also made participants to reconsider the economic valuation of waste.

Simulated workshops taught participants how to balance bank accounts using ledgers to systematically organize and record bins of pre-sorted waste. This was both a practical and therotically engaging as new participants learned how booking a deposit was converted to visual bank balance through waste. The handson deposit exercise engaged participants by helping them achieve practical results that could translate to their behavior outside of the classroom.

An interesting aspect was how the participants as a whole started to take ownership over their work. At first, some participants felt that managing waste was a responsibility that was well above their reach and was usually done by either the government or garbage collectors. As participants engaged and completed their waste bins, they began perceiving themselves as participants in saving the environment as well as their money. This shift in thinking is a major milestone of the program. It shows that simply taking action is enough to start integrating sustainable practices into the societies that we live in. The financial literacy part of the workshops was a great support for the waste bank workshop in which the participants were taught some bookkeeping and basic saving strategies. They were taught some basic bookkeeping techniques to monitor their incomes and expenses in relation to waste bank deposits and withdrawals. This was the session which emphasized the concept that financial literacy does not always have to be about sophisticated financial instruments, but rather can be developed through small but frequent actions. The facilitators also stressed the sociocultural importance of savings and its contribution to the concept of saving the resources. This connection made the materials, concepts and ideas of the training easier to understand and more applicable in real-life situations.

The financial literacy session revealed that most of the participants had never received formal training on financial management. This is probably the reason for their financial practices being more intuitive than developed. The instruction of financial literacy in the context of the waste management system made the participants more comfortable with the subject. They understood that the same rules governing the recording of the waste deposits could also apply to personal and business financial transactions. This realization was one of the most amazing elements of the entire program. During evaluation results, improvement was shown in the understanding of both topics. Many participants did not show much confidence in waste management or in the area of finance before the activity. After participants completed the activity, they were able to show greater levels of motivation and understanding, and were also able to use the skills they learned. This particular program was able to show changes in the attitudes and understanding participants had, all in the span of one day. This possible suggests that with the right planning, developed short highly interventions can also be highly effective.

During the reflections, one of the dominant themes was the incorporation of cultural aspects. Participants connected the waste bank model to the Balinese traditions of cooperative and communal responsibility. They viewed waste management not just as a technical task, but as a cultural act of nurturing the community and the environment. Similarly, being financially literate was viewed as a civic obligation that is beneficial to families and the wider society. Such a cultural approach to the content of the program enhanced its acceptance. Another important outcome was the possibility of replication. Several participants wanted to implement the waste bank model in their communities and at their workplaces. They understood its advantages for both the environment and profit. This curiosity points to the fact that the program was more than a day of activities. It has helped to foster community initiatives that are sustainable. In fact, the ability to replicate the initiatives is important result of the community service.

The program also surfaced issues that should be resolved in the next steps. Some participants had doubts about the waste bank system and its benefits. They wondered about the return in comparison to the effort that was to be put in the system. Even if the doubts were addressed to a large extent during the workshop and the financial literacy session, more collaborative support is needed in order to keep the momentum. This issue demonstrates the focus that is needed on sustained actions instead of one off actions.

Facilitators and participants' interactions was another important dimension of the program. Using the participatory approach made the program feel more like a collaboration than a traditional teacher-student hierarchy. Participants were asked to offer their pre-existing knowledge and the contributions made the discussions more enriched and the sessions more vibrant. This resulted in an exchange of insights and

thereby an augmented learning environment. Such reciprocity would be ideal in community service activities.

On a larger scale, the program showed the linkage between the environmental education and the financial literacy components and how they work in tandem. Waste management and financial literacy would be taught in isolation and as siloed disciplines. The activity demonstrated that sustainable development requires an interdisciplinary approach. This enhanced the relevance of the training to the participants as they witnessed tangible returns in both disciplines. It reiterated the notion that sustainability is an environmental and economic discipline. The evaluation questionnaires showed clear differences in attitudes of participants from before to after the training. Prior to the training, only a few people expressed trust in their abilities to manage, manage financial records and apply waste management. In contrast to the pre-training assessment, a majority indicated that they were willing and able to apply the skills that were taught. This has shown the effectiveness of training that is contextualized and focused. This affirms the effectiveness of the design approach and sets a precedent for similar strategies in future community service practices.

One of the most important moments of the training was when participants were asked to reflect on the training and explain how it affected them. Some participants recounted the ways in which they intended to pass on the lessons of waste management and savings to their family members. Some of them felt a sense of fulfillment that they were able to acquire skills that they could use for their businesses. These testimonies reinforced the importance and effectiveness of the program. They showed that, in addition to cognitive understanding, the training brought about other behavioral change on the participants. To conclude, the participants learned new concepts, developed hands-on skills, and most importantly, were highly motivated to practice the lessons learned. Feedback, positive indications, and changes observed indicate that such programs have the potential to be expanded and tailored to different communities. Even children were able to understand the concepts and the activities had children “leaning in” and fully engaged. This demonstrates that well designed, simple activities have the potential to make significant advances in the long term empowerment of the community.

**Table 1.** Comparison Before and After PKM Implementation

<b>Aspect</b>	<b>Before Program</b>	<b>After Program</b>
<b>Waste Management Awareness</b>	Limited knowledge; waste seen as valueless	Better understanding of waste as financial and environmental asset
<b>Financial Literacy</b>	Intuitive practices, no formal recording	Able to apply simple bookkeeping and savings principles
<b>Attitude Toward Savings</b>	Low motivation, irregular saving habits	Increased motivation, awareness of consistent saving culture
<b>Community Engagement</b>	Passive role, waiting for government action	Active participation, initiative to replicate waste bank
<b>Confidence</b>	Lack of confidence in applying concepts	Stronger confidence and readiness to practice daily

From Table 1, clearly demonstrates the positive transformation experienced by participants after the community service activity. Initially, participants had limited awareness of waste management, weak financial literacy, and low motivation to save. Their role in community engagement was also passive, relying heavily on external interventions such as government action. After the program, however, participants showed improved knowledge of waste as both an environmental and financial asset, developed simple bookkeeping skills, and demonstrated stronger motivation to save consistently. Moreover, they shifted from passive observers to active contributors, expressing confidence and readiness to replicate the waste bank model in their daily lives and businesses.



Figure 2. Flyer of the Program

From Figure 2 the flyer served as the primary promotional tool to attract participants from the SME and surrounding community. It outlined the theme of the program, the schedule of activities, and the expected benefits. By providing clear information in an accessible design, the flyer increased awareness and encouraged participation in the event.



Figure 3. Community Visit Documentation



Figure 3 captured the moment when facilitators and students visited the community in Padangsambian Klod. The visit demonstrated the direct engagement between the academic team and local stakeholders, fostering trust and collaboration. It highlighted the participatory nature of the program, where the community was not only an audience but an active partner in the process.

### *3.1. Implications and Future Prospects*

The outcomes of this program highlight important implications for community empowerment initiatives that combine environmental and financial education. By demonstrating that waste management can be directly linked to financial literacy, the activity bridged two domains that are often treated separately. This integration not only increased participants' awareness but also provided practical tools that can be immediately applied in their daily lives. Such a model shows that simple interventions can lead to meaningful changes in knowledge, skills, and attitudes. Therefore, this approach can serve as a reference for future community service programs aiming for sustainable impact.

In terms of broader prospects, the program has the potential to be replicated across other SMEs and communities in Bali and beyond. The waste bank concept can be adapted to local cultural values, making it more acceptable and easier to implement in different contexts. With consistent support, these initiatives can evolve into community-driven movements that reduce environmental problems while enhancing financial resilience. Furthermore, the program provides an opportunity for collaboration between universities, SMEs, and local governments to establish sustainable community education models. Such collaboration could create multiplier effects that extend the benefits to a wider audience.

Looking ahead, future programs could focus on strengthening long-term monitoring and scaling up the activities. Continuous mentoring would help ensure that participants do not revert to old habits but instead develop consistent practices in waste management and financial literacy. Digital tools such as mobile applications could also be introduced to simplify recording and enhance engagement. Moreover, expanding the program into schools and youth organizations could create intergenerational awareness and sustain its impact over time. Ultimately, the prospects of this initiative point toward building communities that are not only environmentally conscious but also financially empowered.

## **4. Conclusion**

This community service program successfully demonstrated the integration of waste bank education and financial literacy within the context of an SME in Padangsambian Klod, Denpasar. The one-day activity provided participants with both conceptual knowledge and practical skills that are directly applicable in their daily lives. Through hands-on workshops, participants learned to sort, weigh, and record waste as deposits while also understanding the basic principles of financial management. The program thus bridged environmental awareness with financial empowerment. This dual focus contributed to both personal growth and community sustainability.

The results showed significant improvements in participants' awareness, attitudes, and confidence regarding waste management and financial practices. Before the program, participants often perceived waste as valueless and had little knowledge of structured financial management. Afterward, they began to recognize waste as a financial asset and felt more capable of applying simple bookkeeping methods. The change in perspective was not only cognitive but also attitudinal, with participants expressing stronger motivation to save and engage actively. This shift highlights the effectiveness of integrating education with practical application.

The cultural dimension also played an important role in the program's success. Participants were able to relate the waste bank model to traditional Balinese values of cooperation and mutual responsibility. By aligning modern concepts with local culture, the program created a sense of relevance and ownership among participants. This cultural alignment enhanced acceptance and encouraged participants to envision long-term applications in their businesses and households. Such integration ensures that community service initiatives remain meaningful and sustainable.

Despite its success, the program also revealed certain challenges, particularly skepticism about the long-term benefits of waste banks. Some participants initially doubted whether the financial returns would justify

the effort required. However, through practical demonstrations and financial literacy sessions, these doubts were largely addressed. The experience emphasized the importance of continuous support and follow-up in ensuring sustainability. Future programs should therefore include monitoring mechanisms to strengthen long-term outcomes.

In conclusion, this program achieved its primary goals of enhancing financial literacy and promoting sustainable waste management practices among SMEs and communities in Padangsambian Klod. It provided a replicable model that links environmental responsibility with economic empowerment. The program demonstrated that even short-term interventions can produce meaningful changes when designed with cultural sensitivity and practical application. Moving forward, this approach can be scaled up and adapted to other communities, creating broader impacts for sustainable development. Ultimately, the activity affirmed that education, when connected to local realities, can transform both individuals and communities.

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