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Neutrosophic Logic and Neither Nor Logic in Development Studies: A Few Examples

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Abstract

Decision making, especially in real-world contexts, often involves complexities that go beyond simple linear logic. We are often faced with situations where the available choices present a series of conflicting criteria. This is a dilemma often described in the classic Indonesian proverb "buah simalakama" (English term: simalakama fruit, with problem involved if eaten, father dies, but if not eaten, mother dies): whatever choice is made, there are always unpleasant consequences. This paper attempts to examine the problem of decision making from the perspective of conflicting criteria. We also discuss among other things Water logic proposed by Edward de Bono, Neutrosophic Logic proposed by one of us (FS), Logic of not proposed by Nagatomo, and neither nor logic as commonly found among Asian people.

Keywords: Neutrosophic Logic; Decision making; Water Logic; Simple Linear Logic.

1 | Introduction: Exploring Alternative Logics

Decision making, especially in real-world contexts, often involves complexities that go beyond simple linear logic. We are often faced with situations where the available choices present a series of conflicting criteria. This is a dilemma often described in the classic Indonesian proverb "buah simalakama" (if eaten, father dies, if not eaten, mother dies): whatever choice is made, there are always unpleasant consequences. This paper attempts to examine the problem of decision making from the perspective of conflicting criteria.

Traditional Western logic often relies on the principle of the excluded middle: a statement is either true or false. However, many real-world situations defy this right/wrong categorization.

Why Are Decisions Difficult?

- Conflicting Criteria: In many cases, the criteria that must be considered in decision making conflict with each other. For example, to decide proper electricity tariff for people, decision makers in Indonesia shall consider various criteria, which quite often are conflicting.
- Incomplete Information: Often, we do not have all the information necessary to make a perfect decision. This uncertainty adds complexity to the situation.

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- Emotions and Values: Decisions are often influenced by emotions, personal values, and social factors. This makes the decision-making process more subjective.

This is where alternative logics can offer valuable insights.

- **Water Logic (Edward de Bono):** This framework encourages lateral thinking by moving beyond traditional yes/no dichotomies. It emphasizes the fluidity of ideas and the importance of exploring multiple perspectives. Water logic can be particularly useful in situations where creative solutions and innovative approaches are required, for instance where a river stream faces a rock as obstacle, the stream will find a way to move around the rock in a smooth and flexible way. That is the distinction between work through a problem, and work around the problem.
- **Neutrosophic Logic (Florentin Smarandache):** This logic extends the concept of truth values beyond simple yes/no type answer or even fuzzy values. It introduces three independent components: truth, indeterminacy, and falsity. Neutrosophic logic can be valuable in situations with uncertainty, ambiguity, and incomplete information.
- **Logic of Not (Nagatomo):** This approach focuses on identifying and overcoming limitations. By understanding what something is *not*, we can gain a deeper understanding of its true nature and potential. This logic can be particularly useful in problem-solving and identifying alternative solutions.
- **Neither Nor Logic:** This logic, often observed in Asian cultures, recognizes the value of finding solutions that transcend simple dichotomies. It emphasizes the importance of finding a "third way" or a solution that addresses the concerns of all parties involved. This approach can be particularly valuable in conflict resolution and negotiation.

Implications for Development Studies

These alternative logics have significant implications for development studies. Many development challenges involve complex social, economic, and environmental factors.

- Addressing Complexities: Recognizing the limitations of traditional logic can help development practitioners better understand and address the complexities of development challenges.
- Finding Sustainable Solutions: Alternative logics can encourage the exploration of innovative and sustainable solutions that address the needs of all stakeholders.
- Promoting diversity response: "Neither nor logic" can be particularly valuable in promoting response that acknowledge diversity to development approaches that consider the perspectives and needs of all members of society.
- Improving Decision-Making: By incorporating these alternative logics into their decision-making processes, development practitioners can make more informed and effective decisions.

A few examples

i). **Implications of Water Logic.** Edward de Bono's Water Logic offers a powerful framework for thinking beyond traditional yes/no dichotomies. Unlike rigid, linear logic that often restricts our thinking, Water Logic emphasizes the fluidity of ideas and the importance of exploring multiple perspectives. Just as water seamlessly navigates around obstacles in its path, finding new channels and adapting to changing conditions, Water Logic encourages us to approach problems with flexibility and creativity.

Instead of rigidly adhering to pre-defined solutions or getting stuck in unproductive debates, Water Logic encourages us to explore alternative paths, consider different viewpoints, and embrace the unexpected. It emphasizes the importance of moving beyond simple categorization and recognizing

the nuances and complexities of any given situation. By viewing problems as dynamic and interconnected, we can develop more innovative and effective solutions.

One of the key principles of Water Logic is to move beyond the limitations of traditional logic, which often relies on the principle of the excluded middle – a statement is either true or false. Water Logic, on the other hand, acknowledges the existence of ambiguities and paradoxes. It encourages us to embrace these complexities and explore the possibilities that arise from them.

Water Logic can be applied to a wide range of situations, from personal decision-making to organizational challenges. For example, in a business setting, Water Logic can help teams to brainstorm more creative solutions to problems, to identify new market opportunities, and to develop more effective communication strategies. In personal life, Water Logic can help us to navigate difficult relationships, to resolve conflicts more effectively, and to make more informed decisions.

By embracing the principles of Water Logic, we can cultivate a more flexible and creative mindset. We can learn to approach problems with a sense of curiosity and wonder, to explore alternative perspectives, and to embrace the unexpected. This, in turn, can lead to more innovative solutions, more effective communication, and a deeper understanding of the world around us.

Right-Brain Epistemology: Beyond Logic and Analysis

A right-brain-based approach to epistemology shifts the focus from purely logical and analytical reasoning to encompass a broader spectrum of cognitive processes. It recognizes the significance of:

- Intuition: This involves immediate understanding or insight, often without conscious reasoning. Right-brain thinking allows for the recognition of patterns, connections, and underlying meanings that may not be readily apparent through logical analysis. This intuitive grasp of situations can lead to novel solutions and innovative approaches.
- Holistic Thinking: Right-brain thinking tends to be more holistic, considering the interconnectedness of different elements within a system. It emphasizes the "big picture" rather than focusing on isolated details. This holistic perspective allows for a deeper understanding of complex problems and the identification of systemic issues that may not be evident from a purely analytical approach.
- Empathy and Emotional Intelligence: Right-brain thinking is often associated with heightened emotional intelligence and empathy. This allows for a deeper understanding of human motivations, values, and perspectives. This empathetic understanding is crucial for effective communication, collaboration, and the development of solutions that are not only technically sound but also socially and ethically responsible.
- Creativity and Imagination: Right-brain thinking fosters creativity and imagination. It allows for the exploration of alternative possibilities, the generation of novel ideas, and the development of innovative solutions that may not be readily apparent through conventional, linear thinking.

Examples in Action

- Artistic Expression: Artists, musicians, and writers often rely heavily on right-brain thinking. Their work often involves intuitive leaps, holistic understanding of human emotions, and creative expression of ideas.
- Design and Innovation: Designers and inventors often utilize right-brain thinking to develop innovative products and solutions. They rely on intuition, creativity, and a holistic understanding of user needs to create designs that are both functional and aesthetically pleasing.
- Leadership and Management: Effective leaders often demonstrate strong right-brain skills, such as empathy, intuition, and the ability to understand and navigate complex social dynamics. They can

inspire and motivate others, build strong teams, and make decisions that are not only strategically sound but also ethically and socially responsible.

- Scientific Discovery: While often associated with left-brain dominance, scientific discovery also benefits from right-brain thinking. Intuition and creative leaps often play a crucial role in the development of new hypotheses and the formulation of innovative research approaches.

ii). Example of Neutrosophic Logic.

Traditional development approaches often fall into dichotomies:

- **Top-down:** Imposed by external actors (governments, NGOs), often leading to dependency and lack of local ownership.
- **Bottom-up:** Driven entirely by local communities, potentially lacking resources, expertise, and a broader perspective.

  Neutrosophic Logic, with its emphasis on indeterminacy and the inclusion of contradictory elements, can offer a valuable framework for navigating these complexities. Instead of choosing between these two extremes, we can embrace a more nuanced approach: **"development from within."**

Key Principles:

1. **Thou Relationship:**

   Development should be based on *I-Thou relationship* between development actors (internal and external) and the community, assuming the people as subjects of development too, not merely objects.

   This means recognizing the community as a subject, not just an object of development, with inherent dignity, knowledge, and agency.

   Dialogue, mutual respect, and genuine understanding are paramount.

2. **Embracing Indeterminacy:**

   Acknowledging that development is a complex process with inherent uncertainties.

   Recognizing that pre-defined outcomes and rigid plans may not always be feasible or desirable.

   Allowing for flexibility, adaptation, and course correction based on emerging realities and community feedback.

3. **Integrating Local Knowledge and External Expertise:**

   Recognizing the value of both local knowledge and external expertise.

   Finding ways to integrate these perspectives in a way that empowers local communities while leveraging external resources and knowledge.

4. **Focusing on Human Development:**

   Prioritizing the development of human potential – skills, knowledge, creativity, and self-reliance – over simply increasing material wealth.

   Fostering a sense of community ownership and responsibility for development outcomes.

Martin Buber's philosophy, particularly his concept of the *"I-Thou" relationship*, offers a powerful framework for rethinking development economics. Traditional development models often prioritize top-down, technocratic approaches, neglecting the voices and needs of the people most affected by development projects. This leads to situations where infrastructure projects, such as roads and dams, are built without meaningful community consent, and resource extraction industries, like mining, operate with little regard for local livelihoods and cultural values. While concepts like "development from below" have been proposed, they often remain theoretical, lacking a robust ethical foundation.

iii). Buber's "I-Thou" emphasizes the importance of genuine dialogue and mutual recognition. In an "I-Thou" encounter, individuals engage with each other as whole beings, transcending the objectification and instrumentalization inherent in the "I-It" relationship. Applying this to development implies a shift from treating local communities as mere beneficiaries or obstacles to be overcome, to recognizing them as equal partners in the development process.

iv). Development from within as a new approach

"*Development from within*," as we propose in this review article, emphasizes this participatory nature. It suggests that genuine development can only occur when local communities are not merely recipients of aid or beneficiaries of projects, but active subjects in shaping their own destinies. This requires a fundamental shift in perspective, moving away from externally imposed solutions and towards a model that prioritizes local knowledge, values, and aspirations.

A Buberian approach to development necessitates a continuous, dialogic process. It involves genuine listening, where development agencies and external actors actively seek to understand the needs, concerns, and aspirations of local communities. This dialogue should not be a one-time consultation, but an ongoing process of learning and adaptation, where feedback from local communities is continuously incorporated into the design and implementation of development projects.

Furthermore, this approach demands a recognition of the inherent dignity and worth of every individual within the community. It requires treating local communities not as homogenous masses, but as diverse groups with unique histories, cultures, and worldviews. Development projects must be designed to respect and uphold these unique identities, rather than attempting to homogenize or assimilate them.

Implementing a Buberian approach to development presents significant challenges. It requires a fundamental shift in the power dynamics between external actors and local communities. It demands a degree of humility and self-reflection from development agencies, acknowledging their own limitations and recognizing the importance of local knowledge and expertise.

Building trust is crucial for establishing a genuine I-Thou relationship between development actors and local communities. This requires consistent and transparent communication, demonstrating respect for local values and concerns, and ensuring that the benefits of development are equitably shared among all members of the community.

A Buberian approach to development offers a more ethical and sustainable path to progress. By prioritizing genuine dialogue, recognizing the inherent dignity of local communities, and empowering them to shape their own futures, we can move beyond top-down, technocratic approaches and create development models that are truly inclusive and transformative.

In conclusion, "development from within," grounded in Buber's philosophy of the I-Thou, offers a compelling alternative to traditional development models. By prioritizing dialogue, participation, and respect for local values, this approach can lead to more equitable, sustainable, and human-centered development outcomes.

This section has explored the concept of "Buberian development from within" and its potential to transform the practice of development economics. It has emphasized the importance of genuine dialogue, participatory approaches, and respect for local knowledge and values. While significant challenges remain, this approach offers a promising pathway towards more just and sustainable development for all.

The Paradox of Unutilized Biomass Installations in Java: A Case for "Development from Within"

v). Across several regions in Java, Indonesia, a recurring pattern emerges: the establishment of small-scale biomass processing installations followed by their subsequent neglect and underutilization. This phenomenon can be attributed to a top-down approach to development, where local communities are not meaningfully involved in the planning, implementation, and ownership of these projects.

vi). These biomass installations, often utilizing appropriate technologies as advocated by E.F. Schumacher, possess the potential to address critical local needs such as energy poverty and waste management. However, their failure to thrive stems from a fundamental disconnect between the project initiators (often government agencies) and the intended beneficiaries – the local communities.

vii). The lack of local ownership manifests in several ways. Firstly, communities often feel alienated from the project, perceiving it as an externally imposed solution rather than a locally driven initiative. Their needs and priorities may not have been adequately considered during the planning and design phases, leading to a mismatch between the technology and the community's actual requirements. Secondly, inadequate training and capacity building within the community hinder its ability to operate and maintain the installations effectively. This lack of technical expertise leads to equipment breakdowns, reduced efficiency, and ultimately, disinterest in utilizing the technology.

viii). Furthermore, the absence of ongoing support and maintenance from the government exacerbates the problem. Once the initial funding and technical assistance dry up, communities are left to fend for themselves, often lacking the resources and expertise to address operational challenges and ensure the long-term sustainability of the installations. This lack of continued engagement from the government reinforces the perception that the project is not a genuine investment in the community's well-being.

ix). To address this issue, a "development from within" approach, inspired by Martin Buber's philosophy of the "I-Thou," is crucial. This approach emphasizes genuine dialogue and active participation of local communities in all stages of the development process.

x). Firstly, community engagement must begin with a thorough needs assessment, conducted in collaboration with local stakeholders. This participatory process will ensure that the chosen technology aligns with the community's specific needs, priorities, and existing knowledge systems.

xi). Secondly, capacity building should be an integral part of the project. This includes providing comprehensive training to local community members on the operation, maintenance, and repair of the biomass installation. This empowers the community to take ownership of the technology and ensure its long-term sustainability.

xii). Thirdly, establishing community-based organizations or cooperatives to manage and operate the installations can foster a sense of collective ownership and responsibility. These organizations can be responsible for the day-to-day operations, maintenance, and marketing of the products or services generated by the installation.

xiii). Finally, ongoing support and mentorship from government agencies and technical experts are essential. This includes providing access to spare parts, facilitating access to markets for the products generated by the installation, and offering ongoing technical assistance and training.

xiv). By embracing a "development from within" approach, we can ensure that biomass processing installations in Java serve the true needs of local communities, fostering sustainable development, economic empowerment, and environmental stewardship. This approach not only ensures the effective utilization of these valuable resources but also strengthens community resilience and promotes genuine local ownership of development initiatives.

xv). **Example of neither/nor Logic**

"Neither-nor" logic represents a distinct approach to decision-making and problem-solving prevalent in many Asian cultures. It diverges from the traditional Western emphasis on binary choices (either/or) and embraces a more nuanced perspective. This approach recognizes that many situations are complex and multifaceted, with no single "right" or "wrong" answer.

Instead of seeking a definitive solution that favors one extreme over another, neither-nor logic seeks a "third way" – a solution that integrates the best aspects of different perspectives and avoids the pitfalls of extremes. It emphasizes finding common ground, reconciling conflicting interests, and seeking harmonious solutions that address the needs and concerns of all parties involved. This approach is often characterized by compromise, negotiation, and a focus on maintaining social harmony.

For example, in a business negotiation, neither-nor logic might involve finding a solution that satisfies both the needs of the company and the concerns of its employees, rather than simply prioritizing profits or worker demands. In social interactions, it might involve finding a way to reconcile conflicting cultural values or traditions while maintaining respect for individual needs and preferences.

Neither-nor logic reflects a deeper understanding of human relationships and the interconnectedness of different elements within a society. It emphasizes the importance of finding solutions that are not only practical but also ethical, socially responsible, and conducive to long-term harmony and sustainability.

Implications

If asked to Indonesian economists, what is actually meant by Pancasila economics? Of course the answer will tend to be ambiguous, for example it is often mentioned in the logic of not this but also not that. The point is not pure capitalism but also not socialism; however, if we read carefully the wording of the results of the amendment to article 33 of the 1945 Constitution, it appears that there are efforts to include a liberal capitalism model in the national economic structure in additional paragraphs. Several constitutional law experts say that the results of the amendment make the amended version of the 1945 Constitution somewhat different in character and musical tone compared to the original version. Of course we do not want to debate the 1945 Constitution, but we want to discuss here, is there a solution formulation that could be a middle way?

For introductory note, we already discussed an approach based on a Biblical interpretation, presented at a conference in Baku University a few years ago, called *Koinomics* (cf. Christianto, 2022 [2]). One thing is clear, that what is to be achieved through the spirit of Pancasila if we look at Soekarno's original speech in front of BPUPKI is none other than realizing the values of mutual cooperation, i.e, gotong royong [1]. Then how can the values of mutual cooperation be realized today, without abandoning the wisdom in the villages in the archipelago which may now have begun to fade? Alvin Toffler, a visionary futurist, introduced the concept of "prosumer" several decades ago. Prosumer is a combination of producer and consumer, where individuals not only buy products but also participate in the production process, either directly or indirectly. This concept may sound foreign to some people, but if we look closer at the economic practices that occur in Indonesia, especially at the community level, we will find many similarities with this prosumer concept.

Community-Based Economy: Implementation of Prosumer Economy in Indonesia

Community-based economy in Indonesia has long been part of the social fabric of society. For example, farmer groups that collaborate in producing and marketing their agricultural products, groups of craftsmen who help each other in creating handicraft products, or even groups of housewives who make home-cooked food products to sell. In this context, community members are not only consumers of the products produced, but also producers who are actively involved in the production process.

Why is Prosumer Economy Suitable for the Indonesian Context?

- Mutual Cooperation Values: Strong mutual cooperation values in Indonesian society strongly support the prosumer concept. Cooperation and mutual assistance in production are common in communities.

- Access to Local Resources: Indonesia is rich in natural and cultural resources. A community-based economy allows communities to optimally utilize local resources and create unique, value-added products.
- Economic Resilience: Community-based economies tend to be more resilient to global economic shocks because production and consumption are more integrated on a local scale.
- Cultural Preservation: Production processes that directly involve communities help preserve traditional knowledge and skills that are unique to each community.

Challenges and Opportunities

Although the concept of the prosumer economy and community-based economy has a lot of potential, there are still several challenges that need to be overcome, such as:

- Lack of access to technology: The use of appropriate technology can increase the efficiency of production and marketing of community products.
- Competition with mass products: Community products often have to compete with cheaper and more accessible mass products.
- Quality standardization: In order to enter a wider market, community products need to meet certain quality standards.

Open Opportunities

On the other hand, there are many opportunities that can be utilized to develop a community-based economy, including:

- Utilization of digital technology: social media can be used to expand the market for community products.
- Partnerships with business actors: Collaboration with larger business actors can help increase the scale of production and distribution of community products.
- Development of human resource capacity: Training and skills development for community members are essential to improve product quality and competitiveness.

Some illustrations

Actually, the prosumer pattern introduced by Toffler several decades ago is not something that is uncommon in Indonesia, but is perhaps better known as a community-based economy.

Among them are traditional irrigation management in villages in Bali known as subak, and also traditional markets, for example, which can still be found in Mojokerto, called pasar kramat, which also prioritize community economy. The concept of subak with its mutual cooperation system and local wisdom in managing water resources has been going on for centuries, showing that community economy has become an integral part of Indonesian society. Likewise, pasar kramat is not only a place for buying and selling transactions, but also a center for social and cultural interaction in the community.

In addition, the increasingly popular sharing economy is also a manifestation of a community-based economy. For example, a motorbike pick-up and drop-off rental service that utilizes friendship networks shows how digital technology can strengthen the community economic model. In this context, the community does not only act as a consumer, but also as a producer and service provider. This provides opportunities for the community to create new jobs and increase income.

The phenomenon of independent natural resource management by the community can also be found, such as in the village of Texas Wonocolo, East Java. It is said that the local community obtained the land from a letter signed by General Sudirman during *masa perjuangan* (years after the Proclamation of Indonesia's Independence). This case shows that communities have the ability to manage natural resources sustainably and equitably. Despite facing various challenges, such as climate change and competition with large companies, this community-based natural resource management model remains relevant and needs to be supported.

From the examples above, it can be concluded that a community-based economy has great potential to build a more just, sustainable, and independent society. This economic model is not only able to overcome economic problems, but also strengthen social and cultural values. Therefore, support is needed from various parties, both government, private sector, and community, to develop and strengthen the community-based economy in Indonesia.

2 | Discussion: The Role of Combining Approaches and Meta-economics

In practice, non-linear approaches are often combined to produce optimal solutions. For example, we can use Neutrosophic logic to identify the various options available, then apply GRIT to build consensus, and finally use Water Logic to find innovative solutions.

While non-linear approaches offer many benefits, there are also some challenges that need to be overcome. Some of them are:

- Lack of a clear framework: Unlike linear logic, non-linear approaches are often less formal and difficult to measure.
- Time and resources: Implementing non-linear approaches requires more time and resources than linear approaches.
- Differences in perception: Not everyone agrees with non-linear approaches, especially those who are more accustomed to rational and logical thinking.

We have discussed above, among other things, how the concept of the prosumer economy proposed by Alvin Toffler is very relevant to the conditions in Indonesia. The community-based economy that has long grown and developed in various regions is a real implementation of this prosumer concept. With the support of the government, private sector, and community, the community-based economy can become one of the important pillars in building a more inclusive, sustainable, and competitive Indonesian economy [11].

Exploring "Meta-Economics" in a Multifaceted World

It shall be emphasized here, that decision-making, at its essence, is about selecting the best course of action from a set of alternatives. While numerous frameworks exist – from cost-benefit analysis to game theory – a crucial yet often overlooked aspect is the underlying logic guiding these choices [12-14]. This "*meta-economics*," as philosopher E.F. Schumacher eloquently suggested, delves into the deeper "why" behind our decisions, transcending mere economic calculations.

Schumacher, in his seminal work "*Small is Beautiful*," argued that conventional economics, with its focus on growth and material accumulation, often overlooks the long-term consequences of our choices [3][4]. He advocated for a more holistic approach that considers environmental, social, and ethical factors alongside economic ones. This "meta-economic" perspective emphasizes the need to question the very foundations of our economic system and to prioritize human well-being and ecological sustainability.

However, the choice of which logic to be applied extends beyond the purely economic realm. Numerous studies have explored the multifaceted nature of decision-making, highlighting the influence of:

- **Conflicting Criteria:** Many decisions involve trade-offs between competing goals. For example, a business may need to balance profit maximization with environmental responsibility. Decision-making theories, such as multi-criteria decision analysis (MCDA), provide frameworks for evaluating and prioritizing these conflicting objectives [12-14].
- **Cultural Considerations:** Cultural values and norms significantly shape individual and collective decision-making processes. Different cultures may prioritize different values, such as individualism versus collectivism, risk aversion versus risk tolerance, and long-term versus short-term perspectives.
- **Decision-Making Styles:** Research suggests that individuals exhibit distinct decision-making styles, such as analytical, intuitive, and dependent styles. These styles influence how individuals gather information, evaluate options, and ultimately make choices.

These factors, while seemingly disparate, are interconnected. Cultural values can influence the weight given to different criteria in decision-making, while individual decision-making styles can shape how these criteria are evaluated and prioritized.

By incorporating meta-economic considerations into our decision-making processes, we can:

- **Improve Long-Term Outcomes:** By considering the broader societal and environmental impacts of our choices, we can make decisions that are more sustainable and equitable in the long run.
- **Enhance Ethical Decision-Making:** Meta-economic thinking encourages us to question the ethical implications of our choices and to prioritize values beyond profit maximization.
- **Foster Innovation:** By challenging conventional assumptions and exploring alternative ways of doing things, we can unlock new opportunities for innovation and create a more just and sustainable future.

3 | Conclusion

In conclusion, recognizing the limitations of traditional logic and exploring alternative frameworks can significantly enhance our understanding of decision-making processes, particularly in complex and dynamic contexts such as those encountered in development studies. By embracing the fluidity of ideas, acknowledging uncertainty, and seeking solutions that transcend simple dichotomies, we can move towards more effective and sustainable development outcomes.

This article has explored among other things the concept of "*Buberian development from within*" and its potential to transform the practice of development economics. It has emphasized the importance of genuine dialogue, participatory approaches, and respect for local knowledge and values. While significant challenges remain, this approach offers a promising pathway towards more just and sustainable development for all.

This article has also discussed prosumer economics as an approach in tune with traditional practices in many Indonesia's villages called gotong royong. We discuss and emphasize how can the values of mutual cooperation be realized today, without abandoning the wisdom in the villages in the archipelago which may now have begun to fade? Alvin Toffler, a visionary futurist, introduced the concept of "prosumer" several decades ago. Prosumer is a combination of producer and consumer, where individuals not only buy products but also participate in the production process, either directly or indirectly. This concept may sound foreign to some people, but if we look closer at the economic practices that occur in Indonesia, especially at the community level, we will find many similarities with this prosumer concept.

While we discuss several different possible approaches, we shall discuss further more examples of this new framework later on.

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Data Availability

The datasets generated during and/or analyzed during the current study are not publicly available due to the privacy-preserving nature of the data but are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that there is no conflict of interest in the research.

Ethical Approval

This article does not contain any studies with human participants or animals performed by any of the authors.

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