



Integrative Approaches to Sustainable Development Goals Acceleration: Lesson from ProKlim Development in Sukoharjo Regency

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Abstract. Sustainable development goals (SDGs) are an international agenda that includes three important pillars, namely economic, social, and environmental. SDGs were initiated in 2015, but until now its implementation is still far from the target. The Climate Village Program (ProKlim) is one of the steps that can be taken to accelerate the achievement of SDGs. ProKlim is also a manifestation of the jargon "think globally, act locally", which is an important strategy in responding to climate change. This study aims to analyze the integrative approaches in the development of ProKlim in Sukoharjo district. This study uses the concept of sustainability in the hexagon model of local economic development and the pentahelix cooperation model for analysis. This study applies a qualitative descriptive method with a literature study technique in obtaining research data. The results show that.

Keywords: Proklm, Integrative Approach, SDGs, Climate Change.

1 Introduction

In 2015, the United Nations adopted the Sustainable Development Goals (SDGs) agenda, comprising 17 goals and 169 targets aimed at achieving global sustainable development by 2030. This agenda covers diverse areas, including poverty alleviation, health improvement, education enhancement, climate change mitigation, and environmental conservation. However, as we near the final five years before the 2030 deadline, the 2024 SDGs progress report reveals that significant challenges remain. Out of 135 monitored targets, only 17% are on track, while 48% have not met expectations. Additionally, 18% are stagnating, and 17% have experienced setbacks. These results illustrate a substantial gap between ambition and reality, largely due to factors such as the climate crisis [1].

The climate crisis underscores the urgent need to address climate change driven by global warming, posing a significant threat to the sustainability of life across nearly all sectors. The United Nations Department of Economic and Social Affairs indicates that around 80% of the Sustainable Development Goals (SDGs) targets cannot be fully achieved if the climate crisis is ignored. Researchers anticipate that the peak of the climate crisis will occur by 2040, with a potential global temperature increase of 1.5 degrees Celsius—ten years earlier than previously predicted—due to high

concentrations of greenhouse gases expected to reach 450 parts per million if unregulated. The United Nations Intergovernmental Panel on Climate Change (IPCC) report from 2021 emphasizes the need for a global carbon emissions reduction of at least 45% by 2030 to avert this peak [2].

In Indonesia, the commitment to the 13th Sustainable Development Goal (SDG), which focuses on climate action, is manifested in Presidential Regulation Number 61 of 2011 concerning the National Action Plan for Reducing Greenhouse Gas Emissions (RAN-GRK) and Presidential Regulation Number 71 of 2011 regarding the Implementation of the National Greenhouse Gas Inventory [3]. These regulations aim to achieve greenhouse gas emissions reduction targets of 29% independently and up to 41% with international assistance by the year 2030, in alignment with the Nationally Determined Contributions (NDCs) outlined in the Paris Agreement.

One of the Indonesian government's national initiatives to meet these emission reduction targets is the Program Kampung Iklim (ProKlim). ProKlim is a community-based program designed to facilitate climate change adaptation, particularly in enhancing community resilience to the impacts of climate change. This program is regulated under Minister of Environment and Forestry Regulation No. 84 of 2016 concerning the Climate Village Program. According to a report from the Ministry of Environment and Forestry, as of 2023, there are 2,490 registered ProKlim locations within the National Registry System (SRN) for Climate Change Control, distributed across 36 provinces in 347 districts and cities [4].

Sukoharjo Regency is one region actively engaged in developing ProKlim. According to the Regional Environmental Agency of Sukoharjo (DLH Sukoharjo), the number of ProKlim initiatives in this area reached 60 villages in 2022, making it the largest ProKlim program in Central Java [5]. This research aims to analyze the development of ProKlim in Sukoharjo Regency through an integrative approach. It is anticipated that the findings will provide valuable insights and evaluative materials for various stakeholders, particularly in formulating more effective implementation strategies for ProKlim that can yield broader impacts in the future.

2 Literature review

Previous research on ProKlim found that cooperation and support from the government through the Ministry of Environment and Forestry is important, so that the community can increase their knowledge about protecting and preserving the environment. On the other hand, the study found that the inhibiting factors for implementation were only influenced by the community who had not participated in ProKlim activities, and the inadequate costs to support some people in preserving their environment [6]. The following study found a positive contribution of community development in the implementation of ProKlim in Kampar Regency, where climate adaptation and mitigation activities were running well. In ProKlim in the area, the community responded to this program with enthusiasm and mutual cooperation. However, there were several obstacles faced including lack of understanding, technical training, company support, community knowledge, and the passive attitude of some residents [7]. Meanwhile, Priyanto et al. (2021) examined descriptive awareness and perceptions

of climate change between ProKlim and non-ProKlim farmers in Sleman Regency. The study showed that ProKlim and non-ProKlim locations were dominated by farmers' awareness of climate change and perception of climate change risks at a moderate level. Other findings showed that farmers from ProKlim locations had higher awareness of climate change compared to non-ProKlim farmers, with a difference in awareness of 6.44% [8].

The next study was written by Faedlulloh (2019) on the implementation of community empowerment through the Climate Village Program (ProKlim) in Jati Village, East Jakarta and Kebon Kosong Village, Central Jakarta, where both locations had shown good practices in empowerment and implementation of ProKlim. However, the study found that villages as subjects were only able to carry out limited climate change adaptation and mitigation, if climate change was substantively global in nature. Therefore, the study suggested re-representing the role and intervention of the state through macro policies [9]. Then, another study saw ProKlim as one of the main adaptation and mitigation actions carried out at the local (community) level. The study discusses greenhouse gas emissions at the village level to support the program in Poncosari Village, Yogyakarta - Indonesia [10]. The above study focuses more on community empowerment in ProKlim. Meanwhile, this study focuses on an integrative approach to the development of ProKlim in Sukoharjo. However, the various literatures above can be used by the author as a reference in understanding ProKlim.

3 Methods

This study uses a qualitative method. Bogdan and Tailor in Moleong, define qualitative methodology as a research procedure that produces descriptive data in the form of written or spoken words or from the form of policy actions [11]. This research method is used to analyze the integrative approach in the development of ProKlim in Sukoharjo Regency, in accelerating the achievement of SDGs which will end in a matter of years. Data and information related to the research object were obtained through literature studies through various existing literature such as books, journal articles, mass media articles, and so on. The data analysis technique in this study will be carried out in several steps, namely data collection, relevant data reduction, data presentation, and drawing conclusions [12]. To analyze and help answer the research questions above, the author uses the concept of sustainable development in the hexagon model of local economic development theory and helix theory.

Sustainability Concept

In 1987, the United Nations Brundtland Commission defined sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs” [13]. Later, in the charter of the UCLA Sustainability Committee, sustainability was defined as: “the integration of environmental health, social equity, and economic vitality to create thriving, healthy, diverse, and resilient communities for this and future generations. Sustainability practices recognize how these issues are interrelated and require a systems approach and recognition of complexity [14].

1. Jorg Meyer Stamer in his hexagon model of local economic development, includes sustainable aspects in his analysis. In his writings, he shows remarkable manifestations of the concept of sustainable development, which include (Meyer-Stamer, 2004):
2. It solves several environmental problems (river pollution, air pollution from conventional gasoline),
3. It creates economic opportunities, since the gathering and refining operations must be run as private companies (possibly with some initial public funding),
4. It contributes to social development, especially in terms of creating low-skilled jobs in the oil gathering business.



Figure 1 Sustainable development triangle

Teori Helix

Helix Theory

Efforts to achieve SDGs targets can be done through an integrative approach. The integrative approach applies an integrated approach to public planning not only including the integration of environmental components in socio-economic development plans and projects, but also encouraging sectoral and cross-sectoral balance between social development, sustainable economic growth, and sustainable management of natural resources and ecosystems [15]. In an effort to realize an integrative approach, there needs to be collaboration between various parties so that in this study the author uses the pentahelix cooperation model as an analytical tool.

Pentahelix is an innovative model developed from the Quadruple Helix model. Previously, Etzkowitz and Leydesdorff (1995) developed the Triple Helix model which adopted a spiral innovation model (versus traditional linear) that captures several reciprocal relationships between institutional arrangements (public, private and academic) at different stages in knowledge capitalization [16], [17].

The 'Pentahelix' model is based on five types of stakeholders: business, public administration, local population, knowledge sector, and capital. This model is very useful for multi-stakeholder problem areas where stakeholders represent various interests in a location or problem. Penta helix is an extension of the triple helix strategy by involving various elements of society or non-profit organizations to realize innovation. Academics are a source of knowledge. They have concepts, theories in developing businesses to gain sustainable competitive advantages. The community are people who have the same interests and are relevant to the business being developed.

The government is one of the stakeholders who has regulations and responsibilities in developing businesses. Business is an entity that has activities in processing goods or services into value. Meanwhile, the media is a stakeholder who has more information to develop businesses and plays a strong role in promoting businesses [18].

4 Result and Discussion

4.1. The Development of ProKlim in Sukoharjo Regency

Sukoharjo Regency, covering an area of 46.666 km², is the second smallest district in Central Java. This district comprises 12 sub-districts, 17 towns, and 150 villages. Sukoharjo has emerged as a leading district in the development of the Climate Village Program (ProKlim). In 2023, Sukoharjo received the Top 45 KIPP award from the Ministry of State Apparatus Empowerment and Bureaucratic Reform (PANRB) for its innovation, *Semangat Bangun Desa melalui Program Kampung Iklim (Sembada ProKlim)*, initiated by the Environmental Service (DLH) [19]. The ProKlim Sembada Initiative is designed as a sustainable effort aligned with three key aspects: environmental, economic, and social.

Since its inception in 2020, Sukoharjo Regency has developed the largest number of ProKlim initiatives in Central Java. In 2017, the regency issued Circular Letter No. 660.1/1396, urging all sub-districts to establish ProKlim initiatives to enhance climate change mitigation efforts. This innovation aims to ensure that each village or sub-district has at least one designated Climate Village. The government emphasizes that this program is crucial not only for addressing environmental challenges but also for raising awareness and encouraging local community involvement in environmental protection.

Ngadirejo Village was the first village in Sukoharjo Regency to be developed into a ProKlim initiative. The community's proactive approach to environmental issues facilitated a swift response to the formation of ProKlim. Even before the government intensified its push for ProKlim development, Ngadirejo Village had already initiated efforts to tackle local environmental problems. Driven by changing climate conditions that negatively affected the community, residents were encouraged to plant biopore holes and construct absorption wells during a seminar organized by the Sukoharjo Environment and Forestry Service (DLH) in 2015 [20]. As a result of these initiatives, Ngadirejo Village experienced a significant reduction in flooding and water shortages by 2017. Consequently, DLH Sukoharjo recognized Ngadirejo Village as a pioneer of ProKlim innovation in the regency. In 2020, Ngadirejo Village was awarded the ProKlim Lestari Trophy, marking the first such recognition for Central Java [21].

In addition to Ngadirejo Village, Bodeyan Village, located in Nguter District, has emerged as another prominent ProKlim initiative in Sukoharjo Regency, driven by similar factors. Like Ngadirejo, Bodeyan Village implemented ProKlim in 2017 to address various environmental challenges impacting social and economic conditions. Frequent flooding damaged sanitation systems, reduced the quality of well water, and harmed agricultural land, forcing residents to incur additional costs for clean water. Moreover, limited mobility hindered economic activities within the village.

As part of its ProKlim implementation, Bodeyan Village has undertaken several climate change mitigation actions, including installing waste filters, planting trees, and dredging rivers. These efforts have yielded positive results, as the community has experienced a significant reduction in flooding, which was previously a recurring issue. To further enhance these initiatives, Bodeyan Village has established a Waste Bank to manage waste effectively, converting organic waste into compost while processing inorganic waste through the Maju Lancar Waste Bank. In recognition of its efforts, ProKlim Bodeyan received the ProKlim Utama certificate from the Ministry of Environment and Forestry (KLHK) [22].

In addition to Ngadirejo Village, Bodeyan Village, located in Nguter District, is a prominent ProKlim initiative within Sukoharjo Regency, exhibiting similar environmental challenges. In 2017, Bodeyan Village implemented ProKlim to address various environmental issues directly affecting the social and economic sectors. Frequent flooding damaged sanitation systems, degraded the quality of well water, and harmed agricultural land, resulting in increased costs for residents to access clean water. Additionally, the community faced limited mobility, which impeded local economic activities.

In 2023, Bodeyan Village launched the Smart Garden program within the ProKlim Bodeyan Mini Farm area. This program integrates organic waste management with urban farming through various installations, including separate bins for organic and inorganic waste, biofloc ponds for tilapia cultivation, and a drip fertigation system [23]. The development of this program is supported by DLH Sukoharjo and CSR initiatives from PT Astra International Daihatsu Tbk [24].

The activities within ProKlim Bodeyan extend beyond practical implementations; they also emphasize raising awareness and encouraging community participation in environmental protection. Through educational initiatives and support from DLH Sukoharjo, residents have become more knowledgeable about effective environmental management practices, thereby fostering an environmentally friendly lifestyle.

Both Ngadirejo and Bodeyan villages serve as models for other villages in their ProKlim development efforts. Mojolaban Sub-district, in particular, has been proactive in establishing ProKlim initiatives, with 15 villages implementing the program as of 2024. This sub-district has recently been designated as a ProKlim sub-district, reinforcing its commitment to climate action. Two new innovations aimed at reducing greenhouse gas emissions in each ProKlim village have been introduced, known as Gatutkaca Sigrak and Dewi Arimbi. In the same year, Mojolaban Sub-district was registered in the Ministry of Environment and Forestry's National Registry System for Controlling Climate Change (SRN-PPI) [25].

Overall, the development of ProKlim in Sukoharjo Regency demonstrates significant progress and success over the years. According to the latest data, the district has successfully established over 50 ProKlim villages by 2024. The success of the ProKlim initiatives is further evidenced by the numerous awards received by Sukoharjo Regency, including two Lestari trophies, three Main ProKlim trophies, ten Main ProKlim certificates, 33 ProKlim Intermediate certificates, and 15 ProKlim Pratama certificates. These achievements highlight the awareness and active participation of the Sukoharjo community in addressing the impacts of climate change.

4.2. Relation between Economy Growth with the Achievement of Indonesia's SDGs

4.2.1. The Importance of Multi Actors in Developing ProKlim

The issue of climate change as one of the agendas in the SDGs requires cooperation from various parties according to their respective roles. Similar to the development of ProKlim, the involvement of various actors in Sukoharjo Regency is a very vital synergy. In this section, the analysis will be carried out using the pentahelix cooperation model.

First, academics have various theories and ideas that may be applied by related parties in developing ProKlim in their areas. In this case, academics must be able to become initiators and inspirators for various parties to implement ProKlim. For example, one of the state universities in Surakarta, provides assistance for ProKlim in several areas in Solo Raya, including Sukoharjo. One form of support from UNS is through the Merdeka Belajar Kampus Merdeka (MBKM) Bangun Desa program which is implemented in Sanggung Village, Gatak District, Sukoharjo. Other forms of support, for example, were carried out by the UNS 119 BEGAJAH KKN team which assisted the KWT (Women Farmers Group) Activities in Begajah Village, Sukoharjo Regency. KWT Kumalasari made ecoenzyme fertilizer from fruit waste. "The ratio is 1 kg of fruit waste, 1 kg of Javanese/palm sugar, then mixed with 1 liter of water and fermented for 3 months," he explained. Plants that are cultivated include sapodilla, lime, grape celery, chives, fragrant pandan, butterfly pea flowers, suweg, honey pumpkin, pepper, pagoda mustard greens and many more. The technology used is manual, does not use modern technology. "KWT Kumalasari won 2nd place in the ProKlim (Climate Village Program) at the district level and received a prize of IDR 5,000,000.00, won 6th place at the district level, and just advanced to the national ProKlim (Climate Village Program) competition representing the sub-district on August 14, 2023 yesterday," said Mrs. Sumiyati as deputy chair of KWT Kumalasari [26].

Furthermore, the government has an important role as a regulator and a party that encourages the creation of ProKlim by building a network between ProKlim and various partners. In this context, the Environmental Service (DLH) is the party authorized to support ProKlim. The government has prepared regulations, namely the Regulation of the Minister of Environment and Forestry No. 84/2016 concerning the Climate Village Program, where the regulation states that ProKlim can be developed in the lowest administrative area at the community unit (RW) level. Meanwhile, based on data from the Sukoharjo DLH, there are more than 50 ProKlim villages spread across Sukoharjo. In detail, 15 primary ProKlim, 33 intermediate ProKlim, 10 main ProKlim, and 2 sustainable ProKlim [27].

The Sukoharjo government in this case also acts as a hub connecting private actors with the community as the spearhead of ProKlim. For example, the Sukoharjo DLH is the liaison between ProKlim Bodeyan and Astra Daihatsu Solo Baru to create an installation of organic and inorganic waste bins, a Mini Farm with a smart garden system that integrates tilapia biofloc ponds and drip fertigation irrigation [28]. This step can fill the gap in terms of funding, while also providing opportunities for private actors to contribute to social and environmental responsibility programs.

"In the implementation of ProKlim, the Bodeyan community has worked together in waste management and mitigating the impact on the surrounding environment. Through the "Smart ProKlim" program supported by PT. Astra International, Tbk - Daihatsu." - Head of ProKlim Bodeyan Warsini (2022)

The organic waste management program integrated with the smart garden in ProKlim Bodeyan has a concept, the organic fertilizer produced is used as a planting medium for horticultural cultivation combined with automatic drip irrigation so that it is very effective and efficient in addition to being able to produce maximum crop yields [29]. An important actor who is also the spearhead and main actor of ProKlim is the community itself. The local community is at the forefront of ProKlim management. ProKlim management is carried out differently in each village. There is ProKlim which is indeed carried out directly by the ProKlim management community, meaning that there is indeed a special task force formed to manage it, such as the ProKlim community in Bodeyan Village. Meanwhile, there is also ProKlim which is managed by the Women Farmers Group (KWT), namely in Sanggung Village, Gatak District, Sukoharjo Regency. Support from various parties for Proklm is indeed important, but what is more important is the role of the community and public awareness in developing and managing Proklm consistently. There are situations when the community feels that managing proklm is not profitable for them and is only used as a side job, so that the sustainability of proklm becomes a difficult challenge to overcome. In other words, there needs to be consistency from the community in managing proklm. For example, the management of proklm in Bodeyan village is an example that can be used as a reference considering that proklm Bodeyan has received various awards and has many other fostered villages. Furthermore, another actor that can play an important role in the development of proklm is the media. Media exposure is one of the important instruments that can be used to introduce proklm to the community. The general public may not understand what proklm is and environmental awareness may still be low. Therefore, the media can play a role in providing exposure to proklm, including awareness in responding to climate change that is occurring. The media can link the phenomena that are currently occurring in society as a result of climate change.

4.2.2. Sustainable Aspects in ProKlim Implementation in Sukoharjo

The sustainability of the ProKlim implementation in Sukoharjo can be evaluated through its operational framework, environmental impact, and the socio-economic advancement of the surrounding community. ProKlim was established in Sukoharjo as an alternative solution to various local challenges, including crop failures, flooding, landslides, drought, and clean water shortages, all exacerbated by climate change. Additionally, the program aims to enhance food security by promoting the diversification of food crops beyond rice.

The specific programs implemented within each climate village in Sukoharjo vary based on the region's potential and creativity. For instance, Ngadirejo Village has developed biopore holes, infiltration wells, and waste banks, while Bodeyan Village has initiated a Smart Urban Farming project. In Sanggung Village, eco-enzymes are produced. Despite these differences, the core characteristic of all programs is their focus on addressing environmental issues and generating new economic opportunities for the community. In the context of waste management, for example, inorganic waste is collected, sorted, and sold to collectors, with reusable inorganic materials often

transformed into crafts or used as planting mediums. Meanwhile, organic waste is processed into compost or eco-enzymes. The income generated from these sales typically serves as a funding source for the ProKlim management group to further develop their initiatives.

An important aspect of ProKlim is its emphasis on social development through community empowerment. The program adopts a community-based approach, engaging local residents—often members of Women Farmers' Groups (KWT)—as the primary implementers. Most KWT members are housewives motivated to participate in ProKlim activities. When activities such as waste management, eco-enzyme production, and vegetable and ornamental plant cultivation are effectively managed with guidance and training from experts, practitioners, and academics, they can enhance productivity and provide alternative income sources for local residents.

However, the sustainability of ProKlim faces challenges, particularly in creating programs or products that hold market value. When community members produce items such as ornamental plants, vegetables, and local fruits, they often sell them at low prices to local buyers. This indicates limitations in accessing broader markets. Therefore, there is a need for guidance on effective marketing strategies to help residents reach wider markets, especially for environmentally friendly products such as eco-enzymes, compost fertilizer, and maggots, which have significant sales potential.

4.3. Barriers and Area to Improvement

Despite Sukoharjo Regency's success in developing ProKlim across various villages, several challenges must be addressed to optimize its implementation. One major obstacle is changing community mindsets. Public skepticism regarding long-term results can generate conflicting opinions, which negatively impact community participation and diminish the motivation of ProKlim administrators. Many individuals perceive climate change adaptation and mitigation efforts—such as waste management and tree planting—as burdensome activities that yield no immediate benefits. Consequently, community members often expect quick, tangible outcomes, such as increased income. In some instances, funds generated through ProKlim are primarily allocated for operational needs, such as equipment purchases, leading residents to question the direct benefits of their participation.

In addition to mindset challenges, funding represents a significant barrier to the effective implementation of ProKlim. Limited financial resources often hinder the program's development. Communities frequently rely on personal funds, including contributions from community members or voluntary assistance from local leaders, to initiate their programs. This dependence on private funding sources exposes ProKlim to financial uncertainty, resulting in instability in operations. When funding is insufficient, it becomes challenging for communities to sustain programs, particularly those requiring investment, such as procuring tree seedlings or managing waste.

Another challenge is the lack of human resources. Many community members lack the necessary knowledge and skills to effectively manage the program. Insufficient training or support from government or private entities further complicates their ability to implement activities sustainably and optimally. Successful implementation of ProKlim requires active collaboration among various stakeholders, including the government, community members, and the private sector. However, inconsistent support from these parties often hampers the program's effectiveness.

To enhance community participation, it is crucial to ensure that residents recognize the positive impacts of their efforts in implementing ProKlim. This can be achieved by fostering entrepreneurial skills relevant to environmental management, such as creating recycled products with market value or cultivating climate-adaptive local plants. By providing this training, individuals can adopt environmentally friendly practices while simultaneously establishing small businesses to generate additional income.

Moreover, improving financial management is essential for the sustainability of ProKlim. A comprehensive and transparent plan is necessary for acquiring, managing, and allocating funding sources effectively. Although a rewards scheme exists for regions participating in ProKlim competitions, the financial support provided is often inadequate to cover program management costs. For newly designated ProKlim villages, securing initial capital is particularly critical. The government's role is vital in facilitating funding acquisition, which can include collaborations with the private sector. Additionally, the government can assist communities in accessing grant funds or support from non-governmental organizations with similar objectives, thereby reducing reliance on limited government budgets. Such collaborations can establish stable funding sources, motivating communities to engage fully in various ProKlim initiatives.

5. Conclusions

ProKlim represents a significant innovation in addressing the climate crisis, particularly as its implementation embodies key sustainability principles. As a community-based program, ProKlim fosters active involvement from local populations, facilitating grassroots participation in Sustainable Development Goals (SDGs) initiatives, notably Goal 13, which focuses on climate action. In Sukoharjo Regency, the rapid development of ProKlim villages stands in contrast to progress observed in other regions, largely due to the engagement of diverse stakeholders.

However, the successful implementation of ProKlim requires ongoing evaluation and enhanced collaboration among community members, government entities, the private sector, academics, and non-governmental organizations (NGOs). By identifying areas for improvement, ProKlim can extend its impact beyond climate action to contribute to the achievement of additional SDGs, including the reduction of poverty and hunger, the promotion of economic growth, and the establishment of responsible consumption and production patterns.

References

1. United Nations. (2024). Progress towards the Sustainable Development Goals 2024. United Nations General Assembly Economic and Social Council.
2. Gürdür Broo, D., Lamb, K., Ehwi, R. J., Pärn, E., Koronaki, A., Makri, C., & Zomer, T. (2020). Built Environment of Britain in 2040: Scenarios and Strategies. *Sustainable Cities and Society*, 65, 102645. <https://doi.org/10.1016/j.scs.2020.102645>

3. Badan Pembinaan Hukum Nasional. PERATURAN PRESIDEN REPUBLIK INDONESIA [Internet]. 2011 [cited 2024 Oct 31]. Available from: <https://bphn.go.id/data/documents/11pr061.pdf>
4. PPID. (2023). PROKLIM, Program Komunitas Untuk Iklim, Kolaborasi Dalam Rumah Iklim dan Karbon. Ppid.menlhk.go.id. <https://ppid.menlhk.go.id/berita/siaran-pers/7468/proklam-program-komunitas-untuk-iklim-kolaborasi-dalam-rumah-iklim-dan-karbon>
5. Sujatmiko, T. (2023, June 23). DLH Sukoharjo Dorong Jumlah Proklam Diperbanyak - Krjogja. DLH Sukoharjo Dorong Jumlah Proklam Diperbanyak - Krjogja; Krjogja. <https://www.krjogja.com/klaten/1242447458/-dlh-sukoharjo-dorong-jumlah-proklam-diperbanyak>
6. Yunus Tri Jatmiko, & Fauzi, A. (2023). Kepedulian Masyarakat Terhadap Lingkungan Melalui Kegiatan ProKlim. Jurnal Socia Logica, 3(1), 138–148. <https://doi.org/10.572349/sociologica.v3i1.355>
7. Khairul Fikri, Mhd. Saeri, & Nur Laila Meilani. (2024). Kontribusi Community Development Dalam Pelaksanaan Program Kampung Iklim (PROKLIM) Di Kabupaten Kampar. Innovative: Journal of Social Science Research, 4(4), 5514–5520. <https://doi.org/10.31004/innovative.v4i4.13737>
8. Priyanto, Moh. W., Handoyo Mulyo, J., & Irham. (2021). Comparison of Awareness and Perception of Climate Change between Proklam and Non-Proklam Farmers in Sleman District. E3S Web of Conferences, 232, 04007. <https://doi.org/10.1051/e3sconf/202123204007>
9. Faedlulloh D, Prasetyanti R, Irawan B. Kampung versus Climate Change: The Dynamics of Community Empowerment through the Climate Village Program (ProKlim). Journal of Physics: Conference Series. 2019 Dec;1424:012055.
10. Andung Bayu Sekaranom, Ambar Kusumandari, None Suratman. The study of greenhouse gas emissions in village level to support the “PROKLIM” program: case Study of Poncosari Village, Yogyakarta - Indonesia. IOP Conference Series Earth and Environmental Science. 2022 Sep 1;1039(1):012016–6.
11. Moleong, L. J. (2012). Metodologi penelitian kualitatif. Pt Remaja Rosdakarya.
12. Miles, M. B., & Huberman, A. M. (1994). Qualitative Data Analysis: An Expanded Sourcebook (2nd ed.). Sage.
13. United Nations. (1987). Sustainability. United Nations. <https://www.un.org/en/academic-impact/sustainability>
14. UCLA. (2024). What is Sustainability? UCLA Sustainability; UCLA. <https://www.sustain.ucla.edu/what-is-sustainability/>
15. UNEP. (2017, October 29). Integrated approach to environmental sustainability in development planning. UNEP - UN Environment Programme. <https://www.unep.org/regions/latin-america-and-caribbean/regional-initiatives/strengthening-environmental-governance-1>
16. Etzkowitz H, Leydesdorff LA. Universities and the Global Knowledge Economy. Burns & Oates; 1997.
17. Viale, R., & Campodall’Orto, S. (2002). An evolutionary Triple Helix to strengthen academy-industry relations: suggestions from European regions. Science and Public Policy, 29(3), 154–168. <https://doi.org/10.3152/147154302781781029>
18. Elof Stuesson, Lindmark A, Roos M. Collaboration for Innovation - a study in the Öresund Region [Internet]. 2017 [cited 2024 Oct 30]. Available from: <https://www.semanticscholar.org/paper/Collaboration-for-Innovation-a-study-in-the-%C3%96resund-Stuesson-Lindmark/b2a20880292672075c6167fd3b90a70e2a6e8670>

19. PPID. (2024, January 24). Bupati Beri Penghargaan kepada OPD Berprestasi di Bidang Pelayanan Publik – PPID Kabupaten Sukoharjo. Sukoharjokab.go.id. <https://ppid.sukoharjokab.go.id/2024/01/24/bupati-beri-penghargaan-kepada-opd-berprestasi-di-bidang-pelayanan-publik/>
20. Dursin K. Indonesia's Climate Villages Where Communities Work Together to Mitigate Climate Change [Internet]. Globalissues.org. 2021 [cited 2024 Oct 31]. Available from: <https://www.globalissues.org/news/2021/05/26/27918>
21. Pemkab Sukoharjo. (2023, July). Inovasi Sembada Proklam, Melawan Perubahan Iklim. Portal.sukoharjokab.go.id/. <https://portal.sukoharjokab.go.id/2023/07/03/inovasi-sembada-proklam-melawan-perubahan-iklim/>
22. Warsini. (2023). Dokumen Profil ProKlim Bodeyan.
23. Putra, F. A. A. (2023a, November 11). Sadar Lingkungan di Kampung Iklim Bodeyan. Detiknews; detikcom. <https://news.detik.com/kolom/d-7029738/sadar-lingkungan-di-kampung-iklim-bodeyan>
24. Budiman A. Smart ProKlim Bodeyan, Pemberdayaan Warga dengan Pengelolaan Sampah [Internet]. jatengpos.co.id. 2023. Available from: <https://jatengpos.co.id/smart-proklam-bodeyan-pemberdayaan-warga-dengan-pengolahan-sampah/arif/>
25. Sumarno, N. (2024, July 4). DLH Sukoharjo Launching Program “Gatutkaca Sigrak” Saat Verifikasi Lapangan ProKlim Nasional | Sukoharjone.ws. Sukoharjone.ws. <https://sukoharjone.ws/dlh-sukoharjo-launching-program-gatutkaca-sigrak-saat-verifikasi-lapangan-proklam-nasional/>
26. Media Mahasiswa Indonesia. (2023, August 22). Media Mahasiswa Indonesia. Media Mahasiswa Indonesia. <https://mahasiswaindonesia.id/kelompok-kkn-uns-119-begajah-kunjungi-serta-membantu-kegiatan-kwt-kelompok-wanita-tani-kelurahan-begajah-kabupaten-sukoharjo/>
27. Bony R. Mojolaban Sukoharjo Dicanangkan sebagai Kecamatan Proklam, Ini Inovasinya [Internet]. Espos Indonesia. 2024 [cited 2024 Oct 30]. Available from: <https://solopos.espos.id/mojolaban-sukoharjo-dicanangkan-sebagai-kecamatan-proklam-ini-inovasinya-1955116>
28. Putra, F. A. A. (2023b, November 11). Sadar Lingkungan di Kampung Iklim Bodeyan. Detiknews; detikcom. <https://news.detik.com/kolom/d-7029738/sadar-lingkungan-di-kampung-iklim-bodeyan>
29. Kusumawati. (2023, June 26). Launching Smart Proklam Bodeyan Binaan PT. Astra International Tbk – Daihatsu Solo Baru. Soloaja.co. https://soloaja.co/read/launching-smart-proklam-bodeyan-binaan-pt-astra-international-tbk-daihatsu-solo-baru#google_vignette

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