

Analysis of Indonesia & Germany's Cooperation on Urban Nexus Project in Support of SDG's No 13

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ABSTRACT

Keywords: Indonesia, Germany, SDG No 13, Urban Nexus.

The purpose of this research is to analyze the role of Indonesia and Germany's cooperation in supporting the achievement of Sustainable Development Goal (SDG) number 13 related to climate change, especially in the Urban Nexus project. This research uses a qualitative approach that is analytically descriptive. The research technique used is a literature review. This research procedure consists of three steps: (1) preparation in determining the topic, (2) implementation in finding relevant reference sources, and writing down findings from various reference sources. The data was taken from the official websites of ESCAP, GIZ, and ICLEI that describe the Urban Nexus project, news, and research results published in journals. To obtain reliable data, the triangulation technique was used as a data validity checking technique. The data analysis technique consists of three stages, namely data reduction, data presentation, and conclusion drawing. The results of the analysis found that the cooperation between Indonesia and Germany in the Urban Nexus project is a successful example of international cooperation in supporting SDGs through a holistic and integrative approach. Indonesia focuses on identifying prospects for Urban Nexus integration at the local and regional levels, integrating various aspects of the environment, infrastructure, supply chain, and services to avoid wasting assets. Meanwhile, Germany contributes with its expertise in technology and sustainable city management, assisting in the design and delivery of solutions, as well as training and operational capacity building.



Introduction

The approval of 2030 Agenda for Sustainable Development approved by the United Nations has formed a strategic basis to confront a series of global challenges that encapsulate social, economic, and environmental issues with a holistic approach. Given the complexity of the challenges faced by the global community today, the issue of climate change has been recognized as a critical issue that demands coordinated action

from the international community as a whole (Mondolu, 2023). The increasingly felt impacts of climate change not only affect the natural environment, but also have a wide impact on the economy, health, food security, migration, and social justice (Herfana and Rijal, 2022).

SDG No. 13, which specifically highlights urgent action to address climate change, is an important milestone in the Sustainable Development Agenda. It is emphasized in these goals that it is very important to take concrete actions in reducing greenhouse gas emissions, strengthening resilience to the impacts of climate change, and improving adaptation and mitigation capabilities globally (Tarigan, 2022). In this context, the 2030 Agenda for Sustainable Development provides a comprehensive framework to encourage innovation, cross-sectoral cooperation, and sustainable investment in efforts to address climate change (Ministry of Energy and Mineral Resources of Indonesia, 2020).

As one of the countries rich in natural resources, Indonesia experiences great difficulties in managing these resources, especially related to nature protection and the reduction of greenhouse gas emissions. Despite the commitment to the Sustainable Development Goals (SDGs), the implementation of policies that support Goal 13 of the SDGs still faces obstacles, especially in building the necessary institutional capacity (Bank, 2022).

Tabel 1
Indonesia’s Climate Policy Framework

Sector	2000 (tons CO ₂ e)	2014 (tons CO ₂ e)
Energy	298412	602458
Industrial Processes and Product Use	42610	47449
Agriculture	99717	113440
LULUCF	505368	979422
Waste	61351	101560
Total Without LULUCF	502090	864907
Total with LULUCF and Peat Fire	1007458	1844329

Source: Sustainable Development Goals Indonesia One – Green Finance Facility

The analysis shows that if Indonesia does not succeed in meeting the necessary policies to cut greenhouse gas emissions, it is projected that by 2030, CO₂ emissions from land use and the energy sector will exceed the target set by the country's unconditional commitment to cut GHG emissions by up to 29%. However, if Indonesia implements strengthened measures, then by 2030 CO emissions₂ of land use and the energy sector will be below the target, which will allow for a small increase in GHG emissions from other sources or sectors, but still meet the unconditional target (Bank, 2022). To achieve the conditional target set by Indonesia to cut CO₂ emissions by up to 41% from Business As Usual (BAU) levels, a significant increase in efforts is needed. These efforts include the expansion of the deforestation moratorium policy, the restoration of degraded

peatland areas, the implementation of initiatives for energy conservation, and the development of mitigation measures for various sectors and other greenhouse gases (Bank, 2022). Close cooperation is needed by Indonesia to overcome various challenges of climate change, given that the country faces geographical complexity and different socio-economic conditions. In Indonesia, the consequences of climate change are often manifested through various natural disasters, such as floods, landslides, droughts, and strong winds (Iklim, 2017).

Cooperation with developed countries, such as Germany, is crucial in addressing the challenges of climate change. To reduce greenhouse gas emissions, developing countries such as Indonesia often take advantage of advanced technology and financial resources from developed countries. This support contributes to strengthening adaptation infrastructure and building capacity to cope with natural disasters that occur more frequently (Randa, Tank and Askikarno, 2024). Germany, as one of the 10 cleanest countries in the world according to the Environmental Performance Index 2022, has a strong reputation for sustainable environmental management. This reputation demonstrates Germany's commitment to implementing best practices that can be adopted by Indonesia through various cooperation programs. With experience and technology that has proven to be effective, Germany can play a strategic role as a strategic partner for Indonesia in achieving sustainable development goals, especially in addressing climate change (*Environmental Performance Index, 2020*).

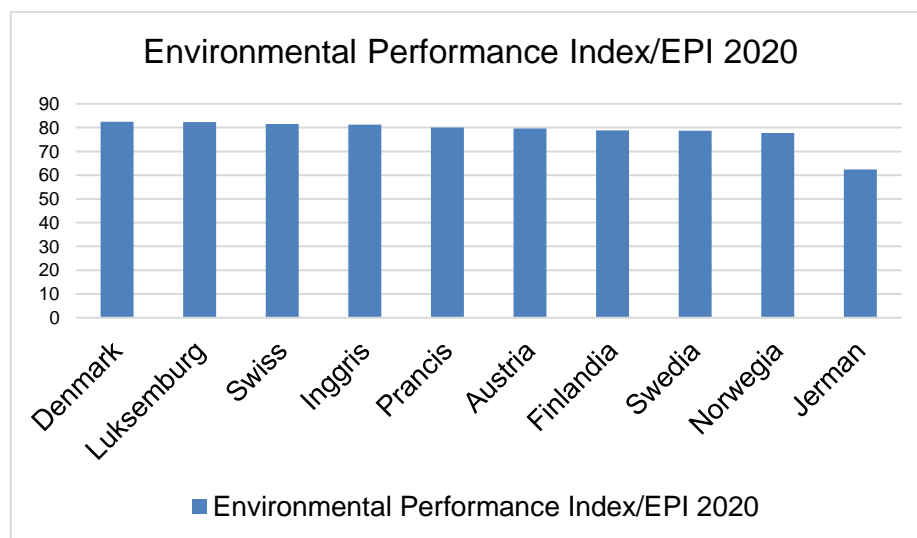


Figure 1
10 Countries with the Best Environmental Management

Mitigation and adaptation measures to climate change in Indonesia can be strengthened through knowledge exchange and technology transfer supported by bilateral cooperation. Investment in green infrastructure, the development of renewable energy, increasing food security, and strengthening community capacity in dealing with natural

disasters are important parts of this cooperation (Sugandi, Abdoellah and Gunawan, 2022).

To support the goals of SDG No. 13, the project carried out by Indonesia and Germany in tackling climate change has been recognized as a model that should be emulated by other countries. Germany, which is a developed country with a deep commitment to environmental issues, has contributed significantly through the development of technology and experience in mitigation and adaptation to climate change. Germany is known as a pioneer in green technology innovation and sustainability. They have strong policies related to climate change mitigation and have successfully integrated sustainable solutions into various sectors of the economy and industry (Wiriadidjaja, Andriasanti, and Jane, 2019). Through investments in renewable energy, energy efficiency, green transportation, and waste management, Germany has proven that sustainable economic development is possible.

In addition, Germany is also active in establishing partnerships with other countries, including Indonesia, to support the implementation of the SDGs, including SDG No 13. Through knowledge exchange, technology transfer, and bilateral cooperation programs, Germany has played a role in strengthening Indonesia's capacity to deal with climate change and implement sustainable policies (Atthareq and Affandi, 2023). The cooperation project implemented by Indonesia and Germany not only supports the reduction of greenhouse gas emissions and increases resilience to the impacts of climate change, but also plays a role in shaping the example of cooperation analysis that can be used by other countries (Nurfindarti, 2019). By learning from each other and sharing experiences, countries can accelerate progress towards SDGs goal No. 13, creating a more sustainable and resilient world to global environmental challenges.

Cooperation between Indonesia and Germany in the context of climate change does reflect the difference in roles and capacities between the two. As a developing country, Indonesia faces unique challenges in dealing with the impacts of climate change, while Germany is known as a leader in innovation and environmental policy. However, the cooperation between the two countries shows how countries with different backgrounds and capacities can support each other to achieve SDG goal number 13 (Hariyadi & Suryadipura, 2022).

Germany has taken a step forward in climate change-related policies and innovations, and it has programs in place that can assist developing countries, including Indonesia, to raise awareness and action on the issue (Adenia, Nabiela and Afkarina, 2023). One example is the establishment of German government organizations in Indonesia, such as GIZ, which works with Indonesian institutions such as Bappenas and the Ministry of Foreign Affairs (Putri, 2018). Indonesia is enriched with access to knowledge, technology, and financial resources that are essential in tackling climate change through this cooperation. On the other hand, by strengthening its partnerships in achieving the SDGs globally, Germany has the opportunity to increase its influence in supporting environmental sustainability in developing countries (Trimulato, Syamsu and Octaviany, 2021).

The Government of Indonesia affirms its commitment to addressing the issue of climate change through the issuance of Law of the Republic of Indonesia Number 17 of 2004 which ratifies the Kyoto Protocol of the United Nations Framework Convention on Climate Change. This seriousness is also supported by the implementation of Presidential Regulation Number 61 of 2011, which stipulates the National Action Plan for Reducing Greenhouse Gas Emissions (Budiarso, 2019). In 2014, as a further step, the Government of Indonesia announced the National Action Plan for Climate Change Adaptation. The widespread impact of climate change on people's lives supports the publication of this plan (Statistics, 2016).

Inequality in policy implementation and concrete actions between Indonesia and Germany in supporting SDG 13 from the achievement of the set targets. Indonesia, as a developing country, is often constrained by a lack of allocated funds and a lack of competent experts in formulating and implementing initiatives that support SDG Number 13. In reality, the main problem faced is limited resources, both financially and in terms of human capacity. Meanwhile, Germany, despite having larger resources, may face obstacles in allocating those resources effectively in the context of international cooperation.

Research Methods

Urban Nexus Project Overview

Managing fast-growing cities and their urban areas is one of the most important challenges facing Asia and the Pacific, especially the relationship between urban development and natural resource management. (Economic and Social Commission for Asia and the Pacific, 2019). Cities tend to continue to grow and develop, many of which exceed their carrying capacity, accelerating and exacerbating the various impacts of climate change. (Handayani *et al.*, 2021). Since 2013, GIZ GmbH, a German company focused on international cooperation, has been carrying out a project called "Integrated Resource Management in Asian Cities: Urban Nexus". The project is implemented jointly with ESCAP and ICLEI - Local Governments for Sustainability. The analysis and financial support for the project are provided by the German Federal Ministry responsible for Economic Cooperation and Development (BMZ).

The project supports twelve cities in seven countries: China, India, Indonesia, Mongolia, the Philippines, Thailand, and Vietnam. ESCAP-led activities promote a framework that enables urban nexus initiatives to thrive in cities, highlight the relevance of nexus approaches, and seek to mainstream nexus approaches in national and local strategies for the implementation of the 2030 Agenda for Sustainable Development and the Urban New Agenda. (Economic and Social Commission for Asia and the Pacific, 2019).

According to Government Regulation of the Republic of Indonesia Number 26 of 2007 concerning Spatial Planning, an urban area is defined as an area where the main activity is not agriculture. The area is organized to function as an urban settlement center, as well as a concentration and distribution point of government services, social services, and economic activities (Pertiwi, 2017). The project aims to support the enhancement of

the capacity of central and local governments in developing Asia-Pacific countries to design and implement integrated policies, plans, and initiatives in the sustainable management of natural resources in urban areas. The project oversees the design, planning, and, where possible, the implementation of practical nexus initiatives (with a focus on water, energy, land, and/or food security) and at the same time seeks to apply the experience gained at the local and national levels into regional policy dialogues and learning platforms to achieve knowledge unification at the regional level as well as to drive the necessary shifts in policy and practice (Economic and Social Commission for Asia and the Pacific, 2019).

Urban Nexus Project Background

As a cross-sectoral issue, climate change highlights the need for a new approach in governance to address the lack of coordination and integration. Climate resilience requires positive actions and effective partnerships to reduce vulnerability and drive optimal benefits for urban communities. Thus, in this case, the integration of social sciences and related skills is very important in influencing key decision-making processes and behaviors. (European Commission, 2016).

Governance can be considered as something fundamental about society and how society lives and carries out social, cultural, personal, and economic life in one place. The topic of people and places is of course very closely related and is something that should be seriously considered. Climate change will have a direct impact on human health and quality of life, as well as bring indirect risks to wider social and economic activities. The vulnerability of communities and their ability to respond to the impacts of climate change is not only determined by geographical location or physical attributes alone. Economic factors also play an important role in determining the level of vulnerability and adaptation capacity of households and communities.

Based on research on urban climate resilience, several key findings need to be considered. First, although there is a great deal of scientific and business research related to climate change, there are still few well-coordinated studies that adopt an integrated perspective. This shows the need for closer collaboration in related studies. Second, most of the research, policy, and practices on climate change in cities today are more focused on mitigation aspects, such as energy efficiency, new development, and eco-town development. However, there is an urgent need to expand the scope of the research to include aspects of climate adaptation and resilience. Third, while there are many urban sustainability models, most of them are still confusing and often ignore the importance of considering climate resilience in their planning. This signals a gap in the current approach to sustainability. (European Commission, 2016).

Theoretical Review of Methodology

This research uses a qualitative research approach, where the context focuses on a deep understanding of a phenomenon. (Scioto & Sodik, 2015). (Wekke, 2019) Underlining that this understanding arises after a careful analysis of the social reality that is the focus of the research.

This study uses an explanatory descriptive research method. This study describes events with a wider scope, not only describing symptoms and events, but also describing the reasons behind the occurrence of a phenomenon, causative factors, and other related aspects. (Ibrahim *et al.*, 2018).

Data Collection Techniques

This research was carried out by applying the library research method to collect data, which includes analysis and evaluation of theories, data, and relevant information. Secondary sources such as scientific journals, books, ebooks, and reports are used as primary materials. This approach supports the use of information obtained from sources that are secondary hand. (Wekke, 2019)

Data Validity

In this study, the validity of the data was checked through the triangulation technique. The triangulation approach has been proven to be effective in minimizing the disparity in understanding reality that occurs in the analysis. Triangulation facilitates the reassessment of research findings by comparing them against different sources, methods, or theories as data is collected from various events and interactions. Therefore, the use of triangulation contributes to increased validity and accuracy in research results. (Kusumastuti and Khoiron, 2019).

Results and Discussion

Urban Nexus Implementation

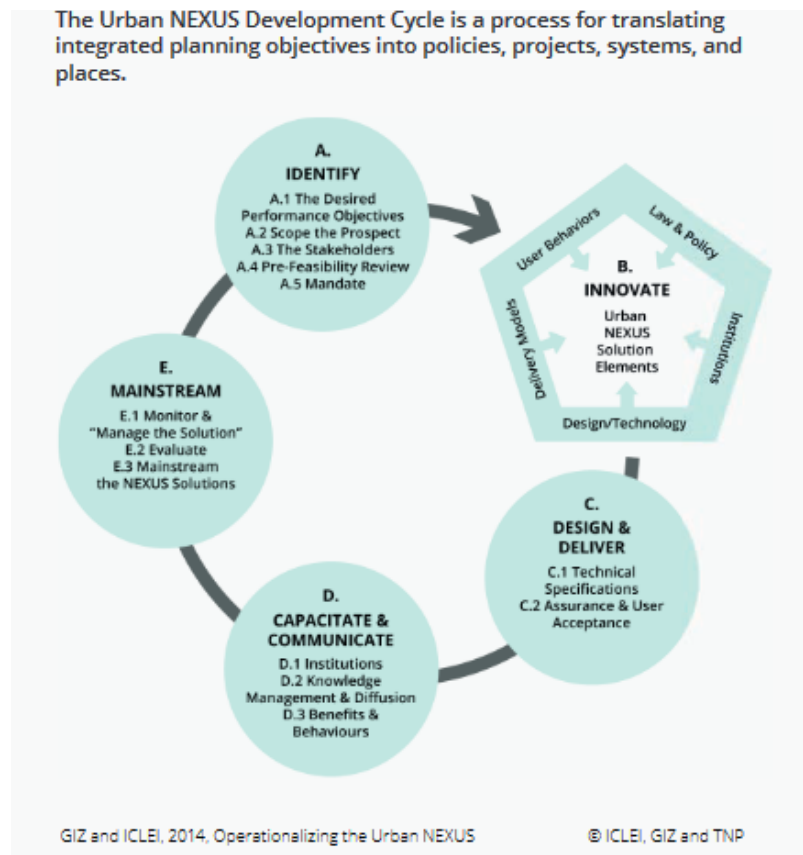


Figure 2
Operationalization of Urban Nexus

There are several stages of actualization of the Urban Nexus project, including. (ICLEI, 2014) :

1. Identification

To achieve strategic goals, stakeholders identified local Urban Nexus integration prospects. The prospect of building synergies can be found in five Integration Areas, namely. (ICLEI, 2014):

- 1) Integration at various scales includes built environments, infrastructure, and supply chains, following the applicable resource cycle at the local and regional levels. This also includes policies and operations within local, regional, sub-national, and national jurisdictions;
- 2) Integration of resource extraction and power generation systems, food cultivation, processing, manufacturing, resource provision and waste management, etc. by building cascades and resource cycles between systems
- 3) Integration of Services and Facilities to avoid underutilization of valuable fixed assets by integrating services and facilities that are conventionally separated based on sectoral functions;

- 4) Integration across Silos that consolidate institutional interests and managerial and professional "silos" arising from the organization of urban areas and systems into separate jurisdictions, utilities, and departments; and finally
- 5) Integration of Social Relationships and Behaviors to enable the involvement of all stakeholders in the above dimensions of integration, and counteract the legacy of cultural, social, and political divisions

2. Innovation

The identified stakeholders collaborate in a structured innovation process to develop a set of politically, institutionally, and economically viable actions in the Urban NEXUS Innovation Area that span the areas of law and policy, design and technology, delivery and financing models, communication, and user change. Behavior, as well as institutional design and development (ICLEI, 2014).

3. Design and Maintenance

Solution design and delivery include prototyping and commissioning in a real-world operating environment. Urban NEXUS brings together a variety of stakeholders who have never sat together before at one table, resulting in a new "institutional relationship". In suburban farming practices, innovative solutions and programs are designed and implemented collaboratively to optimize the use of water, energy, and land resources. This supports the improvement of the learning environment in the two city schools through the application of integrated energy-saving technology, rainwater harvesting systems, and vertical food production. To demonstrate the benefits of Urban NEXUS' thinking to local communities and government officials (ICLEI, 2014).

4. Communication and Capacity

The three main areas of capacity development that are typically required to build new solutions are: (1) training operational staff in managing their solution parts; (2) encouraging behavior change and building the skills needed by beneficiaries; and (3) enabling relevant agencies to establish a systematic process for introducing and supporting such operational staff at new sites or facilities. (ICLEI, 2014).

5. Improving and prioritizing Urban NEXUS

Prioritizing often involves appointing or establishing a dedicated entity tasked with developing all the unique aspects of an existing Urban NEXUS solution. This entity must have the capacity to handle specific issues in each location and "manage solutions" in various contexts. (ICLEI, 2014).

Analysis of the Role of Indonesia and Germany in the NEXUS Urban Project

According to the description of the implementation scheme that has been explained earlier, it is clear that Indonesia's role is very crucial in recognizing opportunities for Urban NEXUS integration on a local and regional scale. In this context, stakeholders from Indonesia are actively collaborating to bring together various elements such as the built environment, infrastructure, supply chain, and resource cycles that exist at the local level. The Government of Indonesia is also responsible for integrating service systems and facilities, avoiding the waste of valuable assets by combining services that are usually separated by sectoral functions.

In addition, Indonesia takes the lead in consolidating institutional and managerial interests that are often separated in the management of urban areas and systems. At the innovation stage, stakeholders in Indonesia collaborate on a structured innovation process, developing political, institutional, and economic action. This includes policy development, design and technology, delivery and financing models, and changes in user behavior.

On the other hand, Germany, with its experience and expertise in technology and sustainable city management, contributes to the design and implementation of Urban NEXUS solutions. The prototyping and trial of the solution in a real operating environment is supported by the important role played by Germany. In this context, Germany has implemented technologies that focus on optimizing the use of water, energy, and land resources. In addition, integrated energy-saving technology, rainwater harvesting systems, and vertical food production have been integrated thanks to technical expertise from Germany. In terms of communication and capacity building, Germany supports the training of operational staff in managing solutions, driving behavioral change, and building the skills needed by beneficiaries. Germany is also assisting relevant institutions in Indonesia to establish a systematic process for supporting operational staff at new sites or facilities.

Conclusion

The UN warns that by 2030, the world will need more food, energy, and water, with most of these needs coming from fast-growing cities. This shows how urgent efforts are to integrate urban development with sustainable resource management. To address these challenges, GIZ has been implementing the project "Integrated Resource Management in Asian Cities: Urban Nexus" since 2013. To advance the urban nexus initiative, the project involves cooperation with ESCAP and ICLEI and is strengthened by support from the German Federal Ministry for Economic Cooperation and Development (BMZ). The existence of this project aims to improve the implementation of the nexus approach in national and local strategies, which is in line with the implementation of the 2030 Agenda for Sustainable Development as well as the New Urban Agenda. Twelve cities in seven countries, including Indonesia, have gained support through the framework developed in this project to facilitate the growth of the Nexus initiative.

In the Urban Nexus Project, the importance of an integrated governance approach is strongly emphasized to address the challenge of climate change, especially in urban areas. As a cross-sectoral issue, climate change requires better coordination and integration between different disciplines and policies to reduce community vulnerability and maximize social and economic benefits. The integration of social sciences and capacity building for adaptation are key in influencing more effective decision-making in dealing with the impacts of climate change. In addition, although there has been a lot of research and policy related to climate change mitigation, more efforts are still needed in the aspects of adaptation and resilience to create a more holistic and sustainable approach for urban communities.

Indonesia and Germany have an important role to play in this project. Indonesia focuses on identifying the potential for Urban Nexus integration at the local and regional levels, integrating various aspects of the environment, infrastructure, supply chain, and services to avoid wasting assets. Meanwhile, Germany contributes with its expertise in technology and sustainable city management, assisting in the design and implementation of solutions, as well as training and operational capacity building.

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