



Impacts and Challenges of Implementing Ecological Fiscal Transfers: A Systematic Literature Review of Indonesia's Policies

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ARTICLE INFORMATION	A B S T R A C T
<p>Received: February 27, 2024 Revised: June 14, 2024 Available online: July 30, 2024</p>	<p>The environmental challenges currently facing Indonesia pose a significant obstacle to the country's sustainable development. The 2009 Law on Environmental Protection and Management (No. 32/2009) establishes a legal framework aimed at preserving and protecting the environment. However, budget constraints often hinder effective environmental management. This study investigates the effectiveness of Ecological Fiscal Transfer (EFT) in promoting environmental conservation in Indonesia. A Systematic Literature Review (SLR) methodology was used to analyze 23 relevant studies on this topic. The findings reveal that EFT implementation has a significant positive impact on environmental conservation. The EFT program fosters improvements in environmental quality, encourages active local participation in conservation efforts, and supports sustainable local economic development. Additionally, EFT enhances accountability regarding the use of government funds and improves public service quality, leading to widespread benefits for both society and the environment. Despite these advantages, EFT faces challenges, including a lack of regional mapping of ecological financing needs and difficulties in the absorption and reporting of fiscal transfer funds. This study concludes that while the Ecology-Based Fiscal Transfer (EFT) policy in Indonesia has positively influenced environmental preservation and sustainable development, it still encounters challenges such as the need for enhanced regional fiscal capacity and better coordination. To ensure its effectiveness, it is crucial to improve coherence between central and local policies and to enhance the management of fiscal transfers.</p>
<p>KEYWORDS</p> <p>Challenge, Ecological Fiscal Transfer, Environment, Impact, Policy</p>	
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INTRODUCTION

Understanding the environment as a unified space involves recognizing all objects, forces, conditions, and living beings including humans and their behaviors that can influence nature, survival, and the welfare of other living organisms (Manik, 2018). In the context of Indonesian law, Government Regulation No. 71/2014, Government Regulation No. 46/2016, and Minister of Environment and Forestry Regulation No. 16/2019 on Environmental Protection and Management emphasize that environmental management and protection require systematic and integrated efforts to preserve environmental functions and prevent pollution and damage. These efforts include planning, utilization, control, maintenance, supervision, and law enforcement (Imelda et al., 2023). Despite these regulations, data from the Draft State Budget (RAPBN) for 2023 indicate that environmental management continues to face challenges related to budget allocations, which are frequently smaller than those for other sectors. This is evident in the central government's budget distribution.

This situation reveals that environmental issues pose not only a threat to current development but also to future sustainability (Alisjahbana and Murniningtyas, 2018). Environmental challenges are often complex and frequently overlooked in development strategies, leading to negative social and economic consequences. These problems can be categorized into two main types: first, natural events such as disasters that are beyond human control; and second, environmental damage resulting from human activities like deforestation, mining, and pollution (Tahir, 2017).

In Indonesia, environmental degradation has become a chronic problem that continues to grow along with economic growth and infrastructure development. This poses a serious

threat to environmental sustainability. Several studies have highlighted environmental issues in Indonesia. Research by Gaite et al., (2023) examined the role of non-governmental organizations (NGOs) such as New World Together (NWT) in addressing the issue of environmental damage in Bali with online programs, consulting services, and retreats. In a study on corporate responsibility for environmental pollution, Margareta and Boediningsih (2023) examined the case of PT Pertamina's oil spill, which caused environmental damage on the Karawang coast. Yuliana (2022) also examined violations of Law Number 32 of 2009 concerning Environmental Protection and Management and highlighted the relationship between human rights and environmental protection, as well as the importance of community involvement in environmental management.

Projections for the future of Indonesia's environment indicate a further deterioration in the coming decades. According to the projections, only approximately 18.4% of the nation's total land area will be covered by primary forests by 2045, with the impact being particularly felt on islands with low levels of forest cover, such as Java, Bali and Nusa Tenggara. Consequently, the probability of a scarcity of raw water is anticipated to increase (Bappenas, 2020). The government has implemented a number of initiatives to address environmental degradation, particularly with regard to the reduction of greenhouse gas (GHG) emissions and the maintenance of forest cover. Measures such as the prevention of land and forest fires, reforestation, and social forestry have contributed significantly to the reduction of GHG emissions (Romanovskaya et al., 2020). However, all of the mechanisms that have been implemented by the government require substantial financial resources.

One of the primary challenges in efforts to maintain biodiversity and improve environmental quality is the lack of

adequate financing. One proposed solution is the ecological fiscal transfer (EFT) scheme, which provides incentives to regions that are active in maintaining and protecting environmental quality. Some countries, such as Brazil, have successfully implemented this scheme and achieved significant increases in their protected areas (Selva et al., 2021).

In Indonesia, numerous studies have focused on ecological-based budget transfers (EFT). For example, Haryanto (2015) analyzed the mechanisms of fund transfers to regions using secondary data from government agencies. His findings suggested that the General Allocation Fund (DAU) mechanism could be a viable source of funding for environmental and forestry conservation through ecological fiscal transfer (EFT). He proposed increasing the DAU allocation ceiling to bolster these conservation efforts and recommended including environmental and forestry indicators in the current DAU formulation. Additionally, Khasanah et al., (2024) explored the implementation of ecological-based provincial budget transfer policies in North Kalimantan using a qualitative descriptive method, gathering data from interviews, observations, and documents. Laksana and Gustav (2022) conducted a literature review and secondary data analysis to outline the fiscal decentralization system in Indonesia and suggest new directions for the Regional Incentive Fund policy. However, there remains a gap in research that addresses the challenges and consequences of implementing these policies, which this study aims to fill through a literature review.

The objective of this study is to explore the challenges and consequences of implementing Indonesia's ecological fiscal transfer policy. One effective approach for this is the Systematic Literature Review (SLR) method, which has not been applied in previous studies on this topic. The SLR method allows researchers to systematically review and identify relevant journal articles, books, and other sources, with each step guided by predefined criteria (Krupinski, 2019). This approach helps avoid subjective identification and supports the development of evidence-based conclusions grounded in high-quality, scientifically relevant research (Jia and Liu, 2018). It is anticipated that the findings from this study, utilizing the SLR method, will enhance the current understanding of previous research and its implications for the implementation of the ecological fiscal transfer policy in Indonesia.

METHOD

This research adopts a library research approach, specifically utilizing the Systematic Literature Review (SLR) method. The primary source of data is journal literature, gathered through searches on Google Scholar via its official website at <https://scholar.google.co.id/> and at <https://sinta.kemdikbud.go.id/journals>. The data used in this study encompasses a selection of 25 scientific journal articles, as well as publications from official government websites, government documents, government regulations, theses, dissertations, proceedings, and international conferences pertaining to ecological fiscal transfer schemes. Subsequently, the data will undergo a screening and selection process based on predetermined inclusion and exclusion criteria (Xiao and Watson, 2017).

Data Collection Process

The data collection process commenced with observations made via the source <https://scholar.google.co.id/> as follows:

1. The user first visits the site <https://scholar.google.co.id/>.
2. The user then enters the keyword "Ecological Fiscal Transfer" into the search form.
3. Subsequently, in the "Filter by Year" option, the user selects the range of 2015-2023 to narrow down the source years in order to identify related government policy issues.
4. Once the filter has been selected, the page will display article titles, year of publication, and author names related to the keywords.

In addition to articles sourced from <https://scholar.google.co.id/>, information from the official websites of central, provincial, and district/city governments, as well as proceedings and conferences, was also utilized to complement the analyses and studies conducted.

Research Question

Research questions were formulated to maintain the focus of the systematic literature review. The observation questions used by researchers in this research include:

- RQ1: What are the topics of journal articles, proceedings and books related to EFT in Indonesia?
- RQ2: How have EFT policies been implemented in Indonesia?
- RQ3: What are the challenges of implementing EFT programmes in Indonesia?
- RQ4: What is the impact of the EFT Programme on the quality of the environment and society?

Search Strategy

The strategy or search process in the Systematic Literature Review (SLR) consists of several stages, as described by (Latifah and Ritonga, 2020). These stages include selecting relevant digital libraries, defining a search string, conducting a search, refining the search string, and retrieving the main list of digital libraries that match the determined search string. The search string used consisted of four key phrases, namely 'Ecological Fiscal', 'Fiscal Transfer', 'Fiscal Decentralization', and 'Ecological Fiscal Transfer in Indonesia'. The search was conducted based on title, keywords, and abstract, with publication year limitation from 2015 to 2023.

Data Selection

Inclusion and exclusion criteria were used to select primary studies, these criteria are listed in Table 1.

Table 1. Inclusion and Exclusion Criteria

Inclusion Criteria	• Studies conducted in academic and institutional settings utilizing large and small-scale datasets.
	• Studies that address the subject of Ecological Fiscal Transfer in Indonesia.
	• Studies that examine the implementation of Ecological Fiscal Transfer at the national level (TANE), provincial level (TAPE) and district level (TAKE).
	• If the study is published in a journal or proceedings, only the journal version indexed by SINTA ISSN and proceedings with an ISSN will be included.
	• If the publication is a duplication of the same study, but with a different perspective, then

	only the most complete and most recent will be included
	<ul style="list-style-type: none"> • Studies or information originating from official government websites (provincial and regency/city levels)
Exclusion Criteria	<ul style="list-style-type: none"> • Studies without strong validation • Studies that are not written in other than Bahasa Indonesia and English

Source: Criteria determined by the researcher

Study Evaluation and Data Synthesis

The data analyzed in this review included both quantitative and qualitative data processed using a qualitative descriptive approach. The research used various techniques to synthesize the extracted data, which related to the various research questions. A holistic narrative approach was often used in the data synthesis process. The data were categorized according to the research questions posed and narrated to improve the understanding of predicting the policy effectiveness of ecological fiscal transfer programs in Indonesia.

RESULTS AND DISCUSSION

Topics of Journal Articles, Proceedings and Books Related to EFT in Indonesia

This literature study examines the findings of previous research on the topic of ecology-based budget transfers in Indonesia. The analysis of 20 articles published between 2015 and 2024 revealed the following composition of the research findings in figure 1.

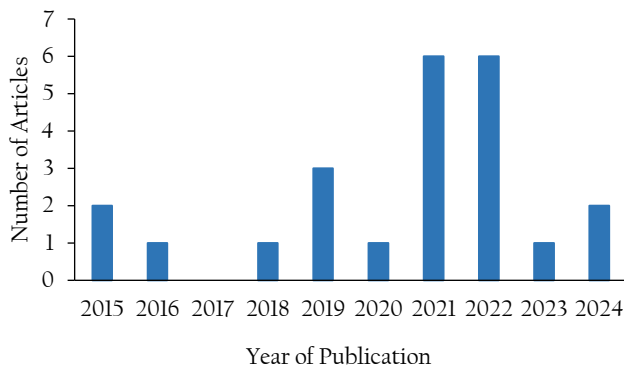


Figure 1. Year of Publication Related to EFT in Indonesia

Source: Data processed by researchers

A review of research trends in the year of publication of articles on the EFT system in Indonesia reveals that the most published research trends in 2021 and 2022 were six articles each. The majority of these articles were identified through a search on Google Scholar and are nationally accredited by SINTA.

Based on the inclusion and exclusion criteria, 16 journal articles, two from proceedings, and two from books published online were yielded. This relatively small number is due to the fact that the EFT in Indonesia is still in its infancy, having commenced in 2019. However, research that directly examines funding schemes that can be categorized as EFT has been conducted since 2011. Furthermore, the implementation of EFT program policies in the form of TANE, TAPE, and TAKE remains relatively limited.

Ecological Fiscal Transfer Policy in Indonesia

Indonesia's forests, which cover an area of 9.39 million hectares and are distributed across various provinces, are facing significant challenges to their long-term sustainability. To ensure their continued existence, a number of initiatives are required, including those related to fiscal policy. Fiscal policy can enhance environmental quality by acting as a regulator, rather than merely a conduit for income. Environmental control is of greater importance than risk mitigation (Manurung, 2019). The Ecological Fiscal Transfer (EFT) plays a role in increasing the capacity of local governments and creating an effective environmental control system (Andita et al., 2022). Putra et al. (2019) elucidate that within the framework of this fiscal transfer scheme, there are two scenarios that are implemented. The first scenario is that of basic allocation and incentives-disincentives. Here, districts/cities will receive additional basic allocations as a form of incentive if they are successful in maintaining forest areas. Conversely, they will be subject to disincentives if there is a decrease in forest area. The second scenario is based on forest cover in the district or city relative to other areas. In this scenario, areas that have experienced deforestation levels exceeding the maximum deforestation limit will not be eligible for incentive funds.

The writings of Khasanah et al., (2024) and Kabullah (2022) also elucidate the characteristics and indicators of EFT recipients in Indonesia as stipulated in Minister of Finance Regulation Number 17/PMK.07/2022 concerning Procedures for Allocating Ecology-Based Provincial Budget Transfer Funds and Ecology-Based Regency/City Budget Transfer Funds. The following are some characteristics and indicators of EFT recipients:

1. Priority is given to areas with large forest areas, low forest cover levels, low water quality, high greenhouse gas emissions, and forest rehabilitation efforts.
2. Efforts to reduce water pollution: Areas that have water pollution reduction programmes are prioritized for EFT.
3. Efforts to reduce greenhouse gas emissions: Regions that have greenhouse gas emission reduction programmes are prioritized for EFT.

The EFT policy has been implemented in 13 districts in Indonesia since 2019. Research by (Khasanah et al., 2024) revealed that North Kalimantan was the first province to be granted the opportunity to implement EFT through Ecology-based Provincial Budget Transfers (TAPE). The implementation of ecological-based fiscal transfers in North Kalimantan is regulated by Governor Regulation Number 6 of 2019, which outlines the procedures for providing, distributing and accounting for financial aid expenditures. Saputra et al. (2021), representing the Fiscal Policy Agency of the Ministry of Finance, elucidated that this regulation delineates the utilization of ecological-based funds for five principal activities, including the prevention of forest fires, the protection of green open spaces, the management of waste, the protection of water sources, and the mitigation and prevention of air pollution.

In addition to the TAPE scheme, the EFT program can also be implemented in the ecology-based district budget transfer (TAKE) scheme. Putra et al. (2019) states that the TAKE scheme was first implemented by the Jayapura Regency government in 2019. The implementation of this scheme has been regulated through Jayapura Regent's Regulation No. 11 of 2019 concerning Jayapura Regency Village Fund Allocation. Slightly different from TAPE, the TAKE scheme targets direct fund transfers to villages.

Other regions have also proposed TAPE or TAKE schemes. [Pratama and Septiana \(2022\)](#) emphasized the necessity for other regions, particularly Lampung Province, to be included in the implementation and acceptance of the EFT programme. [Nasir \(2022\)](#) also stated that East Kutai Regency is a suitable location for implementing the EFT scheme.

The authors' analysis of the state of Indonesia's forests underscores the significant challenges to their long-term sustainability, which require fiscal policy intervention as an environmental control measure. The implementation of Ecological Fiscal Transfer (EFT) policies in Indonesia, as seen in the basic allocation and incentive-disincentive scenarios, aims to increase the capacity of local governments to manage and protect the environment. Through schemes such as TAPE and TAKE, regions that successfully maintain forest area or implement programs to reduce pollution and greenhouse gas emissions are incentivized, while those that fail face disincentives.

Ecological Fiscal Transfer (EFT) is an effective tool in improving environmental quality and motivating local governments to actively participate in environmental conservation. However, the application of this policy is still limited to a few regions such as North Kalimantan and Jayapura, although there is potential for expansion to other regions such as Lampung and East Kutai. This expansion requires strong regulatory support as well as broader involvement from local governments for the benefits of EFT to be felt nationwide.

[Halimatussadiyah et al. \(2021\)](#) posited that numerous instruments within the fiscal transfer system in Indonesia have embraced the tenets of ecological fiscal transfer, with implementation in the majority of provinces and districts. The following fiscal transfer mechanisms have been implemented in Indonesia based on ecological principles.

1. Regional Incentive Funds (DID) have high relevance and have the potential to become an ecological-based fiscal transfer mechanism. Based on Law no. 12 of 2018 and PMK no. 167 of 2020, the concept is that DID is given based on how performance and incentives are assessed ([Laksana and Gustav, 2022](#); [Pambudi et al., 2022](#); [Ria, 2019](#)).
2. General Allocation Funds (DAU) and Special Allocation Funds (DAK) have the potential to be used as EFT instruments, especially in the Environment and Forestry Sector. DAU and DAK will later be allocated for various activities that support the environment and forestry, the source of which is directly from APBN funds to regional governments ([Haryanto, 2015](#); [Saputra et al., 2021](#)).
3. Profit Sharing Funds Reforestation Funds (DBH-DR) are utilized for the purpose of improving forest cover or reforestation, as well as other supporting activities, with the funds obtained from holders of Forest Product Utilization Business Permits (IUPHH) who utilize the forest ([Hawari et al., 2024](#); [Muhafidin, 2020](#)).
4. Village Funds (DD) regulated in Law Number 6 of 2014 are an implementation of village autonomy. The use of village funds in 2020 is a priority (Permendes No 11/2019) for preparation, prevention and management of disasters as well as environmental preservation ([Anshari, 2018](#)).
5. In addition, the schemes that adopt EFT are the Ecology-based Provincial Budget Transfers (TAPE) and the Ecology-based Regency Budget Transfers (TAKE). These can be utilized by regions down to the villages ([Putra et al., 2019](#)).

Impact of the EFT Program on the Environment and Society

The positive impact of Ecological Fiscal Transfers (EFT) is very significant in efforts to preserve the environment. [Pratama and Septiana \(2022\)](#) describe in their paper that EFT helps to improve the quality of the environment by aligning economic development with environmental sustainability. [Nasir \(2022\)](#) adds that the benefits of ecology-based budget transfers can encourage regions to actively participate in environmental conservation efforts, such as forest rehabilitation, reducing water pollution and tackling greenhouse gas emissions. Furthermore, the EFT program can increase local economic development by using funds for environmentally friendly infrastructure and economic development, creating jobs and increasing community income ([Ria, 2019](#)). The benefits of EFT also include increased accountability and transparency in the use of government funds for environmental conservation ([Andita et al., 2022](#)). Regional incentive funds (DID) from the EFT scheme are also a source of development finance at the provincial level. In addition, DID is also an indicator of regional quality, as it requires competition to obtain ([Pambudi et al., 2022](#)).

Evaluation of DID is also carried out to measure the extent of realization and effectiveness of budget use, which aims to increase the overall efficiency of budget use ([Synta and Nurhazana, 2021](#)). The EFT can also improve the understanding of performance indicators and pay attention to improving the quality of public services in the context of fiscal decentralization ([Laksana and Gustav, 2022](#)). Thus, EFT has great potential to have a broad positive impact on society and the environment.

The authors' analysis demonstrates that several instruments in Indonesia's fiscal transfer system have incorporated the principles of Ecological Fiscal Transfer (EFT), which are being implemented in numerous provinces and districts. Instruments like the Regional Incentive Fund (DID), General Allocation Fund (DAU), Special Allocation Fund (DAK), Reforestation Revenue Sharing Fund (DBH-DR), and Village Fund (DD) possess significant potential to promote environmental conservation through budget allocations aimed at ecological-based activities. Furthermore, the TAPE and TAKE schemes further expand the application of EFT to the village level, thereby showcasing the government's strong commitment to integrating fiscal policy with environmental objectives.

Challenges in Implementing Ecological Fiscal Transfer in Indonesia

The form of the EFT scheme that has been proposed and implemented still faces several challenges. Based on the experience of the stakeholders who are the key to this ecologically based fiscal transfer policy, it is analyzed from various literature and the following outline can be drawn:

1. Local Government Needs for Ecological Financing Uncharted

The implementation of the EFT scheme in Kalimantan and Sulawesi has revealed many problems and ecological challenges that require the intervention of the regional government. Conditions such as floods, landslides, forest fires, damage to coral reef ecosystems, earthquakes, droughts, water pollution, air pollution, soil pollution, waste problems, deforestation, damage to mangrove ecosystems and others. All require sources of finance for mitigation and adaptation activities ([Manurung, 2019](#); [Nasir, 2022](#)).

In terms of financing, the central government asserts that there are sufficient sources, both in the form of government spending and financing outside government spending. With regard to government spending, this ecological financing allocation is available in the form of central government spending and financial transfers to regions. However, the government has yet to develop a map of its ecological financing needs and a funding map. Indeed, the creation of this map will enable us to identify the discrepancies between the needs and the availability of funding sources. Without a map, it is common for all parties to mention the lack of funding sources for ecology. Conversely, the absorption of ecological funding sources provided is also low (Saputra and Haryanto, 2021).

The absence of a mapping between needs and budget availability prevents the optimal encouragement of synergy in ecological financing. Indeed, the ecological aspect is a cross-sector aspect, the financing of which should be optimized using the concept of synergy. For instance, when the government accelerates infrastructure development, infrastructure financing should include ecological financing, such as mitigating the impact of infrastructure development on the environment. Consequently, the capacity and capability of ecological financing can be strengthened through the implementation of financing synergies.

2. Challenges related to the Implementation and Absorption of Fiscal Transfer Funds for Ecological aspects

A number of ministries, institutions and provincial governments have expressed concerns regarding the implementation of ecological financing. The Ministry of Environment and Forestry has indicated that the central government has designed the DAK for the Environment and Forestry Sector with the intention of making it accessible to regional governments. However, there are still numerous regions that have not utilized these funds, despite the clear necessity for them to do so. Furthermore, regions that have received these funds frequently encounter difficulties in absorbing and reporting them, thereby perpetuating this issue annually (Haryanto, 2015; Saputra et al., 2021).

There is a mismatch between policies designed by the central government and the needs of local governments. Programs in the DAK for Environment and Forestry are not always in accordance with regional needs (Rasu et al., 2019; Sania Twinki and Retno Widiyanti, 2022; Saputra et al., 2021). In order to overcome this problem, it is necessary to synchronize the programs. Furthermore, increased uptake and reporting must also be strengthened. It is therefore necessary to ensure that the program's outreach and monitoring are both effective in order to overcome the technical obstacles that may arise, such as those related to administration.

CONCLUSION

Based on the established inclusion and exclusion criteria, 20 studies were identified as relevant for this review. The findings from the literature review can be summarized through the results of the systematic literature review (SLR) and accompanying discussions. This research demonstrates that the implementation of the Ecology-Based Fiscal Transfer (EFT) policy in Indonesia has significantly enhanced environmental preservation, improved environmental quality, and fostered the development of a sustainable local economy. Specific measures, including the Regional Incentive Fund (DID), Special Allocation Fund (DAK),

Revenue Sharing Fund for Reforestation (DBH-DR), Village Fund (DD), as well as the Ecology-Based Provincial Budget Transfer (TAPE) and Ecology-Based District Budget Transfer (TAKE), have been introduced to bolster environmental protection and combat forest destruction. However, for these policies to be effective and sustainable, it is essential to enhance regional fiscal capacity, improve coordination among stakeholders, and reformulate ecological-based financial instruments.

While this study indicates initial success in the implementation of EFT, certain limitations must be acknowledged. One significant limitation is the lack of mapping ecological financing needs at the regional level, which hampers the absorption and reporting of fiscal transfer funds. Additionally, this research may not fully capture the broader dynamics of administrative and social challenges at the local level. To address these limitations, further research is necessary, particularly focusing on optimizing central policies to align with regional needs and developing more efficient monitoring and administrative systems to ensure effective allocation and utilization of funds.

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