

DOĞAL KAYNAKLARIN YÖNETİMİNDE NEGATİF DIŞSALLIKLAR VE BEDAVACILIK SORUNU ÜZERİNE İSLAM HUKUKU PERSPEKTİFİNDEN TEORİK BİR İNCELEME^a

Ozat SHAMSHIYEV^b

Ankara Sosyal Bilimler Üniversitesi, Türkiye

MAKALE BİLGİSİ

Makale Geçmişi:

Başvuru: 25 Ekim 2023

Kabul: 27 Aralık 2023

Yayın: 30 Haziran 2024

Makale Türü:

Araştırma Makalesi

JEL Sınıflandırma:

B55

K38

K42

Anahtar Kavramlar:

İslam Hukuku,
Doğal Kaynaklar,
Negatif Dışsallık,
Bedavacılık,
Sorunlar ve Öneriler

ÖZ

Bu çalışma, doğal kaynakların üretimi sırasında karşılaşılan iki önemli sorunu, negatif dışsallık ve bedavacılık sorununu ele almayı ve İslam Hukuku çerçevesinde politika yapıcılar için bazı ilgili çözüm ve öneriler sunmayı amaçlamaktadır. Bu makalede, sorunları tanımlamak için betimsel bir araştırma metodolojisi kullanılmış ve araştırma boyunca kullanılan birincil yöntem olarak kavramsal analiz modeli kullanılmıştır. Genel teorilerden ve yerleşik İslam hukuku ilkelerinden spesifik tahminler türetmek için tümdengelim yöntemi kullanılmıştır. Araştırma bulguları, negatif dışsallık ve bedavacı sorununun ekonomik kaygıların ötesine geçtiğini ve İslam hukuku çerçevesinde hakların ihlaliyle iç içe geçtiğini göstermektedir. Hem negatif dışsallıkların hem de doğal kaynaklardan bedavacılığın insan hakları (hukûku'l-'ibâd) ve toplum hakları (hukûku'l-İlâh) ihlallerine yol açabileceği açıktır. Bu gözlem, İslami bağlamda ekonomik ve hukuki boyutların kritik bir kesişme noktasının altını çizmektedir. Çalışmanın pratik ve sosyal çıkarımları, İslami ekonomi ve çevre politikalarının İslam hukuku ve etiği ile uyumlu olması, kamu yararı ve refahına öncelik vermesi ve sorumlu kaynak yönetimi ve sürdürülebilirliği teşvik etmesi gerektiğini vurgulamaktadır. Ayrıca çalışma, politika yapıcıları küresel bir bakış açısı benimsemeye teşvik etmekte ve daha geniş bir bağlamda Allah'ın yeryüzündeki halifesi olarak rollerinin farkına varmalarına davet etmektedir.

<https://doi.org/tr/10.54863/jief.1381347>

^a Bu çalışma, 20-21 Ekim (2023) tarihlerinde Houston, Teksas'ta düzenlenen *The First North American Conference on Islamic Finance*'de sunulan bildirinin geliştirilmiş ve genişletilmiş halidir.

^b **Sorumlu Yazar:** Dr. Öğr. Üyesi, Ankara Sosyal Bilimler Üniversitesi, İslami Araştırmalar Enstitüsü, İslam Ekonomisi ve Finansı, E-posta: ozat.shamshiyev@asbu.edu.tr, <https://orcid.org/0000-0002-9385-7235>.

Kaynak göster: Shamsiyev, O., (2024). Doğal Kaynakların Yönetiminde Negatif Dışsallıklar ve Bedavacılık Sorunu Üzerine İslam Hukuku Perspektifinden Teorik Bir İnceleme. *İslam Ekonomisi ve Finansı Dergisi*, 10(1), 40-68, <https://doi.org/tr/10.54863/jief.1381347>.

© IZU Uluslararası İslam Ekonomi ve Finansı Araştırma ve Uygulama Merkezi.

A THEORETICAL STUDY ON NEGATIVE EXTERNALITIES AND THE FREE-RIDER PROBLEM IN NATURAL RESOURCE MANAGEMENT FROM AN ISLAMIC LAW PERSPECTIVE^a

Ozat SHAMSHIYEV^b

Social Sciences University of Ankara, Türkiye

ARTICLE INFO

Article history:

Received: Oct 25, 2023

Accepted: Dec 27, 2023

Published: Jun 30 2024

Article Type:

Research Article

JEL Classification:

B55

K38

K42

Keywords:

Islamic Law,

Natural Resources,

Negative Externality,

Free-riding,

Problems and

Recommendations

ABSTRACT

This paper aims to address two major problems faced throughout the production and management of natural resources: negative externality and free-rider problem and to offer some relevant solutions and suggestions for policymakers within the framework of Islamic Law. This paper used a descriptive research methodology to identify the problems, using a conceptual analysis model as a primary method used throughout the research. Deductive reasoning was employed to derive specific predictions from general theories and established Islamic jurisprudence principles. The research findings indicate that the negative externality and free-rider problem extend beyond economic concerns and are intricately linked to the violation of rights within the framework of Islamic law. It is evident that both negative externalities and the free-riding of natural resources can lead to violations of human rights (ḥuqūq al-‘ibād) and community rights (ḥuqūq Allāh). This observation underscores a critical intersection of economic and legal dimensions within an Islamic context. The practical and social implications of the study highlight the need for Islamic economic and environmental policies to align with Islamic law and ethics, prioritize public interest and well-being, and promote responsible resource stewardship and sustainability. Additionally, the study encourages policymakers to adopt a global perspective, recognizing their role as stewards in a broader context.

<https://doi.org/tr/10.54863/jief.1381347>

^a This study is an improved and expanded version of the paper presented at *The First North American Conference on Islamic Finance* in Houston, Texas, on October 20-21 (2023).

^b **Corresponding Author:** Asst. Prof. Dr., Social Sciences University of Ankara, Islamic Economics and Finance, E-mail: ozat.shamshiyev@asbu.edu.tr, <https://orcid.org/0000-0002-9385-7235>.

To cite this article: Shamsiyev, O., (2024). A Theoretical Study on Negative Externalities and The Free-Rider Problem in Natural Resource Management From An Islamic Law Perspective. *Journal of Islamic Economics and Finance*, 10(1), 40-68, <https://doi.org/tr/10.54863/jief.1381347>.

© IZU International Research Center for Islamic Economics and Finance.

INTRODUCTION

The challenges within natural resource production are intricate, entailing both environmental and socio-economic dimensions. A paramount issue is the depletion and degradation of natural resources. Various sources indicate that the incessant exploitation of natural resources, especially nonrenewable ones, has led to their depletion, posing a grave threat to future generations by constraining their access to vital resources like fossil fuels, minerals, and freshwater. Furthermore, extracting natural resources frequently results in environmental degradation (Wojciechowska-Solis, 2018).

Another predicament intertwined with natural resource production is the overproduction of renewable resources. This pertains to the extraction of resources from ecosystems at a rate that outpaces their natural replenishment, ultimately causing their decline or even collapse. Moreover, the capitalist ideology often fosters this overproduction of natural resources due to its unwavering pursuit of profit and economic growth. Under this system, the absence of incentives and regulations to ensure sustainable resource extraction, coupled with the short-term focus of many industries and governments, cultivates a disregard for long-term sustainability. This excessively emphasizes immediate economic gains without considering the long-term repercussions (Alhassan & Kwakwa, 2023).

The uncontrolled production of natural resources also engenders other environmental, social, and economic predicaments. These include climate change, loss of biodiversity, air and water pollution, long-term sustainability challenges, and even the emergence of social conflicts and socio-economic disparities. Notably, negative externalities are a salient issue associated with natural resource production.

Economic externalities denote the unintended costs or benefits imposed on third parties due to economic activities conducted by individuals or firms. These externalities can manifest in various forms, such as environmental pollution, traffic congestion, or noise pollution. They wield a significant impact on the well-being of bystanders and frequently yield adverse consequences for society at large. For instance, when a factory emits pollutants into the air, it not only imperils the health and well-being

of nearby residents but also contributes to overall environmental degradation.

Given the well-established status of the negative externalities problem in economics, numerous studies have addressed it, offering diverse approaches and solutions. However, given the specific focus of our conference on Islamic finance, it becomes imperative to scrutinize this issue from an Islamic perspective. Thus, the central inquiry concerning negative externalities in this paper is:

(RQ1): What are the implications of negative externalities in Islamic law, and how does Islamic jurisprudence discern and tackle the ethical and legal challenges posed by these externalities in economic and environmental contexts?

On the flip side, another issue that arises during the production of natural resources, especially in the context of public goods, is the “free rider” problem. The free rider problem refers to a situation in which individuals or entities benefit from a public good or resource without contributing their fair share to its provision or maintenance. This problem emerges because public goods are non-excludable (Jakubowski & Kusmierczyk, 2007), meaning that once they are provided, it is challenging to prevent anyone from accessing or benefiting from them, irrespective of whether they have contributed or not (Deneulin and Townsend, 2007).

The free rider problem can be attributed to various factors. One of its causes is the existence of incomplete or weak property rights. In situations where property rights are not clearly defined or protected, individuals may be more inclined to free-ride on the contributions of others, as they lack a clear incentive to contribute themselves. Another cause of the free rider problem is the absence of effective enforcement mechanisms. When there are no robust mechanisms for enforcement, individuals may not face any consequences for free riding, further discouraging them from contributing. The free rider problem can also result from a lack of information or coordination among individuals. In the absence of proper knowledge or coordination, individuals may not fully comprehend the benefits of contributing or may assume that others will bear the costs. Moreover, the presence of social norms or cultural beliefs can also influence the occurrence of free riding. For instance, individuals may be more likely to engage in free riding behavior if there is

a prevailing belief that it is acceptable to free-ride or a norm of not contributing to public goods.

The behavior of free riding is detrimental to society as a whole and can lead to the under-provision or degradation of public goods. However, our primary focus in this paper will be on the non-excludability aspect as the root cause of the free rider problem.

To underscore the significance of the free rider problem and establish the connection between non-excludability and this issue, it is appropriate to present the following matrix:

Matrix 1. Classification of Goods in Terms of Consumption (Gasper, 2007)

	Excludable	Non-excludable
Rival	Private Goods: <i>Car, House, Food and Clothing</i>	Common Resource: <i>Water, Air, Forests</i>
Non-rival	Artificially Scarce Goods: <i>Private Park, Satellite Service, Cable Television</i>	Public Goods: <i>State-owned Resources, Natural Resources, National Defense, the Law</i>

As illustrated in the provided matrix, the free rider problem prominently surfaces within the context of public goods. Owing to the non-excludable nature of public goods, Des Gasper (2007, p. 10) aptly characterizes them as “problematic commodities.” The central concern revolves around the fact that, despite numerous research endeavors dedicated to addressing the free rider problem and offering recommendations, our particular interest lies in conceptualizing this issue within the framework of Islamic law. Therefore, the second primary question of this paper is as follows:

(RQ2): How can the well-known economic issue of the free rider problem be identified within the framework of Islamic law, and what are the potential approaches to its resolution?

Moving forward, we will embark on a comprehensive review of the relevant literature.

LITERATURE REVIEW

Kuran (2018) criticizes Islamic economics for its perceived limitations in addressing issues such as the free rider problem and market failure theory. It is crucial to note that these challenges are not unique to Islamic economics but are fundamental issues within contemporary economics and the mainstream economic system. Consequently, many studies have been dedicated to addressing the challenges posed by negative externalities and the free-rider behavior of consumers.

Negative Externalities and Proposed Solutions

The operation of free markets gives rise to negative externalities, wherein companies engaged in various forms of production, civilian or military, tend to generate harmful effects in any economic context. These effects impose significant costs on society but do not directly affect the producing companies. Since the companies do not bear these costs, their primary focus remains on individual profitability rather than benefiting society, resulting in economic inefficiencies (Cosma & Cosma, 2010).

Numerous papers address negative externalities broadly, with some explicitly focusing on negative externalities stemming from natural resource production. Among existing studies, various solutions from different perspectives have been proposed to mitigate these negative externalities.

Two broad approaches to addressing negative externalities exist. On one hand, there are market-based mechanisms, including taxes, subsidies, fees, and marketable pollution rights. On the other hand, there is the command and control approach, involving direct regulation and standards to internalize the market failure caused by environmental externalities (Kargi & Yuksel, 2010). Each approach has its strengths and weaknesses depending on the specific context. However, two key approaches have been emphasized: the “double dividend” approach, which aims to achieve both economic and environmental benefits, and the “pricing and standards” approach, which combines market-based

mechanisms with regulatory standards to address externalities effectively.

Within the context of Shared Social Responsibility (CSR), Barboza et al. (2021) explore the role of socially responsible consumers as stakeholders in firm strategy and develop a model demonstrating how proactive firm actions, in response to consumer and stakeholder demands, lead to overall social welfare improvement when negative externalities from production are incorporated into the decision-making process of both consumers and firms.

From a market-centric perspective on corporate social responsibility (CSR), Laudal (2012) concludes that a tangible link exists between mounting external costs and corporate accountability. He advocates for a nuanced CSR policy framework and emphasizes the need for governments to adapt their strategies, accounting for sector-specific characteristics and reducing adverse externalities in various segments of the value chain within each sector.

Rayamajhee and Joshi (2018) propose a locally negotiated endogenous externality mitigation fund (EMF) as a policy alternative to mitigate negative externalities and compensate individuals for specific environmental damages caused by hydroelectricity generation. This approach effectively reduces crop loss and balances the disparity caused by locally concentrated negative externalities and nationally or globally dispersed benefits.

Countermeasures against negative externalities arising from natural resource production include addressing the relationship between the short-term cost of business and long-term social cost, enhancing division of labor cooperation in small, medium, and large natural resource exploiting enterprises, and strengthening national macro-control through rational use of government subsidies, taxes, and regulatory measures (Lv, 2011). Referring to traditional Pigouvian taxes and Coase theorem, Wiseman (2021) suggests combining taxation and negotiation incentives to bridge the regulatory void in the US political-economic system. Patel and Ramachandran (2022) offer a bargaining model for sharing water in a river with a negative externality.

Jing & Sun (2018), focusing on the sharing economy, propose several policy recommendations, including highlighting platform corporate

responsibility, establishing a multi-subject governance framework, and building a multi-level safeguard and constraint mechanism. This entails establishing and improving industry norms and laws and using new technologies like big data and cloud computing to incorporate individual behavior into the personal credit system and form a new constraint mechanism.

In summary, numerous studies, such as Christiansen (2013), Fuadah & Qudsi Fauzi (2019), Adegbite *et al.* (2020), Ekici *et al.* (2022), Alhassan & Kwakwa (2023), and others, whether closely or loosely related to the subject, endeavor to formulate solutions. A common trait among them is their identification of problems through mainstream economic theory and the subsequent proposal of solutions aligned with this perspective. In contrast, our research will approach the issue of negative externalities from the vantage point of Islamic law and economics. Both the problem's framework and essence will be exclusively derived from Islamic economic theory, and the proposed solution will be assessed accordingly.

The Free-Rider Problem

Yudanov *et al.* (2016) try to reinterpret the classic "free rider problem" from a unique perspective. Instead of focusing solely on the free rider's behavior, they consider the impact of the free riders' actions on their surrounding environment and introduce the concepts of public and private harm resulting from the free riders' activities. The article describes various situations where the private harm suffered by significant social groups becomes substantial enough to prompt active opposition to free riders. Further, the authors offer a mathematical model to describe resolving the free rider problem. They mention using a Markov chain with single or multiple absorbing states. This mathematical model likely helps quantify the dynamics of the problem and understand when and how it can be effectively resolved.

In fact, free-riding is a complex issue often considered unsolvable in mainstream economics (Jakubowski & Kusmierczyk, 2007; Olsson-Yaouzis, 2010; Rogna, 2016). Interestingly, traces of this concept can be found even in al-Tabarī's "History of the Prophets and the Kings", where he conducts a free-rider analysis of the decline of Abbasid state power (Martensson, 2011). Al-Tabarī's perspective suggests that he viewed the

‘misāḥah tax system’ and establishing a ‘rule of law’ as crucial factors for maintaining imperial rule. In essence, al-Tabarī’s historical account already provides insights into questions that modern historians have posed regarding the reasons behind the downfall of the Abbasid state and the role of religion in the political economy.

Approaching the issue from the property allocation aspect, (Chari & Jones, 2000) explore the relationship between property rights, competition, and efficient allocations in economies with global externalities. The authors show that the Coase Theorem may not work well in such economies due to the free-rider problem manifesting as a complementary monopoly problem. They also examine the incentives for strategic behavior in economies with complementarities and discuss alternative formulations of Tiebout’s hypothesis. The authors suggest a set of conditions under which theories of markets give rise to efficient outcomes in economies with local public goods.

Luqman et al. (2022) offer a solution to the free-riding problem in the context of international environmental agreements, particularly those related to climate change. They introduce a novel approach using evolutionary game theory to address this challenge. The primary focus is on the enforcement and effectiveness of International Environmental Agreements (IEAs), which play a significant role in global environmental protection.

In substance, some studies aim to directly confront the issue and propose solutions to the free-riding problem through taxation (Bogoviz et al., 2019), while others concentrate on addressing the underlying causes of free-riding, providing comprehensive recommendations for the optimal management of public goods; trade policy and lobby formation (Magee, 2002); a flexible design for funding public goods (Pittel & Rübhelke, 2006; Bonini et. al., 2015; Buterin et al., 2019); social responsibility in public goods revenues (Deneulin & Townsend, 2007; Vilke, 2019); rent-seeking solutions for public goods management (Cheikbossian, 2008); and some others highlighting the importance of cooperative agreements in controlling free-riding behavior (Skarzhinskaia & Tsurikov, 2019) and significance of corporate governance (Munyo & Regent, 2016) etc.

We attempted to provide a literature review concerning the challenges posed by negative externalities and the free rider problem, specifically

focusing on potential solutions. While a substantial body of research addresses these issues in a broader context, it is noteworthy that a significant portion of this research is not directly associated with the production processes of natural resources. Moreover, there is a notable scarcity of studies that relate these economic phenomena to the principles of Islamic economics and Islamic law. What sets our study apart in terms of significance is its unique perspective. We strive to shed light on these economic challenges through the lens of Islamic law, providing a distinct framework rooted in Islamic economics. This approach not only identifies these problems but also situates them within the context of Islamic economic principles. Furthermore, our study goes beyond mere identification by delving into practical solutions for these economic predicaments, culminating in actionable recommendations tailor-made for policymakers.

METHODOLOGY

In the introductory phase of our research, we employed the descriptive research methodology to identify and delineate the primary issues addressed in our study. Notably, these issues had not been previously explored in academic research. To address this gap, we adopted the concept analysis model to elucidate the problems of negative externality and non-excludability from the perspective of Islamic law.

The core method employed throughout our research is conceptual analysis, which is a widely recognized approach in the fields of social sciences. This method involves a comprehensive examination and clarification of the meanings and definitions of key concepts and terms within a theoretical framework (Jabareen, 2009, p. 52). Additionally, our research encompassed elements of comparative analysis, particularly in drawing parallels between economic principles and Islamic legal perspectives, facilitating a juxtaposition of different theoretical frameworks or models (Brada & Wachtel, 2018, p. 640). This approach allowed us to assess these frameworks' relative strengths and weaknesses.

In addressing fiqh-related issues within our study, we employed deductive reasoning as a prominent method. This method is characterized by using logical reasoning to derive specific predictions or

implications from a general theory or hypothesis (Tariq, 2015, p. 230). Subsequently, these predictions were subjected to theoretical exploration and testing.

It must be stated that the chosen approach for framing the problems within the context of fiqh is analogous to the methodology known as *tahrīj al-furū' alā al-usūl*. This method involves the systematic alignment of emerging issues and challenges with the established and well-recognized principles and foundations of Islamic jurisprudence (Ahmad, no date, p. 27), the method which is otherwise called “deduction”. Furthermore, throughout the study, a selective (eclectic) approach was consistently applied when considering the opinions of mujtahids without confining itself to any single school of Islamic law (Mohamed et al., 2019).

Thus, the research approach and methods are clearly presented, allowing readers to understand the progression and rationale behind the study’s methodology.

RESULTS AND DISCUSSIONS

1) Negative externality is an inevitable problem of the economy. We aim to define this universal problem in terms of Islamic Law and identify and reveal its problematic aspects. As it is known, one of the most fundamental principles of Islamic Law is that “*Neither causing harm to others is lawful, nor retaliating with harm*”. This judgment is also one of the legal maxims of *al-Majallah* (Committee, 1876 Article: 19), originating from a ḥadīth narration. Therefore, in general terms, according to Islamic Law, no one has the right to harm anyone. If it is the case, then the harm must be eliminated following the principle “*the damage must be eradicated*” (Committee, 1876. Article: 20). However, we can see that these general principles are undermined in negative externalities. Because in the production and utilization of natural resources, there is a “direct” or “indirect” harm to third parties. To better understand the problem, we must examine the rights theory in Islamic Law.

In the Islamic ethical and legal tradition, two fundamental categories of “rights” are recognized: the “rights” of God and the “rights” of human beings. The term *ḥuqūq al-'ibād* is used to describe human obligations towards one another. While contemporary discourse often translates

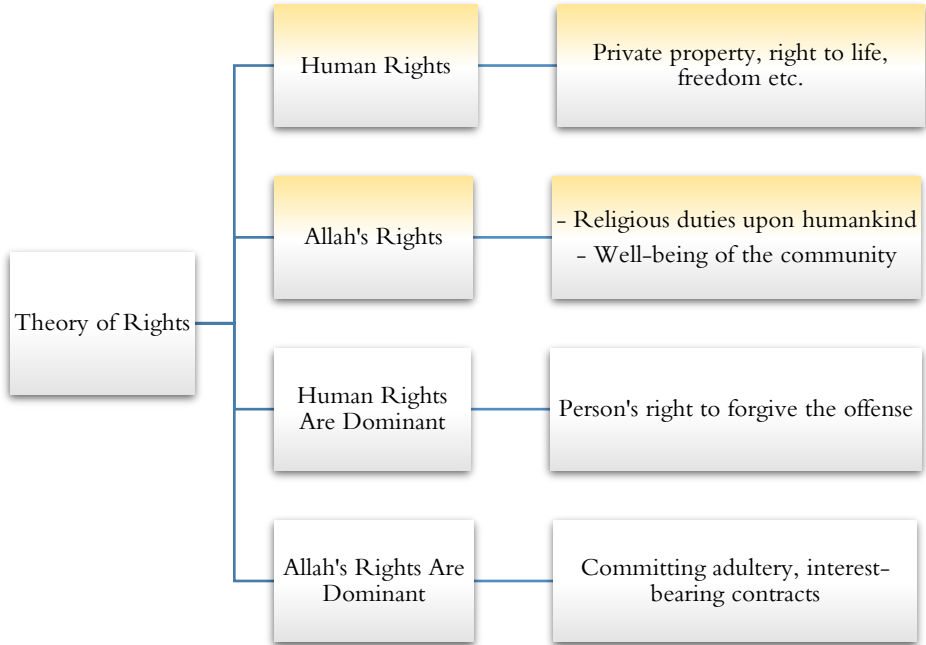
ḥuqūq al-‘ibād as the “rights of humankind”, its lexical essence aligns more closely with the concept of duties, signifying “that which is owed to man”. Conversely, *ḥuqūq Allāh* pertains to the “rights of God”. However, translating the term as “rights of God” presents, from theological aspect, challenges due to God’s inherent lack of needs. Nevertheless, these “rights” are neither liberties granted to God by others nor mere obligations humans owe to God. Instead, *ḥuqūq Allāh* is a technical term employed by Islamic jurists to classify two types of obligations. The first category encompasses devotional duties, such as the five pillars of worship, which serve religious purposes and are thus owed to God. The second category involves obligations related to societal well-being recognized as “beneficial to the community at large” (*maṣlaḥah al-‘āmmah*). In this context, Islamic jurists regard the welfare of society and social inviolability as God’s “right” over a Muslim ruler and humanity at large (Padela, 2017).

In contrast, the “rights of humankind,” or Islamically saying *ḥuqūq al-‘ibād*, concern individual interests and possessions, including rights such as ownership of purchased goods and receivables from other parties.

Islamic jurists employ the framework of God’s rights and humankind’s rights to identify and balance competing interests at both the individual and societal levels, in line with the preservation objectives of Islamic law.

The full picture of the right theory according to Islamic law is illustrated below:

Figure 1. Theory of Rights in Islamic Law (Moosa, 2000; Emon, 2006)



Returning to the “direct” and “indirect” damages to human beings and the environment as a result of negative externalities, those who suffer direct harm in any way in the production and management of natural resources are victims in the context of “humankind rights”. On the other hand, society or future generations indirectly affected by the process are considered harmed in the context of “God’s rights”. Notably, the latter means that Allah presents Himself as a Successive of the community and The Protector of rights of all mankind (Padela, 2017). Then, afflicting harm upon the community is tantamount to causing harm to God (Hallaq, 2019).

According to Islamic jurisprudence, the theory suggests that when harm is done to an individual, it is possible to make amends by rectifying the harm caused and returning the individual’s rights. In other words, if someone is wronged, it is within the realm of possibility to address this wrong by fixing the harm that was done and ensuring that the person gets what he or she is entitled to. In the case of the usurpation of *ḥuqūq al-*

'ibād, the right to pardon lies exclusively with the real owners of those rights. Not even divine authority has the jurisdiction to forgive violations of human rights. This underscores the principle that human rights are sacrosanct and can only be absolved by the individuals only.

However, a broader responsibility extends beyond the individual's rights. The duty of society as a whole and, more specifically, the head of state to consider the public interest, which is often associated with what is right in the eyes of the Higher authority, is referred to as "the right of Allah" (Yildirimer, 2021).

Until now, we have expounded upon the problematic aspects of negative externalities. Moving forward, our primary focus will shift towards exploring potential solutions in accordance with Islamic law. The central question that guides our inquiry is: "How can negative externalities be prevented, resolved, or mitigated from an Islamic law perspective?" In this regard, we present two alternative approaches that differ from the solutions proposed by conventional economists.

a) The first alternative presents a consumer-stakeholder (CS) model based on Islamic profit-loss sharing instruments. This shared economic model advocates for the inclusion of ordinary citizens in both the production and consumption processes. By involving consumers who would otherwise suffer from the negative externalities of natural resource production, they become integral stakeholders in project decision-making. This involvement can be facilitated through Profit and Loss Sharing (PLS) partnership arrangements or the issuance of project sukuks. As a result, by empowering consumers as stakeholders, decision-makers in natural resource production are compelled to consider the potential repercussions of their choices, which may directly impact themselves and their loved ones. Whether these decision-makers are government officials or citizen stakeholders, the pursuit of profit maximization is tempered by the realization that their decisions could harm their own relatives or future generations. This model, grounded in shared social responsibility, shares similarities with (Barboza et al., 2021)'s proposal. However, their divergence lies in the practical implementation of these models. However, since the model they propose is based on a capitalist worldview, it does not

seem economically sustainable due to factors such as profit maximization, interest-bearing investment instruments, bubble economy resulting from interest rate policy, unjust income distribution, etc. In our model, inclusivity, which involves ordinary citizens affected by the production process, may foster a sense of ownership and responsibility among consumers, potentially leading to more sustainable resource management. Additionally, the model aligns with the principles of social responsibility based on the Islamic concept of *khilāfah* (Khawar, 2023), encouraging decision-makers to consider the broader societal and environmental impacts of their choices beyond profit because the driving force in economic activities carried out according to Islamic law is not only capital and profit maximization but also the protection mechanism that forces the observance of the right of human (*ḥuqūq al-ʿibād*) and the right of God (*ḥuqūq Allāh*).

b) Another proposal of Islamic Law is to try to minimize negative externalities by imposing restrictive sanctions on the production of natural resources by prioritizing the public interest (*maṣlaḥah al-ʿāmmah*) over any economic concerns and needs (Cebeci, 2012). Natural resources are the right of present and future generations (Bukhari *et al.*, 2019). In the practice of Caliph Umar, we can see an example of an exception to the general legal practice for the sake of public interest and the benefit of future generations. Normally, places conquered by war should have been divided among the conquering soldiers, subject to the rules of *khumus* following verse 41 of Surah al-Anfāl. As a matter of fact, this was the Prophet's (pbuh) practice regarding the land of Khaybar. However, Caliph' Umar did not divide the Iraqi lands conquered by the sword (the lands of Sawād) and left them in the hands of their owners, and considering the public interest of the Muslims of that day and the interest of the Muslims of the future generations, he deemed it appropriate to collect taxes from these lands. Because if he had divided them based on the previous practice, those lands would have been privatized. Consequently, the enriched soldiers would have been economically superior to those who came later and this situation would have paved the way for potential injustice. Therefore, in this example, we can witness that Caliph' Umar prioritized the public interest over

everything else for economic sustainability and justice with a more wise perspective, even if it seems contrary to the explicit source-texts and legal practices. This practice of Caliph' Umar can be justified by the evidence of *istihsān* (Kayadibi, 2019), which refers to ruling differently by making exceptions from the general rules and going beyond the usual discourse. Additionally, this practice laid the foundation for the establishment of the legal maxim of Islamic law, "*the ruler's actions concerning citizens are rooted in public interest and social expediency*" (Committee, 2006).

2) The second phase of our discussion of the production and management of natural resources is the utilization of resources and the distribution of the revenues derived from them. One of the most important problems in this context is the free-rider problem. According to Islamic law principles, free-rider can be related to the issue of wrongful/undue acquisition of benefit.

According to the philosophy of Islamic jurisprudence, no financial benefit is given without a corresponding exchange. Every financial value carries a cost, as even unclaimed flowing water in Islam is subject to question. Furthermore, every financial value ultimately represents either the cost of human labor or a direct blessing bestowed by Allah. While natural resources are a blessing from Allah to humanity, their incorporation into the economy requires human intervention. Consequently, the income generated from the management of natural resources not only holds a spiritual responsibility towards Allah but also entails a worldly responsibility towards the rights of individuals. We can either say that the free-rider has directly usurped someone's right and thus violated the *ḥuqūq al-'ibād*, or can we say that he has violated *ḥuqūq Allāh* because he has taken away the share of future generations.

In accordance with a fundamental principle of Islamic law, which asserts that benefits are only legitimate when accompanied by risk-sharing or active participation in economic endeavors (known as "*al-ghunm bi al-ghurm*") (al-Marghīnānī, no date; Committee, 1876. Article: 87), a parallel concept states that "revenue entitlement is contingent upon assuming responsibility" (referred to as "*al-kharāj bi al-damān*") (Subkī, 1991). Consequently, regardless of its nature, any form of free-rider obtains benefits without shouldering any responsibility or participating in the

cost-bearing process. Therefore, the free-riding act contradicts the principles mentioned above.

Furthermore, if we liken the free-rider’s “usurpation”, through *kiyās al-shabah* concept, to a form of “unjust profit”, the actions of the free-rider are in contrast to the legitimate means of earning a profit according to Islamic principles, which illustrated below:

Figure 3. Bases For Legitimate Profit (Guney, 2019)

Bases for legitimate profit (and benefit)	Wealth (Māl)
	Effort ('Amal)
	Responsibility (Ḍamān)

As depicted in Figure 3, benefiting from natural resources revenue is contingent upon fulfilling the associated obligations. To rightfully deserve this benefit, one must contribute through wealth, effort, or the responsibility tied to both wealth and effort.

However, the following questions emerge from this discussion: “Should citizens be obliged to compensate the state for all the services provided?”; “Must children, disabled individuals, the elderly, and vulnerable members of society pay for the social aids they receive from the state, potentially sourced from the production of natural resources?”; “Could this scenario also be seen as a manifestation of the free-rider problem?”.

In a nutshell, Islamic legal theory strongly emphasizes social justice, mutual support, and the provision of essential services to all members of society, particularly vulnerable individuals. While individuals may not be required to compensate the state for all services, the state is responsible for ensuring that these services are accessible to all, including those in need, with funding from various sources, including revenue from natural resource production. This approach aligns with the principles of ethical

resource stewardship and societal well-being in Islamic jurisprudence (Padela, 2017; Ciftci, 2019).

a) One possible solution to address the free-riding problem in the context of natural resource production is to adapt the *iqtā'* system. *Iqtā'* was historically a land grant provided by the Islamic state during the medieval period to individuals in exchange for their services. Typically, this grant consisted of uncultivated and unowned land, which the recipient could cultivate and utilize for their own benefit. In return, the grantee was responsible for paying taxes on the land and providing military service as needed. The *iqtā'* system served various purposes, including encouraging the settlement of new territories, rewarding loyal service, and generating revenue for the state (Oner, 2020). To adapt the *iqtā'* system for the management of natural resources, a legal framework would be needed to grant resource extraction rights to individuals or companies in exchange for their services or the payment of taxes. While there is no direct equivalent to the *iqtā'* system in conventional economics for managing public goods, some economic concepts share similarities. For instance, the idea of a public-private partnership (PPP) is often employed to oversee public goods like infrastructure projects. In a PPP, the government contracts a private company to finance, construct, and operate a public project (Nshimbi & Vinya, 2014). The private company assumes responsibility for project management and generating a return on investment, while the government retains ownership and oversight. Another concept akin to the *iqtā'* system involves using land leases or concessions to extract natural resources. In this arrangement, the government grants a lease or concession to a private company to extract natural resources, such as oil or minerals, in exchange for royalties or other fees. The private company takes on the role of managing resource extraction, with the government maintaining ownership and oversight. Building upon the principles of the *iqtā'* system, the details of implementing these concepts can be reorganized and redesigned to ensure that the entire process of natural resource production adheres to Islamically accepted principles and tools (Hamed, 1993).

b) Addressing the free-rider problem in natural resource production processes often involves contemplating the imposition of direct taxes

on consumers. Nevertheless, this approach can still face challenges in preventing free-riding, primarily due to the difficulty in accurately identifying which consumers benefit from natural resource revenues and in what quantities. This essay explores potential strategies to mitigate this issue. Two key approaches are examined: 1) Benefit Measurement through Technology: One potential avenue for addressing the free-rider problem is leveraging technological advancements. As technology continues to evolve rapidly, it becomes increasingly feasible to develop tools capable of accurately quantifying the benefits derived by individual consumers from natural resource revenues. These tools could track and measure the consumption of such benefits, providing a more equitable basis for taxation. 2) Categorization of Consumers: Another approach involves categorizing consumers into distinct taxable groups, utilizing relevant parameters such as age, geographical location, socio-economic status, and other pertinent criteria. This concept draws inspiration from the principle of *qasāmah* in Islamic law, where a group of individuals residing in the same neighborhood can be held collectively responsible for an offense committed nearby. By categorizing consumers in this manner, it becomes possible to tailor tax assessments more effectively, ensuring that those who benefit from natural resource revenues contribute in proportion to their consumption.

From an Islamic jurisprudential standpoint, the implementation of direct taxes can be justified within the boundaries of shariah compliance. Islamic scholars have reached a consensus that taxes are permissible as long as they do not violate the explicit teachings of the Qur'an and Sunnah or contravene established legal maxims. In this context, the imposition of direct taxes can be seen as an application of *al-siyāsah al-shar'īyyah* (sharia-based governance). This concept acknowledges the authority of leaders in Muslim communities to manage and administer the community's affairs, including revenue collection for the collective welfare (Fourati *et. al.*, 2019). Such measures are rooted in the Islamic legal maxim that "*governing the society depends on the interest of the society*" (Committee, 1876. Article: 58). However, taxation in Islam is not merely political. Given the theocratic nature of Islamic law, the directives issued by religious scholars, often referred to as "*ulū al-amr*", are

regarded as religious obligations as well. This is because non-compliance with these directives can potentially result in the violation of the “human” and “divine rights” mentioned earlier.

In summary, addressing the free-rider problem in the context of natural resource production through direct taxation presents challenges, but technological advancements and the categorization of consumers offer promising avenues for improvement. These strategies can be assessed within the framework of Islamic law, which supports taxation for the more significant benefit of the community while adhering to Shariah principles.

CONCLUSION AND RECOMMENDATIONS

There is a close and, so to say, organic link between Islamic law and Islamic economics. According to Aristotelian logic’s terminology, there is an inter-transitive (*‘umüm khusûş min wajh*) relationship between the two disciplines. At some points, it can even be said that Islamic law plays a role in shaping Islamic economics and determining its worldview. This is because the legal dimension and strategy-setting aspect of the Islamic economy is undertaken by Islamic law. For instance, the regulation of Islamic financial instruments such as murabahah, mudarabah, musharakah, salam, istisna’ etc. is fully governed by Shariah law. Similarly, when a new issue or challenge emerges, Islamic economics must address and work within the framework of the principles and regulations defined by Islamic jurisprudence.

The problematic aspect of negative externalities in Islamic law stems from their conflict with the principle of avoiding harm to others and the tensions they create between societal well-being, considered as Allah’s “right”, and harm to individuals as well. From an Islamic law perspective, potential solutions for negative externalities include either a) the incorporation of a consumer-stakeholder (CS) model based on Islamic profit-loss sharing instruments or b) the imposition of stringent sanctions on natural resource production, with a primary focus on safeguarding the public interest (*maslahah al-‘ammah*).

As for the free-riding issue, in terms of Islamic law, the problem with free-riders lies in their acquisition of benefits without shouldering any

corresponding responsibility, which contradicts the ethical principles of risk-sharing and active participation emphasized in Islamic jurisprudence. Potential solutions include either privatizing the production of natural resources while adhering to *iqṭā'* regulations or implementing direct taxes on free-riding consumers, with a foundation in the public interest principle (*maṣlahah al-‘āmmah*).

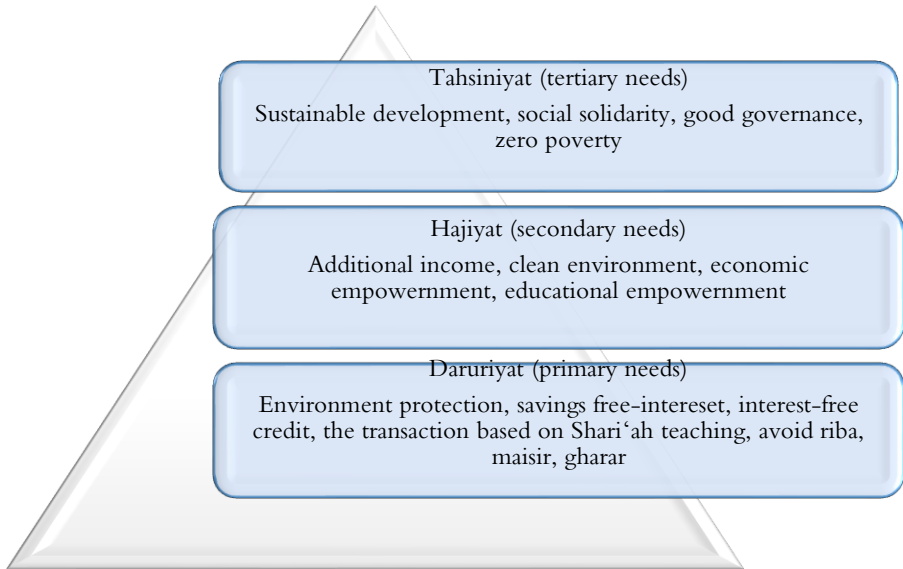
The scope of this study predominantly centers on the adverse externalities and free-riding issues prevalent in the production phase of natural resources, as indicated by the topic. However, it is essential to acknowledge that other dimensions within the production of natural resources remain unexplored within this research framework. Furthermore, examining these aforementioned challenges is rooted in a theoretical analysis under the framework of Islamic law. Consequently, a pressing need exists for further empirical and applied research to delve into these matters comprehensively. Future studies should aim to expand beyond theoretical constructs and incorporate empirical data, thereby enhancing our understanding and offering pragmatic solutions to these complex issues.

It is strongly recommended that we adopt a holistic and environmentally responsible approach to the production of natural resources. A deep understanding of the laws of nature and the concept of scarcity should underpin this approach. While individualism has its merits, it's crucial to recognize that it may not always align with the broader system-level principles that govern both nature and human interactions. As we navigate the intricate landscape of natural resource utilization, we must appreciate the interconnectedness and consequences of our actions. Externalities, such as the pressing issue of climate change, degradation of the nature etc. should be at the forefront of our considerations rather than being treated as mere afterthoughts. To ensure the preservation of our environment and effectively tackle resource management challenges, a paradigm shift towards prioritizing collective well-being and sustainability over immediate individual gains is imperative. This shift respects the laws of nature and upholds the principles of ethical resource stewardship.

The Islamic concept of stewardship, often referred to as *khilafah* and *amanah*, plays a significant role in guiding the production of natural

resources. In Islam, humans are considered stewards (*khalīfah*) of the Earth, signifying a profound responsibility to manage and utilize natural resources wisely. This concept underscores the need for sustainable and ethical resource use, suggesting that humans are caretakers of the Earth, and their actions should not deplete or harm the environment, keeping in mind the well-being of future generations. There is a strong correlation between the *khalīfah* concept and *sustainability*. Stewardship, as advocated by these principles, encourages moderation in resource consumption and calls for responsible management to prevent overproduction while striving to maintain ecological balance. Additionally, the principle of *amānah* reinforces the concept of trust from Allah. It signifies that natural resources are a trust (*amanah*) from Allah, and humans are entrusted with their responsible management. This emphasizes that resources should be used ethically and responsibly, avoiding harm and misuse. *Amanah* further discourages wasteful practices and extravagance, promoting the efficient use of resources and minimizing excess or unnecessary consumption. Together, these Islamic principles advocate for a harmonious and sustainable coexistence with the natural world, emphasizing ethical, responsible, and efficient resource utilization, all within the framework of *khilāfah* and *amanah*, representing the profound responsibilities of stewardship and trust in Islam.

Figure 4. Maqasid pyramid (al-Ghazali, 1993; Miftahorrozi et al., 2022; Monawer et al., 2022)



Furthermore, when managing natural resources, it is imperative to consider the maqāsid theory, which emanates from the principles of Islamic jurisprudence. As illustrated in the pyramid diagram above, the prioritization should address fundamental needs before progressing to activities of a complementary nature. Complementary needs should be fulfilled before embarking on supererogatory needs as well. In this context, Muslim policymakers are encouraged not to limit their focus to the framework of the nation-state concept but to adopt a global perspective, aligning with the requirements of the stewardship position.

REFERENCES

- Adegbite, E., Amaeshi, K., Nakpodia, F., Ferry, L., & Yekini, K. (2020). Corporate Social Responsibility Strategies in Nigeria: A Tinged Shareholder Model. *Corporate Governance: The International Journal of Business in Society*, 20(5), 797–820.
- Ahmad, A.A. (no date). *Structural interrelations of theory and practice in Islamic law: A study of takhrīj al -furū’ ‘alā al -usūl literature*. Ph.D. <https://www.proquest.com/docview/305001680/abstract/5F92895C88984FCDPQ/1> (Accessed: 4 September 2023).
- al-Ghazālī, A.H.M.B.I.M. (1993). *al-Mustaşfā*. Beirut: Dar al-Kutub al-'ilmiyyah.
- Alhassan, H., & Kwakwa, P.A. (2023). The Effect of Natural Resources Extraction and Public Debt on Environmental Sustainability. *Management of Environmental Quality: An International Journal*, 34(3), 605–623.
- Barboza, G., Pede, V., & Madero, S. (2021). Shared Social Responsibility. Dual Role of Consumers as Stakeholders in Firm Strategy. *Social Responsibility Journal*, 17(1), 48–68.
- Bogoviz, A.V., Rycova I.N., Kletsikova, E.V., & Rudakova, T.I. (2019). Tax Awareness and “Free Rider” Problem in Taxes, in I.V. Gashenko, Y.S. Zima, & A.V. Davidyan (eds) Optimization of the Taxation System: Preconditions, Tendencies and Perspectives. *Cham: Springer International Publishing (Studies in Systems, Decision and Control)*, 117–123.
- Bonini, N., Ritov, I., & Graffeo, M. (2015). On the Evaluation of Public Goods: Cognitive and Emotional Aspects. *On the Horizon*, 23(2), 119–127.
- Brada, J.C., & Wachtel, P. (2018). Comparative Economic Studies and Comparative Economics: Six Decades and Counting. *Comparative Economic Studies*, 60(4), 638–656.
- Bukhari, S.A.A., Hashim, F., Amran, A.B. & Hyder, K. (2019). Green Banking and Islam: Two Sides of the Same Coin. *Journal of Islamic Marketing*, 11(4), 977–1000.
- Buterin, V., Hitzig, Z., & Weyl, E.G. (2019). A Flexible Design for Funding Public Goods. *Management Science*, 65(11), 5171–5187.
- Cebeci, I. (2012). Integrating the Social Maslaha into Islamic Finance. *Accounting Research Journal*, 25(3), 166–184.
- Chari, V.V., & Jones, L.E. (2000). A Reconsideration of the Problem of Social Cost: Free Riders and Monopolists. *Economic Theory*, 16(1), 1–22.
- Cheikbossian, G. (2008). Heterogeneous Groups and Rent-Seeking for Public Goods. *European Journal of Political Economy*, 24(1), 133–150.
- Christiansen, E.A.N. (2013). Negative Externalities of Food Production: Discourses on the Contested Norwegian Aquaculture Industry. *Journal of*

Political Ecology, 20, 180–198.

- Ciftci, S. (2019). Islam, Social Justice, and Democracy. *Politics and Religion*, 12(4), 549–576.
- Committee. (1876). *Majallah al-Aḥkām al-'Adliyyah*.
- Committee. (2006). *Fiqh Encyclopedia*. Kuwait: Wizarah al-awqaf.
- Cosma, S., & Cosma, S. (2010). Managing Negative Externalities. *16th International Conference on the Knowledge-Based Organization - Economic, Social and Administrative Approaches to the Knowledge-Based Organization. Sibiu: Nicolae Balcescu-Land Forces Academy (Knowledge Based Organization International Conference)*, 21–24. Available at: <https://www.webofscience.com/wos/woscc/fullrecord/WOS:000297623800002> (Accessed: 13 September 2023).
- Deneulin, S., & Townsend, N. (2007). Public Goods, Global Public Goods and the Common Good. *International Journal of Social Economics*, 34(1/2), 19–36.
- Ekici, F., Orhan, G., Öner, G., & Bahçe, A.B. (2022). A Policy on the Externality Problem and Solution Suggestions in Air Transportation: The Environment and Sustainability. *Energy*, 258, p. 124827.
- Emon, A. (2006). Huqūq Allāh and Huqūq al-'Ibād: A Legal Heuristic for a Natural Rights Regime. *Islamic Law and Society*, 13(3), 325–391.
- Fourati, M., Gratton, G., & Grosjean, P. (2019). Render unto Caesar: Taxes, charity, and political Islam. *European Economic Review*, 119, 114–146.
- Fuadah, N., & Qudsi Fauzi, R.M. (2019). Externalities in Water Santri Sidogiri Natural Resources Perspective Islamic Economy. *KnE Social Sciences*, 3(13), p. 85.
- Gaspar, D. (2007). Goods and Persons, Reasons and Responsibilities. *International Journal of Social Economics*, 34(1/2), 6–18.
- Guney, N. (2019). The Basis for the Legitimate Entitlement to Profit in Islamic Law. *Turkish Journal of Islamic Economics*, 6(2), 62–79.
- Hallaq, W. (2019). 'God cannot be harmed' On Huquq Allah/Huquq al-Ibad continuum. ed. ElFadl, K.A., Ahmad, A.A. & Hassan, S.F. Abingdon: Routledge. Available at: <https://www.webofscience.com/wos/woscc/full-record/WOS:000576870000004> (Accessed: 26 September 2023).
- Hamed, S.E.D. (1993). Seeing the Environment Through Islamic Eyes: Application Ofshariah to Natural Resources Planning and Management. *Journal of Agricultural and Environmental Ethics*, 6(2), 145–164.
- Jabareen, Y. (2009). Building a Conceptual Framework: Philosophy, Definitions, and Procedure. *International Journal of Qualitative Methods*, 8(4), 49–62.
- Jakubowski, R.M., & Kusmierczyk, P. (2007). Production of Public Goods and the Free-Riding Problem. *Ekonomia I Prawo-Economics and Law*, 3(1), 163–184.

- Jing, W., & Sun, B. (2018). Negative Externalities in the Sharing Economy: Sources, Paths and Recommendations. *International Journal of Crowd Science*, 2(2), 149–163.
- Kargi, V., & Yuksel, C. (2010). Public Economics Solutions on Environmental Externalities. *Maliye Dergisi*, (159),183–202.
- Kayadibi, S. (2019). *Istihsan: The Doctrine of Juristic Preference in Islamic Law*. Islamic Book Trust.
- Khawar, M. (2023). Economic Agency of Women in Islamic Economic Philosophy: Going Beyond Economic Man and Islamic Man. *International Journal of Social Economics*, ahead-of-print(ahead-of-print).
- Laudal, T. (2012). Rising Externality Costs and Corporate Social Responsibility Case: Eu Legislation on Electric and Electronic Equipment. *Social Responsibility Journal*, 8(2), 289–304.
- Levent, A. (2018). Kurumlar ve İktisadi Gelişme: Timur Kuran'ın İslam Ekonomisi Yaklaşımının Metodolojik Analizi. *Journal of Humanity and Society (İnsan & Toplum Dergisi)*, 1–22.
- Luqman, M., Soytaş, U., Li, Y., & Ahmad, N. (2022). Rewards and Penalties in an Evolutionary Game Theoretic Model of International Environmental Agreements. *Economic Research-Ekonomika Istraživanja*, 35(1), 602–621.
- Lv, J. (2011). Research on Negative External Economy of Natural Resources Exploiting Enterprises in P.R.China. *2011 International Conference on Business Management and Electronic Information. 2011 International Conference on Business Management and Electronic Information*, 882–885.
- Magee, C. (2002). Endogenous Trade Policy and Lobby Formation: An Application to the Free-Rider Problem. *Journal of International Economics*, 57(2), 449–471.
- al-Marghīnānī, B. (no date). *al-Hidāyah Sharḥ Bidāyah al-Mubtadī*. Beirut: Dar Ihya al-Turath al-`Arabi.
- Martensson, U. (2011). 'It's the Economy, Stupid': Al-Tabarī's Analysis of the Free Rider Problem in the Abbāsīd Caliphate. *Journal of the Economic and Social History of the Orient*, 54(2), 203–238.
- Miftahorrozi, M., Khan, S., & Bhatti, M.I. (2022).Waste Bank-Socio-Economic Empowerment Nexus in Indonesia: The Stance of Maqasid al-Shari'ah. *Journal of Risk and Financial Management*, 15(7), p. 294.
- Mohamed, M.F., Abdul Mutalib, L., İsmail, W.A.F.W., & Sahid, M.M. (2019). Islamic Epistemology and Its Relations to Scientific Method in Islamic Law of Evidence. *International Journal of Recent Technology and Engineering (IJRTE)*, 8(3), 4350–4352.
- Monawer, A.T.M., Abdul Rahman, N.N., Qasem Al-Nahari, A.A.A., Haji Abdullah,

- L., Ali, A.K. & Meguellati, A. (2022). The Actualization of Maqāṣid Al-Sharī'ah in Islamic Finance: A Conceptual Framework. *International Journal of Islamic and Middle Eastern Finance and Management*, 15(5), 847–864.
- Moosa, E. (2000). The Dilemma of Islamic Rights Schemes. *Journal of Law and Religion*, 15(1/2), p. 185.
- Munyo, I., & Regent, P. (2016). Exercise of Ownership Rights and Efficiency in State-Owned Enterprises: The Case of Uruguay. *Management Research: Journal of the Iberoamerican Academy of Management*, 14(2), 150–165.
- Nshimbi, M., & Vinya, R. (2014). Impacts of Public-Private Partnership on Local Livelihoods and Natural Resource Dynamics: Perceptions from Eastern Zambia. *Resources*, 3(2), 471–487.
- Olsson-Yaouzis, N. (2010). Revolutionaries, Despots, and Rationality. *Rationality and Society*, 22(3), 283–299.
- Oner, A. (2020). Iqta Applications in the Period of the Rashid Caliphs. *Sirnak University Journal of Divinity Faculty*, 11(25), 457–486.
- Padela, A.I. (2017). Social Responsibility and the State's Duty to provide Healthcare: An Islamic Ethico-Legal Perspective. *Developing World Bioethics*, 17(3), 205–214.
- Patel, S.S., & Ramachandran, P. (2022). A Bargaining Model for Sharing Water in a River with Negative Externality. *Opsearch*, 59(2), 645–666.
- Pittel, K., & Rübhelke, D.T.G. (2006). Private Provision of Public Goods: Incentives for Donations. *Journal of Economic Studies*, 33(6), 497–519.
- Rayamajhee, V., & Joshi, A. (2018). Economic Trade-Offs Between Hydroelectricity Production and Environmental Externalities: A Case for Local Externality Mitigation Fund. *Renewable Energy*, 129, 237–244.
- Rogna, M. (2016). Cooperative Game Theory Applied to leas: A Comparison of Solution Concepts. *Journal of Economic Surveys*, 30(3), 649–678.
- Skarzhinskaia, E.M., & Tsurikov, V.I. (2019). Modelling of Collective Actions: The Significance of Cooperative Agreements. *Russian Management Journal*, 17(3), 337–366.
- Subkī, T. al-Dīn (1991). *al-Ashbāh wa al-Nazāir*. Beirut: Dar al-Kutub al-'ilmiyyah.
- Tariq, M.U. (2015). Hypothetico-Deductive Method: A Comparative Analysis. *Journal of Basic and Applied Research International*, 7, 2395–3446.
- Vilke, R. (2019). Towards Holistic Understanding of Socially Responsible Provision of Public Goods: Conceptual Foundations. *Social Responsibility Journal*, 15(1), 47–60.
- Wiseman, H.J. (2021). Taxing Local Energy Externalities. *Notre Dame Law Review*, 96(2), 563–620.
- Wojciechowska-Solis, J. (2018). Polish Society in the Light of the Use of Renewable Energy Sources. *Applied Ecology and Environmental Research*,

16(1), 893–901.

Yildirimer, Ş. (2021). *İslam Hukukunun Aksiyolojik Boyutu*. Ankara: Akademisyen Kitabevi.

Yudanov, A., Pyrkina, O., & Bekker, E. (2016). On the Limits of Unsolvability of the “Free Rider Problem”. *Voprosy Ekonomiki*, (11), 57–75.

AUTHORS' PERCENTAGE-BASED CONTRIBUTION

The contributions of the author to the study by percentages are as follows: The percentage-based contributions of the author are %100 respectively.

DECLARATION OF CONFLICTING INTERESTS

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

ETHICAL APPROVAL OF THE STUDY

All rules within the scope of "Instruction on Research and Publication Ethics for the Higher Education Institutions" were observed throughout the study. No actions mentioned in the Instruction's second chapter titled "Actions Against to Scientific Research and Publication Ethics" were taken in the study.

PEER-REVIEW

Externally peer-reviewed.