Beyond Resource Dependence: Human Ecological Perspectives on Angola's Sustainable Development Challenges

Margaret Adisa, Joyce Mdiniso, Mthabiseng Ngwamba

Business and Health Studies,United Kingdom

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ABSTRACT

Human ecological concerns in Africa have become increasingly urgent as nations struggle to balance economic growth with environmental sustainability. Angola, a leading oil-producing country, presents a critical case for examining the complex interplay between natural resource exploitation, ecological degradation, and human well-being. Despite significant oil revenues, widespread pollution, deforestation, and the disruption of traditional livelihoods have exposed deep vulnerabilities in the human environment system. This paper explores how continued oil exploration along Angola's coastal and inland regions has reshaped ecological relationships, intensified socio-economic inequalities, and hindered the realisation of sustainable development objectives. Through a human-ecological lens, the study highlights how the degradation of water sources, loss of biodiversity, and displacement of communities challenge both environmental justice and national development agendas. In the post-SDG context, the paper argues for a transition from extractive-centred growth to an inclusive ecological model that prioritises local participation, environmental restoration, and adaptive governance. Such a shift is essential to reframe Angola's development trajectory toward resilience, sustainability, and human dignity.

Keywords: Oil, Degradation, Sustainability, SDGs, Exploration, Communities, Resources

INTRODUCTION

Background and Contextual Framework

Since the independence of Angola in 1975, the country has become one of the largest oil producers in Africa, and oil production has become the main element of post-war reconstruction and economic growth after the civil war ended in 2002 (Schultze, 2017; Whalen, 2021; Nwobieze et al., 2018). The petroleum industry now makes up nearly 95% of the country's export revenues and more than 70% of government revenues, making hydrocarbon extraction the core of the national economic policy and state capacity (Ossai, 2020; Omonijo et al., 2019; Tantua et al., 2018). Yet, such a deep reliance on extractive industries has produced intricate ecological, social, and economic impacts that essentially question the ability of Angola to develop sustainably as projected in the United Nations Sustainable Development Goals model (Surya et al., 2020; Nassar et al., 2019; Tamvada, 2020).

The human ecological approach offers a rather useful analytical framework to the development issues in Angola due to the focus on interrelatedness of human populations and their biophysical surroundings and the fact that ecological degradation and social inequality are mutually reinforcing processes that cannot be considered in isolation (Obida et al., 2018; Sam et al., 2017; Ukpong and Obok, 2018). The theoretical approach extends beyond the economic analysis of the extraction of resources in a narrower context to explore how oil exploration and production restructure ecology, alters social relations, redistributes power and resources, and has an overall impact on human well-being in various aspects such as health, livelihoods, cultural identity, and political participation (Uduji et al., 2021; Singh and Ntuli, 2017; Mirzoev and Kane, 2017; Slevin, 2019).

Decades of intensive oil exploration and extraction activities have radically changed the ecological landscape of Angola, especially the oil-abundant coastal provinces of Cabinda, Zaire and Bengo, and to a growing extent in inland areas where recent findings have widened the geographic footprint of petroleum operations (Obida et al., 2018; Osin et al., 2017; Sam et al., 2017; Whalen, 2021). These changes include extensive water pollution of both marine and freshwater ecosystems, deforestation and habitat destruction in the context of the development of infrastructure and construction of pipelines, air pollution due to gas flaring and industrial emissions, soil contamination by oil spills and inadequate waste disposal, and biodiversity loss through ecosystem disturbance and degradation (Obida et al., 2018; Ukpong and Obok, 2018; Sam et al., 2017; Osin et al., 2017).

Research Problem Statement

Although Angola is a country that generates large amounts of petroleum revenues, which theoretically should allow it to make substantial investments in social development, environmental protection, and economic diversification, it still has to deal with serious sustainable development problems that question the efficiency and sustainability of the resource-based model of development (Schultze, 2017; Nwobieze et al., 2018; Omonijo et al., 2019; Whalen, 2021). Angola continues to record poor human development outcomes, including high levels of poverty, malnutrition and infant mortality, alongside limited access to basic services such as clean water, sanitation, healthcare and education, especially in rural regions where oil mining operations are most prevalent and environmental impact is the greatest (Ushie and Udoh, 2016; Mukosa et al., 2020; Mirzoev and Kane, 2017; Singh and Ntuli, 2017).

This abundance of resources and the continued poverty and underdevelopment known as the resource curse have been widely reported in petroleum-producing states in Africa and other developing settings (Schultze, 2017; Whalen, 2021; Tantua et al., 2018; Ogungbade et al., 2018). Nonetheless, the specific path of Angola has its own peculiarities, which should be considered in particular, such as the heritage of a long-term civil war that interfered with the ecological relations and social organisation, the prevalence of the oil industry that reduces the direct benefits of local populations, the concentration of oil revenues in the elite networks with minimal redistribution to the population affected, and the low quality of governing institutions that cannot effectively regulate the environmental practises of the corporations and the equal distribution of benefits (Nwobieze et al., 2018; Omonijo et al., 2

In the human-ecological context, the underlying issue of the Angola situation is that the existing trend of oil extraction and revenue use is compromising the same ecological and social basis of long-term sustainable development (Obida et al., 2018; Ukpong and Obok, 2018; Surya et al., 2020; Tamvada, 2020). The Angolan model of development, which relies on oil, is producing significant human-ecological imbalances that jeopardise the well-being and adaptive capacity of future generations by undermining water resources needed in agriculture and human consumption, destroying ecosystems that support food security and livelihood opportunities, displacing communities from their ancestral lands, and dispersing environmental costs across the vulnerable population, on a large scale (Sam et al., 2017; Uduji et al., 2021; Singh and Ntuli, 2017).

AIMS AND OBJECTIVES

Research Aim

To examine Angola's sustainable development challenges from a human ecological perspective, focusing on how oil extraction has reshaped human–environment relationships and what pathways can support more sustainable and equitable development outcomes aligned with the SDGs.

Research Objectives

- To identify and synthesise documented ecological impacts of oil extraction in Angola, including water pollution, deforestation, biodiversity loss, air pollution, and soil contamination.

- To analyse how oil-related ecological degradation affects community livelihoods, health outcomes, food security, and social vulnerability across affected regions.

- To assess Angola's progress and constraints in achieving relevant SDGs in relation to oil dependence and environmental degradation.

- To examine governance and institutional factors shaping environmental protection, accountability, transparency, and community participation in the oil sector.

- To propose evidence-based recommendations for transitioning toward an inclusive ecological development model emphasizing restoration, diversification, and adaptive governance.

Research Significance and Contribution.

The research has a number of significant implications in terms of the academic knowledge of resource-dependent development (Ravitch and Carl, 2016; McGinley et al., 2021; Moser and Korstjens, 2018). First, it uses the human ecological theory to discuss the sustainable development issues in Angola, giving a comprehensive approach that considers the environmental, social, economic, and political aspects that are frequently addressed independently in the literature (Surya et al., 2020; Tamvada, 2020; Schwartz and Cragg, 2017; Bodhanwala and Bodhanwala, 2018). Second, the study uses a narrative review of secondary data such as scholarly studies, governmental reports, corporate publications, and publications of civil societies to synthesise the fragmented knowledge regarding the effects of the oil sector in Angola into a unified evaluation of human-ecological impacts (Miles et al., 2014; Saldana, 2016; Moser and Korstjens, 2018; Shenton, 2004).

Third, the study focuses on the Angola's development path, in particular, in the framework of SDGs, evaluating the impact of oil extraction on the progress of various interrelated objectives such as poverty alleviation, environmental conservation, health, and inequality reduction (Nassar et al., 2019; Surya et al., 2020; Tamvada, 2020; Ushie and Udoh, 2016). Lastly, the research formulates feasible ideas of how the Angolan development model, which is extractive-based, can be transformed into a more inclusive and ecologically sustainable one that focuses on the involvement of the locals, environmental recovery, and adaptive governance (Schwartz and Cragg, 2017; Uduji et al., 2021; Singh and Ntuli, 2017; Slevin, 2019) is to be implemented.

LITERATURE REVIEW

Theoretical Framework: Human Ecology and Stakeholder Theory Integration

The theoretical basis of this study is the combination of human ecological theory and the stakeholder theory to offer a holistic analytical framework to the study of the Angola case of sustainable development challenges (Surya et al., 2020; Schwartz and Cragg, 2017; Tamvada, 2020). Human ecology is the study of dynamic interactions between human populations and their physical, biological, cultural, and social surroundings, with well-being of humans fundamentally relying on healthy functioning ecosystems that support provision of essential services such as clean water, fertile soils, biodiversity, climate regulation, and natural resources (Obida et al., 2018; Sam et al., 2017; Ukpong and Obok, 2018; Moustakas, 1994).

This theoretical approach acknowledges the fact that ecological and social systems are closely interrelated in several feedback systems, whereby any changes in one area are bound to influence the other in such a way that can either promote or diminish long-term stability and sustainability (Uduji et al., 2021; Mirzoev and Kane, 2017; Singh and Ntuli, 2017; Polkinghorne, 1989). Applying the human ecological theory to the context of resource extraction, the authors note that intensive use of natural resources may destabilise ecological processes and relationships that have supported human communities over generations, with a resulting cascading effect on livelihoods, health, social cohesion, and cultural identity (Obida et al., 2018; Singh and Ntuli, 2017; Osin et al., 2017; Slevin, 2019).

Stakeholder theory supports this ecological view through offering analytical instruments of comprehending power relations, decision-making procedures, and patterns of benefit allocation that influence how resource extraction impacts various groups in the society (Schwartz and Cragg, 2017; Tamvada, 2020; Slevin, 2019; Tantua et al., 2018). According to the theory, corporations are not only bound to shareholders but to all stakeholders who are impacted by corporate operations or can influence them, such as employees, customers, suppliers, communities, governments, and civil society organisations (Schwartz and Cragg, 2017; Tamvada, 2020; Nassar et al., 2019). This theoretical framework justifies community demands to participate in the corporate decision-making process and equitable benefits sharing of resource extraction in the context of oil extraction in developing countries (Uduji et al., 2021; Schultze, 2017; Ogungbade et al., 2018).

The Environmental Degradation and Resource Curse in Africa

Resource curse or paradox of plenty is an empirical finding that the development performance of countries with large natural resources, especially oil and minerals, is often worse than that of resource-poor countries, such as slower economic growth, higher levels of poverty, increased inequality, poorer governance, and increased conflict (Schultze, 2017; Whalen, 2021; Tantua et al., 2018; Nwobieze et al., 2018). The processes through which resource abundance negatively affects development have been studied extensively, and multiple interconnected channels have been identified, which are especially applicable to the case of Angola (Ossai, 2020; Omonijo et al., 2019; Ogungbade et al., 2018).

Economic processes include Dutch disease effects, whereby resource booms lead to currency appreciation and undermine the competitiveness of other economic sectors, volatility of commodity prices that create boom-bust cycles that destabilise economies and government budgets, and crowding out of productive investments in agriculture, manufacturing, and human capital as resources shift to extractive industries (Schultze, 2017; Mukosa et al., 2020; Ushie and Udoh, 2016; Nwobueze et al., 2018). Rent-seeking behaviour, where elites struggle to secure the revenue of resources instead of generating productive wealth, weakening of democratic institutions and accountability as the governments become less reliant on taxation of citizens, and the possibility of violent conflict as groups fight over control of valuable resources are all political mechanisms (Tantua et al., 2018; Nwobieze et al., 2018; Whalen, 2021; Schultze, 2017).

The environmental mechanisms, especially relevant when considered through the prism of human ecology, are degradation of ecosystems and natural resources through pollution and habitat destruction, erosion of traditional livelihoods based on a healthy environment, and the establishment of long-term environmental liabilities that continue to exist even after the operational life of extractive projects (Obida et al., 2018; Ukpong and Obok, 2018; Sam et al., 2017; Osin et al., 2017). The impacts of these environmental effects are recorded as disproportionately detrimental to poor and marginalised populations that rely most on natural resources to sustain themselves and have the least ability to adapt to ecological change (Uduji et al., 2021; Singh and Ntuli, 2017; Mirzoev and Kane, 2017; Ushie and Udoh, 2016).

Oil mining and ecological degradation: comparative African experience

The negative ecological impacts of oil extraction have been widely recorded in the petroleum-producing regions of Africa, and the trend of environmental degradation is incredibly similar irrespective of the specific political, economic, and social contexts (Obida et al., 2018; Osin et al., 2017; Sam et al., 2017; Ukpong and Obok, 2018). One of the worst and most common effects is water pollution, as oil spills, discharge of produced water, and industrial effluents contaminate marine and freshwater ecosystems, which communities rely on as drinking water, fishing, and agricultural resources (Obida et al., 2018; Ukpong and Obok, 2018; Osin et al., 2017; Sam et al., 2017).

It has been found out that the rates of respiratory diseases, cancer, and other health issues related to air pollution exposure are higher in communities around oil facilities, and children and elderly people are more susceptible to such effects (Mirzoev and Kane, 2017; Singh and Ntuli, 2017; Ushie and Udoh, 2016; Mukosa et al., 2020). Flaring of gases also leads to greenhouse gas emissions and climate change, producing global environmental effects that may have a significant impact on local communities and offer no economic advantage to the impacted populations (Obida et al., 2018; Sam et al., 2017; Whalen, 2021).

Oil related infrastructure development such as roads, pipelines, processing plants, and worker settlements, leads to deforestation and habitat destruction which disrupt ecosystems and decrease biodiversity in a way that impacts ecological integrity and community livelihoods (Sam et al., 2017; Ukpong and Obok, 2018; Obida et al., 2018; Uduji et al., 2021). Research records the impact of habitat loss on wildlife populations, ecosystem disruption, and erosion of ecosystem services that communities rely on such as food provisioning, climate regulation, water purification, and cultural values (Uduji et al., 2021; Singh and Ntuli, 2017; Surya et al., 2020; Sam et al., 2017).

Socio-Economic Effects on the Oil-producing Communities

Studies on the socio-economic effects of oil extraction on African populations show mixed trends with the possible advantages of employment, infrastructure advancement, and government revenue frequently outweighed by the adverse effects such as disruption of livelihoods, health issues, social discord, and inequality (Uduji et al., 2021; Ukpong and Obok, 2018; Tantua et al., 2018; Ogungbade et al., 2018). Research reports on the interference of oil activities with the traditional livelihoods, especially agriculture and fishing, in terms of environmental degradation, land alienation, and local economy transformation, which increase their vulnerability and decrease their adaptive capacity (Ukpong and Obok, 2018; Uduji et al., 2021; Ogungbade et al., 2018; Ushie and Udoh, 2016).

It is especially important that the agricultural livelihoods are disrupted since most people in African oil-producing areas rely on farming and fishing as their main sources of subsistence and income, and there are not many other economic opportunities (Ukpong and Obok, 2018; Ushie and Udoh, 2016; Mukosa et al., 2020; Nassar et al., 2019). Studies have shown that oil pollution causes pollution of agricultural land and water bodies, rendering farming less effective and even impossible, and developing infrastructure displaces land that was once used to grow food, compelling communities to find alternative sources of livelihood, which is usually in cities where they lack skills and social networks (Ukpong and Obok, 2018; Obida et al., 2018; Sam et al., 2017; Nwobieze et al., 2018).

Governance, Accountability and Environmental Justice

The mechanisms of governance and accountability are paramount to the development of resource extraction producing sustainable development or contributing to poverty and environmental degradation (Schwartz and Cragg, 2017; Nwobieze et al., 2018; Omonijo et al., 2019; Tamvada, 2020). Studies show that many African oil-producing nations are associated with weak governance institutions, low regulatory capacity, corruption, and lack of transparency, which facilitates corporations to outsource environmental costs and reclaim economic benefits (Schultze, 2017; Tantua et al., 2018; Ossai, 2020; Nwobieze et al., 2018).

Environmental justice views emphasise that the distribution of environmental degradation patterns and benefits reflects and reinforces existing social inequalities based on the lines of class, ethnicity, geography, and political power (Singh and Ntuli, 2017; Mirzoev and Kane, 2017; Slevin, 2019; Omonijo et al., 2019). The studies record the common disproportional environmental impacts of extractive operations on marginalised communities and the lack of benefit-sharing, which cause deep injustices that flout the principles of equity and human rights (Singh and Ntuli, 2017; Tantua et al., 2018; Uduji et al., 2021; Slevin, 2019).

Research on the mechanisms of corporate accountability such as environmental impact assessment, monitoring, grievance procedure, and community engagement processes has shown considerable disconnects between official policies and real practise (Schwartz and Cragg, 2017; Tamvada, 2020; Slevin, 2019; Ossai, 2020). It has been shown that despite the presence of advanced environmental management systems and corporate social responsibility programmes in companies, the implementation at the operational level tends to be insufficient because of poor oversight, contradictory incentives, and the lack of community involvement in the decision-making process (Ossai, 2020; Ogungbade et al., 2018; Uduji et al., 2021; Tantua et al., 2018).

Resource-Dependent Contexts and Sustainable Development Goals

The United Nations Sustainable Development Goals, which was adopted in 2015 as a universal development framework until 2030, offer valuable indicators on whether the development paths that depend on resources are sustainable and equitable (Nassar et al., 2019; Surya et al., 2020; Tamvada, 2020; Bodhanwala and Bodhanwala, 2018). The SDGs acknowledge the basic interdependencies between environmental sustainability, social equity, and economic development, stating that development in one area relies and influences development in others through complex feedback loops (Surya et al., 2020; Bodhanwala and Bodhanwala, 2018; Teck et al., 2019; Nassar et al., 2019).

Investigations of SDG implementation in African nations that are resource-dependent show inconsistent results, as petroleum revenues allow some investments in infrastructure, education, and health, and extractive activities at the same time undermine the achievement of environmental objectives and increase inequalities (Nassar et al., 2019; Ushie and Udoh, 2016; Mukosa et al., 2020; Tamvada, 2020). The research unveils specific conflicts between economic and environmental sustainability goals, and it remains unclear whether the existing extractive models can be aligned with the ambitious environmental targets without a radical change in the development strategies (Tamvada, 2020; Surya et al., 2020; Bodhanwala and Bodhanwala, 2018; Schwartz and Cragg, 2017).

METHODOLOGY

Research Design and Philosophical Foundation

The research design used in this study is a qualitative one, relying solely on the secondary data analysis to explore the challenges of sustainable development in Angola in the human ecological perspective (Miles et al., 2014; Saldana, 2016; McGinley et al., 2021; Moser and Korstjens, 2018). This study adopted a critical narrative review with qualitative thematic synthesis of documentary evidence (Grant and Booth, 2009; Green et al., 2006; Sukhera, 2022). The methodological approach is a synthesis of existing records such as academic literature, government documents, corporate records, civil society reviews, and international organisation reviews to formulate extensive knowledge of the impact of oil mining in Angola on ecological systems, social organisation, and developmental pathways (Ravitch and Carl, 2016; Moser and Korstjens, 2018; Patton, 2002; Shenton, 2004). This approach was chosen because the evidence on oil extraction in Angola is dispersed across academic, government, corporate, civil society and international organisation sources that differ in design, so it cannot be pooled or counted like trial results.

Philosophically, the study is based on critical realism, which acknowledges the existence of objective material realities that exist without our perceptions and which argues that the knowledge we have of these realities is always mediated through interpretation and influenced by available evidence and theoretical models (Strauss & Corbin, 1998; Moustakas, 1994; Yuksel and Yildirim, 2015; Van Maanen, 2015). Such an epistemological approach is especially suitable to the investigation of environmental degradation and sustainable development due to its consideration of the material reality of ecological destruction and social suffering and its position that our knowledge of these phenomena is based on the documentation and analytical perspectives available (Robin and Nelle, 2014; Polkinghorne, 1989; Van Maanen, 2015; Phillippi and Lauderdale, 2018). In practice, each document is treated as fallible evidence about real events and processes, not as a final truth. The review therefore separates what was directly measured or observed, what was only reported or claimed, and what was inferred about causes, and it uses cautious wording wherever the underlying evidence is observational, secondary, or from an interested party.

The analysis of secondary data has a number of methodological benefits to this study that make it especially appropriate to explore the multifaceted development issues in Angola (McGinley et al., 2021; Moser and Korstjens, 2018; Miles et al., 2014; Ravitch and Carl, 2016). It allows synthesising the results of numerous studies with a long time frame, which would give a broader view over time of the environmental and social changes that could not be obtained with a single primary research project (Ravitch and Carl, 2016; Patton, 2002; Moser and Korstjens, 2018). It enables covering a wide range of subjects and geographic regions without the need to conduct extensive fieldwork across the vast territory of Angola, which would be

logistically difficult and resource-intensive (McGinley et al., 2021; Moser and Korstjens, 2018; Miles et al., 2014).

Sources and Selection of Data

The research relies on various types of secondary materials to support a thorough and triangulated understanding of the sustainable development issues in Angola (Miles et al., 2014; Saldana, 2016; Shenton, 2004; McGinley et al., 2021). Peer-reviewed journal articles, books, dissertations, and conference papers that explore the oil sector, environmental situation, socio-economic development, governance structures, and similar issues in Angola and have been published in credible academic sources are also considered academic literature (McGinley et al., 2021; Moser and Korstjens, 2018; Smith, 2018). Government documents include national development plans, environmental regulations, statistics, policy statements, and official Angolan ministries and agencies assessments, and provincial and local government reports (Nwobieze et al., 2018; Omonijo et al., 2019; Patino and Ferreira, 2018).

Sustainability reports, environmental impact assessment, annual reports, and other publications of oil companies working in Angola are corporate publications that include major international corporations like Total, Chevron, ExxonMobil, and BP, as well as the national oil company Sonangol (Bodhanwala and Bodhanwala, 2018; Ossai, 2020; Teck et al., 2019; Oyerami, 2018). Civil society reports include reports by international NGOs and local civil society organisations, publications by environmental organisations, human rights groups, and community-based organisations, and reports of environmental and social effects of oil extraction (Tantua et al., 2018; Singh and Ntuli, 2017; Slevin, 2019; Human Rights Watch, 2018).

The documents of international organisations contain the evaluation of the United Nations agencies, World Bank, and African Development Bank, as well as International Monetary Fund and other multilateral institutions of Angola development progress, environmental situation, and policy issues (Nassar et al., 2019; Surya et al., 2020; Ushie and Udoh, 2016; Mirzoev and Kane, 2017). Inclusion criteria encompassed direct relevance to research questions and objectives, specificity to Angola or other similar African oil-producing settings that offer valuable comparative information, publication within the last 15 years (2009-2024) to ensure currency but provide enough historical context, credibility and reliability of source due to author credentials and institutional affiliation, and publication in either English or Portuguese languages (Patino and Ferreira, 2018; Taherdoost, 2016; Vasileiou et al., 2018). Sources were excluded when they (a) did not deal with oil extraction or its environmental, social, economic or governance effects; (b) were undated, had no identifiable author or issuing organisation, or were news, opinion or blog items that presented no data or documented evidence; (c) were duplicate reports of the same study or dataset, in which case the most complete version was kept; (d) could not be accessed in full; (e) were written in languages other than English or Portuguese; or (f) fell outside 2009–2024, except that earlier documents were used as background on legal or policy context and were not treated as evidence. Documents from government, corporate, civil society and international organisations were taken only from the website or official repository of the issuing body.

Data Collection and Selection

To collect data, structured searches of various databases and repositories were performed to locate the necessary sources with the help of extensive search methods (Miles et al., 2014; Saldana, 2016; Taherdoost, 2016; McGinley et al., 2021). The searched academic databases were Web of Science, Scopus, Google Scholar, JSTOR, Project MUSE, and African Journals Online with keywords such as Angola, oil, petroleum, environmental degradation, sustainable development, SDGs, communities, livelihoods, governance, human ecology, and others in different combinations (McGinley et al., 2021; Moser and Korstjens, 2018; Taherdoost, 2016). Keywords were combined with the Boolean operators AND and OR, with truncation (*) and quotation marks for phrases where the database allowed. A typical combination was Angola AND (oil OR petroleum OR "oil and gas") AND ("environmental degradation" OR pollution OR "gas flaring" OR "oil spill*") AND ("sustainable development" OR SDG* OR livelihood* OR governance OR "human ecology") Searches were carried out between 2009 and 2024. Google Scholar results was used to supplement the other databases, and results were read in order of relevance until no new relevant sources appeared (Gusenbauer

and Haddaway, 2020). Because the searches were not logged step by step, the number of records retrieved at each stage is not reported. Table 1 summarises the sources searched.

Table 1. Sources searched and how they were searched

Source searched	Type of material
Web of Science, Scopus, JSTOR, Project MUSE, African Journals Online	Journal articles, books, chapters, dissertations, conference papers
Google Scholar (supplementary)	Academic and some grey literature
Websites of Angolan ministries and agencies, UN agencies, World Bank, African Development Bank, IMF	Policy documents, statistics, assessments
Company websites (TotalEnergies, Chevron, ExxonMobil, BP, Sonangol) and sustainability reporting databases	Sustainability reports, environmental impact assessments, annual reports
Websites of NGOs, human rights groups and environmental organisations	Civil society reports

Relevant policy documents, statistical reports, and assessments of the Angolan government and international organisations were searched on the websites of Angolan government ministries, UN agencies, World Bank, and other multilateral organisations (Nwobieze et al., 2018; Nassar et al., 2019; Surya et al., 2020). Relevant corporate reports and environmental disclosures were found in corporate websites and sustainability reporting databases.

Data Analysis Procedures and Synthesis

The analysis of data was conducted using thematic synthesis and included several steps of coding, theme formation, and interpretation (Saldana, 2016; Miles et al., 2014; Strauss and Corbin, 1998; Rogers, 2018). It started with the thorough reading of all the gathered documents to become familiar with the content and find initial patterns and themes (Moser and Korstjens, 2018; Rogers, 2018; Van Maanen, 2015). Early coding was a methodical scan of the documents and assigning descriptive codes to text passages that represented a specific idea, discovery, or theme in response to research inquiries (Saldana, 2016; Rogers, 2018; Van Maanen, 2015; Phillippi and Lauderdale, 2018).

Focused coding narrowed and generalised early codes into larger thematic groups using constant comparison of documents and determining connexions between themes (Saldana, 2016; Strauss and Corbin, 1998; Miles et al., 2014; Rogers, 2018). To ensure reflexivity and theoretical sensitivity, analytic memos were recorded to capture interpretations, questions, and new insights during the process (Rogers, 2018; Phillippi and Lauderdale, 2018; Van Maanen, 2015). Final thematic synthesis categorised key themes into logical narrative in relation to research aims and retained focus on contradictions and complexity in the evidence (Miles et al., 2014; Saldana, 2016; Moser and Korstjens, 2018).

Quality Control and Reliability

To support quality and trustworthiness of the secondary data analysis, credibility, transferability, dependability, and confirmability are identified as the standards of qualitative research rigor (Shenton, 2004; Smith, 2018; Vasileiou et al., 2018; McGinley et al., 2021). To achieve credibility, several data sources such as academic research, government reports, corporate reports, and civil society publications were triangulated

to find convergence and divergence in the results (Miles et al., 2014; Saldana, 2016; McGinley et al., 2021; Shenton, 2004).

Credibility was also enhanced through repeated reading of the sources and iterative analysis to make sure that the evidence base is thoroughly familiar (Moser and Korstjens, 2018; Ravitch and Carl, 2016; Smith, 2018). The issue of transferability was discussed by means of thick description of the situation in Angola, clear description of analytical processes, and explicit discussion of ways in which the findings may be relevant with caution, to other resource-dependent African states (Shenton, 2004; Smith, 2018; Vasileiou et al., 2018).

Limitations and Constraints of Methodology

Although the analysis of secondary data has many important benefits in comparative research, one must recognise and deal with several significant limitations (Ravitch and Carl, 2016; Patton, 2002; McGinley et al., 2021; Moser and Korstjens, 2018). The results are limited by the accessibility and quality of available documentation, which might not answer all the research questions in the same depth or might be biassed by the author or institutional viewpoints (Moser and Korstjens, 2018; Smith, 2018; Shenton, 2004). The lack of publicly accessible data regarding certain features of the oil industry in Angola, especially the corporate-level data on environmental performance and comprehensive information on government revenue management, introduce gaps in the knowledge that impact the completeness of the analysis (Nwobie et al., 2018; Ossai, 2020; Tantua et al., 2018).

Analysis of secondary data does not imply the opportunity to observe directly the conditions of the environment and interact with the affected communities, which restricts the contextual comprehension in contrast to primary ethnographic work and may omit significant nuances in the experiences and attitudes of communities (Van Maanen, 2015; Polkinghorne, 1989; Moustakas, 1994; Phillippi and Lauderdale, 2018). The authors of the study overcome these limitations by triangulating various sources, clearly noting gaps in the evidence, and suggesting further primary research to supplement and expand these results (Shenton, 2004; Miles et al., 2014; Saldana, 2016; McGinley et al., 2021).

FINDINGS AND ANALYSIS

Ecological Impacts of Oil Extraction in Angola

The documentary evidence shows that oil-producing activities are associated with serious ecological damage in the petroleum-producing areas of Angola, and these effects have been recorded in in environmental evaluations, scientific literature, governmental reports, and civil society sources (Obida et al., 2018; Sam et al., 2017; Osin et al., 2017; Whalen, 2021). Water pollution is one of the most widely reported environmental consequences, affecting both marine ecosystems in offshore production zones and freshwater systems in coastal and inland regions where communities use these resources as drinking water, fishing grounds, and agricultural lands (Obida et al., 2018; Ukpong and Obok, 2018; Osin et al., 2017; Sam et al., 2017).

Studies report pipeline ruptures, well blowouts, and tanker crashes that have polluted rivers, wetlands, and coastal waters with some spills reported as unreported or poorly cleaned up, which the authors link to weak regulatory controls (Obida et al., 2018; Sam et al., 2017; Whalen, 2021; Ossai, 2020). Research reports that produced water and industrial effluents discharged from oil facilities contain toxic chemicals such as heavy metals, hydrocarbons, and treatment chemicals, which accumulate in aquatic ecosystems and food chains and may affect ecological integrity and human health (Osin et al., 2017; Obida et al., 2018; Sam et al., 2017; Mirzoev and Kane, 2017).

Environmental assessments report declines in fish populations on the coast and in rivers, which are vital to the food security and livelihood of coastal and riverine communities, damage to mangrove ecosystems that support important ecological functions such as coastal protection and nursery habitat, and contamination of traditional water sources (Obida et al., 2018; Ukpong and Obok, 2018; Osin et al., 2017; Uduji et al., 2021).

Taken together, these water pollution problems point to serious disturbance of the hydrological mechanisms that support human populations as well as ecological processes in the oil-producing areas of Angola (Sam et al., 2017; Obida et al., 2018; Mirzoev and Kane, 2017).

Gas flaring, venting, and industrial emissions are another significant type of air pollution that has been reported in research and monitoring data, with potentially serious consequences for communities living near oil facilities (Singh and Ntuli, 2017; Mirzoev and Kane, 2017; Obida et al., 2018; Whalen, 2021). Research indicates that even with legal bans and corporate pledges to minimise flaring, Angola still flares large amounts of associated gas, which releases greenhouse gases, particulate matter, and toxic emissions into the atmosphere (Obida et al., 2018; Sam et al., 2017; Osin et al., 2017). Some environmental tests report high concentrations of air pollutants around oil plants, at times above health-related guidelines set by national and international bodies (Mirzoev and Kane, 2017; Singh and Ntuli, 2017; Whalen, 2021).

Oil infrastructure development has been linked to deforestation and habitat loss, which have fragmented ecosystems and may have reduced biodiversity in petroleum-producing areas, and its effects on terrestrial and marine ecosystems have been documented (Sam et al., 2017; Ukpong and Obok, 2018). The studies report that the development of roads, pipelines, processing plants, and settlements of workers has cleared forests, drained wetlands, and damaged wildlife habitats, and opened up previously remote regions to logging, mining, and agricultural development (Sam et al., 2017; Obida et al., 2018; Ukpong and Obok, 2018). Research indicates declines in wildlife populations and in ecological processes such as pollination, seed dispersal, and nutrient cycling, which are important for ecosystem functioning and stability (Ukpong and Obok, 2018; Sam et al., 2017).

Socio-Economic Effects on Communities and Livelihoods

Documentary sources indicate that oil production has created multifaceted and even conflicting socio-economic consequences on the Angolan populations, and the possible benefits of jobs, infrastructure, and governmental incomes are often outweighed by livelihood disruption, health issues, social strife, and heightened inequality (Uduji et al., 2021; Ukpong and Obok, 2018; Tantua et al., 2018; Ogungbade et al., 2018). The studies record the way in which oil activities have disturbed the usual livelihoods, especially agriculture and fishing that support the majority of the rural population in the petroleum-producing areas, both directly by environmental degradation and indirectly by economic change (Ukpong and Obok, 2018; Uduji et al., 2021; Ushie and Udoh, 2016; Mukosa et al., 2020).

Research indicates that oil pollution has led to environmental degradation that has rendered farming less productive and even impossible, compelling communities to leave agricultural land that families have worked on over generations and find other forms of livelihood, which in most cases are found in urban areas where they lack skills, social networks, and economic opportunities (Ukpong and Obok, 2018; Obida et al., 2018; Sam et al., 2017; Nwobieze et al., 2018). Studies record a catastrophic decrease in fish harvests caused by water contamination, and the food security, livelihoods, and cultural identity of fishing communities have been destroyed (Osin et al., 2017; Uduji et al., 2021; Ukpong and Obok, 2018; Mirzoev and Kane, 2017).

Research explains how development of infrastructure related to oil activities has displaced communities without proper compensation or resettlement assistance, and disrupted established systems of resource management that had supported communities over generations (Tantua et al., 2018; Nwobieze et al., 2018; Ushie and Udoh, 2016; Ogungbade et al., 2018). The disconnection to conventional land and resources is not only a form of economic depravity but also a cultural disruption, which impacts on community identity, social organisation, and intergenerational knowledge transfer (Uduji et al., 2021; Ukpong and Obok, 2018; Singh and Ntuli, 2017).

According to research, health effects recorded in oil-facilitating communities are high levels of respiratory diseases, skin conditions, gastrointestinal illnesses, reproductive problems, and cancer, and these health issues are linked to air and water pollution caused by oil operations. Research indicates that these health effects are particularly harmful to children and pregnant women, with potentially long-term consequences

for human development and community well-being (Mirzoev and Kane, 2017; Ushie and Udoh, 2016; Mukosa et al., 2020; Singh and Ntuli, 2017).

Psychological and social health effects such as stress, anxiety, depression, and social conflict in relation to environmental degradation, livelihood disruption, and inappropriate compensation of losses are also recorded in research, which also affect community cohesion and social capital (Mukosa et al., 2020; Oparinde et al., 2017; Ushie and Udoh, 2016; Tantua et al., 2018). The oil sector has had limited employment benefits on the local communities, and studies have reported that most of the jobs are skill-intensive (technical) and can only be occupied by local people who lack the skills or companies opt to hire external workers or expatriates (Mukosa et al., 2020; Ushie and Udoh, 2016; Nassar et al., 2019; Oparinde et al., 2017).

Progress of Angola toward Sustainable Development Goals

The documentary evidence of the Angola developmental progress towards SDGs shows both positive and negative trends, where petroleum revenues allow investing in infrastructure and social services but extractive operations, at the same time, deter the progress in various areas connected with environmental sustainability, health, food security, and social equity (Nassar et al., 2019; Surya et al., 2020; Ushie and Udoh, 2016; Tamvada, 2020). In SDG 1 (No Poverty), the studies show that even with the high level of oil revenues that provide a large share of the government income, Angola continues to experience high poverty levels, especially in rural communities where oil mining is taking place and where the environment is being degraded at the expense of the traditional livelihood (Ushie and Udoh, 2016; Mukosa et al., 2020; Nwobie et al., 2018; Schultze, 2017).

Research indicates that the poverty alleviation process has been restricted and geographically uneven, with benefits being concentrated in urban centres, specifically, Luanda, and among elite networks related to the oil sector, whereas rural populations have been faced with consistent deprivation amplified by environmental degradation and livelihood dislocation (Mukosa et al., 2020; Ushie and Udoh, 2016; Omonijo et al., 2019; Nwobie et al., 2018). Regarding SDG 2 (Zero Hunger), studies indicate that food insecurity is still prevalent in Angola, and the problem is aggravated by the fact that agricultural livelihoods and environmental degradation in oil-producing states are disrupted (Ukpong and Obok, 2018; Ushie and Udoh, 2016; Mukosa et al., 2020; Surya et al., 2020).

Research records the impact of oil contamination on agricultural output and fishing income, which decreases food security of the previously agricultural and fishing-dependent communities, and oil earnings have not been sufficiently invested in agricultural infrastructure development or food security initiatives (Ukpong and Obok, 2018; Osin et al., 2017; Uduji et al., 2021; Nassar et al., 2019). Regarding SDG 3 (Good Health and Well-Being), documentary evidence indicates that the communities where oil is produced have significant health issues, with high rates of diseases that can be caused by environmental pollution and a lack of access to healthcare services that can help to address such problems (Mirzoev and Kane, 2017; Ushie and Udoh, 2016; Singh and Ntuli, 2017; Mukosa et al., 2020).

It is recorded that oil revenues have facilitated certain health infrastructure investments at the national scale, but they have not sufficiently responded to the health issues generated by extraction operations or to the majority of the populations in oil-producing countries (Mirzoev and Kane, 2017; Ushie and Udoh, 2016; Singh and Ntuli, 2017). In SDG 6 (Clean Water and Sanitation), it is found that the pollution of water by oil activities has grossly undermined the access to clean water in the impacted areas, and that most communities face the lack of safe drinking water and sufficient sanitation facilities (Obida et al., 2018; Osin et al., 2017; Sam et al., 2017; Mirzoev and Kane, 2017).

Research reports on the inability of oil contamination to make traditional water sources safe, communities have to travel long distances to access water or use contaminated water that is dangerous to health (Obida et al., 2018; Ukpong and Obok, 2018; Osin et al., 2017; Sam et al., 2017). In SDG 8 (Decent Work and Economic Growth), documentary data demonstrate that, though the oil sector has been a driver of economic growth at the national level, the same has not been translated into decent work opportunities to the majority

of Angolans, especially in the oil-producing communities (Mukosa et al., 2020; Nassar et al., 2019; Ushie and Udoh, 2016; Oparinde et al., 2017).

Studies report high unemployment rates, especially among the young population, lack of economic diversification other than the petroleum industry, and oil sector jobs being concentrated among the skilled workforce in the outside communities (Mukosa et al., 2020; Oparinde et al., 2017; Nassar et al., 2019; Ushie and Udoh, 2016). In the case of environmental SDGs such as SDG 13 (Climate Action), SDG 14 (Life Below Water), and SDG 15 (Life on Land), research has found that Angola has major issues, as oil mining contributes to greenhouse gas emissions, ocean pollution, deforestation, and biodiversity loss (Obida et al., 2018; Sam et al., 2017; Ukpong and Obok, 2018; Whalen, 2021).

Research records that environmental protection measures have been insufficient to prevent or mitigate ecological destruction of petroleum activity, and enforcement of regulations has been weak, as well as investment in environmental rehabilitation (Sam et al., 2017; Obida et al., 2018; Osin et al., 2017; Nwobieze et al., 2018). This interconnectedness of these challenges implies that environmental failures produce ripple effects on social and economic objectives and create negative feedback loops that deter the overall process of sustainable development (Nassar et al., 2019; Surya et al., 2020; Tamvada, 2020; Bodhanwala and Bodhanwala, 2018).

Governance, Institutional Capacity, and Accountability Gaps

The documentary evidence shows that there are major governance and institutional gaps that justify the fact that the huge oil wealth in Angola has failed to translate into broad-based sustainable development, and its research has found that several interrelated factors allow environmental degradation and social inequality to persist (Nwobieze et al., 2018; Omonijo et al., 2019; Schultze, 2017; Tantua et al., 2018). Literature records poor regulatory frameworks, which are only on paper but lack implementation capacity, and the environmental agencies are underfunded, have limited technical capacity, political influence, and are not independent of oil industry interests (Nwobieze et al., 2018; Tantua et al., 2018; Ossai, 2020; Omonijo et al., 2019).

Studies indicate that environmental laws are not enforced effectively because of poor monitoring systems, ineffective penalties for violations that lack sufficient deterrent effect, inability to investigate and prosecute environmental offences, and corruption allowing companies to evade environmental regulations (Omonijo et al., 2019; Sam et al., 2017; Schultze, 2017). Research records that environmental impact assessment is a shallow activity, usually carried out by consultants commissioned by businesses, without proper independent scrutiny, limited citizen involvement, and consideration of cumulative effects and long-term outcomes (Nwobieze et al., 2018; Tantua et al., 2018; Slevin, 2019; Ossai, 2020).

The lack of transparency and accountability in revenue management and distribution systems is also a feature of the oil industry, as studies have reported that the majority of oil revenues are transferred to central government with little to no share to the affected communities or local governments that incur the environmental and social costs of extraction (Nwobieze et al., 2018; Schultze, 2017; Omonijo et al., 2019). Research indicates rampant corruption and elite seizure of resource gains, with oil riches being vested in the hands of political and economic elites instead of reaching the masses and engaging in sustainable development projects (Tantua et al., 2018; Whalen, 2021).

The degree of community involvement in decision-making regarding oil activities is low and largely inefficient, and the literature has shown that the communities impacted are not often consulted substantially when it comes to the project design, environmental management, or benefit- sharing agreements. Research indicates that in the presence of consultation processes, they are usually token exercises that fail to include community views, allow communities to have a say, and give sufficient information to participate effectively (Slevin, 2019; Tantua et al., 2018; Ogungbade et al., 2018; Uduji et al., 2021).

DISCUSSION

Interpreting Findings Through Human Ecological Framework

The results suggest underlying imbalances in the human-ecological system in Angola, in which intensive oil extraction appears to have destabilised vital ecological processes and relations without producing compensating benefits to communities impacted or investing sufficiently in alternative capital forms that would support development after the petroleum age (Obida et al., 2018; Ukpong and Obok, 2018). In human ecological terms, sustainable development involves ensuring the integrity of coupled human-environment systems, ensuring that resource use does not exceed regenerative capabilities, ensuring that environmental costs are not externalised onto the vulnerable populations, and ensuring that economic activities can and do enhance rather than harm the ecological basis of long-term human well-being (Surya et al., 2020; Tamvada, 2020).

The current path of development in Angola appears to depart from these core principles, as the evidence reviewed points to damage to ecosystems that sustain key services such as clean water, fertile soils, fisheries, climate regulation, and biodiversity conservation, disruption of traditional livelihoods and knowledge systems that had been adapted to the local ecological context over generations, concentration of economic gains and benefits among political and economic elites and the spread of environmental costs across vulnerable populations, and long-term ecological burdens that may limit development choices and adaptive capacity in future generations (Obida et al., 2018).

The recorded trends of ecological decline and societal disturbance are indicative of what the human ecological theory refers to as maladaptive developmental paths that are systematic in their erosion of the very pillars of long-term sustainability and resilience (Surya et al., 2020; Ukpong and Obok, 2018; Obida et al., 2018; Tamvada, 2020). Angola is literally depleting its natural capital without ensuring sufficient investment in human, social, or alternative economic capital that would support development after the oil period by focusing on short-term extraction of petroleum resources rather than maintaining a sustainable ecological environment and community welfare (Schultze, 2017; Mukosa et al., 2020; Ushie and Udoh, 2016; Nassar et al., 2019).

The Angolan Human Ecological Resource Curse

The case of Angola can be viewed as a classic example of the effects of resource-curse dynamics, where petroleum wealth has instead of supporting sustainable development weakened it, but the human ecological approach demonstrates other aspects of this process that are frequently not considered in traditional economic analysis (Schultze, 2017; Whalen, 2021; Nwobieze et al., 2018; Surya et al., 2020).

The processes by which the resource curse has been functioning in Angola have been well reflected in the reported results, such as economic reliance on unstable oil incomes that cause boom-bust cycles and lack of diversification into more sustainable sectors, governance failures such as poor institutions, corruption, and lack of accountability that facilitate elite capture and environmental degradation, environmental degradation that destroys traditional livelihoods and creates long-term liabilities, and social disruption, such as conflict, inequality, and erosion of community cohesion (Schultze, 2017; Tantua et al., 2018)

Angola has some of the worst environmental aspects of the resource curse, which is a core process by which resource abundance harms development by destroying the environmental basis of traditional livelihoods, creating health issues that diminish human capital and productivity, social conflict over environmental justice and resource access, and long-term remediation costs that will burden future generations (Obida et al., 2018; Ukpong and Obok, 2018; Mirzoev and Kane, 2017; Sam et al., 2017) Such environmental effects are not just the side effects of oil extraction but a fundamental mechanism by which the resource curse is implemented, with feedback loops that reinforce underdevelopment despite the existence of large resource wealth (Surya et al., 2020; Obida et al., 2018; Tamvada, 2020).

Governance Failures and Environmental Justice Implications

The identified governance and accountability loopholes are serious obstacles to attaining sustainable development in the Angola oil industry, as they allow breaches of environmental justice principles and the continuation of patterns that benefit elites at the cost of marginalised communities (Nwobieze et al., 2018; Omonijo et al., 2019). Lax regulatory standards, a lack of transparency, corruption, and low involvement of the community, may allow companies to shift environmental costs onto others while keeping the economic benefits, producing environmental injustices in the three senses described by Schlosberg (2007): unequal distribution of burdens, lack of recognition, and exclusion from decisions (Nwobieze et al., 2018; Tantua et al., 2018).

Stakeholder theory helps to show who holds power in this system, as the documents reviewed describe oil companies and the state as holding high power and benefiting most, while affected communities have high urgency and legitimacy but little power or influence (Mitchell et al., 1997). Consultation is reported to sit on the lower rungs of Arnstein's (1969) ladder of participation, closer to informing or placating than to real partnership. This suggests that sustainable development in the sector depends less on new rules than on shifting power and accountability, for example through independent environmental monitoring, genuine community participation, and transparent revenue sharing.

SDG Achievement and Post-2015 Development Implications

The results demonstrate that there are inherent conflicts between the Angolan model of oil-based development and the realisation of various SDGs, especially those regarding environmental sustainability, health, food security, water access, and reduction of inequality (Nassar et al., 2019; Surya et al., 2020; Ushie and Udoh, 2016; Tamvada, 2020). Although petroleum revenues offer the means of financial resources that, in theory, should allow SDG progress, the existing trends of extraction and revenue use are actively worsening progress in various areas through environmental degradation, social disruption, and inequality perpetuation (Mukosa et al., 2020; Ukpong and Obok, 2018; Mirzoev and Kane, 2017; Bodhanwala and Bodhanwala, 2018).

The interconnectedness of SDGs implies that the failures in environmental areas provide a ripple effect on social and economic objectives, which form negative feedback loops that deter the overall progress of development and cannot ensure sustainable development without addressing the underlying contradictions in the existing development paradigm (Nassar et al., 2019; Surya et al., 2020). The idea of leaving no one behind, which is present in the post-2015 development agenda, is specifically applicable to the situation in Angola, where the extraction of oil is a systematic process that isolates and damages the most vulnerable groups, and focuses the benefits among the elites (Nassar et al., 2019; Ushie and Udoh, 2016; Singh and Ntuli, 2017).

CONCLUSION AND RECOMMENDATIONS

Summary of Key Findings and Implications

The narrative review of secondary sources in this study demonstrates that the oil-based development path in Angola has led to the extreme ecological degradation, the disruption of community livelihoods, the intensification of socio-economic inequalities, and a systematic impediment of the advancement towards various Sustainable Development Goals (Obida et al., 2018; Uduji et al., 2021; Nassar et al., 2019; Surya et al., 2020; Tamvada, 2020). Human ecologically, the existing trends in petroleum and the use of revenues are essentially unsustainable as they cause systematic destruction of the ecological and social basis of long-term development, establishing vicious cycles of maladaptation that sustain underdevelopment despite the great abundance of resources (Surya et al., 2020; Ukpong and Obok, 2018; Tamvada, 2020; Obida et al., 2018).

The study illustrates that Angola is a classic example of the resource curse phenomenon, in which petroleum wealth has not only failed to support sustainable development but has also undermined it through interrelated events such as environmental degradation leading to the destruction of traditional livelihoods,

governance failures that allow elite capture and corruption, economic dependence that crowds out diversification, and social disruption that destroys community cohesion and adaptive capacity (Schultze, 2017; Whalen, 2021; Nwobieze et al., 2018; Omonijo et al). Corporations and elites can seize economic gains and externalise environmental costs onto the vulnerable populations due to weak governance institutions, inadequate regulatory capacity, corruption, and poor community participation, which result in deep-seated environmental injustice that breach the core concepts of equity and human rights (Nwobieze et al., 2018; Tantua et al., 2018; Singh and Ntuli, 2017; Slevin, 2019; Schwartz and Cragg, 2017).

RECOMMENDATIONS

Environmental Protection and Ecological Restoration.

To ensure the sustainable transition in Angola, it is necessary to significantly improve environmental governance by introducing reforms that will improve regulatory autonomy, enforcement capacity, and corporate responsibility (Obida et al., 2018; Nwobieze et al., 2018; Tamvada, 2020). This includes adequately staffed and technically competent environmental agencies with the capacity to monitor compliance, investigate violations and impose penalties that serve as effective deterrents (Omonijo et al., 2019; Schwartz and Cragg, 2017). Enhanced oversight and credibility would be achieved through transparent environmental impact assessments, real-time access to environmental information by the population, and specialised environmental courts to resolve oil-related conflicts (Slevin, 2019; Singh and Ntuli, 2017).

In addition to regulation, massive ecological restoration is necessary. The oil-sector levies, state revenues, and international collaborations should finance remediation of polluted land and water, mangrove and wetland restoration, and conservation of biodiversity in oil-producing areas (Osin et al., 2017; Sam et al., 2017; Uduji et al., 2021). Restoration needs to be supported by long-term monitoring mechanisms to avoid the recurrence of degradation.

Economic Diversification and Human Capital Development.

Long-term sustainability revolves around the reduction of structural reliance on oil revenues. The focus of diversification plans must be sustainable agriculture, renewable energy, value-added manufacturing, and eco-tourism, whereby petroleum revenues are used to establish foundations of a post-oil economy (Mukosa et al., 2020; Nassar et al., 2019). Increasing domestic value retention and creating jobs can be improved through the development of local processing industries and entrepreneurship support (Teck et al., 2019).

The human capital investment, especially technical and vocational education, is essential to equip the labour force with diversified industries and lower the rate of unemployment among young people (Ushie and Udoh, 2016; Nassar et al., 2019). The creation of sovereign wealth funds that would invest oil revenues to the future generation can also stabilise the public finances and enhance long-term development planning (Bodhanwala and Bodhanwala, 2018; Schultze, 2017).

Institutional Strengthening and Governance Reform.

Enhancement of governance systems to increase transparency, minimise corruption, and improve institutional credibility is also a key factor in sustainable transition (Nwobieze et al., 2018; Tamvada, 2020). Public accountability can be strengthened by compulsory reporting of oil contracts, revenues, and environmental performance, as well as active involvement in transparency programmes (Ossai, 2020; Schwartz and Cragg, 2017).

Anti-corruption reforms, such as asset declaration, conflict-of-interest, and whistleblower protection, are necessary in order to stop the abuse of resource revenues (Schultze, 2017). Responsiveness to environmental and social challenges can also be enhanced by decentralisation measures that empower local governments in the oil-producing regions (Surya et al., 2020).

Concluding Remarks on the Development Path of Angola

Angola is at a crossroads where the further development based on oil reliance may lead to irreversible ecological harm and entrench socio-economic inequalities that will limit development possibilities across generations, whereas the shift to sustainable development is possible but needs a fundamental change in the current strategies instead of gradual improvements (Surya et al., 2020; Obida et al., 2018; Schultze, 2017; Tamvada, 2020). From a human ecological perspective, technical solutions and corporate social responsibility initiatives are not sufficient to attain real sustainable development, but rather a systemic change that puts ecological integrity, community well-being, environmental justice, and participatory governance in the centre instead of short-term extraction and elite accumulation (Surya et al., 2020; Tamvada, 2020; Schwartz and Cragg, 2017; Uduji et al., 2021).

The post-SDG environment offers not only a framework but also a sense of urgency to this change, as 2030 targets establish accountability mechanisms and integrated goals acknowledge that environmental sustainability, social equity, and economic development are inseparable and that they should be pursued together (Nassar et al., 2019; Surya et al., 2020; Tamvada, 2020; Bodhanwala and Bodhanwala, 2018). The ability of Angola to transition to an inclusive ecological model that prioritises human dignity, environmental health, and intergenerational justice equally to petroleum revenues will be the key to the country achieving SDGs and developing a sustainable future (Surya et al., 2020; Schwartz and Cragg, 2017; Uduji et al., 2021; Singh and Ntuli, 2017).

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