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Assessing the Effectiveness of UNDP's Climate Action Initiatives at the Local Level: A Thematic Analysis of Implementation Strategies and Outcomes

Tasneem Asad^{1*}, Moiz Ahmed², Simrah Malik³, Fatima Ali Al Zarouni⁴

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ABSTRACT

Sustainable development has been considered as the global phenomena in every field of life. The United Nations developed a program to attain sustainability. This programme is a United Nations agency tasked help countries to eliminate poverty and achieve sustainable economic growth and human development. The UNDP emphasizes in promoting local capacity towards long-term self-sufficiency and prosperity. Therefore, this research aimed to analyse the effectiveness of UNDP climate action initiatives and outcome on local level. The study employs a research design involving the selection of previously published case studies from different regions worldwide, which highlights various climate-related challenges and the effectiveness of UNDP initiatives in addressing them. The data was collected from different sources, such as the World Bank's official website and UNDP's official website, and previously published studies were also utilized. Thematic analysis approach was applied to assess the implementation strategies and outcomes across different regions. The findings reveal similarities and differences in the implementation of UNDP climate action plans and the challenges countries face in executing these initiatives. Through thematic analysis and interpretation of results, the study provides valuable information for developing effective policies to address climate-related challenges. Additionally, the research also suggests directions for future studies. The thematic analysis showcases specific case studies, including renewable energy deployment in Pacific Island Nations, ecosystem restoration in the Sahel Region, climate-smart agriculture in Southeast Asia, and climate-resilient urban planning in Latin America. These cases illustrate UNDP's commitment to promoting climate action and sustainable development through innovative projects and partnerships. This research contributes to understanding the effectiveness of UNDP's climate action initiatives at the local level and informs future policy and programmatic efforts in this area.

INTRODUCTION

Climate change impact almost all aspects of sustainable development which giving rise to a pressing need to understand what initiatives or actions has great significance in promoting sustainable development (Mensah, 2019). According to Lim *et al.*, (2018), climate change contributes in sustainable development by reinforcing all other SDGs (Lim *et al.*, 2018). It enables and reinforce building prosperous, equal and peaceful societies, provides a foundation for building strong, functioning and capable institutions and has synergies with targets concerning poverty reduction, welfare and jobs (Fuso Nerini *et al.*, 2019; Roy *et al.*, 2018). The north-to-south and the south-to-south mechanisms embedded in climate action were consistent with commitments to both 'contract and converge' emissions and 'level the playing field' across countries, which help to decrease inequalities among and within countries (Fuso Nerini *et al.*, 2019). Climate action also played a crucial role in making efforts to better plan and manage resources in an integrated way (Karimi *et al.*, 2018). Many of the targets on food, water and energy systems were reinforced or indivisible with climate action. Climate change has also improved the sustainable consumption and production

by reducing emissions related to waste and production (Bengtsson *et al.*, 2018). It also indivisible from the achievement of several environmental and health targets. According to Carlson *et al.*, (2021), there were strong synergies between climate action and the management and conservation of other environmental resources, such as marine and terrestrial ecosystems (Carlson *et al.*, 2021). Another climate action was taken by the UNDP to improve global health outcomes and to reduce local pollution in households and cities which harm billions of people every day³¹ (Fuso Nerini *et al.*, 2019). Sustainable cities and human settlements, as home to the majority of the world's population, also played a key role in both climate mitigation and adaptation efforts (Abubakar & Dano, 2020).

Climate action also adversely affect communities relying on the fossil fuel industries, if a 'just transition' plan was absent because it provides a framework document for measuring, tracking, and reducing greenhouse gas emissions and adopting climate adaptation measures. These documents were used as a framework which provide guidance to the administrative bodies in addressing the impact of climate change in their communities (Gambhir *et al.*, 2018). On the other hand poor climate policies

¹ Institute of Business Administration, University of Sindh, Jamshoro, Pakistan

² Department of Biotechnology, Shaheed Zulfiqar Ali Bhutto Institute of Science and Technology (SZABIST), Karachi, Sindh, Pakistan

³ Department of Food Science and Technology, University of Karachi, KU Circular Rd, Karachi, Karachi City, Sindh, Pakistan

⁴ King Abdullah University of Science And Technology 23955, Saudi Arabia

* Corresponding author's e-mail: tasneemasad12345@outlook.com

cause social and economic regression which creates exacerbating inequality and poverty (Markkanen & Anger-Kraavi, 2019). For instance, certain climate policies has a great impact on land and food prices which increased the risk of leaving behind small agricultural holders (Fuso Nerini *et al.*, 2019).

In energy poor areas climate change underpin the adoption of efficient and renewable energy which affects the delivery of affordable, reliable and modern energy services for all by 2030—such as fossil fuel energy which was cheaper and affordable in poor areas (Gielen *et al.*, 2019). Therefore, UNDP navigates the complex interactions between climate change and sustainable development which requires to generate scientific evidence governance and politics to operate across sectors (Monkelbaan, 2019). Therefore, assessing the effectiveness of (UNDPs) climate action initiatives at the local level was crucial to evaluate the impact, efficiency and sustainability of these initiatives, which significantly contribute in informed decision-making and the enhancement of future climate-related interventions. According to Weiskopf *et al.* (2020), climate change effects in multiple ways on ecosystems, economies, and communities (Weiskopf *et al.*, 2020).

According to Dedicatoria & Diomampo (2019), UNDP's climate action plan effectiveness has been evaluated by addressing the particular vulnerabilities on the local population. It highlights the accomplishments, challenges, and weaknesses of mitigation and adaptation strategies that were unique to local contexts and also assess the contribution of local communities to the accomplishment of climate action projects. (Dedicatoria & Diomampo, 2019).

Thus, the degree of community engagement, participation, and empowerment helps to assess the efficacy of UNDP's local efforts. UNDP climate action plan also assess the allocation of financial, human, and technological resources and the desired results yield from these resources. This assessment of resources helps to understand the efficacy of UNDP's climate change projects (Lam *et al.*, 2021). Additionally, the review of inefficiencies or areas of efficiency aids in the optimisation of resource allocation for maximum impact. The assessment also provide help to UNDP climate action plan in compliance with local climate projects and national climate policies. Comprehending the integration of these activities into wider policy structures promises unity and cooperation among global, domestic, and regional accomplishments (Fatemi *et al.*, 2020).

According to the Paris agreement, the assessment of local UNDP's climate action initiatives played a crucial role in tracking the progress of global climate targets (Gomez-Echeverri, 2018). This local assessment contributes to a full assessment of the entire global response to climate change by providing relevant information on adaptation measures, emission reductions, and grassroots resilience-building projects. A comprehensive assessment of UNDP's climate programmes presents chances for organisational learning and adjustment. It helps the

organisations to improve the design and implementation of future initiatives and refine its strategies by identifying problems, best practices, and lessons gained from the local context (Morrow *et al.*, 2022).

METHODOLOGY

In this research a thematic analysis approach was used to examine and understand the effectiveness of UNDP climate action initiatives and its outcome on local level. A number of case studies and UNDP climate action reports which was published and available on their website was used to collect the data and develop the themes to understand the effectiveness of UNDP climate action initiatives. Thematic analysis approach was used to analyse the qualitative data such as text, interview transcripts etc. It helps to identify the themes to understand the effectiveness of UNDP climate action initiatives and outcome from different regional perspective. The findings highlight the similarities and differences in the implementation of UNDP climate action plan from different regions of the world and also the challenges faced by these countries in implementing these initiatives. Through thematic analysis and interpretation of the results, this study aims to contribute valuable information to develop effective policies to handle difficult situation related to the climate. Moreover, this study also suggests directions for future research.

Case Studies

In this component, we dwell on UNDP-led climate action and sustainable development initiatives, depicting the different cutting-edge approaches which yielded positive outcomes. With these examples, they cover work in areas like renewable energy deployment, ecosystem restoration, climate-smart urban planning, and community-based adaptation. This section through scenarios of UNDP's action shows the real-life evidence of integrated climate resilience and sustainable development.

Case-1 Renewable Energy Deployment in Pacific Island Nations

In the Pacific region, small Island developing states (SIDS) were especially prone to the impacts of climate change, namely, sea-level rise, extreme weather events, and ocean acidification. UNDP has joined hands with governments, regional entities, and international partners to help with deployment of renewable energy technologies, including solar, wind and hydropower, to address the problem of overreliance on fossil fuels and improve energy security (Martyr-Koller *et al.*, 2021). In the Solomon Islands, UNDP's support for off-grid solar energy systems which supplied electricity to communities with poor access to power, simultaneously cutting greenhouse gas emissions and boosting economic development.(Nordman *et al.*, 2019).

Case-2 Ecosystem Restoration in the Sahel Region

In the Sahel of Africa, the cyclical nature of droughts, land degradation, and desertification, as well as their

contribution to food insecurity and poverty, have impinged on the sustainable development that the region has been struggling to achieve. together with the Global Environment Facility (GEF) and with support from other partners, UNDP has applied the ecosystem restoration projects which were directed towards improving the land management practices, restoring degraded landscapes and enhancing climate resilience. (Adamou *et al.*, 2021). For instance, the Great Green Wall initiative supports reforestation efforts across the Sahel region, creating jobs, protecting biodiversity, and mitigating the impacts of climate change on local communities (Turner *et al.*, 2021).

Case-3 Climate-Smart Agriculture in Southeast Asia

Agriculture in the Southeast Asia was a core sector that has traditionally exposed to climate change-associated variability and extreme weather conditions. UNDP has been collaborating with governments, farmers' organizations, and research institutions to support the diffusion of climate-smart agricultural approaches that were improving resilience, productivity, and sustainability. (Schneider & Asch, 2020). In a nutshell, in Vietnam, UNDP'S assistance to smallholder farmers to use climate-resilient crop varieties and agroforestry systems has helped these farmers to adapt to climate change while decreasing greenhouse gas emission from the agricultural

sector as a result of their practise (Gray & Jones, 2022).

Case-4 Climate-Resilient Urban Planning in Latin America

The fast-growing urbanization in Latin America has created higher economic vulnerability and an increased risk of floods, heatwaves, and landslides. UNDP has put joint efforts with municipalities, urban planners, and community groups to address climate change in urban planning and infrastructures development (Gray & Jones, 2022). As an example, in Colombia, UNDP's support for climate-resilient urban design and green infrastructure projects has helped the cities of Bogota and Cartagena to be more resilient to climate hazards and to reduce the occurrence of disasters which result in people's lives getting better (Hardoy *et al.*, 2019).

These case studies reveal UNDP's dedication to advancing the climate agenda and sustainable development by supporting pioneering projects that address emerging challenges of various communities across the world. Through using a local understanding, technological solutions and global cooperation, the UNDP helps building resilience, reducing emissions and promoting the progress in a more sustainable and equitable future.

Thematic Analysis

Table 1: Thematic Analysis

Initiatives	Outcome
Nationally Determined Contributions (NDCs) Support:	The UNDP initiative supporting Nationally Determined Contributions (NDCs) aims to strengthen countries' capacities in addressing climate change while advancing sustainable development. Through this initiative, UNDP facilitates capacity building by providing technical assistance, training, and knowledge sharing to enhance countries' abilities to develop, implement, and update their NDCs (Atteridge <i>et al.</i>, 2021). Moreover, UNDP strengthens policy frameworks by assisting countries in aligning NDCs with national development priorities, integrating climate considerations into sectoral policies, and fostering coordination among relevant stakeholders (Fransen <i>et al.</i>, 2019). Additionally, UNDP works to increase ambition by supporting countries in reviewing and enhancing the ambition of their NDCs over time, mobilizing financial and technical resources for implementation, and establishing robust monitoring and reporting mechanisms to track progress and ensure transparency (Hofman & van der Gaast, 2019). Furthermore, this initiative contributes to empowering countries to take effective climate actions tailored to their specific contexts by advancing global efforts to address climate change and achieve sustainable development goals (Fuso Nerini <i>et al.</i>, 2019).
Renewable Energy and Energy Efficiency:	The UNDP initiative on Renewable Energy and Energy Efficiency aimed to catalyse sustainable energy transitions in countries worldwide (Kabeyi & Olanrewaju, 2022). This initiative fosters multiple positive outcomes such as promotion of renewable energy deployment and facilitating the transition towards cleaner energy sources. By providing technical assistance, capacity building, and policy support, UNDP help countries to develop and implement renewable energy projects, diversifying their energy mix and reducing reliance on fossil fuels (Koutoudjian <i>et al.</i>, 2021). Moreover, the initiative fosters energy efficiency improvements across various sectors, including industry, transportation, and buildings which leads to reduce energy consumption, lower greenhouse gas emissions, and cost savings (Ribas <i>et al.</i>, 2019). UNDP climate action plan promote renewable energy and energy efficiency measures, which contributes to enhance energy access, resilience, and sustainability, while supporting countries in achieving their climate and sustainable development goals (Koutoudjian <i>et al.</i>, 2021). Additionally, these efforts create opportunities for economic growth, job creation, and innovation in the clean energy sector which foster socio-economic development and inclusive prosperity.

Climate Resilience and Adaptation:	The purpose of this initiative was to enhance the resilience of communities and ecosystems against the climate change impacts, which results in several significant outcomes such as, capacity building, technical assistance, and knowledge sharing, strengthens the adaptive capacity of vulnerable communities, enabling them to anticipate, cope with, and recover from climate-related shocks and stresses (Kulenthiran & Stanley, 2018). This leads to reduced vulnerability to climate risks such as extreme weather events, sea-level rise, and changes in precipitation patterns. Moreover, this initiative mainstreams the climate resilience considerations into development planning and policy-making processes helps to integrate adaptation measures across sectors such as agriculture, water resources management, infrastructure, and health (Tanner <i>et al.</i> , 2019). Additionally, this initiative also promotes climate-resilient livelihoods and infrastructure which contributes to poverty reduction, sustainable development, and the achievement of the Sustainable Development Goals (SDGs) (Kiriveldeniya <i>et al.</i> , 2024).
Climate Finance and Investment:	UNDP provide support to different countries to access and effectively utilize climate finance to address climate change challenges. They facilitate the countries regarding the investments in renewable energy, climate-resilient infrastructure, sustainable agriculture, and other initiatives that aimed to reduce greenhouse gas emissions and building resilience to climate impacts (Michaelowa <i>et al.</i> , 2021).
Technology Transfer and Innovation:	The UNDP climate action plan facilitate the transfer of environmentally sound technologies to developing countries which help them to mitigate and adapt to climate change (Tan <i>et al.</i> , 2021). It involves innovative solutions, support capacity building, foster partnerships, and facilitate knowledge sharing among countries and stakeholders (Brouwer <i>et al.</i> , 2019).

Challenges

The United Nations Development Programme (UNDP) meets several challenges in implementing their climate action program locally. The specific context, region, and type of initiative, they face different challenges. Aggestam *et al.* in 2020 pointed out that communities were based on different location, culture and socioeconomic status. Consequently, UNDP climate action plan experienced the problem that influenced its implementation because the cultural, regional and socioeconomic factors shaped different realities (Lam *et al.*, 2021). The complexity of UNDP implementation given the fact that UNDP has to consider the uniqueness of each locality it was not just difficult; it was a real challenge to do it right. As well as the scarcity of financial, human and technological resources and managing 170 countries makes the challenge of the successful implementation of the climate action plan on local scale (Bustamante *et al.*, 2019). In this respect, sufficient money was the determinant of good climate action programs that need to be properly executed and sustained. Establishing local functioning capacity was necessary for the implementation and sustainability of climate action initiatives. This was the case of not just transferring technical skills but also supporting institutions, governance structures, and local leadership too. Yet, capacity-building was a challenge that faces several hindrances including resistance to change, lack of necessary personnel and no supporting institutions. Basra (2019) identified how UNDP's initiatives effectiveness was influenced by the political and local governance structure, which results in political instability, corruption, or local officials not being committed, these are the barriers that can prevent the execution of climate action plans (Basra, 2019). Therefore, building strong partnerships with local

governments played a critical role in long-term successful implementation of climate action plan. The monitoring and evaluation of climate action initiatives at the local level require robust systems to track progress, measure impact, and identify areas for improvement (Averchenkova *et al.*, 2019). The effectiveness of UNDP's initiatives also depends on the political and local governance structure such as the political instability, corruption, or lack of commitment from local authorities impede the effective implementation of climate action plans (Basra, 2019). Reinforcing local community resilience was a key initiative in responding to the effects of climate change. Although improving resilience through interventions was undoubtedly important, the implementation of such measures face challenges arising from the resistance in the local community, inadequate expertise or knowledge of climate risks. It was also very difficult to ensure the successful implementation of the plan through effective collaboration among different participants which include government agencies, non-governmental organizations, and local communities. The absence of cooperation also results in duplicate work, misuse of resources, and a dysfunctional climate action. External factors that can include natural disasters, political conflicts, public health crises amongst others, impede the implementation of climate action initiatives as well. These unforeseen events shift the attention, financial resources, and effort away from the priorities related to climate (Mabuza & Mabuza, 2020).

RECOMMENDATIONS

- In order to guarantee multiple perspectives and produce more inclusive and successful climate action plans, UNDP climate action must promote wider involvement with a

range of stakeholders, including governments, NGOs, businesses, and local communities. (Saerbeck *et al.*, 2020).

- In order to improve developing nations' ability to execute climate mitigation and adaptation measures, the UNDP climate action plan has to give priority to capacity building initiatives. By offering instruction in project management, policy creation, and technology transfer (Khan *et al.*, 2021).

- In order to raise money for climate projects, the UNDP climate action plan must investigate and support cutting-edge financing options like green bonds, climate funds, and public-private partnerships. This entails utilising already-existing financial instruments or developing new sources of funding (Tan *et al.*, 2021).

- By offering technical support, encouraging collaborations between technology providers and beneficiaries, and tackling obstacles like intellectual property rights and capacity limitations, the UNDP climate action plan must promote the transfer of climate-resilient innovations (Sajid *et al.*, 2024).

- The UNDP's climate action plan must recognise the significance of the local context and promote the creation of customised climate solutions that cater to the distinct requirements and preferences of communities. This might include encouraging indigenous knowledge and customs and lending support to community-based adaptation initiatives (Mfitumukiza *et al.*, 2020).

- Establishing comprehensive monitoring and evaluation systems is crucial for tracking the advancement and outcomes of UNDP climate action efforts. Establishing precise measurements and indications, carrying out frequent evaluations, and incorporating lessons discovered into upcoming planning and execution (Lam *et al.*, 2021).

LIMITATIONS

The local level review of the efficiency of UNDP activities in respect of climate action have faced some intrinsic limits. An obstacle arises from the fact that each local context was different, which makes it difficult to create a single assessment standard which applicable for all countries of the world. The application of climate initiatives depends on the context, and there are also different socio-economic, cultural, and environmental factors across various localities that make the generalization of data difficult.

The other limitation of this study was availability of accurate and detailed data at community level, because some areas have inadequate monitoring and evaluation mechanism. The dynamic in nature of climate change enhance uncertainty, thereby making it difficult for only UNDP interventions to be linked to explicit outcome. Additionally, the assessment considers the temporal nature of the climate interventions and thereby captures the long-term implications of the climate initiatives. Additionally, the contribution of external factors like alteration in national regulations and global economic conditions in the effectiveness of UNDP's outcomes makes the evaluation approach more complicated.

Recognizing these limitations was crucial to framing the interpretation of the study findings that were able to guide the improvement of future climate action strategies significantly.

CONCLUSION

This study played a vital role in analysing the effectiveness of UNDP's climate action initiatives to attain sustainable development goals and also highlight the multifaceted challenges posed by climate change. This study analyses different case studies from diverse regions using a thematic analysis approach. It is made clear that UNDP's efforts have had a good impact on the deployment of renewable energy, ecological restoration, climate-smart agriculture, and climate-resilient urban design through a thematic analysis of case studies from various locations. These programs support inclusive prosperity and socioeconomic growth in addition to reducing greenhouse gas emissions and building resilience. Meanwhile UNDP's climate action initiatives, needed to overcome a number of challenges in order to more effectively implement these initiatives. These challenges include the need for locally tailored approaches, a lack of resources, the need to build capacity, problems with politics and governance, the need for stakeholder coordination, and outside disruptions. Despite the various limitations associated with assessing the effectiveness of UNDP's initiatives at the local level, addressing these challenges was also essential for refining future climate action strategies and ensuring their alignment with global climate goals.

REFERENCES

- Abhilash, P. C. (2021). Restoring the unrestored: strategies for restoring global land during the UN decade on ecosystem restoration (UN-DER). *Land*, 10(2), 201.
- Abubakar, I. R., & Dano, U. L. (2020). Sustainable urban planning strategies for mitigating climate change in Saudi Arabia. *Environment, Development and Sustainability*, 22(6), 5129-5152.
- Adamou, R., Ibrahim, B., Bonkaney, A. L., Seyni, A. A., & Idrissa, M. (2021). Niger-Land, climate, energy, agriculture and development: A study in the Sudano-Sahel Initiative for Regional Development, Jobs, and Food Security.
- Aggestam, F., Konczal, A., Sotirov, M., Wallin, I., Paillet, Y., Spinelli, R., Lindner, M., Derks, J., Hanewinkel, M., & Winkel, G. (2020). Can nature conservation and wood production be reconciled in managed forests? A review of driving factors for integrated forest management in Europe. *Journal of Environmental management*, 268, 110670.
- Atteridge, A., Verkuil, C., & Dzebo, A. (2021). Nationally determined contributions (NDCs) as instruments for promoting national development agendas? An analysis of small island developing states (SIDS). In *Making Climate Action More Effective* (pp. 81-94). Routledge.
- Averchenkova, A., Gannon, K. E., & Curran, P. (2019).

- Governance of climate change policy: A case study of South Africa. Grantham Research Institute on Climate Change and the Environment Policy Report, 1-39.
- Basra, A. (2019). The Effects Of United Nations Development Programme (UNDP) Leadership Initiatives On Political Stability In Somalia University of Nairobi].
- Bengtsson, M., Alfredsson, E., Cohen, M., Lorek, S., & Schroeder, P. (2018). Transforming systems of consumption and production for achieving the sustainable development goals: Moving beyond efficiency. *Sustainability science*, 13, 1533-1547.
- Brouwer, H., Woodhill, J., Hemmati, M., Verhoosel, K., & van Vugt, S. (2019). The MSP guide: How to design and facilitate multi-stakeholder partnerships. Practical Action Publishing.
- Bustamante, M. M., Silva, J. S., Scariot, A., Sampaio, A. B., Mascia, D. L., Garcia, E., Sano, E., Fernandes, G. W., Durigan, G., & Roitman, I. (2019). Ecological restoration as a strategy for mitigating and adapting to climate change: lessons and challenges from Brazil. *Mitigation and Adaptation Strategies for Global Change*, 24, 1249-1270.
- Carlson, R. R., Evans, L. J., Foo, S. A., Grady, B. W., Li, J., Seeley, M., Xu, Y., & Asner, G. P. (2021). Synergistic benefits of conserving land-sea ecosystems. *Global Ecology and Conservation*, 28, e01684.
- Dedicataria, R. M. M., & Diomampo, C. B. (2019). Status of climate change adaptation in Southeast Asia region. *Status of climate change adaptation in Asia and the Pacific*, 153-182.
- Fatemi, M. N., Okyere, S. A., Diko, S. K., & Kita, M. (2020). Multi-level climate governance in Bangladesh via climate change mainstreaming: lessons for local climate action in Dhaka city. *Urban Science*, 4(2), 24.
- Fransen, T., Sato, I., Levin, K., Waskow, D., Rich, D., Ndoko, S., & Teng, J. (2019). Enhancing NDCs: A guide to strengthening national climate plans.
- Fuso Nerini, F., Sovacool, B., Hughes, N., Cozzi, L., Cosgrave, E., Howells, M., Tavoni, M., Tomei, J., Zerriffi, H., & Milligan, B. (2019). Connecting climate action with other Sustainable Development Goals. *Nature Sustainability*, 2(8), 674-680.
- Gambhir, A., Green, F., & Pearson, P. J. (2018). Towards a just and equitable low-carbon energy transition. *Grantham Institute Briefing Paper*, 26.
- Gielen, D., Boshell, F., Saygin, D., Bazilian, M. D., Wagner, N., & Gorini, R. (2019). The role of renewable energy in the global energy transformation. *Energy strategy reviews*, 24, 38-50.
- Gomez-Echeverri, L. (2018). Climate and development: enhancing impact through stronger linkages in the implementation of the Paris Agreement and the Sustainable Development Goals (SDGs). *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 376(2119), 20160444.
- Gray, E., & Jones, D. (2022). Innovation, agricultural productivity and sustainability in Viet Nam.
- Hardoy, J., Gencer, E., & Winograd, M. (2019). Participatory planning for climate resilient and inclusive urban development in Dosquebradas, Santa Ana and Santa Tomé. *Environment and Urbanization*, 31(1), 33-52.
- Hofman, E., & van der Gaast, W. (2019). Enhancing ambition levels in nationally determined contributions—Learning from Technology Needs Assessments. *Wiley Interdisciplinary Reviews: Energy and Environment*, 8(1), e311.
- Kabeyi, M. J. B., & Olanrewaju, O. A. (2022). Sustainable energy transition for renewable and low carbon grid electricity generation and supply. *Frontiers in Energy research*, 9, 1032.
- Karimi, V., Karami, E., & Keshavarz, M. (2018). Climate change and agriculture: Impacts and adaptive responses in Iran. *Journal of Integrative Agriculture*, 17(1), 1-15.
- Khan, M., Mfitumukiza, D., & Huq, S. (2021). Capacity building for implementation of nationally determined contributions under the Paris Agreement. In *Making Climate Action More Effective* (pp. 95-106). Routledge.
- Kiriveldeniya, K., Adikaram, W., Hansika, S., Malkanthi, S., & Sivashankar, P. (2024). Nexus of sustainable development goals and environmental sustainability in achieving climate resilient sustainable development: Perspectives from the developing world. YSF Thematic Publication 2024, 326.
- Koutoudjian, G., Diniz, L., Cespedes, R., & UNDP, V. G. (2021). About IRENA The International Renewable Energy Agency (IRENA) is an intergovernmental organisation that supports countries in their transition to a sustainable energy future, and serves as the principal platform for international co-operation, a centre of excellence, and a repository of policy, technology, resource and financial knowledge on renewable energy. IRENA promotes the.
- Kulenthiran, K., & Stanley, A. (2018). A Critical Assessment of the United Nations Development Programme (UNDP) Project:“Enhancing Climate Resilience of the Vulnerable Communities and Ecosystems in Somalia”.
- Lam, S., Dodd, W., Berrang-Ford, L., Ford, J., Skinner, K., Papadopoulos, A., & Harper, S. L. (2021). How are climate actions evaluated? A review of United Nations food security evaluations. *Global Food Security*, 28, 100509.
- Lim, M. M., Jørgensen, P. S., & Wyborn, C. A. (2018). Reframing the sustainable development goals to achieve sustainable development in the Anthropocene—a systems approach. *Ecology and Society*, 23(3).
- Mabuza, M. P., & Mabuza, M. P. (2020). Globalisation, climate change, and disasters. Evaluating international public health issues: Critical reflections on diseases and disasters, policies and practices, 265-313.

- Markkanen, S., & Anger-Kraavi, A. (2019). Social impacts of climate change mitigation policies and their implications for inequality. *Climate Policy*, 19(7), 827-844.
- Martyr-Koller, R., Thomas, A., Schleussner, C.-F., Nauels, A., & Lissner, T. (2021). Loss and damage implications of sea-level rise on Small Island Developing States. *Current Opinion in Environmental Sustainability*, 50, 245-259.
- Mensah, J. (2019). Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Cogent social sciences*, 5(1), 1653531.
- Mfitumukiza, D., Roy, A. S., Simane, B., Hammill, A., Rahman, M. F., & Huq, S. (2020). Scaling local and community-based adaptation. Global Commission on Adaptation Background Paper.
- Michaelowa, A., Hoch, S., Weber, A.-K., Kassaye, R., & Hailu, T. (2021). Mobilising private climate finance for sustainable energy access and climate change mitigation in Sub-Saharan Africa. *Climate Policy*, 21(1), 47-62.
- Monkelbaan, J. (2019). Governance for the sustainable development goals. Singapore: Springer.
- Morrow, N., Mock, N. B., Gatto, A., LeMense, J., & Hudson, M. (2022). Protective pathways: Connecting environmental and human security at local and landscape level with NLP and geospatial analysis of a novel database of 1500 project evaluations. *Land*, 11(1), 123.
- Mrabet, R., & Moussadek, R. (2022). Development of climate smart agriculture in Africa. In *Conservation Agriculture in Africa: Climate Smart Agricultural Development* (pp. 17-65). CABI GB.
- Nordman, E., Barrenger, A., Crawford, J., McLaughlin, J., & Wilcox, C. (2019). Options for achieving Cape Verde's 100% renewable electricity goal: a review. *Island Studies Journal*, 14(1), 41-58.
- Ribas, A., Lucena, A. F., & Schaeffer, R. (2019). Closing the energy divide in a climate-constrained world: A focus on the buildings sector. *Energy and Buildings*, 199, 264-274.
- Roy, J., Tscharket, P., Waisman, H., Abdul Halim, S., Antwi-Agyei, P., Dasgupta, P., Hayward, B., Kanninen, M., Liverman, D., & Okereke, C. (2018). Sustainable development, poverty eradication and reducing inequalities.
- Saerbeck, B., Well, M., Jörgens, H., Goritz, A., & Kolleck, N. (2020). Brokering climate action: The UNFCCC secretariat between parties and nonparty stakeholders. *Global Environmental Politics*, 20(2), 105-127.
- Sajid, M. J., Zhang, Y., & Janjua, L. R. (2024). Breaking barriers: Assessing technology transfer for climate-resilient development. *Environmental Technology & Innovation*, 33, 103471.
- Schneider, P., & Asch, F. (2020). Rice production and food security in Asian Mega deltas—A review on characteristics, vulnerabilities and agricultural adaptation options to cope with climate change. *Journal of Agronomy and Crop Science*, 206(4), 491-503.
- Tan, X., Zhu, K., Meng, X., Gu, B., Wang, Y., Meng, F., Liu, G., Tu, T., & Li, H. (2021). Research on the status and priority needs of developing countries to address climate change. *Journal of Cleaner Production*, 289, 125669.
- Tanner, T., Zaman, R. U., Acharya, S., Gogoi, E., & Bahadur, A. (2019). Influencing resilience: the role of policy entrepreneurs in mainstreaming climate adaptation. *Disasters*, 43, S388-S411.
- Turner, M. D., Carney, T., Lawler, L., Reynolds, J., Kelly, L., Teague, M. S., & Brottem, L. (2021). Environmental rehabilitation and the vulnerability of the poor: The case of the Great Green Wall. *Land Use Policy*, 111, 105750.
- Weiskopf, S. R., Rubenstein, M. A., Crozier, L. G., Gaichas, S., Griffis, R., Halofsky, J. E., Hyde, K. J., Morelli, T. L., Morissette, J. T., & Muñoz, R. C. (2020). Climate change effects on biodiversity, ecosystems, ecosystem services, and natural resource management in the United States. *Science of the Total Environment*, 733, 137782.