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Fossil-Fuel Emission Reduction after COP28: Global Climate Politics through Pope Francis' Integral Ecology

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Abstract

Reducing fossil-fuel emissions is necessary to meet the Paris Agreement's goal of limiting global warming to 1.5°C and to advance the Sustainable Development Goals. Progress has been slow because competing political and economic interests shape climate negotiations. From a realist perspective, countries prioritize energy security, economic growth, and national sovereignty. Political-economy and climate-justice perspectives show how fossil-fuel corporations influence policy, petrostates resist moving away from oil and gas, and the North–South divide delays agreements on climate finance, historical responsibility, and transition costs. This study examines these barriers through Pope Francis' framework of integral ecology. It uses qualitative interpretative analysis, triangulating UNFCCC and COP documents, Pope Francis' writings—particularly Laudato Si', Fratelli Tutti, and Laudate Deum—and expert opinions from peer-reviewed works. Findings indicate that the COP28 commitment to transition away from fossil fuels remains constrained by fossil-fuel subsidies, inadequate climate finance, unequal technological capacity, corporate lobbying, and weak accountability. Technological innovation and diplomatic commitments alone cannot ensure an equitable transition when developing countries lack sufficient financial and institutional support. Integral ecology connects environmental responsibility with human dignity, the global common good, intergenerational justice, and concern for vulnerable communities. The study recommends the time-bound removal of fossil-fuel subsidies; reinvestment in renewable energy, energy efficiency, public transportation, and worker retraining; expanded grants and concessional financing for developing countries; stronger adaptation and Loss and Damage mechanisms; renewable-technology transfer; and transparent monitoring of national commitments. Integral ecology can support partnerships for sustainable progress, responsible innovation, environmental justice, accountable governance, equitable climate finance, and a just energy transition.

Keywords: Climate justice, UNFCCC, Sustainable Development Goals, Ecological Spirituality, SDG#13

Introduction

Fossil-fuel emission reduction has become a central concern of international climate governance under the United Nations Framework Convention on Climate Change (UNFCCC). Adopted in 1992, the Convention seeks to stabilize greenhouse gas concentrations "*at a level that would prevent dangerous anthropogenic interference with the climate system*" (UNFCCC, 1992, art. 2). It currently has 198 parties, consisting of 197 states and one regional economic integration organization. The Conference of the Parties (COP), its supreme decision-making body, normally meets annually to review implementation and adopt measures needed to advance the Convention's objectives. Its first session was held in Berlin in 1995 (UNFCCC, 2026).

A major development occurred at COP21 in Paris in 2015, when the Parties adopted the Paris Agreement. Article 2(1)(a) establishes the objective of holding the increase in global average temperature to "*well below 2°C above pre-industrial levels*" while pursuing efforts to limit it to 1.5°C (UNFCCC, 2015a). Parties pursue this objective through nationally determined contributions and domestic mitigation measures under Article 4, adaptation under Article 7, climate finance under Article 9, and technology development and transfer under Article 10. Each successive nationally determined contribution must represent progression beyond the previous contribution and reflect the Party's highest possible ambition (UNFCCC, 2015a, art. 4(3). The accompanying COP decision also recognizes the contributions of non-Party stakeholders, including civil society, the private sector, financial institutions, cities, and other subnational authorities (UNFCCC, 2015b, paras. 134–137).

Despite this framework, collective progress remains inadequate. The first Global Stocktake concluded at COP28 that parties were not yet collectively on track to achieve the Paris Agreement's long-term goals (UNFCCC, 2024a, paras. 2–4). COP28 consequently called on Parties to contribute to "*transitioning away from fossil fuels in energy systems, in a just, orderly, and equitable manner,*" while accelerating action during the critical decade toward net-zero emissions by 2050 (para. 28(d)). COP29 subsequently adopted a new climate-finance goal of at least USD 300 billion annually for developing countries by 2035 and called for efforts to scale total financing from public and private sources to USD 1.3 trillion annually by 2035 (UNFCCC, 2024b). At COP30, the Mutirão Decision shifted attention toward implementation by calling for accelerated domestic

mitigation, NDC implementation and investment plans, technical assistance, and the Global Implementation Accelerator (UNFCCC, 2025, Paras. 15, 28, and 34–42). *Mutirão* is a Brazilian Portuguese word for a community coming together voluntarily to accomplish a shared task. In the COP30 setting, it denotes climate action cannot be accomplished by national governments alone since it demands coordinated participation by governments, indigenous peoples, local communities, civil society, businesses, financial institutions, cities, researchers, women, and young people (COP30 Presidency, 2025).

The implementation gap is fundamentally political because climate policies distribute economic benefits, costs, and risks unevenly across states, industries, workers, and communities. Under the UNFCCC, states possess differentiated historical responsibilities, national circumstances, development priorities, and technological and financial capacities (UNFCCC, 1992, art. 3; UNFCCC, 2015, art. 2(2)). Their negotiating positions are also shaped by varying levels of dependence on coal, oil, and natural gas for government revenue, employment, industrial production, and energy security. Climate politics is characterized not simply by international collective-action problems but by distributive conflicts over who benefits from fossil-fuel use and who bears the costs of decarbonization (Aklin and Mildenberger, 2020). Climate policy can threaten the value of fossil fuel assets, industries, occupations, and communities, encouraging affected actors to resist or weaken transition measures (Colgan et al., 2021). The Intergovernmental Panel on Climate Change (IPCC, 2022) further recognizes that incumbent fossil-fuel interests can exercise political power to obstruct decarbonization, while institutional structures created around fossil-fuel-based electricity, transportation, and industrial systems can reinforce carbon-intensive development. Financial institutions and corporate actors may also influence investment priorities and public policy by continuing to finance or defend carbon-intensive assets. Therefore, governments may endorse collective climate objectives while delaying, weakening, or selectively implementing policies that threaten influential domestic constituencies or immediate economic and energy-security interests (Aklin & Mildenberger, 2020; Stoddard et al., 2021). Global climate politics is therefore a central determinant of the pace, fairness, and effectiveness of fossil-fuel emission reduction.

Pope Francis offers an important ethical framework for interpreting these political tensions. During his pontificate from 2013 to 2025, he developed the concept of integral ecology through *Laudato Si'* (2015),

Fratelli Tutti (2020), and *Laudate Deum* (2023). Published shortly before COP28, *Laudate Deum* directly addresses the climate crisis, the weakness of international politics, the limited implementation of climate agreements, the influence of economic interests, and the slow transition from fossil fuels. These writings argue that environmental degradation is inseparable from poverty, inequality, political responsibility, economic structures, and human dignity because "*everything is interconnected"* (Piscos, 2025, pp. 239-240).

Pope Francis' integral ecology is particularly relevant to fossil-fuel politics because it evaluates national energy policies according to the global common good, concern for poor and vulnerable communities, intergenerational justice, ecological conversion, and international solidarity. These principles find nexus with SDGs 7, 10, 12, 13, 16, and 17, which, respectively, address clean energy, reduced inequalities, responsible consumption and production, climate action, accountable institutions, and global partnerships. Their coming together provides an ethical and policy-oriented basis for assessing whether the transition from fossil fuels is environmentally effective, socially inclusive, politically accountable, and equitable to developing countries.

However, an important research gap remains. Existing discussions often analyze COP negotiations, climate financing, energy transition, and national interests as matters of international policy, while studies of Pope Francis' integral ecology commonly emphasize its theological, ethical, or pastoral dimensions. The relationship between these bodies of scholarship remains insufficiently developed, particularly in explaining how integral ecology can be systematically applied to the political barriers that shape fossil-fuel emission reduction across COP28, COP29, and COP30. Further examination is therefore needed to determine how Pope Francis' framework can connect climate ethics with the institutional, economic, and geopolitical realities of international climate governance.

To address this gap, the study asks, "How *can Pope Francis' integral ecology provide an ethical and analytical framework for addressing the global political barriers to implementing fossil-fuel emission-reduction commitments following COP28, COP29, and COP30?"* Specifically, it seeks to identify the political and economic factors that delay emission reduction; examine how integral ecology interprets the conflict between national interests and the global common good; establish its nexus with selected UN Sustainable Development Goals; and analyze how the

outcomes of COP28, COP29, and COP30 shape continuing debates over climate financing, accountability, and a just energy transition.

The study is limited to a qualitative and interpretative analysis of major UNFCCC and COP documents, Pope Francis' writings, expert assessments, and relevant findings in climate science. It does not measure the direct causal effect of papal teaching on national policies. Instead, it evaluates the capacity of integral ecology to serve as a moral and analytical framework for international climate action.

The significance of the study is theoretical; it connects Catholic ecological thought with the issue of global climate politics. At the practical level, it offers principles for accountable leadership, equitable climate financing, protection of vulnerable communities, and international partnerships that can translate climate commitments into sustainable and inclusive action.

Theoretical Framework

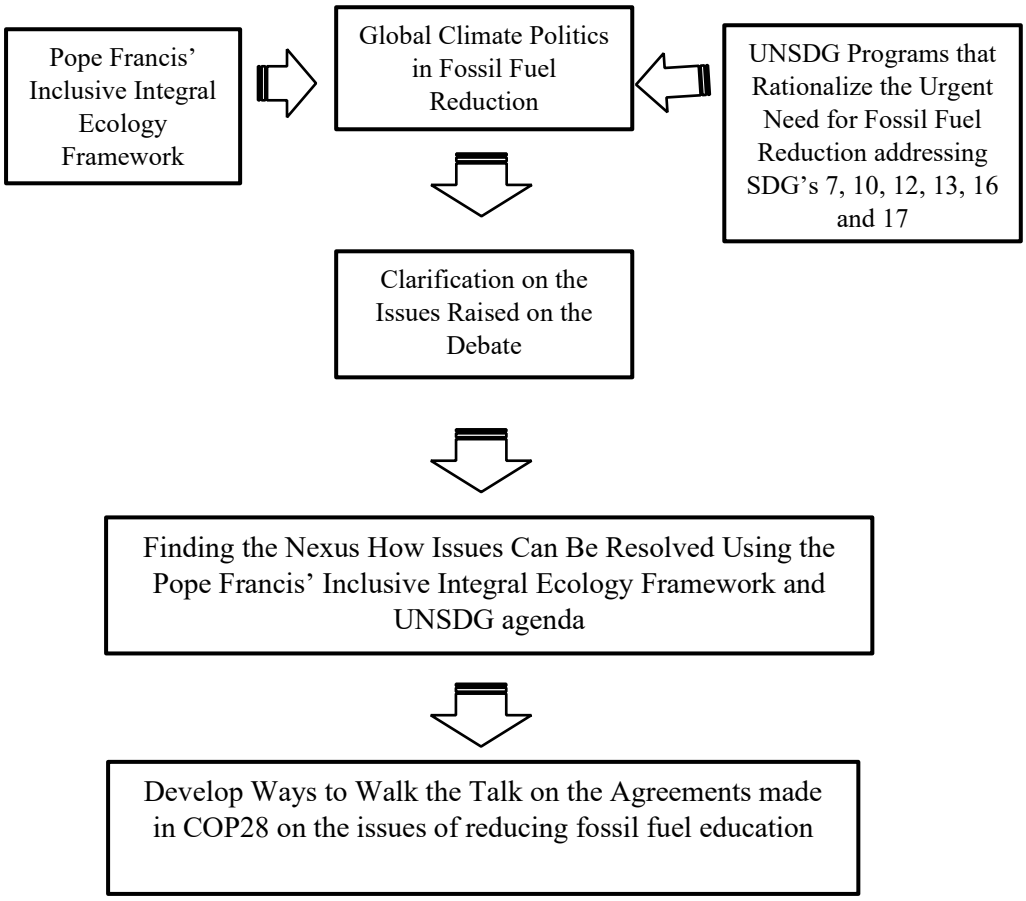
This study adopts Pope Francis' integral ecology as its principal theoretical framework for analyzing the global politics surrounding fossil-fuel emission reduction. Drawn primarily from *Laudato Si,' Fratelli Tutti*, and *Laudate Deum*, integral ecology maintains that environmental degradation cannot be separated from economic inequality, political power, technological development, patterns of production and consumption, and the marginalization of vulnerable communities. The climate crisis is therefore not merely an environmental or scientific problem; it is also a moral, social, economic, and political crisis that requires coordinated action at both national and international levels.

Pope Francis' integral ecology is particularly relevant to fossil-fuel politics because it assesses energy policies in relation to the global common good, the protection of poor and vulnerable communities, justice between generations, ecological conversion, and international solidarity (*Laudato Si'*, §§48–52, 156–165, 216–221). Pope Francis specifically maintains that technologies based on highly polluting fossil fuels must be progressively replaced without delay, while recognizing the unresolved question of who should finance the energy transition (*Laudato Si'*, §165). He stressed that the transition to renewable energy and the abandonment of fossil fuels are not progressing at the necessary speed and that international commitments

must be effective, binding, and subject to continuing monitoring (*Laudate Deum*, §§55, 59). These principles correspond closely to SDGs 7, 10, 12, 13, 16, and 17, which respectively promote sustainable energy, reduced inequalities, responsible consumption and production, climate action, accountable institutions, and global partnerships (United Nations, 2015). The synergy of putting together Pope Francis' integral ecology and the SDGs provides an ethical and policy-oriented framework for assessing whether the fossil-fuel transition is environmentally effective, socially inclusive, politically accountable, intergenerationally responsible, and equitable to developing countries.

Figure 1.

This diagram represents the interpretative analysis.



As shown in Figure 1, Pope Francis inclusive integral ecology framework targets influencing those who are hesitant to implement the COP28 agreements in the reduction of fossil fuels. Using its integration with the UNSDG agenda, it seeks to advocate to world leaders the importance of hitting the temperature to "well below" 2°C—ideally 1.5°C—to mitigate the impact of global warming. Fossil-fuel emission reduction is not merely an energy issue. It involves energy transition (SDG 7), climate justice (SDG 10), economic transformation (SDG 12), urgent mitigation (SDG 13), political accountability (SDG 16), and international solidarity (SDG 17). This reflects Pope Francis' principle that ecological, social, economic, and political realities are interconnected.

The integral ecology framework along with UN sustainability goals may help clarify the debate, which carries with it the global politics of slowing down the process of performance. In finding the nexus of integral ecology and sustainable development that goes beyond national interest, world leaders opposed to the reduction of fossil fuel may be convinced of the necessity and urgency to address the problem of global warming by the process of fossil reduction. Hope springs when we take steps to gradually walk the talk and put the agreements into seamless action.

Review of Related Literature

Global Climate Politics in Fossil-Fuel Emission Reduction within Pope Francis' Integral Ecology Framework

The reduction of greenhouse-gas emissions from fossil fuels has become one of the most contested issues in contemporary global climate governance. Although scientific assessments consistently identify coal, oil, and natural gas as the principal sources of anthropogenic carbon dioxide emissions, international agreements depend on negotiations among states with unequal historical responsibilities, economic capacities, energy requirements, and vulnerability to climate change. Fossil fuel reduction, therefore, is not merely a scientific or technological issue. It is also a political, economic, ethical, and social-justice concern.

The Intergovernmental Panel on Climate Change (IPCC, 2022) emphasizes that limiting global warming requires deep, rapid, and sustained reductions in greenhouse-gas emissions, accompanied by a substantial decline in the overall use of fossil fuels. The International Energy Agency's updated net-zero pathway states that no new, unchanged coal plants, coal

mines, or long-lead-time oil and gas projects are required if the world is to preserve a credible pathway toward the 1.5°C target. These assessments establish the scientific and technical basis for fossil-fuel reduction, but translating them into collective action remains constrained by conflicting national interests, energy-security concerns, development inequalities, and the political influence of the fossil-fuel industry (IPCC, 2022; IEA, 2023).

The United Nations Framework Convention on Climate Change (UNFCCC), adopted in 1992, provides the principal international framework for responding to climate change. Its underlying principle of "*common but differentiated responsibilities and respective capabilities*" recognizes that all countries share responsibility for addressing climate change, but their obligations cannot be identical because of their different historical emissions, economic resources, and levels of development. This principle continues to shape negotiations between industrialized countries, emerging economies, developing nations, and fossil-fuel-dependent states.

The 2015 Paris Agreement strengthened this framework by committing states to hold the increase in global average temperature to "*well below*" 2°C above pre-industrial levels while pursuing efforts to limit global warming to 1.5°C. Rather than prescribing uniform emission targets, the agreement requires countries to formulate and regularly update their Nationally Determined Contributions (NDCs). The Global Stocktake (GST), conducted every five years, assesses the collective progress of states toward the Paris Agreement's mitigation, adaptation, and climate-finance goals. The first GST, completed at COP28 in Dubai in 2023, concluded that existing national commitments and policies were insufficient to place the world on a pathway consistent with the agreement's long-term goals (UNFCCC, 2023).

Beardsworth (2024), in "*COP28: The Fossil Fuel COP and Political Leadership on Climate*," situates COP28 within these conflicting political and economic conditions. He regards the conference as historically significant because fossil fuels were explicitly placed at the center of the negotiations. COP28 culminated in the UAE Consensus, which called on countries to contribute to "*transitioning away from fossil fuels in energy systems in a just, orderly, and equitable manner,"* while accelerating action during the critical decade leading to 2030. It also called for the tripling of global renewable-energy capacity and the doubling of the average annual rate of energy-efficiency improvements by 2030 (UNFCCC, 2023). Beardsworth argues that the conference exposed the continuing

ambivalence of global climate leadership. Fossil-fuel-producing countries feared declining revenues and geopolitical influence, while many developing nations insisted that an accelerated energy transition could not be separated from climate finance, technology transfer, energy access, and historical responsibility. The controversial appointment of Sultan Ahmed Al Jaber—chief executive of the Abu Dhabi National Oil Company—as COP28 president further intensified concerns regarding conflicts of interest and the influence of fossil-fuel producers over climate negotiations. These tensions reveal a fundamental contradiction: governments formally support climate mitigation while many continue to authorize fossil-fuel extraction and infrastructure.

This contradiction is substantiated by the *Production Gap Report 2023*, prepared by the Stockholm Environment Institute, Climate Analytics, E3G, the International Institute for Sustainable Development, and the United Nations Environment Programme. The report found that governments planned to produce approximately 110 percent more fossil fuels in 2030 than would be consistent with limiting warming to 1.5°C. It therefore identifies a significant disparity between states' emission-reduction commitments and their actual plans for coal, oil, and gas production. This "*production gap*" demonstrates that climate politics cannot focus exclusively on reducing consumer demand and improving technological efficiency. It must also confront the supply side of the fossil-fuel economy, including exploration, extraction, subsidies, investments, and long-term infrastructure (UNEP et al., 2023).

In the same vein, Newell and Simms (2020) propose a Fossil Fuel Non-Proliferation Treaty as a supply-side mechanism that would complement and reinforce the Paris Agreement. They claim that international climate governance has concentrated primarily on territorial greenhouse-gas emissions while giving insufficient attention to fossil-fuel extraction, production, and production-based accounting. Drawing an analogy with the Nuclear Non-Proliferation Treaty, they organize their proposal around three pillars: preventing the exploitation of new fossil fuel reserves, managing the decline of existing production and infrastructure, and financing low-carbon alternatives through a just global transition (Newell & Simms, 2020, pp. 1045–1049). Van Asselt and Newell (2022) further examine possible pathways toward an international agreement that would leave fossil fuels in the ground. Newell et al. (2022) argue that such an agreement would require differentiated phaseout timelines, transparent reporting, financial and technological assistance, implementation review,

and credible compliance mechanisms. This scholarship broadens climate governance from controlling emissions after fossil fuels are consumed to address the political, financial, and institutional structures that enable their continuing extraction and production.

Akhtar et al. (2024), in "*Navigating the Global Environmental Agenda: A Comprehensive Analysis of COP Conferences, with a Spotlight on COP28 and Key Environmental Challenges*," examine the effectiveness of the COP process in aligning national climate policies with the United Nations Sustainable Development Goals. Their review identifies recurring demands for reducing fossil-fuel consumption and carbon footprints, expanding renewable energy, advancing a green economy, and establishing reliable measures of climate performance. Their analysis also demonstrates that the effectiveness of the COP system cannot be judged solely by the adoption of agreements. It must be assessed according to whether international commitments are incorporated into national policies, investments, regulatory structures, and measurable emission-reduction outcomes.

Harris (2024), in "*COP28: Loss and Damage, Fossil Fuels and the Limits of Climate Diplomacy*," likewise interprets COP28 as both a diplomatic achievement and a manifestation of the limitations of multilateralism. The conference advanced the objective of transitioning away from fossil fuels and operationalized the Loss and Damage Fund intended to assist particularly vulnerable developing countries. The perceived strategic and economic interests of participating states continue to govern climate negotiations. Harris argues that the history of COP negotiations demonstrates how national sovereignty, economic competition, and divergent development priorities can weaken collective responses to global threats. The importance of COP28 therefore lies not only in its adopted language but also in whether its commitments can survive the pressures of national politics, energy markets, corporate lobbying, geopolitical conflict, and unequal access to climate finance.

Könneke and Adolphsen (2024), in "*Traditional Conflicts and Dynamic Coalitions at the World Climate Conference COP28: New Room for Maneuver in International Climate Politics*," describe COP28 as a turning point because it produced the first COP decision explicitly calling for a transition away from fossil fuels in energy systems. The agreement remained a negotiated compromise. Its language did not establish binding phase-out dates, differentiated production limits, or clear enforcement

mechanisms. The references to "*transition fuels*," carbon capture and storage, and "a*bated*" fossil fuels created space for competing interpretations and potentially prolonged fossil-fuel use.

The authors further locate climate negotiations within the persistent North–South divide. Industrialized countries often demand stronger mitigation commitments from developing states, whereas developing countries emphasize the historical emissions of wealthy nations and their unfulfilled obligations concerning climate finance, capacity building, and technology transfer. Fossil-fuel-dependent developing economies face an additional dilemma because an abrupt reduction in production could undermine public revenue, employment, energy access, and economic development. Hence, a politically feasible transition must be differentiated: countries with greater historical responsibility and stronger financial capacity should reduce fossil fuel consumption and production more rapidly while assisting vulnerable and lower-income countries.

The concept of a just transition responds directly to this concern. It holds that decarbonization must protect workers, local communities, consumers, indigenous peoples, and economically vulnerable populations affected by the restructuring of energy systems. A transition that reduces global emissions but produces mass unemployment, energy poverty, displacement, or new forms of extractive injustice cannot be considered fully sustainable. Accordingly, procedural justice requires the meaningful participation of affected communities; distributive justice concerns the fair allocation of benefits and burdens; and restorative justice addresses historical harms caused by extraction, pollution, colonialism, and unequal development.

Mahendru et al. (2025) trace the development of justice concerns from COP3 in Kyoto and COP15 in Copenhagen to COP21 in Paris and COP28 in Dubai in their work, "The Equity Imperative: Revisiting COP Frameworks Through a Justice Lens." They argue that climate-change narratives and negotiating structures have been shaped by historical inequalities and structural asymmetries among nations. Their proposed justice-accountability paradigm emphasizes inclusivity, transparency, representation, and institutional responsibility. Climate governance becomes more legitimate when marginalized nations and climate-vulnerable communities can participate meaningfully in defining transition pathways rather than merely receiving policies designed by wealthier and more powerful actors.

Schell et al. (2026) extend the post-COP28 literature by examining the First Conference on Transitioning Away from Fossil Fuels as a response to slow implementation under the UNFCCC. Their European Parliament briefing identifies macroeconomic, institutional, and geopolitical lock-ins that sustain fossil-fuel dependence despite declining renewable-energy costs. It presents the Santa Marta process as a form of "two-tier multilateralism," in which a coalition of willing states and non-state actors complements the consensus-based COP process through transition roadmaps, transparency mechanisms, subsidy reform, carbon pricing, and possible legal instruments. This source is relevant to the present study because it moves the discussion from general emission pledges to practical measures addressing fossil-fuel production, finance, and institutional accountability. Its emphasis on just transition, international partnership, and differentiated national circumstances also corresponds with integral ecology's principles of solidarity, concern for vulnerable communities, the global common good, and environmental justice.

Pope Francis' Integral Ecology as an Ethical-Political Framework

Pope Francis offers an ethical framework capable of integrating the scientific, political, economic, cultural, and spiritual dimensions of the climate crisis. In *Laudato Si'* (2015), he develops the concept of integral ecology based on the proposition that environmental degradation and human suffering are inseparable. His assertion that "*everything is interconnected*" rejects approaches that treat climate change as an isolated technical problem. The ecological crisis is simultaneously a crisis of inequality, exclusion, consumerism, technocratic domination, and the weakening of responsibility for the common good.

Integral ecology challenges two extremes in global climate politics. The first is a narrow economic nationalism that protects domestic fossil-fuel interests without adequately considering their effects on vulnerable peoples and future generations. The second is an abstract environmentalism that demands rapid change without attending to workers, poor communities, Indigenous peoples, and developing countries that may bear disproportionate transition costs. For Pope Francis, authentic ecological action must unite environmental sustainability with social justice, human dignity, intergenerational responsibility, and care for the poor.

Fratelli Tutti (2020) strengthens integral ecology by promoting solidarity and international cooperation. It challenges countries to move beyond narrow national interests and work together through climate

financing, technology sharing, debt justice, and assistance to developing nations in their transition to clean energy.

In *Laudate Deum* (2023), Pope Francis criticizes the weak global response to climate change caused by fossil-fuel dependence, corporate interests, and ineffective political institutions. While recognizing the value of science and technology, he argues that these alone cannot solve the climate crisis. He therefore calls for stronger international cooperation that includes civil society, vulnerable communities, and less powerful nations (Francis, 2023).

Piscos (2024), in "'*How Green Do We Have to Be?' Reading Laudate Deum through the Lens of Inclusivity"* interprets Pope Francis' ecological teaching as a movement from a technocentric model toward an inclusive and solidarity-based ecological economy. Piscos emphasizes that ecological conversion is not limited to individual lifestyle changes but entails reforming the institutions and economic structures that exclude vulnerable populations from environmental decision-making. Inclusivity, in this sense, serves as both a moral principle and a standard for evaluating global climate policies.

Piscos (2025), in "*Conference of the Parties 28 in Pope Francis' Ecological Inclusivity Framework,*" applies this perspective directly to COP28. The study analyzes how international politics shaped the conference's accomplishments and limitations and argues that the principle of ecological inclusivity resonates with the COP28 commitment to a just, orderly, and equitable transition. It also demonstrates that the language of inclusion must be translated into substantive participation, equitable climate finance, and policies that protect the welfare of communities most affected by both climate change and fossil-fuel reduction.

Synthesis and Research Gap

The review of related literature indicates that reducing fossil-fuel emissions is not only a scientific and technical concern but also a political, economic, and ethical challenge. Existing studies discuss the role of the UNFCCC and COP negotiations, the gap between climate commitments and actual energy policies, the influence of fossil-fuel-producing states and corporations, and the need for an equitable and just energy transition. Other studies present Pope Francis' integral ecology as a critique of technocracy, social exclusion, weak global cooperation, and excessive economic self-interest.

However, few studies directly affect integral ecology to the political forces shaping fossil fuel reduction. Climate-governance research often gives limited attention to ethical and theological perspectives, while studies of integral ecology rarely examine fossil-fuel negotiations, national interests, corporate influence, climate finance, and energy policies in detail. Previous research on COP28 has examined ecological inclusivity broadly but has not focused sufficiently on the political factors that either support or obstruct emission reduction.

This study addresses the gap by using Pope Francis' integral ecology as an ethical-political framework for analyzing global efforts to reduce fossil-fuel emissions. It examines whether international commitments promote ecological sustainability, human dignity, shared responsibility, public participation, intergenerational justice, and care for the poor. Thus, the study explores how emission reduction can become scientifically sound, politically accountable, socially inclusive, and morally just.

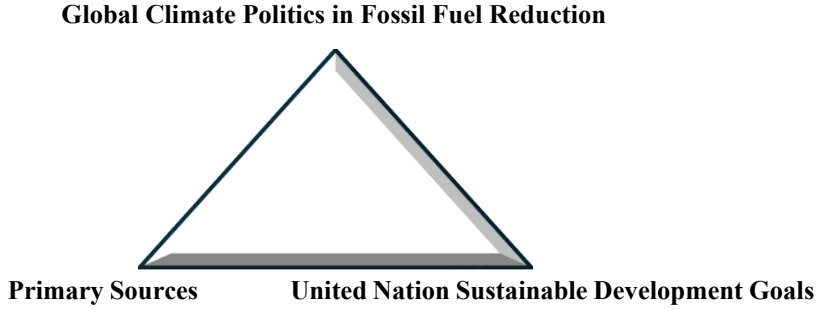
Methodology

This study utilizes a qualitative and interpretative documentary approach using library and electronic library research. It examines primary documents from COP28, COP29, and COP30; Pope Francis' *Laudato Si'*, *Fratelli Tutti*, and *Laudate Deum*; the relevant UN Sustainable Development Goals; and published online interviews and statements of world leaders concerning fossil-fuel emission reduction.

The study uses triangulation to compare these sources and identify how national interests, economic priorities, political positions, and international commitments shape fossil-fuel reduction. Through intertextual analysis, the study interprets the COP documents and political statements alongside Pope Francis' integral ecology and the UN SDGs. This comparison seeks to determine their points of convergence and to identify ethical and practical ways of addressing the global political barriers to a just and equitable energy transition.

Figure 2.

Triangulation Method



Note: Written Texts in COP28, COP29, COP30, and Pope Francis
Available Interviews Published Online and his apostolic exhortation exhortations

As shown in Figure 2, the triangulation of COP documents, Pope Francis' writings, and the UN SDGs provides the basis for analyzing the global politics of fossil-fuel emission reduction. It allows the study to compare international commitments with political positions and to evaluate them according to integral ecology, climate justice, and the global common good.

This study employs qualitative document analysis to examine selected decisions, reports, and policy statements from COP28, COP29, and COP30. The documents were coded according to three themes: implementation, mitigation, and climate finance. These findings were then interpreted through Pope Francis' integral ecology, particularly its principles of interconnectedness, ecological justice, solidarity, concern for the poor, and responsibility for the common good. Official UNFCCC documents, papal writings, scholarly literature, and documented faith-based initiatives were triangulated to strengthen the analysis.

Results and Discussion

The study examines fossil fuel emission reduction across COP28 (Dubai, United Arab Emirates, 2023), COP29 (Baku, Azerbaijan, 2024), and COP30 (Belem, Para, Brazil, 2025) through three themes: implementation, mitigation, and climate finance. The findings show that the

three conferences advanced the Paris Agreement, but their effects were limited by weak enforcement, unequal financial capacity, fossil-fuel dependence, and declining trust among participating states.

Implementation: From Commitment to National Action

COP28 established the political direction by calling for a just, orderly, and equitable transition away from fossil fuels, tripling renewable-energy capacity, and doubling energy-efficiency improvements by 2030. However, binding phase-out schedules did not support these commitments. Countries therefore retained considerable freedom to interpret them according to their economic and energy interests (Beardsworth, 2024).

COP29 attempted to convert the COP28 commitments into national action through stronger Nationally Determined Contributions (NDCs), renewable-energy planning, methane monitoring, and transition strategies. However, progress remained dependent on voluntary state action. The conference therefore advanced implementation planning without creating strong mechanisms to penalize countries that failed to fulfill their commitments (UNFCCC, 2024).

COP30 focused on incorporating the first Global Stocktake into updated NDCs and national climate policies. It encouraged governments to present clearer targets for renewable energy, energy efficiency, subsidy reform, and reduced fossil-fuel dependence. However, the conference failed to adopt a formal fossil fuel phase-out roadmap. The COP30 Presidency instead initiated a separate process for developing a just, orderly, and equitable transition roadmap (UNFCCC, 2026; Touza, 2026).

The Philippine NDC illustrates the implementation problem confronting developing countries. The country committed to a projected 75% reduction and avoidance of greenhouse-gas emissions from 2020 to 2030, but only 2.71% is unconditional. The remaining 72.29% depends on international finance, technology transfer, and capacity-building assistance. National commitments may therefore remain difficult to implement when promised international support is insufficient or delayed (*Implementation Plan for the Republic of the Philippines Nationally Determined Contribution 2020–2030*, 2023).

Mitigation: Reducing Fossil-Fuel Emissions

COP28 recognized that existing action was insufficient to keep the 1.5°C target within reach. The global stocktake called for faster emission

reduction, renewable-energy expansion, energy efficiency, and a transition away from fossil fuels. Its major advance was the explicit recognition that climate mitigation requires addressing coal, oil, and gas. Its main weakness was the absence of binding targets and timelines (Beardsworth, 2024).

COP29 continued the Sharm el-Sheikh Mitigation Ambition and Implementation Work Program, whose 2024 dialogues concentrated on reducing emissions from cities, buildings, and urban systems through energy efficiency, low-carbon construction, spatial planning, electrification, and green and blue infrastructure (UNFCCC, 2024a). COP29 advanced international carbon-market cooperation by completing key rules for the implementation of Article 6 of the Paris Agreement (UNFCCC, 2024b). The ambivalent part is the conference did not adopt a binding prohibition on new fossil-fuel projects or establish a common timetable for reducing fossil fuel production. This omission demonstrates the continuing gap between general mitigation ambition and enforceable supply-side limits on coal, oil, and gas development.

COP30 connected mitigation with forest protection, biodiversity, Indigenous stewardship, and social inequality. This expanded the meaning of climate action beyond energy policy alone. The weaker part is the failure to include a formal fossil-fuel roadmap in the negotiated outcome revealing the continuous influence of countries economically dependent on oil, gas, and coal (Passarelli, 2026).

Across the three conferences, the main mitigation problem was the gap between emission-reduction promises and continued fossil fuel production. Carbon capture and carbon markets may support mitigation, but they should not replace direct measures such as ending new undiminished coal projects, reducing oil and gas dependence, removing inefficient fossil-fuel subsidies, and rapidly installing renewable-energy systems (UNFCCC, 2024).

Climate Finance and a Just Energy Transition

COP28 operationalized the Loss and Damage Fund to assist vulnerable developing countries experiencing severe climate effects. COP29 expanded the finance agenda through the New Collective Quantified Goal, which called for developed countries to lead in mobilizing at least USD 300 billion annually by 2035. It also encouraged all actors to increase total climate finance for developing countries to USD 1.3 trillion annually by 2035 (UNFCCC, 2024; Turkamani, 2025).

COP30 continued discussions on climate finance, loss and damage, renewable-energy investment, and just energy transition partnerships. These mechanisms are important because developing countries cannot rapidly move away from fossil fuels without support for renewable infrastructure, displaced workers, affected communities, and affordable energy access. Climate finance is therefore not separate from emission reduction because it is one of its necessary conditions (Jones, 2025).

However, disagreement remains over who should contribute, how much should be provided, and whether funding should take the form of grants, loans, or private investments. Excessive dependence on loans may increase the debts of vulnerable countries. A just climate-finance system should therefore provide accessible and predictable funding based on historical responsibility, national capacity, and vulnerability to climate change (UNFCCC, 2024).

Declining Trust and the Changing Balance of Power

The United States' withdrawal from the Paris Agreement, its reduced support for international climate programs, and its announced withdrawal from the UNFCCC weakened confidence in multilateral cooperation. As one of the world's largest historical emitters and leading fossil fuel producers, the pulling out also increased financial and political pressure on the European Union and other contributors. This affected not only climate finance but also trust in whether major powers would honor negotiated commitments (Climate Home News, 2025).

Geopolitical conflicts can obstruct climate cooperation by destabilizing energy markets, redirecting public resources, and weakening national capacity for clean-energy transformation. A closer look at the 119 member UNFCCC nations from 2014 to 2022 reveals that geopolitical risk adversely affected energy-system performance and countries' readiness for clean-energy transition, with stronger effects among states at less advanced stages of transition (Shittu et al., 2025). The Russia–Ukraine war (full scale escalated in 2022 and ongoing) demonstrates that conflict can produce contradictory policy responses. Governments may secure alternative oil and gas supplies to address immediate energy-security concerns, while the volatility of fossil-fuel markets may also strengthen policies supporting renewable energy and reduced import dependence (Osička & Černoch, 2022). Its impact provides a scholarly basis for interpreting the 2026 United States–Israel–Iran conflict as a contemporary example of the vulnerability of fossil-fuel-dependent energy systems. However, because the conflict

remains recent, researchers cannot yet conclusively establish its long-term consequences for emissions, climate finance, and international cooperation. Following the pattern shown in the Russia-Ukraine war, geopolitical crises may either reinforce fossil-fuel dependence or accelerate clean-energy investment, depending on whether governments prioritize new fossil-fuel infrastructure or renewable energy, electrification, and demand reduction.

This imbalance may negatively affect future COP actions. Without restored trust, fossil-fuel-producing countries may continue to block strong transition language, while developing countries may resist greater commitments if they do not receive finance and technology. Effective cooperation requires predictable climate funding, transparent reporting, stronger review mechanisms, and recognition of common but differentiated responsibilities (UNFCCC, 2025).

Integral Ecology as a Framework for Fossil-Fuel Reduction

Pope Francis' integral ecology directly addresses fossil-fuel dependence through the principle that "*everything is interconnected*." Burning fossil fuels damages ecosystems, intensifies climate disasters, and disproportionately affects people experiencing poverty. Reliance on coal, oil, and gas is therefore not only an environmental problem but also a form of social injustice because its benefits and harms are unequally distributed (*Laudato Si'*, 2015; *Laudate Deum*, 2023).

Integral ecology also provides concrete policy directions. Governments should gradually remove inefficient fossil-fuel subsidies, stop financing unnecessary fossil-fuel expansion, accelerate renewable-energy installation, improve energy efficiency, and provide transition assistance to affected workers and communities. Funds and revenues from oil and gas operations can also support renewable energy, public transportation, climate adaptation, and social protection (*Laudate Deum*, 2023).

Climate finance should be understood as solidarity rather than charity. Industrialized and oil-rich countries have greater financial capacity and have benefited more from fossil-fuel-based development. Integral ecology therefore supports grants, accessible technology, debt-sensitive financing, and renewable-energy investment for developing countries. This approach can reduce North–South tensions by presenting climate assistance as a shared responsibility grounded in justice (*Fratelli Tutti*, 2020; UNFCCC, 2024).

Political resistance must nevertheless be recognized. Oil-rich countries may block policies that threaten government revenues, employment, and geopolitical influence. Integral ecology cannot remove these interests by moral appeal alone, but it can guide negotiated transition plans that protect workers, diversify fossil-fuel-dependent economies, and require wealthier states to carry a greater share of the cost (*Laudato Si'*, 2015; *Laudate Deum*, 2023).

Concrete Expressions of Faith-Based Climate Action

The publication of *Laudate Deum* shortly before COP28 was a direct moral intervention in climate diplomacy. Although Pope Francis could not personally attend COP28, his message called for action in energy efficiency, renewable energy, the elimination of fossil fuels, and less fossil-dependent lifestyles. COP28 also hosted its first Faith Pavilion, where religious leaders, vulnerable communities, delegates, and civil-society organizations discussed climate justice and accountability. (Pope Francis' COP28 address, 2023; Piscos, 2024). The Pavilion is significant since it provided a collective space in which religious leaders and representatives of vulnerable communities and civil society converged around concerns such as fossil-fuel dependence, climate justice, the disproportionate burdens borne by poorer communities, and the moral responsibility of political and economic actors. Their interventions reinforced the ethical and justice dimensions of the wider COP28 debate and contributed to the growing pressure for stronger language on fossil fuels. It might be difficult to establish a direct causal link between the Faith Pavilion and the final negotiated text; its advocacy formed part of the broader civil society and moral pressure surrounding COP28, which concluded with the unprecedented call for countries to "*transition away from fossil fuels in energy systems"* (Pope Francis' COP28 address, 2023; UNFCCC COP28 faith-based statement).

Faith-based action has also moved from moral declarations to measurable financial decisions. In 2022, 35 faith institutions representing more than USD 1.25 billion in combined assets committed to divesting from fossil-fuel companies, thereby applying religious teaching to the management of institutional investments rather than limiting their climate engagement to public advocacy. The commitments involved churches, dioceses, religious congregations, and faith-based organizations withdrawing or excluding investment capital from companies associated with fossil-fuel production and redirecting their financial practices toward investments more consistent with climate responsibility. This momentum continued during COP30, when 62 additional faith institutions, including

Catholic dioceses, religious orders, churches, and Christian financial institutions, publicly committed to fossil-fuel divestment. Therefore, these initiatives provide concrete evidence of moral teaching being translated into financial action: faith institutions used their roles as asset owners and investors to withdraw financial support from fossil-fuel industries and align institutional capital with their ethical commitments to climate justice and ecological responsibility (Vatican News, 2022; WWF, 2025).

The Vatican's support for the proposed Fossil Fuel Non-Proliferation Treaty provides another concrete example. The proposal calls for ending new fossil-fuel expansion, gradually reducing existing production, and supporting workers and countries during the transition. This demonstrates how integral ecology can be translated into an international policy proposal rather than remaining only a general moral principle (Fossil Fuel Non-Proliferation Treaty Initiative, 2022).

Grassroots mobilization at COP30 went beyond symbolic participation, as Indigenous Peoples, youth, faith-based organizations, and climate-vulnerable communities organized demonstrations, public declarations, assemblies, and direct interventions intended to pressure governments and corporate actors. The parallel People's Summit in Belém brought together more than 70,000 participants from local, national, and international movements, who demanded an end to fossil fuel exploitation, protection and demarcation of Indigenous territories, zero deforestation, greater public climate finance, corporate accountability, and a just and inclusive energy transition. Indigenous organizations likewise challenged extractive projects in the Amazon and demanded recognition of self-determination and Free, Prior, and Informed Consent (FPIC), while youth organizations pressed for meaningful participation in climate governance rather than token consultation. These groups exercised pressure through mass mobilizations, public declarations, direct appeals to the COP30 Presidency, and peaceful protests within and around the conference, including demonstrations opposing new oil and gas development in the Amazon. Their mobilization thus challenged the dominance of governmental and corporate interests by insisting that communities experiencing the consequences of extraction and climate change should participate directly in shaping transition policies. Even though such grassroots pressure did not determine the negotiated outcome by itself, it helped place Indigenous rights, participation, fossil-fuel phase-out, and climate justice more visibly within the political debate over a just transition

at COP30. (People's Summit, 2025; International Indigenous Peoples Forum on Climate Change [IIPFCC], 2025; UNFCCC, 2025).

Integral Ecology, the SDGs, and Fossil-Fuel Reduction

Integral ecology supports the Sustainable Development Goals by connecting environmental protection with human dignity and social justice. Fossil fuel reduction particularly advances SDG 7 on clean energy, SDG 12 on responsible consumption and production, and SDG 13 on climate action. It also contributes to reducing poverty and inequality, protecting ecosystems, and strengthening just and accountable institutions under SDGs 1, 10, 15, and 16. This relationship reflects the principle of *Laudato Si'* that care for the environment cannot be separated from concern for human welfare, especially the needs of the poor and vulnerable (Francis, 2015; United Nations, 2015; Boorse & Jablonski, 2024).

The continued use of fossil fuels raises questions of justice because its economic benefits are often concentrated among powerful states and corporations, while poor and vulnerable communities experience many of its environmental and social costs. Integral ecology therefore calls for climate policies that unite environmental protection with concern for the poor. Consistent with the Sustainable Development Goals, governments should reform inefficient fossil-fuel subsidies and redirect public resources toward renewable energy, affordable transportation, social protection, worker retraining, and climate-resilient livelihoods. Vulnerable developing countries should also receive adequate assistance through the Fund for Responding to Loss and Damage (Francis, 2015; United Nations, 2015; UNDP, 2021; UNFCCC, 2024).

Oil-rich countries can contribute to this transition by using part of their fossil-fuel revenues to diversify their economies and finance renewable-energy development in vulnerable countries. Such action can bridge the interests of developed and developing nations by presenting climate action as global solidarity and shared responsibility, rather than assistance given only at the discretion of wealthy states (*Fratelli Tutti*, 2020).

Conclusion

COP28 established the commitment to transition away from fossil fuels, COP29 strengthened climate finance and implementation mechanisms, and COP30 focused on converting previous commitments into national action. All three conferences were limited by voluntary

compliance, inadequate finance, fossil-fuel interests, geopolitical conflict, and unequal negotiating power.

Turning commitments into progress requires specific measures, stronger monitoring and enforcement of NDCs, national timelines for reducing coal, oil, and gas, removal of inefficient fossil fuel subsidies, faster renewable energy installation, transparent methane reporting, accessible grant-based climate finance, protection for workers and communities, and meaningful participation by developing countries, Indigenous peoples, civil society, and faith-based organizations.

Pope Francis' integral ecology strengthens these measures by connecting fossil-fuel reduction with justice, solidarity, and care for the common home. It demonstrates that emission reduction is not merely a technical objective but a moral and political responsibility to protect vulnerable communities, future generations, and the integrity of the planet.

Recommendations

COP agreements should include clearer national fossil-fuel transition schedules, measurable NDC indicators, regular public reporting, and stronger review and accountability mechanisms. Climate finance should prioritize grants and affordable financing for renewable energy, adaptation, loss and damage, economic diversification, and support for workers and communities affected by the transition.

Governments should gradually redirect inefficient fossil fuel subsidies and part of oil and gas revenues toward renewable energy infrastructure, energy access, public transportation, and community-based climate programs. Educational and faith-based institutions should also integrate the SDGs and integral ecology into curricula, investment policies, institutional operations, and public advocacy.

These recommendations face practical limitations. Oil-rich states may resist measures that threaten their revenues and influence; major powers may withdraw cooperation; conflicts may shift attention toward energy security; and developing countries may lack sufficient finance and technology. Implementation should therefore be gradual but time-bound and differentiated. This should be done according to national capacity, supported by reliable climate finance, and protected by transparent international review.

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