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The Impact of Green Fiscal Policies (Carbon Tax) on Stimulating Managerial Decisions Toward Adopting Renewable Energy: A Case Study of the General Electricity Company of Libya Qualitative Methodology

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Abstract

This study aims to explore and understand the potential role of a "carbon tax" as a fiscal policy tool in guiding and incentivizing administrative decisions toward adopting renewable energy projects within the General Electricity Company of Libya (GECOL). The study stems from a research gap identified in the researcher's previous work, which confirmed that a "lack of specialized expertise" represents a significant obstacle to energy transition. Therefore, this research seeks to analyze this obstacle from a behavioral management perspective.

Using a qualitative approach based on case studies, in-depth personal interviews were conducted with a purposive sample of six department managers, decision-makers, and technical experts from GECOL and the Renewable Energy Authority. The thematic analysis of the interviews revealed that the awareness of the financial costs of carbon emissions acts as a "cognitive motivator" that accelerates administrative acceptance of green projects. However, this awareness is hampered by "organizational rigidity" and conflicting institutional authorities. The interviews also revealed that the lack of "expert capabilities" is not merely a technical obstacle, but a bottleneck preventing leaders from making bold decisions toward a "prosumer" model. The study recommends the development of a legislative framework that unifies efforts among sovereign institutions, with a focus on investing in "specialized human capital" as a prerequisite for the success of any green fiscal policies in the Libyan context.

Keywords: Carbon tax, administrative decision, renewable energy, expert capabilities, qualitative research, Libya.

Introduction

The electricity sector in Libya suffers from technical and administrative challenges resulting from over-reliance on fossil fuels. In light of international trends to reduce emissions, "Carbon Tax" emerges as an economic tool capable of altering institutional behavior. This research seeks to study how this tax can constitute a "managerial incentive" that pushes GECOL leaders to take serious decisions toward clean energy alternatives.

Libya relies almost entirely on oil and gas for electricity generation, placing GECOL before dual challenges: technical issues related to aging networks and inefficiency, and administrative issues regarding the absence of economic incentives for transitioning toward renewable energy. [1]

1-Carbon Tax as an Economic and Behavioral Tool:

Carbon tax is defined as a fee imposed by the government on burning fossil fuels, aimed at making the true cost of emissions visible in institutional balance sheets. Carbon pricing acts as a price signal that pushes decision-makers to seek lower-cost alternatives in the long run. For GECOL, such a tax represents a necessary "managerial shock" to re-evaluate current operating models. [2]

:2- Administrative Gap in Energy Transition

The delay in renewable energy in Libya is not due to a lack of natural resources, but rather "managerial stagnation" and the absence of stimulating legislative frameworks. Relying on government subsidies for fossil fuels "falsifies" the true cost of production, making solar or wind investments appear economically unfeasible from a narrow accounting perspective. [3]

Research Objectives and Importance:

The research analyzes the relationship between carbon taxes and the development of management strategies in the Libyan electricity sector. The primary hypothesis is that a carbon tax will act as a managerial catalyst, reducing resistance to change and pushing leaders toward adopting the "Prosumer" model.

Research Problem:

Despite global trends and environmental pressures to adopt renewable energy, Libya's electricity sector, represented by the General Electricity Company of Libya (GECOL), continues to suffer from a lack of decisive administrative action toward green transformation. The core problem lies in a "perception and implementation gap" among decision-makers; carbon emissions are not viewed as a financial burden impacting the company's strategy due to the absence of deterrent financial policies (such as a carbon tax).

This problem is further compounded by the lack of clarity regarding the mechanisms through which a carbon tax can change organizational behavior from within, particularly in an environment characterized by a "lack of specialized expertise" and overlapping institutional responsibilities. Therefore, this qualitative research aims to explore and understand how administrative leaders perceive the feasibility of green financial policies, identify the behavioral motivations and structural obstacles preventing the implementation of these policies, and ultimately gain a deeper understanding of the phenomenon of "resistance to administrative change" in the transition to a producer-consumer model. [1]

Research Questions:

To address this problem, the research seeks to answer the following central questions:

1-How do decision-makers at the General Electricity Company of Libya interpret the role of carbon tax as a tool to incentivize a change in management mindset?

2-What is the nature of the obstacles related to "lack of expert capacity" that prevent management from responding effectively to green fiscal policies, from the perspective of practitioners?

3-How do organizational culture and overlapping responsibilities between institutions (GECOL and REAOL) shape decision-making strategies toward adopting renewable energy projects?

4-What are the underlying motivations that drive or hinder management leadership from adopting the "producer-consumer" model as a solution to the current energy crisis?

Hypotheses

H1: There is a statistically significant positive correlation between managers' awareness of carbon costs and the speed of decision-making for renewable energy transition.

H2: The lack of managerial and technical expertise weakens the effectiveness of green fiscal policies.

H3: Organizational overlap between sovereign institutions represents a fundamental obstacle to implementing sustainable decisions.

Literature Review

Numerous studies have examined the impact of environmental fiscal policies on organizational behavior, and these can be divided into two main tracks that serve the objectives of this study:

The study by [4] indicated that the anticipation of carbon taxes acts as a strategic incentive, driving senior management in major electricity companies to redirect their investments toward renewable energy to avoid high future operating costs. This aligns with the findings of the study by [5], which concluded that carbon pricing alters the "administrative priorities" in power plant operations, giving preference to clean sources based on economic.

In the context of regulatory obstacles, a study emphasized that the successful adoption of carbon management within companies depends not only on the existence of laws but also, and more importantly, on "expert management capabilities." The study identified a lack of managerial expertise as a fundamental obstacle preventing the implementation of fiscal policies. [6]

This reinforces the findings of the researchers.

previous study [6] , which identified "a lack of professional skills and specialized training programs" as one of the most prominent challenges in the Libyan.

Study [7] discussed the administrative challenges faced by state-owned enterprises (SOEs) in fossil fuel-dependent countries, demonstrating that centralized bureaucracy and overlapping jurisdictions reduce the effectiveness of "green tax incentives." This study intersects with the reality of the General Electricity Company of Libya, raising questions about the capacity of its current organizational structure to accommodate concepts such as "carbon tax" given the overlap of responsibilities with other bodies, such as the Renewable Energy Authority.

Study titled: "The Impact of Carbon Tax on Energy Transition in Deregulated Markets [8]

Objective: To investigate how taxes incentivize energy companies to shift from fossil fuels to renewables.

Results: The study found that the "actual" imposition of the tax (not merely its threat) is the primary driver of increased investment in renewable energy. It confirmed that the tax reduces "administrative anxiety" regarding future uncertainty by establishing a clear price for emissions.

Study [9]

Objective: To measure the effectiveness of carbon taxes in driving a "clean technology transition" within companies.

Results: The study concluded that in the absence of a carbon tax, governments lack the incentive to transition to clean technologies. It emphasized that the tax is most effective when it leads to the development of long-term strategic plans for replacing energy with alternatives.

Study [10] on "The Relationship Between GDP and Carbon Emissions in Arab Countries"

Results: The study indicated that energy price reforms and the reduction of fossil fuel subsidies (policies that complement a carbon tax) are essential to boosting investment in solar and wind energy in the Arab region.

Research Gap

The Contextual Gap: While quantitative studies have identified an impact of the carbon tax, they have failed to provide a deep understanding of how decision-makers in the Libyan Environment and Cooperative Administration (GECOL) perceive this impact. Qualitative research here fills the gap in understanding managers' subjective interpretations of the effectiveness of financial taxes within a fully subsidized economy.

The Behavioral Mechanism Gap: There is a gap in the literature regarding internal management processes following the financial shock. Qualitative research will shed light on organizational conflicts, resistance to change, and how "green" decisions are made behind closed doors something that numbers (questionnaires) cannot capture.

The Experiential Gap: The previous researches have focused on "lack of experience" as a statistical variable, but the qualitative gap lies in exploring the "experiences" of human resources with this lack. Understanding the dimensions of the "bottleneck" from the perspective of practitioners in the field, and how this deficiency prevents the translation of financial policies into technological projects.

The "institutional interaction gap": There is a lack of qualitative studies analyzing the nature of the "organizational overlap" between GECOL and the renewable energy authority. Qualitative research would reveal the roots of bureaucracy and conflicting authorities by analyzing the formal and informal discourse of officials.

Methodology

This research study explores the impact of carbon taxes on the transition toward renewable energy in Libya, specifically focusing on the General Electricity Company of Libya (GECOL) and the Renewable Energy Authority of Libya (REAOL). The research employs a qualitative

method to achieve the study's objectives and to test the research hypotheses. The study follows a positivist model and a confirmatory research design.

Data Collection Tools

The research uses personal interviews as the primary tool for data collection. These interviews are conducted through a face-to-face procedure with the respondents to ensure direct interaction and to gain a profound understanding of the senior management's perspectives regarding carbon policies.

Study Sample

The study sample consists of six (6) individuals from the senior management and specialized departments within the following institutions:

The General Electricity Company of Libya (GECOL)

The Renewable Energy Authority of Libya (REAOL)

The six participants are denoted by P1 to P6 for analysis purposes and to ensure data confidentiality**.**

Discussion and Results

1-Perceiving Carbon Tax as a "Correction Tool" and Not Just a Fee:

Interviewees unanimously agreed that a carbon tax represents a necessary "external driving force."

Result: Managers believe that the current financial system in Libya (based on subsidies) creates a state of "false security."

Discussion: Interviewees explained that imposing the tax would change the "decision-making psychology," shifting their view of renewable energy from an "environmental luxury" to a "financial necessity" to avoid emissions costs.

":2-Bottleneck": Human Competence vs. Fiscal Policy

While welcoming green fiscal policies, all participants (6/6) expressed deep concern about implementation capabilities.

Result: One participant described a "lack of expertise" as the obstacle that would render the carbon tax "merely symbolic."

Discussion: These views align with your previous studies, which confirmed that the absence of personnel trained in "carbon accounting" undermines any administrative transformation. Here, it becomes clear that the problem isn't just "the money," but rather "who manages that money."

3-Regulatory Inertia and Overlapping Jurisdictions (GECOL vs. REOL):

The interviews revealed a "response gap" resulting from centralized bureaucracy.

Conclusion: Participants indicated that overlapping responsibilities between the electricity company and the renewable energy authority led to "fragmented administrative decision-making."

Discussion: Decision-makers believe that the success of the carbon tax requires "horizontal reform" that ensures coordination between these bodies; otherwise, the financial returns will be diverted to administrative conflicts instead of energy projects.

4-Shifting Towards a "Prosumer" Model:

The interviews demonstrated considerable optimism regarding the decentralization of energy in Libya.

Conclusion: There is a conviction that the tax should be used to fund small-scale projects in which citizens participate.

Discussion: This reflects a shift in leadership mindset from "total state monopoly" to "participatory management," which supports your hypothesis about the impact of fiscal policies on changing organizational culture.

First: Analyzing the Administrative Response Gap

The interviews revealed that the true impact of a carbon tax lies not only in its financial value but also in its role as a regulatory stimulus.

In-depth findings: Participants indicated that current administrative inertia stems from a system of hidden costs; fuel subsidies prevent management from feeling the burden of emissions.

Discussion: Interviewers explained that imposing the tax would create accounting pressure, forcing finance departments to demand cleaner alternatives from technical departments. This means the tax acts as a tool to link environmental goals to the organization's balance sheet, which explains the strong correlation coefficient (0.76) observed in your quantitative study.

Second: Dissecting the Human Capital Bottleneck

The interviews went beyond simply identifying the "gap" to describing its "type" and its practical impact.

In-depth findings: All 6 participants agreed that the company suffers from a "hybrid expertise deficit" (e.g., engineers with a background in carbon economics or accountants specializing in emissions trading).

Discussion: The interviews confirmed that financial policies will remain "constrained" unless knowledge is localized. One participant described the situation as "management wants to act, but the technical staff lacks the tools," which explains why your study identified the staffing shortage as a "bottleneck" hindering policy implementation.

Third: The organizational challenge (centralization and overlapping jurisdictions).

Qualitative findings highlighted an underlying conflict over "who leads the energy transition."

In-depth findings: The interviews revealed significant overlap in decision-making between GECOL as the operator and REOL as the renewable energy planner.

Discussion: Decision-makers believe that the dispersal of carbon tax revenues among institutions could weaken their effectiveness. Therefore, participants recommended the necessity of a "unified protocol" to end institutional competition and ensure that taxes are directed exclusively towards solar and wind energy projects.

Fourth: The Psychology of Shifting Towards a Prosumer Model

Qualitative analysis revealed a shift in the "work doctrine" within the Libyan electricity sector.

In-depth findings: The "producer-consumer" axis received the highest approval rating (4.42), and the interviews explained this by indicating that managers see "decentralization" as a solution to the problems of aging networks and inefficiencies.

Discussion: The interviews reflect a conviction that the carbon tax should fund incentives for citizens and the private sector to produce energy, thus transforming the company.

Summary of Qualitative Discussion:

The interviews confirm that the carbon tax is the "fiscal key," but "administrative reform" and "capacity building" are the "cogs" that will make this key work effectively in the Libyan context.

Summary table: Combining quantitative and qualitative results

The phenomenon	Quantitative Results (Numbers)	Qualitative Results (Interviews)	Strategic Interpretation
The Impact of the Carbon Tax	Explains 58% of the energy transition.	Acts as a necessary "management shock.	The tax is the financial engine for changing organizational behavior.
The Expertise Barrier	High average agreement on the existence of barriers.	The shortage is described as a technical ""bottleneck.	Financial policies fail without building specialized competencies.
The Prosumer Model	Highest arithmetic mean (4.42).	Conviction that decentralization is the solution to the crisis.	A shift in leadership mindset towards participatory management.

Conclusion

Carbon Tax as a Driver: It forces a re-evaluation of the economic feasibility of traditional .projects

Expert Capacity Gap: Fiscal policies remain limited without addressing the "professional .capacity gap" in carbon accounting and green project management

Organizational Challenge: Success requires administrative reform to ensure coordination between GECOL and REAOL

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Recommendations

Legislative: Adopt a "National Carbon Pricing Law" and establish an "Energy Transition ."Fund

Administrative: Create a "Carbon Strategy Unit" within GECOL and link managerial .incentives to environmental performance

Human Capital: Launch "Green Competency Programs" and mandate knowledge transfer in .international contracts

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