International Journal of Latest Research in Humanities and Social Science (IJLRHSS)
Volume 09 - Issue 01, 2026
www.ijlrhss.com || PP. 13-22

Coping Strategies of Sokoto State Informal Transport Sector Operators and Government Policy Responses Post Fuel Subsidy Removal in Nigeria

Saidu Nasir Mohammed[1], Esidence Canice E.[2], Ruth L. Caleb[3]
[1]*Department of Political Science*
Nasarawa State University, Keffi, Nigeria
[2]*Associate Prof., Head, Department of Political Science,*
Nasarawa State University, Keffi, Nigeria
[3]*Associate Prof., Department of Political Science*
Nasarawa State University, Keffi, Nigeria

Abstract: The removal of fuel subsidies in Nigeria in May 2023 triggered sharp increases in petrol prices, with profound consequences for fuel-dependent livelihoods, particularly in the informal transportation sector. This study examines the coping strategies adopted by informal transport operators and appraises the policy responses introduced by the government to support them in Sokoto State. Drawing on a mixed-methods research design, the study surveyed 400 informal transport operators—motorcycle (Okada) riders, tricycle (Keke Napep) operators, and informal taxi/mini-bus drivers—across six purposively selected Local Government Areas with the highest concentration of informal transport activity. Quantitative data were complemented with key informant interviews conducted with union leaders, government officials, and transport-sector stakeholders. Findings reveal that operators rely largely on self-managed coping strategies such as fare increases, route and trip optimisation, household expenditure cuts, fuel-saving techniques, and longer working hours, often at the expense of their health and family welfare. Evidence shows very limited institutional or social safety-net support, with nearly nine out of ten operators receiving no structured assistance from unions, religious bodies, or formal credit systems. On the policy side, government responses were narrow in coverage and modest in depth; only 14.5% of respondents reported receiving any form of support, mainly one-off cash transfers or ad hoc training. Communication gaps further constrained access, as over half of operators reported receiving no information on available palliatives. The study concludes that current coping strategies are largely survivalist and unsustainable, and that government policy responses remain insufficiently targeted, poorly communicated, and weakly institutionalised. It recommends the expansion of fuel-voucher schemes, targeted microcredit, sector-specific welfare programmes, and clear communication frameworks, anchored in Welfare Economics Theory and Public Choice Theory, to improve the welfare and resilience of informal transport operators in the post-subsidy era.

Keywords: Fuel Subsidy Removal, Informal Transport Operators, Coping Strategies, Government Policy Responses

1. Introduction

Fuel consumption subsidies are a widespread global phenomenon, historically implemented to stimulate production, reduce inequality, alleviate energy poverty, and stabilise domestic prices [1]. In 2017, global fossil fuel subsidies were estimated at USD 5.2 trillion across 191 countries, representing about 6.5% of global GDP, and increased to an estimated USD 6 trillion (7% of global GDP) in 2020. Oil-producing developing countries accounted for nearly half of global pre-tax subsidies [2], underscoring the centrality of fossil fuel subsidies to their political economy and development trajectories.

Subsidies are not confined to petroleum products. The United States, for instance, supports agricultural inputs to safeguard food security and farm incomes [3], [4]. Australia channels substantial resources into renewable energy, with large-scale wind and solar projects benefitting from sustained public support [5]. Canada deploys wage and training subsidies—such as the Canada Emergency Wage Subsidy (CEWS)—to stabilise employment and ease payroll burdens on employers [6]. The United Arab Emirates operates a targeted fuel subsidy scheme that prioritises low-income families, while also supporting food costs to maintain living standards [7]. Brazil combines oil and gas production incentives with agricultural subsidies to promote sectoral growth [8]. Across Africa, South Africa subsidises coal-based liquid fuel and affordable housing [9], [10], while Togo subsidises off-grid solar and fertiliser inputs to boost energy access and agricultural productivity [11].

Nigeria has long used subsidies on fertiliser, education, foreign exchange, electricity, and especially petroleum products—Premium Motor Spirit (PMS)—as instruments of social and economic policy [12]. Fuel

subsidies were officially justified to stabilise prices and insulate citizens from international oil price volatility. Yet over time, these subsidies became associated with pervasive corruption, diversion by middlemen, and mounting fiscal burdens. Repeated probes and policy debates have highlighted how subsidy leakages deprive the state of resources needed for infrastructure and social services, while disproportionately benefitting politically connected actors.

Concerns over the fiscal cost and distortionary impact of fuel consumption subsidies have spurred numerous reform attempts globally. In Nigeria, successive governments have oscillated between partial removal and reintroduction of subsidies, often in response to social protest [13]. Economic analyses show that fuel subsidies impose large opportunity costs, constrain public investment, and complicate macroeconomic management [48]. Their removal, however, tends to trigger immediate price shocks, inflationary pressures, and socio-political backlash, especially where compensatory measures are weak or poorly implemented [15], [16].

The complete removal of fuel subsidies in Nigeria in May 2023 marked a critical policy turning point. Average petrol prices rose steeply, increasing transport and production costs nationwide. While official narratives emphasised the need to free fiscal space for infrastructure and social investment, early evidence indicates that the policy has significantly heightened living costs and vulnerability among low-income households and informal workers. Studies have reported increases in commodity prices, reductions in real income, and worsening welfare indicators [17], [18].

The informal transportation sector forms the backbone of urban mobility in many Nigerian cities, particularly in northern states such as Sokoto. It comprises unregulated motorcycle taxis (Okada), tricycles (Keke), informal taxis, and minibuses that provide flexible, demand-responsive services to millions of low- and middle-income residents [19]. In the context of limited formal transport infrastructure, informal operators play a dual role as providers of essential mobility and as a major source of employment for youth and other vulnerable groups.

Yet, this sector is highly exposed to macroeconomic shocks and policy changes, particularly those affecting fuel prices. Higher petrol prices raise operational costs, compress profit margins, and force operators to adopt coping mechanisms that often involve fare hikes, route adjustments, and longer work hours [20]. At the same time, passengers face affordability constraints, leading to reduced patronage and further pressure on operators' income. In Sokoto State, these dynamics are embedded in an already fragile socio-economic context characterised by high poverty levels and a large informal workforce.

Recent trends in fuel prices illustrate the scale of the shock. In March 2023, the average retail price of PMS in Nigeria was approximately ₦264.29 per litre. By March 2025, it had surged to around ₦1,245.80 per litre, after peaking above ₦1,260 in early 2025 before easing somewhat later in the year. These increases have been transmitted directly into the cost structure of informal transport operations and household expenditure patterns, with severe implications for welfare and livelihood sustainability.

This study is motivated by both the national policy debate and the researcher's first-hand observations and engagements with informal transport operators and users in Sokoto State. Informal interactions revealed pervasive dissatisfaction, rising hardship, and deep uncertainty among transport workers since the removal of subsidies. Many operators reported struggling to afford fuel, contemplating exit from the sector, or drastically cutting household expenditure. These field realities raised critical questions about how operators are coping and the extent to which government policy responses have supported or neglected them.

While a substantial body of literature has examined the macroeconomic dimensions of fuel subsidy removal—focusing on inflation, fiscal sustainability, and national welfare [21]–[22]—there remains a notable gap in empirically grounded, sector-specific analyses at sub-national level. In particular, little is known about how informal transport operators in peripheral states like Sokoto adapt to subsidy removal shocks, and how far government palliative measures reach them in practice. This study seeks to fill this gap by providing micro-level evidence from Sokoto's informal transportation sector.

1.1 Objectives of the Study

This paper focuses on two specific objectives:

1- To examine the coping strategies adopted by informal transport operators in response to the implementation of fuel subsidy removal in Sokoto State.
2- To appraise the policy responses introduced by the government to support informal transport workers in Sokoto State following the removal of fuel subsidies.

1.2 Research Questions

1- What coping strategies have informal transport operators adopted in response to the implementation of the fuel subsidy removal policy in Sokoto State?

2- What policy responses were introduced by the government to support informal transport workers post-subsidy removal in Sokoto State?

2. Literature Review

2.1 Coping Strategies of Transport Operators under Fuel Price Shocks

Shapiro, Pearlmutter, and Schwartz examined the emergence of rural transport strategies in response to rising fuel costs in Israel [23]. Surveying nearly 100 organisations operating in kibbutzim communities, they showed that firms adopted distinct strategies such as localisation of markets and a shift towards high-value-density activities, including information-based services. Localisation was widespread because it required relatively low capital outlay, while high-value-density strategies were more common in remote regions where sensitivity to transport costs was acute. Non-remote firms tended to prefer non-disruptive adaptations, such as changing shipping modes. Although illuminating, the study focuses on formal rural enterprises in a developed-country context and does not address the specific challenges of informal transport operators in developing regions like Sokoto State, who often lack capital buffers and operate outside formal regulatory frameworks.

In Malaysia, Ladin et al. investigated the influence of fuel price increases on mode choice, particularly the shift from private vehicles to public transport among university commuters [24]. Using a modelling approach, the study established a strong correlation between fuel prices and modal shift, finding that sharp petrol price hikes could induce up to 88% of car users to switch to buses once prices reached a specified threshold. While this work highlights behavioural responses to fuel cost changes, it is centred on commuters' mode choice rather than the livelihood strategies of informal transport workers and therefore offers limited guidance on how such operators cope with sustained increases in fuel prices in Nigeria.

Within the Nigerian context, a growing body of literature has focused on the broader socio-economic implications of subsidy removal and price deregulation. Adinoyi and Kpae explored suitable palliatives to cushion the removal of fuel subsidy in Nigeria, arguing that diverse interventions could mitigate economic hardship if designed and implemented transparently [25]. Their study, however, relied on secondary data and qualitative content analysis, and did not empirically examine the actual coping mechanisms deployed by specific occupational groups such as informal transport operators.

Muhammad, Idriss, Ardo, and Salisu adopted a normative lens by examining the application of Islamic teachings on brotherhood to address the challenges associated with subsidy removal among vulnerable Nigerians [26]. Employing qualitative methods, they argued that Islamic principles of solidarity can foster collective support and mitigate socio-economic tensions. While the work offers an important ethical perspective, it is less concerned with the concrete economic and operational strategies of transport workers.

Other Nigerian studies have addressed poverty, informality, and transport, though not always in the post-2023 reform context. Yelwa and Babalola assessed the role of commercial motorcycle riders in poverty alleviation in Minna metropolis [27]. Using primary data from 379 operators and employing regression analysis, they found that most Okada riders earned above the international poverty line, and that experience, mode of operation, working hours, and turnover significantly influenced poverty reduction. Despite its insights, this study predates the latest subsidy removal and does not consider how subsequent fuel price hikes may have reversed or weakened these poverty-alleviating effects.

The emerging literature following the 2023 removal increasingly documents rising living costs, income erosion, and stress among workers across sectors [17], [18]. Yet, few studies systematically capture the multi-dimensional coping strategies of informal transport operators at the state level. This study responds to that gap by providing empirical evidence on how transport workers in Sokoto State adjust operationally, financially, and socially to survive the post-subsidy environment.

2.2 Policy Responses and Government Interventions after Subsidy Removal

Percy and Gloria examined fiscal policy and alternatives to subsidy removal in Nigeria, using a descriptive survey of 400 respondents to gauge public opinion [28]. Their findings underscored the need for targeted subsidies and investment in renewable energy infrastructure to protect vulnerable groups and support sustainable growth. Although the study highlights important fiscal trade-offs, it does not delve into sector-specific interventions targeting informal transport workers.

Okeke and Akinwunmi analysed the fiscal policy ramifications of subsidy elimination on public welfare in Enugu State using a mixed-methods approach [29]. They found that subsidy removal disproportionately worsened conditions for low-income households, and concluded that weak fiscal frameworks could amplify negative welfare outcomes. However, the focus was on households rather than occupational groups, and the study predates the 2023 nationwide reform.

At the international level, Kraft et al. examined fiscal policy responses to subsidy reforms in Southeast Asia, showing that well-designed cash transfers and social protection schemes can significantly offset the

negative distributional impacts of subsidy removal [30]. Similarly, Wang and Yao considered how integrating sustainability into fiscal policy in China supports long-term economic stability after subsidy adjustments [31]. These comparative studies demonstrate the potential of targeted interventions but are context-specific and may not be directly generalisable to Nigeria's informal transport sector.

Closer to the Nigerian context, Kamba, Bello, and Usman assessed the impact of fuel subsidy removal on household economies in Birnin Kebbi metropolis using a comparative survey of 500 households before and after the policy [32]. Their findings indicate declining incomes, increased fuel spending, and broad support for direct interventions such as financial aid and subsidies on essential goods. While informative, the study does not extend its analysis to occupational sectors such as informal transportation.

Finally, Maih, Omotosho, and Yang employed a Markov-switching dynamic stochastic general equilibrium model to analyse the welfare effects of subsidy removal under varying oil price and monetary policy regimes in Nigeria between 2000 and 2021 [2]. They concluded that subsidy removal can have welfare-reducing effects, especially during periods of high oil price volatility, and recommended flexible monetary and fiscal frameworks to mitigate adverse impacts. This macro-level focus, however, leaves open questions about how concrete policy measures play out in specific sectors and localities after the 2023 reform.

Overall, the literature suggests that while scholars have examined the macroeconomic, fiscal, and political dimensions of fuel subsidy removal, empirical evidence on the reach, design, and perceived effectiveness of post-subsidy interventions for informal transport workers remains limited. This study contributes to filling that gap with evidence from Sokoto State.

3. Theoretical Framework

The study is anchored on three mutually reinforcing theories: Public Choice Theory, Welfare Economics Theory, and Informal Sector Resilience Theory. Together, these frameworks help explain both the rationale and distributional consequences of fuel subsidy removal, as well as the adaptive responses of informal actors.

Public Choice Theory (Buchanan & Tullock) conceptualises policy outcomes as the result of interactions among self-interested politicians, bureaucrats, and interest groups [33]. In the context of fuel subsidy removal, it draws attention to how subsidy regimes and their reform may be shaped by elite interests, rent-seeking, and the political calculus of governments. The limited reach of palliatives to informal transport workers, as found in this study, can be interpreted through this lens as an outcome of weak political representation and collective bargaining power among these actors.

Welfare Economics Theory (WET) focuses on how policies affect social welfare, efficiency, and distribution. It provides a normative framework for evaluating whether subsidy removal enhances or diminishes the well-being of different groups. From this perspective, the central concern of this study is whether the removal of fuel subsidies and accompanying policy responses have improved or worsened the welfare of informal transport operators in Sokoto State. WET thus serves as the primary analytical framework in interpreting the empirical findings.

Informal Sector Resilience Theory emphasises the adaptive capacity of informal economic actors in the face of shocks and institutional constraints [34]. It suggests that while informal workers often develop creative coping strategies, these are frequently defensive and survivalist rather than transformative. The multiple coping mechanisms observed among transport operators—fare increments, fuel-saving measures, household austerity, and extended work hours—illustrate this kind of resilience, but also its limits when not complemented by supportive institutional arrangements.

4. Research Methodology

A mixed-methods research design was employed, integrating quantitative and qualitative approaches. Using Taro Yamane's formula for finite populations with a 5% margin of error [35], a sample size of 400 informal transport operators was determined. The quantitative component consisted of a survey of motorcycle (Okada) riders, tricycle (Keke Napep) operators, and informal taxi/mini-bus drivers across six purposively selected Local Government Areas with the highest concentration of informal transport activity. Qualitative data were obtained through key informant interviews with transport union leaders, relevant government officials, and other transport-sector stakeholders.

5. Data Presentation and Analysis

5.1 Objective I: Coping Strategies Adopted by Informal Transport Operators

Table 1: Coping Strategies Adopted by Operators

Coping Strategy	Frequency	Percentage (%)
Increased transport fares	183	45.75
Reduced number of daily trips	88	22.00
Carry more passengers per trip	106	26.50
Started a side hustle or second job	23	5.75

Table 1 shows that the most common coping strategy was increasing transport fares (45.75%), followed by carrying more passengers per trip (26.5%) and reducing the number of daily trips (22%). Only 5.75% reported taking up a side hustle or second job. These findings indicate that most operators rely on immediate operational adjustments—rather than livelihood diversification—to deal with higher fuel costs. The strategies of fare increases and maximising passenger loads effectively transfer part of the cost burden to commuters while seeking to preserve income levels. The pattern is consistent with Abubakar and Nwoke [36] and Adewumi [37], who described similar "micro-efficiency" responses among informal transport workers facing fuel price shocks in northern Nigeria.

Table 2: Household Expenditure Adjustments

Adjustment	Frequency	Percentage (%)
Reduced household spending	262	65.50
Withdrew children from school	11	2.75
Now depend on family/friends	9	2.25
No major change	118	29.50

As shown in Table 2, 65.5% of respondents reported reducing household spending as a coping response, while 2.75% had withdrawn children from school, and 2.25% depended more on family and friends. About 29.5% reported no major lifestyle changes. These findings suggest that operators are absorbing the fuel shock partly through domestic austerity, which has direct implications for welfare, education, and social well-being. They align with Nwogwugwu and Alabi [38] and the World Bank [39], who observed that low-income informal workers often respond to economic shocks by cutting essential household expenditure due to limited access to credit and savings.

Table 3: Fuel Management Practices

Fuel Adjustment Practice	Frequency	Percentage (%)
Switch off engine during idle times	116	29.00
Plan trips to avoid fuel waste	156	39.00
Ride slower or avoid traffic	60	15.00
No change	68	17.00

Table 3 indicates that 39% of operators plan trips more carefully to avoid fuel waste, 29% switch off their engines during idle periods, and 15% ride slower or avoid congested routes. Only 17% made no changes. These results confirm the adoption of micro-level fuel conservation techniques, reinforcing the view that informal workers display adaptive rationality in managing scarce resources [40].

Table 4: Health and Work-Related Effects

Health/Work Effect	Frequency	Percentage (%)
Feel more stressed and tired	161	40.25
Work longer hours	93	23.25
Skip meals or rest	61	15.25
No noticeable change	85	21.25

Table 4 reveals that 40.25% of operators feel more stressed and tired, 23.25% work longer hours, and 15.25% skip meals or rest to save time or money. Only 21.25% reported no noticeable change. These findings

highlight the physical and psychological toll of economic adjustment on operators. Qualitative accounts underscored experiences of exhaustion, anxiety, and heightened accident risks, corroborating studies by Olowookere and Mustapha [41] and Ajakaye and Akinbode [42].

Table 5: Sources of Support

Source of Support	Frequency	Percentage (%)
Transport union	14	3.50
Religious/community group	6	1.50
Loans and credit	30	7.50
None – manage alone	350	87.50

Table 5 demonstrates that 87.5% of respondents receive no external support, 7.5% access loans or credit, 3.5% rely on transport unions, and 1.5% receive assistance from religious or community groups. The near absence of institutional and social safety nets underscores the vulnerability of informal transport operators and the limited effectiveness of collective mechanisms in cushioning policy shocks.

5.1.1 Synthesis and Theoretical Reflections on Objective I

Synthesising the findings, informal transport operators in Sokoto State have adopted a multi-layered set of coping measures: operational adjustments (fare increases, route optimisation), household expenditure cuts, fuel conservation practices, and increased labour effort. These strategies are largely survivalist and reactive rather than transformative. From an Adaptive Rationality perspective [43], operators are making boundedly rational choices that minimise disruption to their existing livelihood structures. The Livelihood Vulnerability Framework [44] helps show how households dependent on informal transport intensify labour and reduce consumption when faced with external shocks, reflecting limited access to savings, insurance, or credit. Informal Sector Resilience Theory [34] is also supported, as operators' responses reveal both resilience and its limits in the absence of institutional support.

5.2 Objective II: Government Policy Responses to Support Informal Transport Workers

Table 6: Government Support Received

Government Support Received	Frequency	Percentage (%)
Received cash or grants	48	12.00
Received non-cash support	10	2.50
No, but heard others were supported	63	15.75
No support at all	279	69.75

As shown in Table 6, only 14.5% of respondents reported receiving direct government assistance (cash or non-cash), while nearly 70% received no support. A further 15.75% had only indirect awareness that others were supported. This indicates extremely limited coverage of post-subsidy interventions among informal transport workers, reinforcing findings from the World Bank [45] and Onifade et al. [46] on the exclusion of informal workers from national palliative programmes.

Table 7: Types of Support Reported or Recognised

Type of Support	Frequency	Percentage (%)
Direct cash transfer	142	35.50
Fuel subsidy or voucher	68	17.00
Business training/empowerment	116	29.00
Vehicle repair/maintenance aid	18	4.50
None	56	14.00

Table 7summarises the forms of support respondents were aware of. Direct cash transfers (35.5%) and business training or empowerment programmes (29%) were most frequently mentioned, followed by fuel vouchers (17%) and vehicle repair support (4.5%). However, given the low share of operators who actually benefited, these figures mostly reflect programme visibility rather than actual reach. The dominance of cash-

based interventions suggests a preference for short-term income relief over structural support for sectoral productivity [47].

Table 8: Perceived Effectiveness of Support

Perceived Effectiveness	Frequency	Percentage (%)
Helped significantly	71	17.75
Helped in a small way	56	14.00
Did not help at all	16	4.00
Did not receive any support	257	64.25

Table 8 shows that among those who had some contact with support measures, 31.75% rated them as helpful to varying degrees, while 4% felt they did not help at all. However, nearly two-thirds of all respondents did not receive any form of support. Interview narratives revealed that cash grants were typically one-off and quickly eroded by inflation and rising fuel costs, a pattern consistent with Abubakar and Nwoke [37].

Table 9: Assessment of Government Communication

Assessment	Frequency	Percentage (%)
Very clear and well communicated	51	12.75
Delayed or vague	16	4.00
Confusing and hard to understand	127	31.75
No information received	206	51.50

Table 9 indicates that 51.5% of operators received no information about government support measures, while 31.75% rated communication as confusing. Only 12.75% considered it clear and well communicated. This pattern points to serious communication and outreach deficiencies, which undermined participation and fostered perceptions of exclusion and arbitrariness [42], [45].

Table 10: Preferred Forms of Government Support

Preferred Support	Frequency	Percentage (%)
Regular cash assistance	98	24.50
Fuel vouchers for transporters	189	47.25
Access to affordable vehicle repairs	39	9.75
Exit support and business setup package	74	18.50

Table 10 reveals that nearly half (47.25%) of operators prefer fuel vouchers as the primary form of support, followed by regular cash assistance (24.5%), exit or business setup packages (18.5%), and affordable vehicle repairs (9.75%). The preference for fuel vouchers highlights the centrality of fuel costs in operators' cost structure and suggests that in-kind operational support may be more valued and effective than undifferentiated cash transfers [48]. The interest in exit packages reflects growing fatigue and the desire among some operators to transition out of the sector altogether.

5.2.1 Synthesis and Theoretical Reflections on Objective II

Overall, the findings show that government policy responses to subsidy removal in Sokoto State were characterised by limited coverage, an emphasis on short-term cash relief over structural support, and weak communication. From a Public Policy Implementation perspective [48], this reflects implementation deficits arising from bureaucratic bottlenecks, poor coordination, and weak stakeholder engagement. Public Choice Theory further suggests that benefits may have been captured by more organised or politically connected groups, leaving informal operators—who lack strong institutional voice—largely excluded. These dynamics collectively undermine the welfare-enhancing potential of subsidy reforms envisioned by Welfare Economics Theory.

6. Conclusion and Recommendations

This paper examined the coping strategies of informal transport operators and the government policy responses following the removal of fuel subsidy in Sokoto State. Using survey data from 400 operators and insights from key informant interviews, the study found that operators have largely relied on self-managed, survivalist strategies including fare increases, trip and route adjustments, domestic expenditure cuts, fuel-saving techniques, and extended working hours. These coping mechanisms, while demonstrating resilience, are unsustainable in the long term and impose substantial welfare costs on operators and their households.

Government policy responses were found to be limited in coverage, modest in depth, and poorly communicated. Only a small minority of operators received any form of support, mostly in the form of one-off cash or ad hoc training, with minimal impact on long-term livelihoods. The majority of operators preferred fuel vouchers and regular operational assistance over cash handouts, signalling a disconnect between policy design and the lived realities of informal transport workers.

Grounded in Welfare Economics Theory, Public Choice Theory, and Informal Sector Resilience Theory [34], [50], the findings underscore the need for a more inclusive, transparent, and sector-sensitive approach to managing the distributional consequences of fuel subsidy removal. Without concerted efforts to integrate informal operators into post-reform welfare frameworks, the policy risks deepening inequality, exacerbating poverty, and undermining social cohesion.

On the basis of the foregoing, the study makes the following recommendations:

- Expansion of targeted fuel voucher schemes and operational subsidies specifically for registered informal transport operators.
- Developing microcredit and cooperative financing facilities to enable operators to manage liquidity shocks and modestly upgrade their assets.
- Strengthening transport unions and cooperatives as platforms for welfare schemes, pooled procurement, and policy consultation.
- Designing and implementing occupational health and safety programmes to mitigate the health impacts of longer working hours and stress.
- Establishing clear, decentralised communication channels to publicise support measures, using local media and digital platforms.
- Introducing structured exit and business re-skilling programmes for operators who wish to transition into alternative livelihoods.
- Institutionalising monitoring, evaluation, and transparency mechanisms to ensure that post-subsidy interventions reach their intended beneficiaries.

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