TIMBER TRANSPORT BY ROAD IN GHANA

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ABSTRACT

Medium and heavy-duty articulated and rigid trucks are generally used for transporting timber and wood products in Ghana. Currently, over 90% of wood transport depends on roads and contribute significantly to the distribution of wood to both local and external markets. Following lack of uniform harvesting policies for a long time, many logging companies neglected to invest in the development of forest roads in areas outside the reserves. This led to extensive damage under the selective harvesting system and frequent social confrontations following demand for fair compensation. Secondly, as a result of inadequate control of axle load, timber trucks with excessive axle load inadvertently cause damage to public roads with additional high repair cost. There is also frequent involvement of disabled timber trucks in fatal road accidents following non-compliance of advance warning requirements for stationary vehicles. Other potential hazards posed by timber trucks on public roads include rolling of logs off trailers, non-recovery of lost logs and overloading.

INTRODUCTION

Long distance transport of timber and wood products is carried out in Ghana either by road or rail. Of the two, timber transport by road is the more extensive and the more widely used and it plays an important role in timber trade in Ghana. Currently, over 90% of wood transport in Ghana depends on road.

Timber transport by road generally starts from the forest and involves the conveyance of round logs and lumber by heavy-duty trucks to mills for processing or to the harbour for shipment overseas. Even where long distance transport of wood is carried out by rail, the first leg of wood transport from the forest to the railway siding is always dependent on road transport. In addition, road transport plays a significant role after wood processing and subsequent distribution of wood products to domestic markets and retail centres in the neighbouring Economic Community of West African States countries. Similarly, the pre-shipment transport of wood products to harbours for export relies mostly on road transport.

METHODOLOGY

Vehicles for Wood Transport in Ghana

The major types of vehicles used for the transportation of timber and wood products in Ghana are articulated and non-articulated trucks. The non-articulated trucks also known as straight trucks comprise a range of two to three axle medium to heavy duty trucks (4 x 2, or 6 x 4) used for carting lumber, fuelwood, canes, pestles and wood products. The design of truck body varies considerably. The two main types are:

- Wooden platform with high fixed wooden sideboards with rear flap
- Metal bin, container type with rear doors or flap.

A description of different types of non-articulated trucks and their uses have been presented in Table 1 (1.0 – 1.2).

The articulated trucks are heavy-duty trucks used for transporting round logs, lumber and bulky wood products over long distances (>200 km). They comprise a series of two to three axle tractors (4 x 2 or 6 x 4) with trailer attachment serving as load space. The trailer is equipped with a turning plate

TABLE 2

Off-Reserve Log Production as % of Total Log Production

Period	Total Volume	Remarks
1960 – 1972	70%	Impact of 1948 Forest Policy which allowed liquidation of timber exploitation in off-reserves.
1974 – 1992	50%	Impact of economic decline on timber industry, breakdown of facilities and infrastructure. Decline in harvesting activities in off-reserves. Log production mainly from "salvage" felling of over-mature trees in the reserves.
1993 – 1994	80%	Expansion of timber industry and log export markets in the Far East contributed to increased timber exploitation by chainsaw operators from off-reserves where controls were weak.
1995 – 1996	60 – 55%	Interim Measures: tighter management in off-reserves e.g. introduction of farmers right to veto and payment of compensation for crop damage led to dramatic decline in log production (Planning Branch, 1994).
1997 – 1999	55 – 50%	Clamp down on chainsaw operations, extension of forestry service's control over off-reserves and introduction of the Timber Resource Management Act reinforced earlier measures to promote further decline in log production from off-reserve through enhanced rights of stakeholder on trees on their land.

Policy Frame of Timber Harvesting and Forest Road Infrastructure Development

Before 1997, the grant of rights for timber exploitation was administered through a concession system involving the issue of property marks, licences, leases and permits under the Concession Ordinance, Cap 136 (later the Concession Act 1962 – Act 124) and the Trees and Timber Ordinance. Regulations for operation consisted of the application of felling limits for selection of trees in the selective harvesting system and regulations for transportation. During this time, the Lands Commission was responsible for allocating concessions, collection and disbursement of royalties. Additionally, the management of timber resources outside the reserves was entrusted to Lands Commission.

Since the 1948 Forest Policy regarded all forests outside the reserves as not dedicated to permanent forest estate, the Forestry Department therefore devoted much attention to the protection of the reserves with the expectation that all forest outside the reserves would be converted to agricultural lands. As a result, timber-harvesting regulations, which were operational in the forest reserves, were not strictly enforced in the off-reserves (Prah, 1994).

With respect to timber rights, the 1948 Forest Policy and its allied legislation (e.g. Concessions Act, 1962) gave farmers practically no rights over timber trees on their lands. As a result, farmers and local communities were marginalized and denied of their tenurial privileges, and payment of their entitlements from timber exploitation was often delayed.

This created a situation for the spread of irresponsible logging practice in the off-reserves. For example, in order to reduce harvesting costs, many concession holders neglected to develop forest road infrastructure as generally required for timber harvesting and transport operations. Under this lax operational environment, log production in the off-reserves continued to increase over supplies from the reserves

where strict harvesting regulations were enforced. Table 2 provides an overview of the trend in log production in the off-reserves from 1960 – 1999 (Kotey *et al.*, 1998).

Timber Transport in the Forest

In absence of appropriate forest roads, truck transport of logs was generally organised from improvised landings over poorly prepared tracks through forests and farmlands onto feeder and urban road net with several problems. In the first place, the presence of obstacles such as root outcrops, stumps, underbrush and wood debris on such poorly prepared tracks hindered smooth movement of timber trucks and contributed to frequent accidents in transit. Secondly, the forest floor conditions during prolonged wet periods compounded the problems further on the tracks resulting in delays and the use of adjacent forest and farmlands as transport routes causing damage to farm crops and forest vegetation. Moreover, timber transports on such improvised tracks as well as log extraction by crawler tractors and heavy wheeled skidders caused erosion, sedimentation and natural regeneration disturbances, which affected optimal use of the land.

Following lack of any meaningful rights for farmers and forest holding authorities, damage and destruction caused to food crops and cocoa farms received little or no compensation leaving stakeholders aggrieved. Therefore, in order to prevent logging activities on farms and save crops from further damage, farmers resorted to the habit of killing timber trees during land preparation and also liased with chainsaw operators for direct sale of timber trees for cash or lumber.

Reaction from Forest Fringe Communities

In response to the growing awareness of the damage caused through logging operations and the attitude of timber companies, many communities have set up initiative groups to support aggrieved stakeholders to assert their demand for a fair share of the forest wealth. Activities of such groups vary widely and consist of negotiating with concessionaires on development projects, compensations, monitoring and compliance. To back up their demands, the groups mount roadblocks to obstruct conveyance of timber from the forest.

Timber Transport on Public Roads

Soon after leaving the forest with their bulky heavy loads, timber trucks travel on public roads which are governed by Road Traffic Regulations regarding axle weight, speed and loading restrictions.

Recognising the need to protect road infrastructure, the Ministry of Roads and Highways in Ghana introduced in 1994 axle load control and accordingly, installed two weighbridges at Asuoyeboa on Sunyani – Kumasi Road and Ofankor on Accra – Kumasi Road.

In Ghana, the axle load regulations prescribe 10 tons for single axle, 20 tons for tandem axle and 40 tons for gross vehicle weight. Under the ECOWAS protocol to which Ghana is a signatory, 13 tons for single axle has been prescribed. Table 3 provides an overview of legislated axle load limits for selected countries including Ghana.

Axle Load Control and Infringement

Articulated trucks used for transporting logs, wood products and cocoa from hinterlands are affected by the axle load regulations and vehicles exceeding the prescribed axle load limits are arrested, off-loaded and handed over to the police for prosecution (GHA, 1995). Table 4 provides a summary of the exercise at Asuoyeboa on Sunyani – Kumasi Road from 1994 to 2000.

From Table 4, there has been a steady decline in the incidence of axle load infringements from 8.4% in 1994 to 1.7% in 2000.

TABLE 3

The Legislated Limit for 5 Selected Countries are compared with Existing Limits in Ghana

Item (Max Value)	US AASHTO	US Federal AID Highway Amendment 1974/78	EU	Japan	Saudi Arabia	Ghana LI 953 (1974)
Single Axle	20,000 lbs (8.9 tons)	20,000 lbs (8.9 tons)	13 tons	8 tons	13 tons	10 tons
Tandem	32,000 lbs (14.3 tons)	34,000 lbs (15.2 tons)	20 tons	16 tons	20 tons	20 tons
Loaded Height	13" – 6"					11" – 0"
Loaded width	8" – 6"					13" – 3"
Gross width	86,500 lbs (38.6 tons)	80,000 lbs (35.7 tons)				32 tons
Length	55 ft truck tractor & semi-trailer 40ft (single unit)					42" – 8" (articulated) 36 ft (single unit)

* There is no limit for the tandem axle in Ghana but with 10 tons allowed on any single axle it is presumed that 20 tons is allowed for a tandem axle.

Source: Ghana Highway Authority

TABLE 4

Axle Load Control at Asuoyeboa, Kumasi

Year	No. of Timber Trucks	No. of Vehicles Arrested
1994	7,901	662 (8.4%)
1995	8,199	350 (4.3%)
1996	6,582	248 (3.8%)
1998	5,564	178 (3.2%)
1999	5,335	153 (2.9%)
2000	4,190	71 (1.7%)

Source: Ghana Highway Authority, Kumasi Annual Reports (1994 – 2000)

Secondly, it was observed that most of the trucks found infringing the axle load limit had already travelled over 100 km from the hinterland uncontrolled, inflicting damage to road pavement. The relative damage caused to road varies in magnitude and can be expressed approximately as the fourth power of applied wheel load (Millard, 1993).

Road Damage Impact

Some of the common damage found on both forest and public roads after repetitive application of excessive wheel load, include development of ruts, surface cracks, potholes and bridge failure leading to premature deterioration of road infrastructure. According to the Ghana Highway Authority (GHA, 1993), the heavy-duty trucks, which constitute 10% of

traffic vehicles, cause over 90% damage to road infrastructure. In response to the increasing damage caused by vehicles to feeder roads, some of the District Assemblies in the timber producing areas have instituted road levies to generate funds for road maintenance and repairs.

Disabled Trucks and Accidents

Another area of concern on public roads is the involvement of disabled timber trucks in accidents. A survey conducted at Building and Road Research Institute of Ghana, indicated that timber trucks and wooden cargo trucks transporting charcoal constituted 76% of all disabled trucks involved in road accidents on the Kumasi – Kintampo Trunk Road (Salifu, 1993; Akondor, 1993).

Salifu (1993) reported further that disabled trucks left unattended on public roads caused 54 deaths, 105 serious and 84 minor injuries in 29 accidents in 1989.

Barely a decade later, accidents statistics have assumed alarming trend with disabled and abandoned trucks being the major cause of some gruesome road accidents claiming 6,500 lives and leaving 52,000 others with various degrees of injuries from 1992 to 1998. Based on these observations, Agyeman-Day (2000) reported that in a period of six years about 1000 Ghanaians lost their lives yearly with 9000 others suffering diverse injuries. This frightening picture of 3 deaths and 25 injuries daily on Ghanaian roads rates the country among the leading accident-prone roads in the world.

Inadequate Advance Warning of Disabled Trucks

Among reasons assigned to the trend in accident statistics is non-compliance with advance warning requirements of disabled stationery trucks and irresponsible use of materials e.g. grass and plants parts which are unable to warn approaching vehicles as prescribed under Section 44, subsection 1 and 4 of the Ghana Road Traffic Regulations (Salifu, 1993).

Vehicles Disability and Defects

The major causes of vehicle disability leading to frequent breakdown on public roads include lack of regular maintenance and ageing of vehicles. Ofori-Badu (1993) reported the ages of 25 sampled timber trucks to range from 3 to 20 years with an average age of 12 years and identified the following defects with one vehicle having as many as eight different defects (see Table5). A further observation on old timber trucks is the "Centre bolt" defect, which results in a swing of the truck's body off its axis. With such defects, it is not uncommon to find timber trucks travelling in the night without light, posing immense traffic risks on public roads. Following frequent involvement of timber trucks in accidents in the night, timber trucks have been banned from travelling between 6 pm and 6 am.

TABLE 5

Distribution of Defects on 25 Hauling Rigs

Defects	Frequency of Defects
Head lamps	8 *
Traffic indicators	11 *
Defective starters	7
Defective brakes	4
Smashed windscreen	2 *
Smashed driving mirrors	9 *
Inoperative wipers	10 *
Worn tyres	15 *
No spare tyre	23 *
No jerks	7
No warning triangles	8 *

* Identified defects on one truck.

Rolling of Logs off Trailers

Another issue of concern to timber transportation is the snapping of chain binders used for securing logs on trailers during transport, resulting in logs rolling off

the trailer and crashing on vehicles or landing on road pavement with fatal consequences. Chilling reports on logs crashing on vehicles and killing passengers underscores the need for stricter enforcement of controls by both police and truck operators to enhance traffic safety of timber trucks.

Ofori-Badu (1993) reported that in addition to identified defects on the 25 sampled timber trucks (see Table 5), three trucks which had travelled several kilometres from the hinterland had their chain binders not properly hooked and posed serious risks to traffic. Similarly, failure of chain binders in traffic can be attributed to irresponsible use of defective binders following lack of regular inspections and controls of timber truck accessories as required by safety regulations.

A further frequent cause of logs rolling off trailers is through the phenomenon of jack-knifing, generally peculiar to articulated trucks. Under unfavourable pavement and wheel conditions, the trailer of articulated truck swings round at a sharp angle subjecting it into uncontrolled skid forcing the logs off the trailer.

Lost Logs

The prevailing practice indicates that logs lost in transit are generally not recovered but rather abandoned along road shoulders to decay contrary to part VII of the Timber Resources Management Regulations 1998 (LI, 1649). Reasons assigned to non-recovery of logs span across superstitious beliefs alluding to "unwillingness of the logs to travel further for processing" with threats of harm if they were forcibly conveyed, to non-availability of technical and financial resources for recovery. Nevertheless, the prevailing practice demonstrates resource waste following laxity in the enforcement of existing traffic and forest regulations over the years.

Loading Practice

A further established habit undermining traffic safety is the prevailing loading practice on public roads. Following lack of apparent controls, it has become not uncommon to see timber trucks carrying several logs with the sides projecting beyond the prescribed loading limits. Similarly, cargo trucks transporting charcoal from the hinterlands to marketing centres continue to flout loading regulations by frequently exceeding prescribed loading height without being sanctioned by the police.

CONCLUSIONS AND RECOMMENDATIONS

Timber transport by road will continue to play an important role in the domestic and external timber trade in Ghana. Over the years, timber harvesting and transport operations have been carried out to the dissatisfaction of farmers, landowners and rural communities. In the first place, the early forest policies marginalized forest fringe communities and provided no uniform controls for the construction of forest roads. This led to extensive damage under the selective harvesting system and frequent social confrontations following demand for compensation.

On public roads, timber vehicles with excessive axle load cause damage and premature deterioration of roads with high repair and vehicle operational cost. In order to reduce road damage, mobile weigh bridges should be used to augment axle load checkpoints in the country. It is also proposed that timber companies should be encouraged through tax rebates and other incentives to purchase hauling rigs with inbuilt weighing facilities to control weight on axles during loading. Meanwhile, the District Assemblies should be strengthened to expand their toll collection net to generate adequate funds to meet the growing road maintenance cost.

Current accident statistics indicates that disabled timber trucks and wooden cargo trucks carrying charcoal cause fatal road accidents as a result of non-compliance with advance warning requirements for stationary vehicles. In order to prevent such accidents, timber trucks operators should be encouraged to undertake regular inspections (including all accessories) and maintenance schedules to avoid vehicles breaking down frequently on roads. In addition, educational campaigns should be organised to sensitise truck operators on traffic regulations and irresponsible traffic behaviour such as over-speeding, over-loading, overtaking in curves and wilful swaying of trailers. In order to enhance compliance, the police should intensify controls and apply more deterrent sanctions to traffic offences.

Following the inherent lapses of the early policies on timber rights, the former concessions system has been replaced by the Timber Utilisation Contract (TUC) through enactment of the Timber Resources Management Act, 1997, Act 547 and its Allied Regulation LI 1649. With respect to timber transportation, the following conditions have been prescribed to enhance planning and rational management of timber harvesting and transport operations (FAO, 1996). These are:

- Employment of qualified professional and technical staff;
- Construction of appropriate forest road infrastructure;
- Restriction of log transport between 6am and 6pm;
- Appropriate log marking to facilitate log tracking.

In addition to the above, the TUC has instituted measures to reduce social conflicts and improve the welfare of the people in the contract area through the following prescriptions:

- Consultation with local farmers, chiefs and communities;
- Payment of appropriate compensation for operational damage;
- Provision of social amenities for the communities under a Social Responsibility Agreement (SRA);
- Execution of reforestation plan in line with the recommendation of the Forestry Service Division;
- Submission of a performance bond for satisfactory implementation of the contract terms

The current policy on timber right provides a framework for collaboration among diverse stakeholders, namely law enforcement agencies, wood industries, farmers, communities land holding authorities, District Assemblies and NGOs on planning, enforcement, monitoring and performance assessment of provisions aimed at securing sustainable management of Ghana's Forest Resources. In view of this, stakeholders should be educated on their rights and expected roles under the legislation and accordingly motivated to contribute meaningfully to enhance compliance.

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