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TRUCK REGULATIONS AND REGIONAL TRADE IN AFRICA

Edward Fekpe, PhD., PEng
Principal Research Scientist
Battelle, 505 King Avenue
Columbus, OH 43201, USA
E-mail: fekpee@battelle.org

ABSTRACT

A critical element of regional trade is an efficient system for freight transportation. The efficiency of the system is largely determined by the compatibility of the regulations and laws governing the operation of trucks. In Africa, freight transportation is predominantly by trucking. Cross-border trucking in Africa seems to be dominated by transit movements to landlocked countries. The success of any regional trade agreement is largely dependent on the compatibility between the highway facility provisions and capacities, on one hand, and the physical and operating characteristics of trucks on the other. The diverse political and economic histories and thrusts in African countries are reflected in the differences in transportation regulatory settings and policies; and operating conditions of trucks. The question of technical harmonization is not only complex but also sensitive in many respects and requires a lot of compromise and trade off. Complete harmony is neither possible nor expected given the high degree of diversity in the variables to be considered. This paper identifies certain issues considered pertinent to achieve some reasonable level of compatibility and/or technical harmony respecting the regulations and operating conditions in Sub-Sahara Africa. Concepts for technical harmonization, parameters for consideration and the implications for truck operations are discussed.

1.0 INTRODUCTION

The Trans-African highway project intends, among other things, to promote economic and commercial activity, encourage cross-border trade and above all facilitate efficient

movement of goods and services. It is recognized that inter-jurisdictional differences in highway infrastructure provisions and capacities, transport regulatory policies, and enforcement practices exist. A critical element of regional trade is an efficient and harmonized system for freight transportation. In Africa, freight transportation is predominantly by trucking with rail playing an insignificant role. The success of any regional trade agreement is largely dependent on the compatibility between the highway facility provisions and capacities, on one hand, and the physical and operating characteristics of the freight vehicles on the other. The diverse political and economic histories and thrusts in African countries are reflected in the differences in transportation regulatory settings and policies; and operating conditions of freight vehicles. It is important therefore to attempt to rationalize these differences through technical harmonization of the regulations and modalities of operation between jurisdictions.

A number of issues considered pertinent in achieving some reasonable level of compatibility and/or technical harmony respecting the regulations and operating conditions are addressed. These are necessary in the search for promoting competitiveness and regional trade in Africa. Concepts for technical harmonization, and some implications for truck operations are discussed. Experiences from some recent free trade agreements in other parts of the world are also reported.

2.0 REGULATIONS AND FREIGHT MOVEMENT

The regulations governing the sizes, weights and operating conditions of vehicles are intended to ensure safety, control highway infrastructure damage and improve productivity of truck operations. They are structured to accommodate the physical interdependencies which exist between publicly-provided roads and bridges and privately-operated vehicles; to provide reasonable compatibility between the wide range of vehicle types which must share the public highways. Regulations do not exist to: (i) restrict truck size and to protect railways from big trucks; (ii) protect the market of one trucker or any other interest from the other; (iii) one country from another, or the industries of one country from those in another.

In many countries, the efficiency of all sectors of the economy relies on the efficiency of freight movements. Available modes for freight transportation are trucks, rail, water and air transport. In Africa, where the alternative rail and water transport do not offer any significant competition, monopoly by trucks is clearly evident. Trucking accounts for 80 - 90% of freight transportation. Trucking activity on the African continent therefore is vital for all economic activities. The discussion presented in this paper focuses on freight movement by truck and develops concepts for rationalizing the size and weight limits to facilitate free and efficient movement of freight between African countries.

The economies of African countries are similar and basically agricultural-based with countries in a geographic region producing similar products. Exports are dominated by

relatively low value unprocessed agricultural, mining and forestry products. These are normally transported by trucks and rail (trucks dominating) from production centers to the ports and major market centers. Imported goods from outside Africa include agricultural inputs like fertilizers, manufactured products, machinery, vehicles etc. With the high dependence on trucks, bulky and low value raw agricultural commodities, which are more efficiently moved by rail, tend to be transported by trucks. Given the similarity in economic and commercial activities, cross border trucking is dominated by movements between the sea ports to landlocked countries.

3.0 REASONS FOR RELATORY DIFFERENCES

It is practically impossible to achieve uniformity in the regulations across jurisdictions in any given geographic region. In attempting to address the issue of technical harmonization of size of weight regulations it is important to understand why the regulations are different. Within the African context (i.e., non-vehicle manufacturing countries) three possible reasons are identified:

3.1 Regulatory Origin

The regulations in all African countries (where they exist) are derived from some parent set of regulations normally, those of the colonial masters and in most cases, have not been fully adapted to the operating conditions, engineering design standards, and institutional framework prevailing in these countries. The regulations in the English speaking African (Anglophone) countries tend to be similar to those of United Kingdom, while regulations of French speaking (Fracophone) countries resemble those of mainland Europe in many respects. Some countries, for one reason or the other, might have revised their regulations since independence.

3.2 Differences in Transportation Needs and Problems

Different regulations have their roots in the different transport needs and issues. Differences in terrain, subgrade and construction material drive highway design and construction standards including strength of pavements and bridges; road geometry drive the limitations on the dimensions of freight vehicles and highway infrastructure design standards. Similarly, the economic activities influence the choice of desirable truck characteristics. Availability of funds to construct, maintain and upgrade the highway infrastructure to meet the requirements of the vehicles will influence the flexibility to revise existing regulations to accommodate new and probably heavier vehicle configurations. The economic necessity to keep the cost of movement of certain products (e.g., export agricultural products) to a minimum will influence the concession or special permitting or tolerance provisions in the regulations.

3.3 Varying Regulatory Philosophies

Different authorities have different ideas about how much flexibility truck operators require from the regulations in terms of vehicle configurations, loading options and weight tolerances. Some have adopted a mechanism which provides unlimited flexibility within the boundary limits on total length, gross vehicle weight and axle weights. Others adopt a policy which provides a limited range of option, in the form of specified configurations and their loading possibilities. Others lie somewhere between these two extremes.

Fekpe (1996) examined the vehicle size and weight limits of many African countries and observed that the regulations vary in content and detail depending on the parent regulation from which it was derived. Maximum allowable single axle loads range between 7 and 13 tons with the average of 10 tons being the most common. In some cases, the regulations do not distinguish between single drive and non-drive axles; tandem and tridem axles; the type of vehicle combination or unit; also, axle load and gross vehicle weight limits are specified regardless of the dimensional characteristics of the vehicles. A characteristic feature of the regulations is the emphasis on the single axle load limit. It was also noted that the regulations lack sufficient detail when compared with those of the industrialized countries, especially with regards to dimensional characteristics.

4.0 EXAMPLES OF CROSS-BORDER TRUCKING IN AFRICA

Rebello (1993) examined the costs and benefits in transit traffic flows for some landlocked countries in the Sahelian region. Two items of importance in evaluating the costs were identified as the infrastructure and traffic operating characteristics. The infrastructure data required to analyze the costs and benefits include the physical characteristics and condition (type of pavement); distances of alternative corridors; mode and axle weight limits and other restrictions; intermodal facilities and capacities. In addition to trade facilitation, logistics and institutional issues, route choice decisions are influenced by infrastructure and traffic operations consideration. These variables obviously reflect the regulations governing the sizes, weights, operating conditions of freight vehicles, and the enforcement practices.

Transit routes examined included: from the sea ports to Burkina Faso - via Cote D'Ivoire and Togo; to Niger with transit routes through Benin, Togo, and Nigeria; and Mali connects to the sea ports through Cote D'Ivoire and Senegal. These countries are in the western African sub-region and probably active participating members of the Economic Community of West Africa States (ECOWAS). The regulatory origin as a source of difference in the size and weight regulations could partly explain why Burkina Faso uses transit routes through neighboring Francophone countries even though it might be shorter (but not necessarily cheaper) to use the Ghana corridor. Truck movements in the West African subregion, particularly East-West movement, is likely to increase if a technically harmonized set of rules apply at least on the Trans-African highway

There are other trade regions in Africa particularly in Eastern and Southern Africa. Some of the trading or transportation bilateral or trilateral partnerships are resorted to address transportation problems particularly for landlocked countries. Examples are: the joint Tanzania-Zambia railway (TAZARA) – 2000 km rail link from Zambia to Daresalam is the major route for Zambia export and imports; the Ethio-Djibouti Railway. The railway network in this region is relatively more developed and offers some competition to truck in freight transportation. Nonetheless, trucks dominate freight transportation despite the differences in the regulations. Transit routes for some landlocked countries involve crossing more than one transit country. For example, Burundi's transit countries are Rwanda, Uganda and Kenya. The benefits of operating within the framework of harmonized regulations coupled with de-regulation of road transport and other institutional arrangements are expected to be even greater for landlocked countries particularly, those with multiple transit countries.

5.0 TECHNICAL HARMONIZATION OF REGULATIONS

In many parts of the world, efforts at harmonizing the regulations governing the weights and sizes are growing e.g., EEC, NAFTA required technical harmonization of the regulations subsequent to common and free trade agreements. In part, this is the result of the increasing role of trucks in land-based freight transportation and the increasing number of jurisdictions through which a particular trip occurs. The growth of global market place and the increasing importance of international logistics require that the infrastructure in any given country be given consideration beyond local concerns. Some concerns to be addressed in achieving the provisions of a free trade agreement include establishment of compatible land transport technical and safety standards involving harmonization of: (i) vehicle size and weight standards; (ii) vehicle and driver; (iii) road signing and traffic control devices.

In a regional context, diversities in size and weight limits give rise to truck transportation inefficiencies. During inter-jurisdictional freight transportation, the motor carrier faced with multiple regulations either (i) will have to select a vehicle which when loaded meets the size and weight limitation imposed by the most restrictive of the jurisdictions traversed, or (ii) will have to reduce the load or change the vehicle before crossing the border of the more restrictive jurisdiction. When there are many jurisdictions to be traversed and only one or two limits are substantially more restrictive than the others, they impose a substantial burden on the trucking industry that is reflected in increased transportation costs.

To a large extent, the wide variety of trucks is a result of diversity in size and weight regulations. A vehicle designed to be most efficient under one set of regulatory limits may not be efficient under another set of limits. Also, a vehicle configured to optimize the transportation of certain commodities may not be optimal for other types of commodities. Clayton et al. (1990) noted that what once was local, unimportant aspect of government

regulation has now become an inter-regional, national and multinational issue. As the volume of truck freight increases, as multi-jurisdictional trucking increases, as globalization of markets and logistical services grow, so do the pressures for harmonizing the size and weight regulations.

Harmonization does not mean that all aspects of the regulations will be identical. Harmonized regulations will have some commonality among elements with room for individual differences. It may mean setting maximum or minimum base limits and certain conditions for cross border circulations but allow individual jurisdictions to set their own national limits. Expectations of technical harmonization of the regulations within the overall framework of trade agreements includes:

- efficient flow of freight by road and reduced transit costs, particularly to landlocked countries;
- increased productivity in trucking and economic efficiency;
- increased competitiveness which may translate into improved services and reduced costs;
- improved trade between countries.

6.0 CONCEPTS FOR TECHNICAL HARMONIZATION

The issue of harmonizing truck size and weight regulations is complex and could be controversial because of the great number of variables and groups of concerns that are impacted directly and indirectly; the divergent objectives of the major controlling factors; differences in local political institutions and cultural practices. The complexity of the problem increases with the number of interdependent economies. The policies set forth will directly impact producers, carriers, shippers, consumers, transportation agencies in all countries involved, and in different ways.

The regulations define motor carrier's choice of equipment to optimize operations and determine the truck configurations. Fundamental vehicle parameters are maximum height, width and length; axle weights, gross vehicle weight, number and spacing of axles. These parameters affect pavement and bridge damage, traffic operations on highway geometry; highway capacity, safety, and trucking productivity. Since infrastructure design standards are not uniform in all countries on the African continent, and the fact that trucks are imported from different countries configured to satisfy different size and weight regulations, attempts to harmonize the regulations form a technical perspective should address the issue from both infrastructure, regulatory, operational, and institutional standpoints. The primary objective of such a harmonization effort will be to realize the full benefits of regional or inter-jurisdictional freight movement by trucks.

Full technical harmonization of size and weight regulations is more idealistic than realistic unless political, economic, social and transportation practices are very identical. While the

options identified may have some constraints in their implementation, as would be expected, it is possible to merge certain components of one or two options to achieve a workable hybrid option. The process involves a number of approaches or building blocks:

(i) adoption of guidelines or set of rules respecting the sizes and weights of vehicles that are applied in all jurisdictions. This may be a "least-common-denominator" regulation that is adopted as reference by each jurisdiction. This model would define the maximum and minimum limits, classes of vehicles that can travel everywhere on highway systems designated by the jurisdictions that are party to the harmonization.

(ii) harmonization of infrastructure design standards and operational conditions. The operations of freight vehicles is influenced by these standards. Harmonization of these standards is therefore inherent in the size and weight harmonization process.

With the differences in infrastructure design standards, traffic operation features, driver certification standards, truck size and weight regulations, limited regional trade, and above all, political and institutional diversity, only some limited options are considered practical. These are outlined in the following sections.

6.1 Route Designation

One option is the designation of routes in each country that can accommodate the vehicles from other jurisdictions. In this option, trucks engaged in international transportation can use only the designated routes. The assumption being such a route is capable of accommodating vehicles with characteristics within the envelope of size and axle weight limits in participating jurisdictions and/or funds available to upgrade such routes to standards compatible with the requirements of all permissible vehicles. Possibly, the Trans-African highway and some primary highways within participating countries can be designated.

6.2 Common Denominator Vehicle Configuration

Another option is the selection of a vehicle or groups of vehicles which can be used for international freight movement. This option may or may not be implemented with the route designation option. The target is to identify the most productive vehicle configuration or one whose characteristics can be accommodated by the highway design features in all participating jurisdictions. Tractor semitrailers with 4 or 5 axles constitute one of the largest and probably one of the more productive in the freight vehicle fleet. It is important to note that old designs and new designs for the same vehicle configuration do not necessarily possess similar physical and operating characteristics. These basic characteristics must be considered in defining the acceptable common configuration. This can be specified in terms of permissible dimensions and weights.

6.3 Special Permitting of Freight Vehicle Across Jurisdictions

Special permitting programs as an option involves formulation of programs for administering permits to vehicles crossing international borders to operate on the highway system in a foreign country at predetermined size and weight limits. This may be agreed between adjacent jurisdictions where maximum limits and minimum standards are set and vehicles satisfying these conditions may operate. The carrier will be required to show a permit at checkpoints in a foreign country upon request. This option may entail some compromises on the part of jurisdictions with lower limits.

Special permitting program may be applied to vehicle configuration and/or type of operation e.g., trucks transporting certain commodities (agricultural products and inputs, emergency relief material). This is similar to designated routes or common configurations options and can be applied in conjunction as a package.

7.0 EXPERIENCES ELSEWHERE

The following sections summarize lessons learned from Europe and North America in their attempts to achieve technical harmonization of vehicle size and weight regulations in order to promote trade.

7.1 Europe

With the growth in importance of the goal for free trade within the European Community, it was realized in the 1980s that a degree of harmonization was required throughout the Community to enable trade to take place more freely. In 1985 an EC Directive 85/3 came into force harmonizing weights and dimensions for cross borer traffic within the Community. It lays down authorized weights and dimensions which should be allowed by all member states. Members states are permitted to allow higher national limits. This Directive was amended several times since 1985. Derogations have been accorded to the UK and Ireland because their infrastructure would not be able to sustain the maximum weights allowed in the Directive. Since there is considerable divergence between existing national legislation, there is continued pressure from all sides on the Community to set higher or lower maxima than those in the proposal (Missen, 1995). A fully harmonized system is not attained after 10 years of inception yet the benefits of free flow in terms of trade flows are evident.

7.2 North America

In an attempt to improve global competitiveness the North American countries (Canada, USA and Mexico) ventured on a trade agreement which would lower tariffs and increase trade and create jobs. The North American Free Trade Agreement (NAFTA) was enacted

on January 1, 1994 creating the world's largest free trade agreement. Pertinent surface transportation provisions of the NAFTA include harmonization of truck size and weight limits. The US has the lowest axle and gross weight restrictions. Even though the harmonization efforts are on going, the impacts are being felt. For example, Eriksen et al (1996) noted that trade among the NAFTA partners increased by 17.2% between 1993 and 1994. Within the same period, trade between US and Canada accounts for 70% of the NAFTA trade, between Mexico and the US is 28.9% and between Mexico and Canada is 1.1% in 1994. Kingham (1996) also observed that while trade between Canada and the US remained relatively stable, trade has increased significantly between Mexico and the other partners. There is increased truck activity in the region e.g., 81% of the Dollar value of goods are moved by trucks. About 66% of Mexico's exports to Canada and 45% of Canada's export to Mexico are moved by trucks.

8.0 CONCLUDING REMARKS

Cross-border trucking in Africa seems to be dominated by transit movements to landlocked countries. Having identified some possible options for consideration from the technical standpoint, the next step is to seek options for institutional motivation. The issue is not only complex but also sensitive in many respects and requires a lot of effort, compromise and trade-off to achieve a desired level of acceptability. Complete harmony is not possible because of the high degree of diversity in the variables to be considered. It is also a long process but the benefits are worthwhile.

Technical harmonization may seem less complex in the African context because all vehicles are imported therefore issues relating to vehicle design are not relevant. However, the process of technical harmonization may require prescription of acceptable characteristics of imported freight vehicles that may be permitted to operate in the region.

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