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DEVELOPMENT OF MULTIMODAL TRANSPORT AND LOGISTICS SERVICES

Report by the UNCTAD secretariat

Executive Summary

The cost and quality of multimodal transport and logistics services are increasingly relevant for the participation of developing countries in the globalized economy. It is estimated that a doubling of transport costs leads to a drop in the economic growth rate of more than half a percentage point and that variables related to transport costs account for more than two thirds of the statistical variation in per capita income between countries.

For today's requirements, traditional transport services are often insufficient. What is needed today are more complete logistics services, involving the use of ICT and multimodal transport operations which have a service provider assuming responsibility for the entire transport chain. This type of service is often not available in developing countries, and practically non-existent in LDCs, landlocked countries and most SIDS. For these countries, there exists the danger of increased marginalization, with lack of multimodal transport and logistics services becoming a serious obstacle to trade. Low trade volumes, in turn, make it less likely that transport operators will provide the required services. This is a vicious cycle that needs to be broken.

The determinants of inexpensive and high-quality transport and logistics services include exogenous factors, such as distance or total trade volumes. They do, however, also include areas where the public sector can make a difference. Such areas where obstacles to multimodal transport and logistics services exist can be grouped into (a) infrastructure and technologies, (b) security and safety, (c) facilitation, (d) legal aspects and (e) market access. While necessary action in many cases has to be taken at the national level, there are important areas where the international community should provide assistance through coordination, technical assistance, multilateral agreements and common legal frameworks.

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I. INTRODUCTION

1. The seventh session of the Commission on Enterprise, Business Facilitation and Development, held in Geneva from 24 to 27 February 2003, agreed on development of multimodal transport and logistics services as a topic to be studied at an Expert Meeting. Multimodal transport and logistics services are essential for the development of international trade. These services are not, however, widely available in developing countries, because local service providers tend to lack the capacity to reach overseas markets, and because existing infrastructure, technologies, and the institutional and legal frameworks are often inadequate to allow efficient linkages with global operators. This document provides background information for the Expert Meeting, which will review and explore the impact of the latest developments in multimodal transport and logistics and the challenges and opportunities that these developments provide for developing countries, including small island, landlocked and least developed countries.

2. Logistics services include the management, and often also the provision, of packaging, warehousing, information and transport services within a supply chain. International logistics services are a determining factor of a country's competitiveness as they are crucial for production processes and for delivering exports. In particular, increased international trade in unfinished products, i.e. the movement of intermediate goods within production processes, requires logistics services of ever-higher quality with regard to the reliability, safety, security and frequency of deliveries.

3. Transport tends to be the main component of logistics services, and its share in overall logistics cost has actually been increasing in recent years. In particular, the growth of containerized transport, together with technological developments improving the systems for transferring cargo between different modes, has considerably affected modern transport patterns and practices. Increasingly, goods, particularly manufactures, are carried across the globe by means of multimodal transport.¹ Contractual arrangements too have been affected by this trend and increasingly reflect a demand for more integrated transport services. Shippers and consignees often prefer to deal with one party (the multimodal transport operator), who arranges for the transportation of goods from door to door and assumes responsibility throughout, irrespective of whether this is also the party that actually carries out the different stages of the transport.

4. The participation of developing countries in the use and provision of multimodal transport and logistics services varies widely, with small island, landlocked and least developed countries not effectively participating at all. The latter do not usually have companies that provide such services, and nor do international providers usually offer such services in these countries. Global transport networks, containerization, and the increased use of transshipment via hub airports and seaports have led to a situation where practically all urban centres have some transport connection to global markets. However, in many developing countries, these transport services are not usually multimodal, nor can they be considered to be part of a logistics service.

5. The reasons for this common lack of service availability can be grouped into five areas: technologies and physical infrastructure; security and safety; facilitation; legal aspects; and market access. In each one of these areas, developing countries are confronted with different obstacles, which together explain why many of their importers, producers and exporters have only limited access to multimodal transport and logistics services.

¹ International multimodal transport is defined as the "carriage of goods by at least two different modes of transport on the basis of a multimodal transport contract from a place in one country at which the goods are taken in charge by the multimodal transport operator to a place designated for delivery situated in a different country". Source: Article 1 of the United Nations Convention on International Multimodal Transport of Goods. More information is available in the "Multimodal Transport Handbook", UNCTAD, 1996; also A. Zuidwijk, "A Multimodal Transport Perspective", Buenos Aires, 2003.

II. THE RELEVANCE OF MULTIMODAL TRANSPORT AND LOGISTICS SERVICES FOR DEVELOPMENT

A. Logistics services and trade

6. International freight costs have an impact on trade equivalent to customs tariffs or the exchange rate. A reduction in the cost of transport directly stimulates exports and imports, just as an increase in the exchange rate makes exports more competitive, and a reduction in national customs tariffs lowers the cost of imports. Spurred by trade liberalization, customs tariffs have dropped to levels where in many cases any additional reduction would now no longer have a significant impact. In the case of Latin American and Caribbean exports to the United States, for example, customs duties reach an average of 1.86 per cent of their value, compared with a 4.45 per cent share accounted for by international transport costs.² In the case of Africa, as shown in table 1, landlocked countries on average pay four times as much for the international transport leg of their imports than do developed marked economies.

7. The price of the vast majority of traded goods is exogenous for developing countries. If the shipping of imports becomes more expensive, higher inflation ensues as a result of the increased cost of imported goods; in the case of intermediate and capital goods, this also increases the costs of local production. If export freight costs increase, the result is a drop in earnings for the exporting country or simply the loss of a market, depending on the elasticity of demand and the availability of substitutes. Econometric estimates suggest that the doubling of an individual country's transport costs leads to a drop in its trade of 80 per cent or even more.³

8. Spending on transport is also increasing because of improved quality of service, especially greater dependability and "just in time" (JIT) delivery. As a result, the inventory component within the overall cost of logistics declines, while the transport component rises. In the case of the United States, for instance, it is estimated that during the two decades up to 2002, spending on transport rose by 160 per cent, while spending on inventories grew by only 27 per cent during the same period. While in 1982 inventory spending was still higher than spending on transport, today spending on transport is almost double that of inventory carrying costs.⁴

² A. Micco and N. Pérez, *Maritime Transport costs and Port Efficiency*, International Development Bank, Washington, 2001. Data for 1999.

³ N. Limao and A. J. Venables, *Infrastructure, Geographical Disadvantage, and Transport Costs*; *World Bank Economic Review* 15, 2001; D. Hummels, *Toward a Geography of Trade Costs*, University of Chicago, 1999.

⁴ Prologus and CIS, *14th Annual State of Logistics Report*, Washington, June 2003. Data include national transport and inventory holding.

Table 1

Estimates of total freight costs on imports
(millions of US dollars, 2001)

Country group	Estimate of freight cost of imports	Value of Imports (c.i.f.)	Freight costs as percentage of import value
World total	364 008	5 960 595	6.11
Developed market-economy countries	221 248	4 320 511	5.12
Developing countries — total	142 760	1 640 084	8.70
of which Africa ^a	13 806	109 125	12.65
Of which			
North Africa	5 512	49 183	11.21
South Africa	1 346	8 197	16.42
West Africa	5 057	36 394	13.90
East Africa	1 389	11 244	12.35
Indian Ocean ^b	502	4 107	12.23
Sub-Saharan Africa	8 294	59 942	13.84
Landlocked countries	1 900	9 180	20.69

Source: UNCTAD secretariat on the basis of data supplied by the IMF.

^a Excluding Republic of South Africa.

^b No data for Reunion.

9. Trade is increasingly taking place in intermediate goods, which are used in international production processes and which require JIT deliveries of inputs. JIT in turn requires a particularly sophisticated and efficient transport system, which tends not to be available in developing countries. In a context where management does not know whether delivery of required raw materials or intermediate goods is going to be on time, either expenditure on inventory holding goes up or the producer becomes uncompetitive himself, because he will not be able to deliver JIT to his own customers.⁵

10. The freight and insurance costs of international transport also tend to increase as a percentage of gross domestic product (GDP). The reason for this is that trade is growing at a faster pace than GDP. In the 1990s, the rate of growth of world exports was more than double that of GDP, and although transport costs have fallen as a percentage of the value of trade, trade itself has expanded, and with it international freight's share of GDP. Even as a percentage of the value of traded goods only, the incidence of the cost of international transport tends to increase. With growing trade in intermediate goods, the price of most exports, also from developing countries, nowadays includes an increasing component of transport costs of inputs, which themselves have been imported and transported from abroad. Trade, logistics services and development are thus ever more closely linked with one another; this will be further discussed in the following paragraphs.

B. Trade, logistics services and development

11. The geographical location of countries is less relevant for today's trade patterns than are transport and logistics services. Countries mainly trade with one another depending on their patterns of production, income and whether they belong to economic blocs, with the distance between them also having some bearing. The latter gives an advantage to countries located in the "centre of gravity".

⁵ L. Alcorta, *New Technologies, Scale and Scope, and Location of Production in Developing Countries*, United Nations University, INTEC Discussion Papers Series No. 9502, March 1995, www.intech.unu.edu/publications/discussion-papers/9502.pdf.

There is an assumption of a close link between distance and transport costs, which would explain why countries closer to one another trade more than with countries further away. In practice, however, distance also tends to have a bearing on other characteristics of countries, which lead them to trade more. Above all, geographical closeness provides scope for alternative modes of transport, thereby boosting competition and reducing prices for service – and this again encourages trade further. As will be shown in section II.C below, an expanding volume of trade reduces the unit costs of transport. Also, it allows greater differentiation between different services in terms of speed, frequency, reliability and security. Thus, improved transport and logistics services can initiate a virtuous cycle, where improved services lead to more trade, which in turn encourages investment in better transport and other logistics services. The challenge for policy makers is to foster such a cycle, and to avoid being trapped in a vicious cycle, where a lack of trade would discourage the supply of transport services, which again would deter trade.

12. Empirical studies have concluded that – *ceteris paribus* – greater transport costs lead to lower levels of foreign investment, a lower savings ratio, reduced exports of services, reduced access to technology and knowledge, and a decline in employment. It is estimated that a doubling of transport costs leads to a drop in the rate of economic growth of more than half a percentage point.⁶ This impact may appear low, but it should be noted that lower growth over the long term results in a sizeable variation in per capita income. Hence, it comes as no surprise that variables related to transport costs may account for 70 per cent of the statistical variation in per capita income between countries.⁷ Section II.C will therefore look briefly at what these variables are that empirically explain transport costs.

C. Determinants of logistics service quality and costs

13. When analysing how to improve international logistics services, experts need to be aware of the different influencing factors and know which of these factors can be influenced by public policies. Empirical evidence suggests that the costs and quality of international logistics services are influenced by a large variety of factors, many of which are beyond the control of the public sector. Many of the factors that are particularly detrimental to international logistics services are also those that are found in many developing countries, particularly in least developed countries and small island developing States. These economies in particular are often confronted with a situation where their geographical situation, small trade volumes, and trade imbalances are the cause of a difficult starting position for quality and inexpensive international logistics services.

14. Thanks to new information and communication technologies, improvements in infrastructure and the growing rate of containerization, today the same price per tonne of cargo can buy a quicker and more reliable transport service than a decade ago on most trade routes. In addition, it is worth noting that greater commercial demands as regards speed have at the same time given rise to an increase in the global share of air transport as compared with maritime transport, and may even entail an increase in the average cost of transport.⁸

15. Even when single-mode transport services are compared, large differences in transport costs persist. Transporting a 40-foot container from Douala (Cameroon) to Bangui (Central African Republic) over a distance of 1,600 km costs three times as much as moving the same container over a distance of 1,885 km from Walvis Bay (Namibia) to Johannesburg (South Africa) (table 2). In table 2,

⁶ S. Radelet and J. Sachs, *Shipping Costs, Manufactured Exports, and Economic Growth*, Harvard, 1998.

⁷ S. Redding and A. J. Venables, *Economic Geography and International Inequality*, London, 2001.

⁸ The average cost of freight and insurance rose worldwide in the 1990s. This should, however, not be interpreted as a worsening of the international transport system, but rather as a reflection of greater use of air transport and improvements in other transport services. Global freight costs as a percentage of import value rose from 5.52 per cent in 1990 to 6.21 per cent in 2000 (UNCTAD, *Review of Maritime Transport, 2002*, p. 66. www.unctad.org/en/docs/rmt2002_en.pdf).

the correlation coefficient between distance and total cost is +0.39 and that between distance and cost per km is -0.15, both figures indicating that distance is clearly not sufficient to explain the differences in transport costs, and that the costs per km tend to decline over longer distances owing to the fixed cost component.

Table 2

Estimated unit road transport costs for containers on African corridors

Maximum 28 tons in 40' containers, 2001 or latest year available	Distance (km.)	Total cost US\$	Cost US\$ per km
Douala (Cameroon) – Bangui (Central African Republic)	1 600	7 900	4.94
Douala (Cameroon) – N'Djamena (Chad)	1 900	8 000	4.21
Dar es Salaam (United Republic of Tanzania) – Kigali (Rwanda)	1 650	4 980	3.02
Dar es Salaam (United Republic of Tanzania) – Bujumbura (Burundi)	1 750	5 180	2.96
Dakar (Senegal) – Bamako (Mali)	1 200	3 400	2.83
Lomé (Togo) – Niamey (Niger)	1 234	3 160	2.56
Lomé (Togo) – Ouagadougou (Burkina Faso)	1 000	2 550	2.55
Mombasa (Kenya) – Kampala (Uganda)	1 440	3 250	2.26
Dar es Salaam (United Republic of Tanzania) – Lusaka (Zambia)	2 000	4 230	2.11
Cotonou (Benin) – Niamey (Niger)	1 056	2 200	2.08
Dar es Salaam (United Republic of Tanzania) – Blantyre (Malawi) (via Lilongwe)	2 030	3 573	1.76
Dar es Salaam (United Republic of Tanzania) – Harare (Zimbabwe) (via Lusaka)	2 490	4 013	1.61
Beira (Mozambique) – Lubumbashi (Democratic Republic of the Congo) (via Harare and Lusaka)	1 581	2 554	1.61
Nacala (Mozambique) – Lusaka (Zambia) (via Lilongwe)	1 774	2 735	1.54
Durban (South Africa) – Lusaka (Zambia) (via Plumtree)	2 524	3 873	1.53
Walvis Bay (Namibia) – Harare (Zimbabwe) (via Maun)	2 409	3 585	1.49
Maputo (Mozambique) – Johannesburg (South Africa)	561	775	1.38
Walvis Bay (Namibia) – Johannesburg (South Africa)	1 885	2 593	1.38
Average in United States mainland			1.10
Average in European Union			1.65

Source: UNCTAD secretariat on the basis of SATN Comparative Transit Transport Costs Analysis September 2001 – USAID; and Mediterranean Shipping Company, presentation to UNCTAD, Geneva, February 2003.

16. In the case of maritime trade, which is by far the dominant mode of international transport, economies of scale and trade balances appear to be of particular relevance, although the public sector has little influence on them. Levels of competition and private sector participation in ports, however, can be influenced by policy makers, and they too have a bearing on the cost of transport and insurance for international trade (box 1).

Box 1**Determinants of international transport and insurance costs: The case of intra-Latin American containerizable maritime trade**

For maritime trade between Latin American and Caribbean countries, the following statistical relationships between transport and insurance costs and different potential determinants were estimated. What is analysed is the difference between imports c.i.f. and f.o.b. per tonne of cargo of maritime trade in commodities which are likely to be transported containerized (2001):

Distance obviously entails an increase in cost, but by far not proportionally. Doubling the distance, for example, on average results in an increase in transport and insurance cost of just 16.5 per cent.

The greater the value of the merchandise (US\$ per tonne), the greater the cost of transporting it per tonne. There is a need for greater insurance cover, and the shipper is prepared to pay more for better packaging or speed of delivery. A 1 per cent increase in the value of merchandise goods entails an increase in the cost of transport and insurance per tonne of around 0.36 per cent, and at the same time implies a lower transport cost as a percentage of the value of the good.

Economies of scale reduce the transport costs per tonne. Shipping in one individual transaction 10,000 tonnes instead of 100 tonnes reduces transport costs per tonne by an estimated 43 per cent. Also related to economies of scale is the total annual volume of bilateral trade. If, for instance, the volume of bilateral containerizable trade increases from one million to 10 million tonnes, the saving on international transport costs (per tonne) is estimated to be approximately 6 per cent.

Having a larger number of liner shipping services between two countries is closely linked to the total volume of bilateral trade. Further economies of scale come into play and competition between transport suppliers increases. Having 20 instead of five services per month, for instance, results in a drop in freight and insurance costs of an estimated 12 per cent.

Where seaborne transport faces competition from an overland option, average maritime transport costs also show a tendency to decrease. The likely reason is increased competitive pressure; in addition, it is more likely that the overland option will be favoured in the case of products that require speedier carriage. It is estimated that having an overland transport link available leads to a reduction in ocean freight rates per tonne of between approximately 9 and 16 per cent. In general, a better quality of service, as measured by the speed of liner shipping services, is associated with slightly greater costs.

Trade imbalances also influence the cost of transport. Those who import more than they export have relatively higher import transport costs, and vice versa for those who have more exports than imports. Overall, the total transport bill is higher for trades with an imbalance as compared with balanced trades.

Empirically, private sector investment in common user ports also translates into savings in international transport. This is because port tariffs for carriers may drop, but more importantly there is generally a drop in the cost for the ship operator owing to faster port service, better security and more certainty that the schedule will be adhered to. It is estimated that the international transport costs associated with El Salvador's exports would have been 25 per cent lower had that country made as much progress as Panama in concessioning its common user ports in the 1990s.

Source: United Nations Economic Commission for Latin America and the Caribbean, "The cost of international transport, and integration and competitiveness in Latin America and the Caribbean", FAL Bulletin 191, July 2002, www.eclac.cl/transporte/noticias/bolfall/2/11072/FAL191e.htm

III. REQUIREMENTS TO IMPROVE MULTIMODAL TRANSPORT AND LOGISTICS SERVICES

A. Infrastructure and technologies

17. The containerization of general cargo is the main component that has led to the introduction of multimodal transport and logistics services in developed regions. Many developing countries have accepted containerization with delays in the belief that it was a capital-intensive service not suitable for countries with lower wage levels and higher capital costs. Today, it is generally accepted that containerization is a necessary condition for an increasing proportion of trade in merchandise and intermediate goods, also in developing countries. Especially in multimodal transport, the transport chain is usually containerized. Containers used for transport should not be considered tradable goods, and as such their use should not be punished with temporary import duties, as is still the case in some countries. Containerized cargo also requires less but better qualified personnel in ports, where reforms are still pending in many developing countries. It further requires port, rail and road infrastructure, as well as the corresponding regulations and labour regimes. In many developing countries, particularly least developed countries, these inland links are often incomplete and poorly maintained. This is one of the main practical obstacles to transport providers offering multimodal transport.

18. Like containerization in previous decades, information and communication technology (ICT) is today radically changing the way in which international trade and transport are conducted. Electronic means of communication are used to exchange information, enter into contracts and trace goods during transit. Transport users and providers are using them internally, and also to exchange information among themselves. Again, as with containerization in the past, there is a risk that developing countries are late in the introduction of these new technologies, which require investment in equipment, as well as the corresponding legislation, regulation and capacity building. A successful example of the use of ICT in developing countries is the Advance Cargo Information System (box 2).

19. Increased competition and private sector participation empirically tend to encourage investment in infrastructure and the introduction of new technologies. The public sector maintains an important role with regard to investment in public infrastructure such as national telecommunication systems or access to ports. Here, Governments may have to invest themselves, or they may concession the construction and operation of infrastructure, in which case a new regulatory role of the public sector is required.⁹

⁹ A. Estache and G. de Rus (ed.); Privatization and Regulation of Transport Infrastructure, World Bank, 2000, http://publications.worldbank.org/ecommerce/catalog/product?item_id=213333.

Box 2

Logistics information systems: The case of the Advance Cargo Information System

The Advance Cargo Information System (ACIS) is a logistics information system designed to improve transport efficiency by tracking equipment and cargo on transport modes (rail, road, lake/river) and at interfaces (ports, internal clearance depots) and by providing information in advance of cargo arrival. ACIS provides both public and private transport operators and ancillaries with reliable, useful and real-time data on transport operations such as the whereabouts of goods and transport equipment, and thus improves day-to-day management and decision-making. It also produces regular statistics and performance indicators which enable management to remedy deficiencies and to make full use of the existing infrastructure and equipment capacity. ACIS is designed, developed and installed by UNCTAD's Division for Services Infrastructure for Development and Trade Efficiency (SITE).

RailTracker is the railway part of ACIS. It monitors all the movements of both locomotives and wagons on a railway network; it has proved to be a very useful tool to improve management, and it monitors the movement of a railway client's goods. This feature enables registered customers, from any part of the world, to access the network they are interested in, find out where their cargo is and what has happened to it whilst in the custody of the railway. RailTracker can also provide the history of the cargo, and some of the RailTracker-equipped railways already offer access via the Internet. To date, RailTracker is installed on the following networks: Bangladesh Railways, Cameroon Railways, Kenya Railways Corporation, Malawi Railways, Régie Nationale de Chemin de Fer du Mali, Société Nationale des Chemins de fer du Congo, Société Nationale des Chemins de Fer du Sénégal, State Railway of Thailand, Sudan Railway, Tanzania Railways Corporation, Tanzania-Zambia Railway, Uganda Railways Corporation and Zambia Railways Limited.

RailTracker has been proved to enhance service reliability and reduce security risks as processes become more transparent and opportunities for pilferage or corruption are being reduced. Its installation requires adequate planning and investment. It may also require the opposition of vested interests that have so far benefited from prevailing inefficiencies to be overcome.

Source: www.railtracker.com

B. Security and safety

20. In the case of transport and international logistics, corruption, theft and accidents not only imply a direct cost, but also reduce the competitiveness of exports. Especially at ports and other nodes where cargo is shifted from one mode to another, security risks are particularly high. Uncertainty and also weak legal systems are thus a particular obstacle to multimodal transport, where often an original carrier located in a foreign country is supposed to cover the entire risk of the entire transport chain.

21. Fear of terrorist attacks is leading to new regulations and legislation, which add further obligations to shippers and transport providers, especially for exports to the United States (box 3). These obligations imply additional risks for those who have to provide more detailed and timely information. Shippers have to guarantee to the carrier that the information given to him about the goods is accurate and that the carrier can use this information without risk of suffering a penalty or delay. The obligations also imply additional costs inasmuch as they require the use of screening equipment and personnel. The distribution of costs and liabilities linked to these recent changes is difficult to estimate. What appears clear is that developing countries have more difficulties in complying than do industrialized countries.

Box 3

Security measures: The case of United States security initiatives

The implementation in February 2003 of the advance declaration for containerized cargo shipped to and via the United States has had a major impact on shippers and carriers. The objective of this requirement is to identify suspect cargo before it is loaded on vessels calling at the United States. The shipping line or Non-Vessel Operating Common Carrier must provide this information at least 24 hours before the cargo is loaded at a foreign port. This implies comprehensive information and communication technology along the supply chain so that information is available to the carrier for transmission to the United States Customs Service.

Linked to this is the customs cooperation arrangement known as the Container Security Initiative (CSI), which through bilateral agreements places US Customs officials in foreign ports that have significant containerized trade with the United States. There are 18 ports involved in this initiative to date and it is being opened to additional ports. Those containers that have either been deemed suspicious or have incomplete information following the examination of the declaration will need to be examined by customs officials before they can be loaded.

Another initiative is the Customs Trade Partnership Against Terrorism (C-TPAT), which involves the various partners from the private sector involved in the supply chain. These include importers, carriers, brokers, warehouse operators and manufacturers. The C-TPAT scheme seeks to secure the supply chain from the point where the cargo is loaded in the container to its final point of discharge. There were some 3,000 companies participating in this partnership in May 2003. Carriers that join C-TPAT are expected to promote effective security measures throughout the entire supply chain even if a carrier may not “exercise control” over the sealing of containers. That must include doing whatever a carrier can to ensure the sealing of all loaded containers and may require that the carrier work or negotiate with shippers, forwarders or others to arrange for that sealing. Specifically, a C-TPAT carrier should consider the level of risk associated with an unsealed, mislabelled or tampered container and take appropriate security steps prior to its lading. These steps could include applying a high-security seal, requiring a shipper to verify the contents and add a seal, or refusing to lade the container.

Clearly, service providers that have the responsibility for the cargo along the transport chain, such as multimodal transport operators, will have access to this information at an early stage and will be able to comply more easily. These providers will also be in a better position to control and monitor the loading of cargo in the container and its transport to the port of loading. These security requirements will strengthen the desirability of using providers that can supply door-to-door services for imports into the United States. This will require Governments to introduce policies that will foster the development of transport service providers that can join with international carriers to provide multimodal transport services.

22. The possible need for pre-screening cargo prior to its being embarked to the United States may lead to a division of airports and seaports into those that can provide this service and those that cannot. For trade destined for the United States, this may lead to an increase of concentration of cargo in transshipment hubs which are capable of providing the required controls. As the majority of countries will be less likely to be able to host such hub ports, their exports will also be more likely to encounter the need to be transhipped in other countries' ports. The same applies to most small island developing States, although some of them may actually find an opportunity to strengthen their position as hub ports.

C. Facilitation

23. Coherent trade and transport facilitation measures are necessary for the development of international logistics and multimodal transport services. The international movement of cargo and vessels involves a potentially large number of controls and inspections (see also above section III.B about security concerns), and to the extent that such controls take too long, or their duration varies arbitrarily, this becomes an impediment to the planning and operation of services. As has been highlighted by recent expert meetings and international forums, improvements depend on investments and reforms at the national level, and also on concerted efforts by international organizations such as the World Trade Organization and the World Customs Organization.¹⁰ With regard to customs, a successful example of trade facilitation is the introduction of an Automated System for Custom Data (box 4).

Box 4

Customs management systems: The case of the Automated System for Customs Data

The Automated System for Customs Data (ASYCUDA) programme was created 20 years ago to automate the customs administrations of small developing countries. It has become the leading customs reform programme and is among the world's most powerful customs automation systems. ASYCUDA handles every step in the customs process, from pinpointing high-risk consignments for inspection to processing payments. The system is currently used to process an average of 15 million customs declarations in about half the world's developing and transition economies each year, saving their customs administrations and traders some 50 million work hours annually, according to UNCTAD estimates. Increases in customs revenue of between 20 per cent and 30 per cent are not uncommon following implementation of an ASYCUDA project, one reason being that it makes it easier for agents to keep abreast of, and thus enforce, frequently changing customs tariffs and regulations. Other savings are generated by the reduced investment required to develop an automated customs administration system: ASYCUDA typically costs less than \$2 million.

UNCTAD is launching a new Web-based version of its customs automation system, which will allow customs administrators and traders to handle most of their transactions — from customs declarations to cargo manifests and transit documents — via the Internet. The new e-customs platform, dubbed AsycudaWorld, will be particularly useful for developing countries, where poor fixed-line telecommunications are a major problem for e-government applications.

Source: www.asycuda.org.

¹⁰ See, for example, documentation for the UNCTAD Expert Meeting on Efficient Transport and Trade Facilitation to Improve Participation by Developing Countries in International Trade, 25–27 November 2002, under www.unctad.org/en/docs//c3em17d3_en.pdf, and the Second International Forum on Trade Facilitation, organized by the Economic Commission for Europe, under www.unece.org/trade/forums/forum03/index.htm.

24. At the bilateral and regional levels, there are successful experiences concerning information sharing. Common customs posts, for example, or the sharing of information related to the port state control of maritime vessels, reduce the need to assign personnel and improve the quality of controls.

25. There is a perceived lack of coordination in the international organizations dealing with trade facilitation. Much preliminary groundwork has been done by business around the world on standards, certification and risk management. At the Second International Forum on Trade Facilitation organized by the Economic Commission for Europe in 2003, the view was expressed that without a rules-based system with global applicability the full potential of these initiatives will never be realized. An UNCTAD Expert Meeting on Efficient Transport and Trade Facilitation in 2002 highlighted the fact that many developing countries would need assistance in determining their needs and priorities and implementing any new rules, and that there was considerable debate about the modalities of any possible trade facilitation agreement. A consensus emerged on the need to help developing countries improve their participation in international trade through the application of already agreed and existing standards, whether binding or not.¹¹

D. Legal aspects

Legal framework for multimodal transport

26. While much of international trade is now carried out on a door-to-door basis, under one contract and with one party bearing contractual responsibility, the current legal framework governing multimodal transport fails to appropriately reflect these developments. No international uniform regime is in force to regulate liability for loss, damage or delay arising from multimodal transport. Instead, the present legal framework governing multimodal transport consists of a complex array of international conventions designed to regulate unimodal carriage, diverse regional/subregional agreements, national laws and standard term contracts. As a consequence, both the applicable liability rules and the degree and extent of a carrier's liability vary greatly from case to case and are unpredictable.¹²

27. Over the years several attempts have been made at drafting a set of rules to regulate liability arising from international multimodal transportation, but none of these has brought about international uniformity. In 1980, the *United Nations Convention on International Multimodal Transport of Goods* (hereafter *1980 MT Convention*) was adopted, but it did not attract the necessary number of ratifications and thus has not entered into force. In the early 1990s, a set of standard contractual terms was prepared for incorporation into commercial contracts (*UNCTAD/ICC Rules for Multimodal Transport Documents 1992*, hereafter *UNCTAD/ICC Rules*). However, as these rules are contractual in nature, they are by definition subject to any applicable mandatory law and are thus not an effective means of achieving international uniformity.

28. In view of the absence of international uniform regulation of liability, there has been a proliferation of diverse national, regional and subregional laws and regulations on multimodal

¹¹ For more details, see also the United Nations Compendium on Trade Facilitation Recommendations, Geneva, 2001, under www.unece.org/cefact/docum/download/01cf17.pdf and the World Bank Trade and Transport Facilitation Toolkit for Audit Analysis and Remedial Action, Washington, 2001, under [http://wbln0018.worldbank.org/twu/gfp.nsf/files/twu-46.pdf/\\$FILE/twu-46.pdf](http://wbln0018.worldbank.org/twu/gfp.nsf/files/twu-46.pdf/$FILE/twu-46.pdf).

¹² Further details about the complex international liability framework are provided in the UNCTAD report *Implementation of Multimodal Transport Rules* and the accompanying comparative table, which presents in overview the content of existing regional, subregional and national multimodal liability regimes, UNCTAD/SDTE/TLB/2 and Add.1; see also *Multimodal Transport: The Feasibility of an International Legal Instrument*, UNCTAD/SDTE/TLB/2003/1. All UNCTAD documents referred to in this part are available on the www.unctad.org website. Any UNCITRAL documents referred to in this part are available on the www.uncitral.org website.

transport. The lack of a global uniform regime has obliged developing countries to resort to solutions at the regional and/or subregional level, such as the laws and regulations prepared by the Andean Community, the Latin American Integration Association (ALADI), the Southern Common Market (MERCOSUR) and the Association of South-East Asian Nations (ASEAN). While these laws and regulations are often based on the 1980 MT Convention and/or the UNCTAD/ICC Rules, significant differences on key issues among the different sets of rules create a trend of further “disunification” at the international level.¹³ A fragmented and complex legal framework creates uncertainty, which in turn increases transaction costs as it gives rise to legal and evidentiary inquiries, costly litigation and increasing insurance costs. For developing countries and for small and medium-size transport users in particular, this concern is considerable. Without a predictable legal framework, equitable access to markets and participation in international trade are much harder for small or medium players.

29. Against this background and particularly in view of the continuing growth of international multimodal transportation, an Ad Hoc Expert Meeting was convened by the UNCTAD secretariat in November 2001 to review the current situation. Following the recommendations of this Meeting, the secretariat conducted an inquiry into the feasibility of establishing a new international instrument to govern liability arising from multimodal transportation. A questionnaire was circulated to all Governments and industry, as well as to interested intergovernmental and non-governmental organizations and a number of experts on the subject.¹⁴

30. The survey revealed that the great majority of all respondents (83 per cent), among both Governments and non-governmental and industry representatives, did not consider the current legal framework for multimodal transportation to be satisfactory. Most respondents (76 per cent) also did not feel the existing legal framework to be cost-effective. The vast majority of respondents (92 per cent) considered a new international instrument to govern liability arising from multimodal transportation to be desirable and virtually all (98 per cent) indicated they would support any concerted efforts made in this direction.¹⁵

31. The results of the survey are of particular interest at the present time, as an UNCITRAL Working Group recently began consideration of a *Draft Instrument on Transport Law*¹⁶ (hereafter *Draft Instrument*). Although primarily designed to cover contracts for the carriage of goods by sea, it has a broad scope of application and, as currently drafted, would cover all contracts for international multimodal transport involving a sea-leg. At its last meeting in March 2003, the Working Group considered, *inter alia*, the controversial question of the scope of application of the Draft Instrument and decided, tentatively, to proceed on the basis that the Draft Instrument would apply to contracts for multimodal transport involving a sea-leg. Thus, in view of the proposed application to multimodal transport, the Draft Instrument could, if adopted, seriously affect the ability of developing countries, particularly landlocked countries, to benefit from the potential advantages offered by containerization and multimodal transport. In the light of these concerns, it appears to be of considerable importance for developing countries to actively participate in the negotiating process and to be provided with the necessary negotiating assistance so as to ensure that their interests are taken into consideration in the preparation of any possible future convention.

¹³ See UNCTAD report *Implementation of Multimodal Transport Rules* and accompanying comparative table, UNCTAD/SDTE/TLB/2 and Add.1.

¹⁴ The responses to the UNCTAD questionnaire are reflected in the UNCTAD secretariat report *Multimodal Transport: The Feasibility of an International Legal Instrument*, UNCTAD/SDTE/TLB/2003/1.

¹⁵ For detailed information on the responses to the questionnaire, see document UNCTAD/SDTE/TLB/2003/1. A summary version of the report was translated and circulated by the UNCITRAL secretariat in all United Nations languages as document A/CN.9/WG.III/WP.30.

¹⁶ UNCITRAL document A/CN.9/WG.III/WP.21. The UNCTAD commentary UNCTAD/SDTE/TLB/4 is also available, together with some comments by the UNECE secretariat, in all UN languages as UNCITRAL document A/CN.9/WG.III/WP.21/Add.1.

Legal framework for information and communication technology

32. Information technology is radically changing the way in which international trade and transport are conducted. Electronic means of communication are used to exchange information, enter into contracts, trace goods during transit, and so forth. To reap the maximum benefits of modern technology, a supportive legal framework is required, one which recognizes the legal effect and validity of electronic data messages and thus adequately facilitates their use.¹⁷

33. Important steps towards the removal of legal barriers to the use of electronic means of communication in international trade have been taken by the adoption of the UNCITRAL *Model Law on Electronic Commerce* (1996) and *Model Law on Electronic Signatures* (2001). These Model Laws provide Governments with internationally acceptable rules and principles for adaptation of national laws and regulations and the creation of a favourable legal environment for electronic commerce. An important challenge, however, remains the question of the replacement of negotiable transport documents (e.g. marine bills of lading and multimodal transport documents) with electronic alternatives. In the absence of an appropriate legal framework, contractual solutions have been developed in order to replicate the functions of the negotiable bill of lading by means of electronic messages.¹⁸

34. The Draft Instrument, currently under consideration within UNCITRAL, aims at further removing legal barriers by allowing for the use of both “electronic records” and “paper transport documents” and giving them equal legal status. However, the discussions on the Draft Instrument are still in their preliminary stages. If, in due course, ongoing deliberations lead to the adoption of a new transport convention, which effectively addresses the use of electronic equivalents to traditional transport documents, an important step in facilitating international trade and transport will have been taken.

E. Market access

National, bilateral and regional aspects

35. As shown above (in section II.C), trade balances, the available transport mode options and economies of scale have a particularly strong impact on transport costs. The more cargo and transport mode options a service provider has at his disposal, the better he is positioned to choose the most adequate logistics mix of routes, transshipment points, frequencies, speed, volumes and transport modes. Any restrictions that unnecessarily limit his choices will also imply higher costs and lower-quality services for the transport user.

36. On many borders, transport providers are still obliged to transfer cargo from one truck onto another, just as different rail gauges make international rail traffic rare in developing regions. In order to protect the national road industry, it is common to prohibit foreign trucks from carrying return cargo after delivering imports; this is particularly costly for landlocked countries that depend on foreign ports. In maritime transport, cargo reservation regimes tend to make it impossible to use available capacity efficiently because it is prohibited to combine national, regional and intercontinental liner services so that they form part of a single global network. In air transport too, options for international airlines are often limited so as to protect national flag carriers, albeit often at the expense of air transport users.

¹⁷ See the report of the Expert Meeting on Capacity-Building in the Area of Electronic Commerce: Legal and Regulatory Dimensions, TD/B/COM.3/EM.8/3, paras. 3-5.

¹⁸ For more detailed discussion of relevant problems and potential solutions, see the document “Electronic Commerce and International Transport Services”, TD/B/COM.3/EM.12/2, Part II.

37. A shipper or an international operator may find that there are several advantages in choosing or cooperating with local transport and logistics providers. These include a better understanding of local culture and environment, an established relationship with official bodies and trade and transport organizations, better local flexibility and adaptability, availability of an existing transport fleet and language skills. In order to maintain these potential benefits, Governments should have an interest in strengthening existing national service providers or supporting the establishment of such providers, and also the corresponding professional associations (box 5).

Negotiations in the WTO

38. As a combined outcome of the Uruguay Round negotiations, those conducted in the Negotiating Group on Maritime Transport Services (NGMTS) and accession negotiations, there are today 47 WTO member countries that have included maritime transport commitments in their GATS schedules, with considerable variations as to the breadth and depth of commitments. As part of the built-in agenda of GATS, negotiations in the area of maritime transport resumed in January 2000. With regard to substantive coverage of maritime transport, there are a number of issues that go beyond the three original pillars of "blue water" services, auxiliary services and "access to and use of port services" and are of particular interest and concern to developing countries.

39. Market access in the field of multimodal transport is a particularly difficult issue. Given the way liner shipping is developing into door-to-door and logistics services, operators clearly look at the reduction or elimination of access restrictions and thus at the need to include multimodal transport operations in the liberalization process. Possible scheduling options range from an *additional commitment* and thus a question of *access to and use of* to that of an auxiliary service in the context of commitments on the *second pillar* or even a new *fourth pillar*. The difficulties encountered with this issue in the context of the GATS negotiations raise doubts, however, about whether multinational service suppliers will be able to benefit from a more open market regime in the near future. Resistance to progressive liberalization of the supply of multimodal transport might prevail because of the widespread concern that this may open up the inland transport sector to GATS coverage. Consequently, countries that did make conditional commitments on multimodal transport in their draft schedules chose to schedule it as an *additional commitment*. As far as large liner shipping operators are concerned, particularly those that have chosen to invest in inland transport of containers and not to subcontract inland haulage, this option of course far from satisfies their specific requirements. This question is also of importance to terminal operators as it affects the operation of inland container depots.

Box 5
Connecting transport modes and providers:
Three cases of cooperation and coordination in Asia

“New Delhi: A joint venture between DHL Danzas Air & Ocean and India's Lemuir group will begin operations on June 1, offering integrated logistics service to a variety of customers. The new venture will address the needs of clients, including small and medium companies, in sectors such as information technology, automotive, healthcare, electronics, and consumer goods, executives said. DHL Danzas Lemuir will offer door-to-door integrated services using the breadth of its joint venture partners, said Snehlal Parikh, managing director of the Lemuir group. Renato Chiavi, chief operating officer of DHL Danzas Air & Ocean, said the new venture would effectively position the DHL global network in a premier position in this very important emerging market. DHL Danzas Air & Ocean, the logistics arm of Deutsche Post, holds 49 per cent equity in DHL Danzas Lemuir Pvt. Ltd., while Mumbai-based Lemuir will hold 51 per cent. The new company will be headquartered in Mumbai and will have a combined workforce of 367 in 15 offices and warehousing facilities covering major cities in India. The venture by Danzas, a unit of Deutsche Post World Net, comes as part of its strategy to consolidate its presence in the Indian sub-continent region. Last year it picked Sri Lanka as its new multi-national gateway for South Asia.”

“Shippers' body eases consolidation: The Philippine Shippers' Bureau has set up a cargo consolidation network, Carconet, to help provincial shippers move their cargoes more efficiently and to avoid transshipment at Manila. Bureau director Pedro Mendoza told delegates of the Distribution Management Association of the Philippines in a weekend course held on the Negros Navigation ferry San Paolo that Carconet is now available in Cebu, Davao, Cagayan de Oro, General Santos, Zamboanga, Subic and Baguio. Small and medium LCL shippers from the regions have difficulty exporting as many provincial ports are not directly served by international lines, and most shipping lines that do call do not accept LCL cargo. Mendoza says Carconet simplifies the shipment process by the issue of a single transport document as against segmented shipments with multiple service providers. The shippers' bureau, which helped in setting up the network and monitors the performance of the players, accredits freight forwarders and shipping lines to undertake the cargo consolidation.”

“Malaysia seaport gets air designation. In what it claims is a world first, Malaysia's Port of Tanjung Pelepas has been given a dedicated airport code by the International Air Transport Association as part of efforts to spur sea/air intermodal and transshipment business. The IATA code, ZJT, enables airport operators to treat Pelepas as a flight destination like any airport. The service, jointly promoted by the MASkargo arm of Malaysia Airlines System Bhd. and the port, promises shippers and forwarders cheaper and faster delivery to North America, Europe, Australasia and East Asia via MASkargo's base at Kuala Lumpur International Airport. ‘Shippers using this service can expect cost savings of up to 40 per cent,’ J.J. Ong, Malaysia Airlines' senior general manager for cargo, said. Companies need only to send cargo by sea to Pelepas — among the fastest-growing seaports in Southeast Asia — from where it will be trucked to MASkargo's cargo center at KLIA, then by air to the destination, he said. At the port, cargo will be handled at the special air zone using simplified customs documentation and with fast turnaround, he said.”

Sources: *The Journal of Commerce on-line*, www.joc.com, 9 May 2003. *Lloyd's Register Fairplay Daily News*, <http://www.lrfairplay.com>, 20 May 2003. *The Journal of Commerce on-line*, www.joc.com, 29 May 2003.

40. Substantive issues for future negotiation will have to reflect decisions taken in 1996 by the NGMTS on future negotiating mandates, as well as commercial and organizational developments in transport. From these it clearly emerges that future negotiations will have to take into account new approaches of door-to-door transport and logistics. Given the degree of liberalization in the blue water sector, the major problems that need to be tackled would rather relate to the inland portions of the transport chain, that is the issue of multimodal transport and logistics. Proponents of the inclusion of multimodal transport consider that addressing port-to-port problems alone is no longer adequate. Multimodal transport is an increasingly indispensable element of customized logistics services, which link up both domestic and global production and market places through the interconnectivity of and between modes of transport.

41. Some proposals do not stop at multimodal transport, but extend the proposed liberalization process to logistics and value-added services. The proposal by Hong Kong (China) of March 2001¹⁹ is perhaps the most advanced in terms of an integrated approach as it relates to “liberalization of logistics and related services, including maritime services”. To facilitate the achievement of commercially meaningful liberalization measures for the logistics services sector, the proposal by Hong Kong (China) considers it useful to build a consolidated list of logistics and related services, including freight transportation services, cargo-handling services, storage and warehousing services, customs clearance services, transport agency services, container station and depot services, inventory management services, order-processing services, production-planning services and production-control services. The proposal also underscores the need to link logistics/maritime considerations to those of airborne transport and “Express Delivery”, an industry playing an increasingly important role in logistics. Negotiations are currently progressing in accordance with the timetable established for requests and offers in the area of services.

¹⁹ See Proposal of 28 March 2001, WTO document S/CSS/W/68.

IV. CONCLUSIONS

42. Access to logistics and multimodal transport services is an increasingly important prerequisite for competitiveness in a globalized economy, and many developing countries, especially small island, landlocked and least developed ones, are precluded from such access. At the same time, the requirement that operators be able to provide adequate logistics and multimodal services is growing in line with increasing demands for faster, more frequent, reliable and secure deliveries. These requirements are related to (a) infrastructure and technology, (b) security and safety, (c) trade facilitation, (d) the legal framework and (e) market access. In each one of these five interrelated areas, developing countries tend to be confronted with more difficulties in fulfilling these requirements than developed countries. In order to avoid persistent exclusion from global production processes, especially for least developed, landlocked and small island States, a concerted effort by national governments and international organizations to overcome these difficulties appears necessary.

43. Important decisions and investments will have to be undertaken at the national level. However, international cooperation and coordination also have an important supportive and coordinative role to play. These include coordinative activities, technical cooperation, and international agreements and conventions.

44. With regard to infrastructure and technologies, especially at the bilateral and regional levels, investment in ports, railways and other transport infrastructure needs to be coordinated. This is of particular relevance for landlocked and transit countries. Technical cooperation may be necessary in relation to the concessioning and subsequent regulation of ports or other public infrastructure. The development and introduction of adequate information, communication and transport technologies should also be supported by technical cooperation, and investment may require donor support or financing from international financial institutions to build or improve the capacity of local service providers.

45. Concerning security and safety, monitoring and benchmarking could help developing countries to measure the actual costs of the risks associated with, for example, corruption, pilferage or a lack of road safety. More technical cooperation appears necessary in relation to compliance with international conventions and other obligations, in particular with regard to recent security measures initiated by the United States. Developing countries' concerns need to be taken into account before new international security or safety requirements, which may have implications for public finances, are introduced.

46. Monitoring and benchmarking of facilitation measures can help developing countries to measure their own performances with regard to speed and reliability of trade-related controls and inspections. Technical cooperation and capacity building are of particular relevance with regard to the introduction and use of adequate technologies. In international organizations, any advances to promote trade facilitation would be to the benefit of all countries, including developing ones. The latter may, however, encounter more difficulties when implementing possibly mandatory procedures.

47. Concerning the legal framework, technical cooperation may be required in order to implement international conventions. At the multilateral level, a global international instrument that governs liability arising from multimodal transport would be especially to the benefit of smaller transport users in developing countries, because these do not realistically have the option to negotiate particular conditions for their individual transactions. The currently proposed new draft instrument, however, would imply a shift in the balance of risk distribution that would be to the benefit of carriers, weakening the position of transport users, especially in developing countries. The challenge for developing countries is to determine their negotiation positions, taking into account the potential advantages of reaching agreement on an international instrument and the perceived disadvantages of the specific draft as it is currently being proposed.

48. With regard to market access, regional organizations in particular have a potentially important coordinative role to play, which would complement the region's investments in physical infrastructure. At the multilateral level, negotiations in the WTO on maritime transport will certainly be broadened to include other aspects of door-to-door operations. Developing countries will need to participate more actively in the negotiating process, and the international community should be encouraged to provide assistance particularly in assessing the impact of different negotiating options. Technical cooperation and capacity building are particularly important with regard to the strengthening of local transport providers, and also shippers' associations. Joint ventures and cooperation between national and global operators should also be encouraged.