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**REVIEW OF MARITIME  
TRANSPORT  
2009**

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Chapter 5

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## Chapter 5

# PORT AND MULTIMODAL TRANSPORT DEVELOPMENTS

*This chapter covers container port throughput improvements in port performance, institutional change, port development and inland transportation. World container port throughput grew by an estimated 4 per cent to reach 506.9 million TEUs in 2008. Chinese mainland ports accounted for approximately 22.3 per cent of the total world container port throughput. In China, the Russian Federation and India, rail freight traffic measured in ton-kilometres showed growth rates of 3.5 per cent, 5 per cent and 8.4 per cent respectively for 2008. However, rail freight traffic declined in Europe by 5 per cent. In both Europe and the United States, rail freight declined significantly in the early months of 2009 when compared to the same period in the previous year.*

### A. CONTAINER PORT TRAFFIC

World container port throughput (measured in 20-foot equivalent units (TEUs)) increased by 12.1 per cent in 2007. The preliminary figures for world container port throughput in 2008 show that this growth continued, albeit at a lower rate of approximately 4 per cent. In most cases, the port throughput statistics for 2008 are unconfirmed or not reported until the end of the fiscal year, hence the 2007 figures give a more reliable picture.

During 2008, the world's fleet of container ships increased by 17.3 million dwt or 11.9 per cent (see chapter 2), while freight rates on most routes dived sharply towards the end of the year (see chapter 4). The situation now facing some ports is a glut of container ships laying idle outside the port waiting for cargo. The deepening of the global financial crisis towards the end of 2008 had an effect upon port volumes and therefore

on revenue. The high price/earning ratios that some ports and terminal operators were experiencing in the years preceding 2008 have since decreased. For instance, DP World, one of the largest international terminal operators, saw its share price drop to \$0.18 in March 2009 from its initial public offering price of \$1.30 in December 2007. This effectively meant the valuation of the company had declined from just over \$21 billion to less than \$3 billion. Other port/terminal owners/operators suffered a similar fate as stock markets declined globally. However, one other important factor in the valuation of ports was that port throughput – and thus revenue – had been growing faster than international trade. With international trade now set to level off or decline, so too will the revenue of those companies dependent on it. Port revenue consists not only of charges made from cargo handling, but also of charges for services such as towage, mooring, waste removal etc., which will all decrease with the reduced number of vessel calls. There is also likely to be a knock-on effect

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**World container port throughput ... increased by 12.1 per cent in 2007.**

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on port project investments, as ports either cut back on spending or banks insist on stricter loan conditions.

As indicated by the latest figures available on world container port traffic in 63 developing economies with an annual national throughput of over 100,000 TEUs (table 37), 2007 registered 487.1 million TEU moves – an annual increase of 52.7 million TEUs over 2006. In 2007, the container throughput growth rate for developing economies was 14 per cent, with a throughput of 311 million TEUs; this accounted for approximately 64 per cent of total world throughput.

In 2007, out of all the 63 developing economies listed, 29 countries experienced double-digit growth in port throughput compared to the preceding year. The 10 countries registering the highest growth were the Libyan Arab Jamahiriya (81.7 per cent), Namibia (74.1 per cent), Panama (64.5 per cent), Lebanon (59.4 per cent), Viet Nam (43.6 per cent), Yemen (34.4 per cent), Colombia (29 per cent), Chile (26.8 per cent), the Dominican Republic (25.5 per cent) and China (23.2 per cent). China, the Dominican Republic, Lebanon and Panama also figured in this list in 2006. China continues to top the list as the country with the highest container throughput.

Chinese ports (excluding Hong Kong, China) grew on average by 6.2 per cent in 2007 over the previous year to reach 103 million TEUs. Preliminary figures for 2008 show that Chinese port throughput continued to grow, to around 113 million TEUs. Since then, however, port throughput has fallen significantly, with ports in the Bohai Bay area faring better than those in the south of the country. The main factors for this are: (a) the large number of factories that are located in north-east China, where labour and land costs are cheaper than in the south; (b) the development of intermodal links with internal provinces; and (c) the fast expansion of intraregional trade in the region. Despite this, Dalian recorded its biggest fall in container throughput – a 10 per cent drop – in February 2009. In southern China, in particular around Shenzhen, exports are more concentrated on the transpacific trade route, and are thus more affected by the global economic crisis. Shenzhen, China's second largest container port, saw box volumes fall by 21 per cent in the first two months of 2009.<sup>1</sup> During the same period, Shanghai port handled 1.5 million TEUs in February compared with 1.9 million TEUs in January, representing year-on-year declines of

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19 per cent and 17 per cent. In neighbouring Ningbo, port throughput declined to 1.4 million TEUs in the first two months, down 14 per cent from the same period in 2008. The decline in monthly container volumes widened from 5 per cent in January 2009 to 23 per cent in February 2009.

Table 38 shows the world's 20 leading container ports for 2008. The list includes 13 ports from developing economies – all in Asia – with the remainder from developed countries located in Europe (4) and the United States (3). Of the 13 ports in developing economies, 7 are located in China (including Hong Kong, China). The other ports are located in the Republic of Korea, Malaysia (2), Singapore, Taiwan Province of China, and the United Arab Emirates. Container throughput in these ports reached 247.4 million TEUs in 2008, a rise of 4.9 per cent over the previous year. The ports listed remained the same for the second consecutive year, with a slight shifting of fortunes and jostling for position for those further down the league. The top 5 ports all retained their respective positions in 2008.

Singapore retained its lead as the world's busiest port in terms of the total number of TEU moves, growing at just over 7 per cent compared to the previous year. Shanghai matched this growth rate and maintained its position in second place. This was a much lower growth rate than the 20 per cent experienced over the last few years. The gap between Singapore and Shanghai widened slightly in 2008 to 1.9 million TEUs, from 1.7 million in the previous year, despite extra capacity with the completion of the third-phase expansion of Yangshan port (located off Shanghai).

Hong Kong (China) remained in third place, despite a weak growth rate of just 1 per cent over the previous year. The neighbouring port of Shenzhen achieved a 1.5 per cent growth rate in 2008, compared to 14 per cent in 2007, to remain in fourth place. Busan remained in fifth place, with a similar growth rate of just 1.2 per cent in 2008. Dubai continued its steady upward climb, rising one place after growing by 11 per cent. Ningbo and Guangzhou both moved up an impressive four places after increasing their throughput by around 20 per cent. Rotterdam fell by three places to ninth place, as a result of static throughput. Qingdao held on to its tenth place, with a 9 per cent growth rate. Hamburg dropped by two places to end in eleventh place. Kaohsiung continued its

Table 37  
**Container port traffic for 63 developing economies: 2006, 2007 and 2008**  
*(TEUs)*

Name of country or territory	2006	2007	Preliminary figures for 2008	Percentage change 2007–2006	Percentage change 2008–2007
<b>China</b>	84 017 014	103 546 099	113 296 469	23.24	9.42
<b>Singapore<sup>a</sup></b>	25 608 400	28 767 500	30 891 200	12.34	7.38
<b>Hong Kong, China</b>	23 538 580	23 998 449	24 248 000	1.95	1.04
<b>Republic of Korea</b>	15 522 935	16 986 583	17 297 457	9.43	1.83
<b>Malaysia</b>	13 419 053	15 092 899	16 043 669	12.47	6.30
<b>United Arab Emirates</b>	10 967 048	12 708 903	13 903 735	15.88	9.40
<b>Taiwan Province of China</b>	13 102 016	13 722 313	12 994 312	4.73	-5.31
<b>India</b>	6 141 148	7 354 688	7 269 437	19.76	-1.16
<b>Brazil</b>	6 290 532	6 448 520	6 679 542	2.51	3.58
<b>Thailand</b>	5 574 490	6 200 425	6 585 881	11.23	6.22
<b>Egypt</b>	4 532 202	4 877 488	5 558 991	7.62	13.97
<b>Turkey</b>	3 683 497	4 488 403	4 917 309	21.85	9.56
<b>Indonesia</b>	4 117 701	4 410 798	4 715 380	7.12	6.91
<b>Saudi Arabia</b>	3 863 202	4 208 854	4 652 022	8.95	10.53
<b>Panama</b>	3 027 562	4 074 480	4 649 944	34.58	14.12
<b>Philippines</b>	4 156 967	4 338 993	4 102 950	4.38	-5.44
<b>Sri Lanka</b>	3 079 132	3 381 693	3 687 465	9.83	9.04
<b>South Africa</b>	3 552 198	3 734 165	3 485 626	5.12	-6.66
<b>Oman</b>	2 620 363	2 876 969	3 347 739	9.79	16.36
<b>Mexico</b>	2 680 374	3 069 268	3 310 192	14.51	7.85
<b>Chile</b>	2 122 529	2 692 249	2 865 636	26.84	6.44
<b>Iran (Islamic Republic of)</b>	1 528 518	1 844 169	2 122 872	20.65	15.11
<b>Dominican Republic</b>	1 849 775	2 320 845	2 102 058	25.47	-9.43
<b>Colombia</b>	1 610 298	2 076 760	1 996 622	28.97	-3.86
<b>Argentina</b>	2 481 649	2 496 332	1 980 590	0.59	-20.66
<b>Pakistan</b>	1 776 939	1 935 882	1 918 815	8.94	-0.88
<b>Jamaica</b>	2 150 408	2 016 792	1 915 951	-6.21	-5.00
<b>Cuba</b>	1 628 138	1 729 471	1 732 838	6.22	0.19
<b>Puerto Rico</b>	1 749 565	1 695 258	1 685 009	-3.10	-0.60
<b>Bahamas</b>	1 463 000	1 634 000	1 580 000	11.69	-3.30
<b>Peru</b>	1 084 773	1 175 112	1 392 665	8.33	18.51
<b>Venezuela (Bolivarian Rep. of)</b>	1 266 817	1 331 711	1 305 720	5.12	-1.95
<b>Bangladesh</b>	901 528	978 007	1 091 093	8.48	11.56
<b>Costa Rica</b>	765 672	842 903	1 004 971	10.09	19.23
<b>Lebanon</b>	594 603	947 625	945 105	59.37	-0.27
<b>Guatemala</b>	800 245	852 837	905 705	6.57	6.20
<b>Viet Nam</b>	522 347	750 071	884 598	43.60	17.94
<b>Kuwait</b>	750 000	758 409	765 993	1.12	1.00
<b>Yemen</b>	575 394	773 016	764 701	34.35	-1.08
<b>Uruguay</b>	519 218	596 487	675 273	14.88	13.21
<b>Honduras</b>	593 766	636 542	669 910	7.20	5.24

Table 37 (continued)

Name of country or territory	2006	2007	Preliminary figures for 2008	Percentage change 2007–2006	Percentage change 2008–2007
Ecuador	684 618	682 212	651 631	-0.35	-4.48
Kenya	479 355	585 367	615 733	22.12	5.19
Côte d'Ivoire	507 119	469 277	594 199	-7.46	26.62
Syrian Arab Republic	471 970	538 525	588 275	14.10	9.24
Jordan	406 000	414 000	582 515	1.97	40.70
Trinidad and Tobago	472 075	514 557	560 000	9.00	8.83
Ghana	476 451	513 204	518 336	7.71	1.00
Angola	407 609	412 594	416 720	1.22	1.00
United Republic of Tanzania	317 334	348 686	371 706	9.88	6.60
Senegal	375 876	424 457	347 483	12.92	-18.13
Sudan	328 690	342 152	345 574	4.10	1.00
Mauritius	359 265	303 583	334 924	-15.50	10.32
Bahrain	215 487	238 624	269 331	10.74	12.87
Djibouti	221 330	223 543	225 779	1.00	1.00
Cameroon	200 254	217 681	219 858	8.70	1.00
Algeria	189 848	200 050	202 051	5.37	1.00
Cambodia	221 490	253 271	183 367	14.35	-27.60
Guam	147 972	165 427	167 784	11.80	1.42
El Salvador	123 329	144 458	156 323	17.13	8.21
Namibia	83 263	144 993	146 443	74.14	1.00
Libyan Arab Jamahiriya	67 187	122 122	123 343	81.76	1.00
Madagascar	92 496	112 427	102 423	21.55	-8.90
<b>Subtotal</b>	<b>273 078 614</b>	<b>311 743 178</b>	<b>329 667 243</b>	<b>14.16</b>	<b>5.75</b>
<b>Other reported<sup>b</sup></b>	<b>686 737</b>	<b>755 630</b>	<b>760 483</b>	<b>10.03</b>	<b>0.64</b>
<b>Total reported<sup>c</sup></b>	<b>273 765 351</b>	<b>312 498 808</b>	<b>330 427 726</b>	<b>14.15</b>	<b>5.74</b>
<b>World total<sup>d</sup></b>	<b>434 360 625</b>	<b>487 132 209</b>	<b>506 921 348</b>	<b>12.15</b>	<b>4.06</b>

Source: UNCTAD secretariat, derived from information contained in *Containerisation International Online* as of June 2009, from various Dynamar B.V. publications, and from information obtained by the UNCTAD secretariat directly from terminal and port authorities.

<sup>a</sup> Singapore, in this table, includes the port of Jurong.

<sup>b</sup> Comprises developing economies where fewer than 100,000 TEUs per year were reported or where a substantial lack of data was noted.

<sup>c</sup> Certain ports did not respond to the background survey. While they were not among the largest ports, total omissions can be estimated at 5 to 10 per cent.

<sup>d</sup> While every effort is made to obtain up-to-date data, the figures for 2008 are in some cases estimated. Port throughput figures tend not to be disclosed by ports until a considerable time after the end of the calendar year. In some cases, this is due to the publication of annual accounts at the close of the financial year. Country totals may conceal the fact that minor ports may not be included; therefore, in some cases the actual figures may be higher than those given. The figures for 2007 are generally regarded as more reliable and are therefore more often quoted in the accompanying text.

Table 38

## Top 20 container terminals and their throughput for 2006, 2007 and 2008

(TEUs and percentage change)

Port name	2006	2007	2008	Percentage change 2007–2006	Percentage change 2008–2007
Singapore <sup>a</sup>	24 792 400	27 935 500	29 918 200	12.68	7.10
Shanghai	21 710 000	26 150 000	27 980 000	20.45	7.00
Hong Kong, China	23 538 580	23 998 449	24 248 000	1.95	1.04
Shenzhen	18 468 900	21 099 169	21 413 888	14.24	1.49
Busan	12 039 000	13 261 000	13 425 000	10.15	1.24
Dubai	8 923 465	10 653 026	11 827 299	19.38	11.02
Ningbo	7 068 000	9 360 000	11 226 000	32.43	19.94
Guangzhou	6 600 000	9 200 000	11 001 300	39.39	19.58
Rotterdam	9 654 508	10 790 604	10 800 000	11.77	0.09
Qingdao	7 702 000	9 462 000	10 320 000	22.85	9.07
Hamburg	8 861 545	9 900 000	9 700 000	11.72	-2.02
Kaohsiung	9 774 670	10 256 829	9 676 554	4.93	-5.66
Antwerp	7 018 911	8 175 952	8 663 736	16.48	5.97
Tianjin	5 950 000	7 103 000	8 500 000	19.38	19.67
Port Klang	6 326 294	7 118 714	7 970 000	12.53	11.96
Los Angeles	8 469 853	8 355 039	7 849 985	-1.36	-6.04
Long Beach	7 290 365	7 312 465	6 487 816	0.30	-11.28
Tanjung Pelepas	4 770 000	5 500 000	5 600 000	15.30	1.82
Bremen/Bremerhaven	4 428 203	4 892 239	5 500 709	10.48	12.44
New York/New Jersey	5 092 806	5 299 105	5 265 053	4.05	-0.64
<b>Total top 20</b>	<b>208 479 500</b>	<b>235 823 091</b>	<b>247 373 540</b>	<b>13.12</b>	<b>4.90</b>

Source: UNCTAD secretariat and *Containerisation International Online*, June 2009.

<sup>a</sup> Singapore, in this table, does not include the port of Jurong.

downward trend, falling by four places to position 12. Antwerp gained one place, ending in thirteenth position. Tianjin was the biggest mover, moving up an impressive five places – no doubt helped by its closeness to Beijing, the main site of the 2008 Olympic Games. Port Klang moved up one position to fifteenth place, while Los Angeles slipped three positions for a second consecutive year to finish in sixteenth place. Long Beach declined by two places to seventeenth position, after sustaining the largest fall of any port in the top 20, with an 11 per cent reduction in throughput as imports from Asia were cut

**The world port throughput outlook for 2009 remained depressed.**

back. Tanjung Pelepas remained in eighteenth place, while Bremen/Bremerhaven and New York/New Jersey traded places to finish at positions 19 and 20 respectively. Together, these top 20 ports accounted for around 49 per cent of world container port traffic in 2008.

The world port throughput outlook for 2009 remained depressed. Early indications for China in 2009 did not bode well for the rest of the world, since, as mentioned earlier, China's ports account for almost a quarter of global port throughput. The total throughput of China's

main container ports for the first quarter of 2009 fell by 11 per cent to 21.8 million TEUs compared to the previous year. Guangzhou registered the greatest decline in throughput, losing 24.3 per cent; Shanghai and Shenzhen declined by 15.1 per cent and 21.2 per cent respectively.

## B. IMPROVEMENTS IN PORT PERFORMANCE

The most notable improvements to port performance in 2008 occurred in the number of ports achieving greater crane productivity. In recent years, larger vessels have created more pressure on ports to load and discharge cargo, and some of the technology that is used to cater for this need has now spread to a greater number of ports. Developing economies can benefit from greater connectivity to world markets, improve trade and lower their transport costs by improving port facilities. In some cases this may involve infrastructure investments, such as providing better access to the port by dredging, extending and supporting existing quays, or providing breakwaters. In terms of superstructure, better cargo handling equipment and storage facilities may be needed. To make the most use of the port infrastructure and superstructure, these need to be woven together by an effective operational system. By operating an integrated system in the United Arab Emirates, the Khor Fakkan Container Terminal (KCT), for instance, achieved 220 container moves per hour when servicing the United Arab Shipping Company (UASC) vessel *Mayssan* in April 2009. Although this did not beat the terminal's previous record of 237 moves per hour (for the CMA-CGM vessel *La Traviata* in 2007), it was a prelude of things to come. Several weeks later, KCT surpassed its 2007 terminal record by achieving 279 moves per hour (for the CMA-CGM vessel *Pelleas*). While this is not a world record, it is nevertheless impressive, and does highlight the fact that incremental improvements can be made to increase port efficiency through technological advances. The Apapa Container Terminal in Nigeria, operated by APM Terminals, broke its own productivity record when it performed 2,249 moves in 47.3 hours while unloading the *Maersk Pembroke*, achieving 47.26 moves per hour. The improvement in productivity was due to new training programmes, yard improvements, and the deployment of new equipment. Even though some ports have achieved individual crane productivity of greater than 70 moves per hour, most cranes operating at less than half that rate are considered efficient. Vessel productivity, using multiple cranes to discharge a single ship as in the KCT example above,

surpassed the 400 mark several years ago. While the arrival over recent years of tandem-lift, triple-lift and even quad-lifts cranes has helped improve port performance on an incremental scale, these new cranes have not revolutionized the industry. These multiple-lifting cranes are not a panacea, and as such, they are not in use everywhere. To get the most out of multiple-lifting cranes, cargo needs to be loaded onboard in the right position, to be headed for the same destination, and to weigh a similar amount. Cargo handling within ports remains a critical point in the transport chain where improvements in efficiency could greatly benefit the flow of goods internationally.

## C. RECENT PORT DEVELOPMENTS

This section gives a brief overview of some of the port developments that are happening around the world. It is intended to be informative rather than exhaustive, and pertains to developing economies and countries with economies in transition. In general, port developments continue unabated, despite the global economic crisis. Some port projects have been put on hold pending further analysis of the current economic climate, while other projects have gone ahead.

In China, the port of Dalian had announced plans to cut its capital expenditure by 36 per cent, to ¥800 million (yuan), as a result of the global financial crisis. However, subsequent to this, it announced investments of ¥1.5 billion for 2010 and ¥799 million for 2011, signalling that the effects of the financial crisis on the port may not have been as bad as originally perceived. The Ningbo-Zhoushan port expansion plans, which include the building of nine container terminals, have reportedly been put on hold by Singapore's PSA International and Hong Kong's Modern Terminals, as a consequence of the global trade distortions. PSA had also expressed an interest in building seven additional terminals, bringing the total investment as high as \$1.9 billion. Both parties have now put their projects on hold until the global economic downturn eases. Ningbo-Zhoushan port, located near Shanghai, plans to increase its container throughput to 30 million TEUs by 2020, up from 10.93 million TEUs in 2008. Total cargo volume is set to rise to 890 million metric tons, up from 520 million metric tons. Elsewhere in China, plans were announced to build three multi-functional ports on the border with the Russian Federation, at Tuntszyan, Jiamusi and Big Ussuri. In China, a 51 per cent stake in Yichang Port, the largest feeder port for phosphate in the country, was sold to Hong Kong-listed port and infrastructure investor PYI Corporation Ltd.

In India, the Port of Jawaharlal Nehru completed the bidding process for its 330-metre berth extension project. Expected to be ready in 2010, the additional facility would have an annual capacity of 600,000 TEUs, taking total capacity at the state-owned terminal to 1.2 million TEUs. In addition, the port also extended the deadline for bids to operate its fourth container terminal project, which could cost \$1.3 billion. The 30-year design–build–finance–operate–transfer agreement is expected to have a 1,000-metre-long terminal with a backup area and an annual capacity of 4 million TEUs. At present, private operators DP World run the Nhava Sheva Container Terminal, and APM Terminals run the gateway terminal within the port, while the trust operates its own terminal.

In Colombo, the South Container Terminal port expansion ran into delays following a downturn in traffic volumes. Domestic volumes at the Colombo port fell by 24 per cent, while transshipment volumes fell by 19 per cent in February 2009 over the same period in the previous year.

In the Republic of Korea, Hanjin Shipping celebrated the opening of its new terminal at Busan New Port in February 2009. It also has operations at the Gamcheon and Gamman terminals elsewhere in Busan, plus terminals at the ports of Kyangyang and Pyongtaek in the Republic of Korea. Internationally, Hanjin has operations in Long Beach, Oakland, Seattle, Rotterdam, Antwerp, Osaka, Tokyo and Kaohsiung. New projects scheduled to come online include those in Algeciras (Spain), Tan Can-Cai Mep (Viet Nam) and Jacksonville (United States), for completion in 2010, 2011 and 2012 respectively.

In Brunei, the Government has signed an agreement with International Container Terminal Services Inc. to operate the Muara Container Terminal for a period of four years, with two one-year options to extend.

In the Middle East, Saudi Arabia has allocated 12 billion riyals (\$3.2 billion) in its budget for infrastructure projects including road and ports. A 450-km high-speed railway designed to link the Red Sea port city of Jeddah to Mecca and Medina is expected to be finished in 2012. In addition, a 2,400-km rail link between Jordan and Riyadh is due to be completed in 2010. The line will link Saudi Arabia's Al-Jalamid phosphate mine and its Al-Zabirah bauxite mine in the north with planned aluminium and fertilizer complexes at Ras al-Zour on the Gulf coast. Also in Jordan, the Aqaba Development

Corporation has signed a 30-year build-operate transfer agreement worth in excess of \$100 million with the Jordan Phosphate Mines Company and the Arab Potash Company to rehabilitate, develop and operate the current industrial terminal, and to establish and operate a new terminal. In Africa, Nigeria is to build five new ports at Onitsha, Idah, Dekina, Lokoja and Baro, in Niger State, to ease the pressure of congestion at existing terminals in Lagos. In addition, the River Niger is to be dredged some 570 kilometres from Baro in Niger State to Bayelsa State. APM Terminals are involved in port projects in Apapa (Nigeria) and Luanda (Angola), and also in Pointe-Noire (Congo).<sup>2</sup>

In Latin America, plans are progressing for further concessioning in the ports of San Antonio and Valparaíso. At present DP World, which operates the northern port of Callao, is reported to be interested in the upcoming concessioning, along with Hutchison Port Holdings and local operator Puerto de Lirquén. At the Colombian port of Buenaventura, despite a fall in throughput of more than 5 per cent during the first quarter of 2009, the \$17.7 million planned investment programme will continue. In April, the port saw a significant rise in the number of bulk carriers visiting. In Brazil, the National Department of Transport Infrastructure revealed plans to turn a landfill site in Guanabara Bay, Rio de Janeiro, into the country's newest container terminal. Several international terminal operators are reportedly interested in developing the new project, which has received wide local support. In Mexico, the Punta Colonet port development was reportedly put on hold as the global financial crisis curtailed the number of private companies interested in or able to carry out the required investments under the terms stipulated by the Federal Government. The building of a mineral bulk cargo facility at Guaymas port also suffered a similar fate after it failed to attract interest from investors. The building of the first automobile-specialized terminal at Lázaro Cárdenas port was halted, given the difficult financial situation faced by the car industry. The multi-purpose terminal concession at Mazatlán port was declared void because the two bidders failed to meet the tender's economic requisites.

Table 39 shows the equity market share of the leading global terminal operators. The equity share proportions the terminal throughput by the stake that the global terminal operator has in a particular project. Thus, a port operating as a 50/50 joint venture between a global terminal operator and a local partner would allocate each operator half the port throughput. It is, however,



Table 39

**The global terminal operators equity share  
of world container throughput**  
(percentages)

Global terminal operators	2006	2007	2008	HHI
PSA International	8.0	9.8	9.9	98.9
HPH	8.9	6.9	6.8	46.1
APM Terminals	6.5	6.4	6.7	45.0
DP World	6.0	4.9	5.5	29.9
Cosco Pacific		2.0	2.2	
Eurogate		1.5	1.5	
SSA Marine		1.0	0.9	
<b>Total</b>	<b>29</b>	<b>33</b>	<b>33</b>	<b>219.8</b>
<b>World throughput (in millions of TEUs)</b>	<b>434.3</b>	<b>487.1</b>	<b>506.9</b>	

*Source:* Adapted by the UNCTAD secretariat from information obtained by Dynamar B.V.

*Note:* The Herfindahl Hirschmann Index is an indicator of market concentration. If the sum of the top four market leaders equals 1,000, then that indicates a concentrated marketplace. A score above 1,800 is highly concentrated. This calculation is based on the terminal operator's equity market share.

not uncommon for several global terminal operators to be involved in one terminal. In such a case, the port throughput equity share would also be proportioned to the stake held by each party. Table 39 clearly shows that in 2008, PSA International was the market leader, with a 9.9 per cent market share of world cargo throughput.

The global port industry remains highly fragmented. The Herfindahl Hirschmann Index, an indicator of market concentration shown in table 39, equates to a figure of 219,<sup>3</sup> where 1,000 indicates concentrated and 1,800 highly concentrated. This could be a sign that further consolidation within the port terminal operating industry may be expected. The recent devaluation in the share price of ports, brought about by the decline in global stock markets and international trade, could herald another round of mergers or acquisitions by financial institutions, as ports will surely benefit from a rebounding global economy. The main problem facing potential bidders is where to obtain the finance as credit lines become tighter.

*Financial results of the leading international terminal operators*

An evaluation of the financial results of some of the largest terminal operators reveals that their results for 2008 were very mixed. Ports that experienced a growth in profits above 20 per cent in 2008 include, in descending order, APM Terminals, DP World, the Shanghai International Port Group (SIPG), and Hamburger Hafen und Logistik AG (HHLA), while those at the other end of the spectrum, with losses of more than 20 per cent, include PSA and Cosco Pacific. Listed in this section is a general overview of how port operators performed in 2008. Although it is not an exhaustive list, it does include most of the global terminal operators mentioned in table 39, plus a few other companies which are growing internationally.<sup>4</sup>

Hutchison Port Holdings' revenue increased by 4 per cent to \$5.1 billion in 2008. Total throughput at the 49 ports operated by Hutchison Port Holdings increased by 2 per cent to 67.6 million TEUs in 2008. The fastest-growing ports operated by Hutchison Port Holdings in 2008 were the Panama Ports container terminal, where volumes increased by 21 per cent; Westports in Klang, Malaysia, up by 16 per cent; and International Ports Services in Saudi Arabia, also up 16 per cent. Ports where volumes declined included Xiamen (China), down 17 per cent; Busan and Gwangyang (Republic of Korea), down 5 per cent; Yantian (China), down 3 per cent; and Shanghai (China), down 2 per cent.

PSA International increased its revenue to almost S\$4.4 billion (Singapore dollars) (\$3 billion), up from S\$4.1 billion in 2007, and then saw its net profit slump 46 per cent to S\$1.04 billion in 2008. The contributing factors included lower yields, higher operating costs, impairment provisions and lower divestment gains. The total throughput at its terminals in Singapore and abroad climbed 7.3 per cent to 63.2 million TEUs. The firm's Singapore terminals posted a 7 per cent rise in volumes to 29 million TEUs, while its foreign facilities recorded a 7.7 per cent rise in throughput to 34.2 million TEUs. Profit from port operations dropped 21.7 per cent to S\$1.4 billion, down from S\$1.8 billion.<sup>5</sup>

DP World reported that its turnover increased by 20 per cent during 2008 to reach \$3.23 billion. Its profits for 2008 equalled \$621 million – an increase of 48 per cent for the year ending 2008. This follows an impressive rise in profits of 52 per cent for 2007.

Cosco Pacific increased its turnover in 2008 to \$338 million, up 13 per cent on 2007. Operating profit declined, however, by 21 per cent, to \$165 million as a result of the global economic crisis affecting demand for Chinese goods. Cosco Pacific operates 19 ports in China and 3 internationally.

APM Terminals increased profits to \$161 million from \$106 million as revenues rose by 24 per cent to \$3.1 billion in 2008. Traffic rose 8 per cent to 34 million TEUs. The share of third-party carriers rose to 38 per cent, from 34 per cent in 2007, with sister company Maersk Line providing the remainder.

Eurogate increased its revenue by 8.4 per cent in 2008 to €715 million, and posted a record profit for the year of €116.5 million – a rise of 3.5 per cent on 2007. This was the company's best operating result in its 10-year history.

HHLA achieved a 23.4 per cent increase in operating profits to €355 million (\$472 million) in 2008. Sales were up by 12.4 per cent to €1.3 billion. HHLA's full-year 2008 container turnover was still slightly up, by 1.2 per cent to 7.3 million TEUs, including HHLA's container terminal in the Ukrainian Black Sea port of Odessa. However, in the fourth quarter of 2008, box handling figures declined by 9.7 per cent as the global financial crisis took hold.

Shanghai International Port Group increased net profits by 27 per cent in 2008 to ¥4.6 billion, and turnover rose by 11 per cent to ¥18.1 billion. In 2007, the company reported a net profit of ¥3.6 billion, on revenue of ¥16.3 billion. However, fourth-quarter net profits for 2008 show a decline of 17.5 per cent compared to the previous year. Shanghai International Port Group handled 369 million metric tons in 2008, including 28 million TEUs, up 7 per cent, of which the Waigaoqiao container terminal handled 15.4 million TEUs and the Yangshan deep water port processed 8.2 million TEUs.<sup>6</sup>

China Merchants Holdings International increased its profits by 4.5 per cent to approximately HK\$3,706 million (Hong Kong dollars) for 2008. China Merchants Holdings International's portfolio of ports are mainly located in China, with the exception of a small stake in a terminal in Zeebrugge and in a forthcoming project in Viet Nam. The group handled an aggregate container throughput of 50.48 million TEUs – an increase of approximately

7.1 per cent over 2007. Throughput of 43.58 million TEUs was handled in the mainland, an increase of 8.6 over 2007. Terminals invested and managed by the group in the western Shenzhen port recorded a total container throughput of 11.58 million TEUs – an increase of 5 per cent, which was higher than the overall growth rate of Shenzhen Port. Its market share in Shenzhen also grew to 54 per cent.

International Container Terminal Services Inc. reported a decline in profits of 13 per cent to 2.86 billion Philippine pesos, from 3.29 billion in the previous year. A change in accounting practices was cited as the main cause of the decline.

#### D. INLAND TRANSPORT DEVELOPMENTS

By the end of 2008, the effects of the global economic crisis could be seen in all major transport modes: sea, road and rail. The most notable movements in volumes occurred principally in the first half of 2009, with severe declines for railway traffic in particular, across many regions. The following sections briefly state some of the main developments that have occurred in the inland waterway, railway and road sectors.

##### *Inland waterway transport*

Whereas inland waterway transport perhaps used to be the only efficient form of transport to move goods from inland to coastal areas, today it is looked upon more as an alternative means of transport to help relieve congestion on other transport networks. Inland waterway transport is an increasingly popular mode of transportation for goods in many parts of the world, as is evident from the increasing number of projects attracting investment. However, inland waterways only account for a small portion of goods transported internationally, especially in regions with very well-developed alternative modes of transport. For example, in Europe, inland waterway transport represents only 5.6 per cent of total inland transport, whereas railways account for 17.9 per cent and road transport accounts for 76.5 per cent. (These figures, for 2007, are based on Eurostat.) However, in comparison to other regions, European waterways transport a higher percentage of goods, suggesting that perhaps it is not alternative modes of transport that are a key factor, but rather intermodal

**By the end of 2008, the effects of the global economic crisis could be seen in all major transport modes ...**

connectivity. Currently, only 2 per cent of the Russian Federation's freight transport is carried on waterways, and in Brazil, inland waterways account for less than 1 per cent of the total freight volume. China, with the world's largest network of inland waterways, transported around 1.3 billion tons of cargo in 2007. The Russian Federation, with the second-largest network of inland waterways, transported around 152 million tons in 2007, representing a year-on-year increase of 9.5 per cent. The third-largest inland waterway network is in Europe, where 20 of the European Union's 27 member States have direct access. In Europe, around 500 million tons of cargo were transported using its 37,000 kilometres of inland waterways in 2007. Table 40 illustrates the total goods shipped via some of the world's largest inland waterway networks.

Recognizing the potential of inland waterways, some countries have increased their infrastructure investment in such areas. For instance, the Government of Viet Nam has proposed a future inland waterway that would connect Ho Chi Minh City with neighbouring areas, with an estimated cost of \$88.1 million to develop the waterway system. The plan includes connecting Ho Chi Minh City with 88 inland waterway routes totalling 574 km in length, of which 138 km will be new routes.

Table 40

**Total length of navigable waters and tons of goods transported by inland waterways**

Rank	Country/region	km	Date of info.	km 2007
1	China	110 000	2008	1.3 bn
2	Russian Federation	102 000	2007	152 m <sup>a</sup>
3	European Union	52 332	2006	500 m <sup>b</sup>
4	Brazil	50 000	2008	n/a
5	United States of America	41 009	2008	800 m
6	Indonesia	21 579	2008	n/a
7	Colombia	18 000	2008	3.8 m

Source: Compiled by UNCTAD from various sources.

Note: Data refer to 2008, except where indicated.

<sup>a</sup> 2007 data.

<sup>b</sup> 2006 data.

### Railway transport

In some countries, railways are a major transport mode for goods destined for international markets. For example, in the United States, rail traffic accounts for around 40 per cent of transport share by volume. For other countries such as Brazil, railroads account for only 26 per cent of the freight volume; nonetheless, this represents an increase of almost 80 per cent since privatization took place in 1996. This share is expected soon to reach 28 per cent, and a further 2 per cent has been estimated if the Government invests what is necessary to expand the railroad network. With a 30 per cent share, the Brazilian railroad system would be closer to the international parameter of 40 per cent, which is considered by many to be the ideal share of railroads in the transport matrix of countries with similar industrial and regional features.

The International Union of Railways has reported that the ton-kilometres of European railways declined by 5 per cent in 2008, when compared to 2007. The end of 2008 was particularly dramatic for some countries, when in the last quarter rail freight volumes declined on average by 14 per cent over the previous quarter (see table 41). This trend continued into 2009, with a 34 per cent decline in January 2009 compared to the same period in 2008. In Western Europe, similar data indicate decreases of 18 per cent in December 2008 and 36 per cent in January 2009. In the United States, rail volumes were reported to have fallen by 25 per cent in May 2009, compared to May 2008.

In Asia, however, railway growth (in ton-kilometres) was positive in 2008, though less significant than the year before. China's growth in 2008, for instance, was about half the growth rate registered in 2007 (3.5 per cent compared to 7.6 per cent). India's freight traffic growth rate declined slightly, from 9.4 per cent in 2007 to 8.4 per cent in 2008. In contrast, rail freight in the Russian Federation experienced yet another good year, growing by 5 per cent in 2008 from a 7.2 per cent growth rate registered in 2007.

Reports for the first few months of 2009 indicate that railroad carload volumes in the United States were down 19.2 per cent from 2008, down 16.6 per cent for trailers or containers, and down 18.1 per cent in the total volume estimated at 534.6 billion ton-miles. Similarly, Canadian railroads reported a 22.9 per cent decrease in carloads and a 14.3 per cent decline in volume of trailers or containers since 2008.

Table 41

**Rail: International transport of goods for selected countries**  
(millions of ton-kilometres)

	Q1	Q2	Q3	Q4	Annual-2008
<b>Austria</b>	3 627	3 882	3 577	3 656	14 742
<b>Azerbaijan</b>	1 986	2 266	2 046	1 996	8 294
<b>Belgium</b>	1 381	1 410	1 568	1 278	5 637
<b>Bulgaria</b>	340	377	365	275	1 357
<b>Croatia</b>	685	729	651	668	2 733
<b>Czech Republic</b>	2 242	2 210	2 302	2 170	8 925
<b>Denmark</b>	450	474	422	399	1 745
<b>Estonia</b>	1 493	1 158	1 164	1 421	5 236
<b>Finland</b>	729	836	884	740	3 189
<b>France</b>	4 217	3 925	3 367	2 932	14 441
<b>Germany</b>	15 921	16 296	16 507	13 666	62 390
<b>Hungary</b>	1 912	2 258	2 272	2 055	8 497
<b>Italy</b>	2 142	2 173	1 886	1 790	7 991
<b>Latvia</b>	4 593	4 259	3 942	4 576	17 370
<b>Lithuania</b>	3 195	2 790	2 569	2 539	11 093
<b>Luxembourg</b>	54	67	59	35	215
<b>Norway</b>	219	235	229	222	905
<b>Poland</b>	4 148	4 140	4 199	3 189	15 676
<b>Portugal</b>	65	58	51	34	208
<b>Republic of Moldova</b>	742	718	632	419	2 511
<b>Romania</b>	908	926	891	688	3 413
<b>Serbia</b>	973	1 072	1 008	837	3 890
<b>Slovakia</b>	2 137	2 154	2 072	1 836	8 199
<b>Slovenia</b>	685	708	709	678	2 780
<b>Sweden</b>	1 879	1 880	1 832	1 550	7 141
<b>Switzerland</b>	2 602	2 649	2 376	2 139	9 766
<b>Turkey</b>	370	359	316	324	1 367
<b>The FYR Macedonia</b>	193	196	172	167	728
<b>Ukraine</b>	42 678	43 616	43 182	34 549	164 025
<b>TOTAL</b>	102 567	103 822	101 250	86 827	394 464

Source: The International Transport Forum.

Not surprisingly, the economic downturn is impacting rail freight businesses. Recent reports indicate, for instance, that plans to enhance the “Beijing–Hamburg Container Express” may be revised in light of the current global economic crisis and declining trade volumes.<sup>7</sup>

The European Union, the United States, the Russian Federation, China and India account for around 50 per cent of the total existing world rail network (table 42).

Cooperation among developing economies on rail projects is increasing. For instance, a company from the Republic of Korea is seeking to invest in a new double-track rail project in Viet Nam. This project would link Ho Chi Ming City with the central coastal city of Nha Trang. The new line is expect to cost \$7.8 billion and is part of a larger plan to replace the current track and develop a cross-country express railway. The new line, stretching 369 kilometres, would allow trains to travel at

Table 42

**Countries and regions with total rail networks of 20,000 km and above**

(2006 figures, unless otherwise indicated)

	kms	Percentage of world total
<b>European Union</b>	236 436	17.25%
<b>United States</b>	226 612	16.53%
<b>Russian Federation<sup>a</sup></b>	87 157	6.36%
<b>China</b>	75 438	5.50%
<b>India</b>	63 221	4.61%
<b>Germany</b>	48 215	3.52%
<b>Canada</b>	48 068	3.51%
<b>Australia</b>	38 550	2.81%
<b>Argentina</b>	31 902	2.33%
<b>France</b>	29 370	2.14%
<b>Brazil</b>	29 295	2.14%
<b>Japan</b>	23 474	1.71%
<b>Poland</b>	23 072	1.68%
<b>Ukraine</b>	21 852	1.59%
<b>South Africa</b>	20 872	1.52%
<b>World</b>	1 370 782	100.00%

Source: UNCTAD table, based on CIA World Factbook figures.

Note: All figures are from 2006, unless stated otherwise.

<sup>a</sup> 2005 figure (Russian Federation).

a speed of 200 km per hour, compared to the current aging line which only allows speeds of 60 km per hour. A project to improve Kenya's aging rail network has been unveiled. The plan, which could take up to 16 years, allows for faster trains travelling at speeds of between 80 and 120 km per hour. The project will also expand the network beyond Kenya's borders, into the neighbouring countries of Burundi, the Democratic Republic of the Congo, and Rwanda, bringing the entire Eastern African region into a seamless connectivity. Transportation charges – which in some cases amount to 40 per cent of all costs incurred by local businesses in moving goods by road – can be reduced if an efficient rail service becomes operational. The project comes at a time when threats of diverting cargo from the port of Mombasa to other neighbouring ports have threatened Kenya's strategic position in the region. Kenya's rail network is over a century old, having been constructed between 1895 and 1901; few improvements have been made since. In 2008, the rail network moved just over 2 million tons of cargo, compared to around double this capacity in the 1980s.

### Road transport

Road transport is an essential link from the factory door to the main mode of transportation and for onward delivery to the consumer. In examining the modern movement of goods along the so-called ancient "Silk Road", a study conducted by the United States Chamber of Commerce found that it was still a practical and competitive option compared to options that require additional infrastructure investment. For many developing economies in other regions, road transport is still the only viable mode for transporting goods.

Total freight transport by road in the European Union in 2006 represented about 1,894 billion ton-km, 73 per cent of the inland freight transport market. International road freight transport accounted for about one third (or 612 billion ton-km) of total road freight transport in the European Union in the year 2006. National road freight transport represented the other two thirds (1,200 billion ton-km). Haulers registered in five countries (Germany, Poland, Spain, the Netherlands and Italy) accounted for over 50 per cent of the total international road freight market within the European Union.

### Road transport and the economic crisis

Various surveys conducted in October 2008 indicated that trucking companies in the United States were highly concerned about fuel costs and the economic uncertainties. Third-party logistics companies were seen to be relying heavily on the retail, automobile, and electronics industries for their freight business, all three of which were suffering a recession, with automobile sales reportedly at their lowest mark in 15 years, and consumer spending flat. Reports also indicate that as trade growth decelerates, the road transport industry is facing slower growth. Estimates indicate that over the 2009–2013 forecast period, United States road haulage traffic will grow at a subdued average annual rate of slightly above 1.2 per cent measured in millions of ton-km.<sup>8</sup>

Figures from the European Union Road Federation (ERF) and various road freight associations indicate an average decrease in road freight transport activity of up to 50 per cent for the last quarter of 2008, and a rise in costs by at least 3–4 per cent.<sup>9</sup> In 2009, road companies, associations and unions in Europe called for financial support to implement stimulus plans focused on road infrastructure to help mitigate the effects of the slowdown.

Road haulage companies are not immune to the global financial and economic crisis. According to the International Road Transport Union (IRU), the number of bankruptcies of road haulage companies has increased substantially since the end of 2007. The French road transport organization Fédération Nationale des Transports Routiers (FNTR) reports that out of 210 insolvency cases recorded in the road goods transport sector in France in January 2009, 82 per cent took place in small or very small enterprises. Also, according to FNTR, cases of insolvency had increased threefold in French businesses of more than 50 employees between 2007 and the end of 2008. The sector, in which around 50 per cent of workers are self-employed, is likely to be impacted severely by the crisis. As of January 2009, an estimated 10,000 jobs have been lost in France as a result of the financial crisis. An additional 16,000 jobs in Spain and 4,000 in Belgium have been lost through cases of bankruptcy in the road transport sector. It is also estimated that a total of 140,000 jobs in EU road freight transport are currently at risk or have already been lost since the end of 2007.<sup>10</sup> The number of jobs lost is only one indicator of the effects of the crisis on employment (employment conditions in existing jobs are affected by the crisis too).

Prospects for the rest of 2009 are not favourable. In January 2009, the IRU published its yearly road transport indices, according to which growth in the transport sector in Western Europe is set to stagnate at a low level over the first half of 2009. The European Association of Automobile Manufacturers confirms this view: over the year 2008, registrations of new trucks (> 3.5 t.) fell by 4.0 per cent in the EU-27 and EFTA (without Cyprus and Malta), mainly because of the 21.1 per cent decrease in the EU-12.

## E. UNCTAD LINER SHIPPING CONNECTIVITY INDEX 2009

Countries' access to world markets depends largely on their transport connectivity, especially as regards regular shipping services for the import and export of manufactured goods. UNCTAD's Liner Shipping Connectivity Index (LSCI) aims at capturing a

country's level of integration into global liner shipping networks.<sup>11</sup> In 2009, China continued to be the country with the highest LSCI, followed by Hong Kong (China), Singapore, the Netherlands and the Republic of Korea (annex IV).

Between 2008 and early 2009, the container-carrying capacity of the largest container vessels increased further. With 13,800 TEUs, the new MSC *Daniela* is larger than the 12,508-TEU vessels of Maersk, which were the largest ships in mid-2008. As regards the other components of the LSCI, however, the global economic crisis has already had a measurable impact: the average number of ships, the TEU capacity deployed and the number of services per country have all gone down for the first time since 2004, when UNCTAD started monitoring these figures. Already since 2005 we have observed a

**Road haulage companies are not immune to the global financial and economic crisis.**

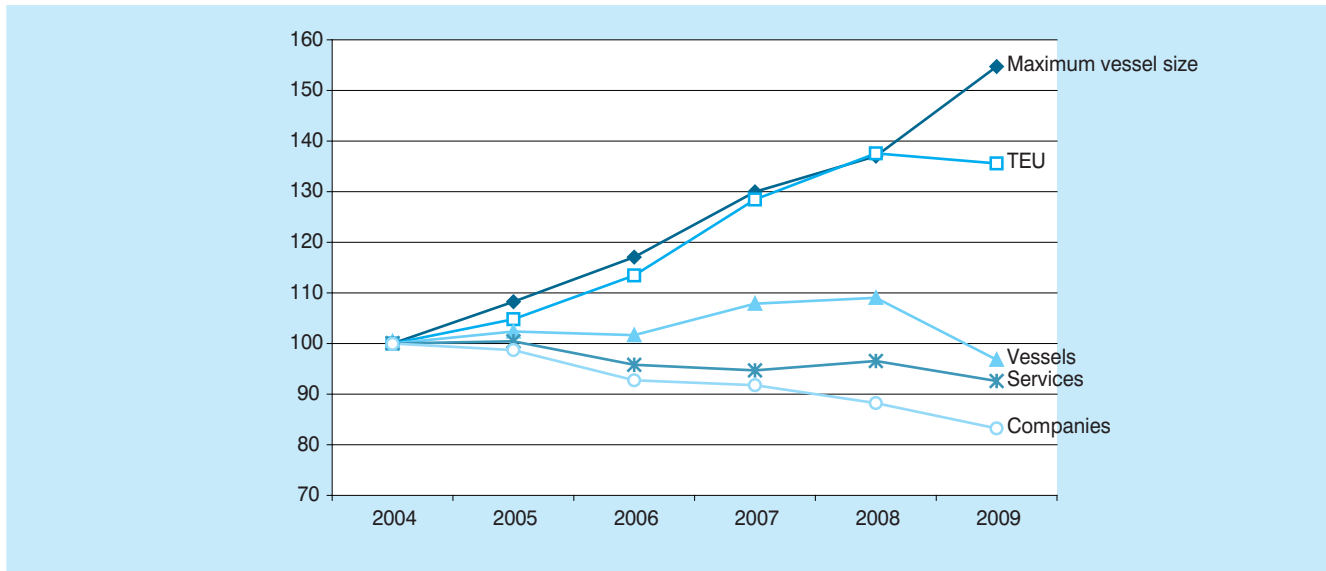
**Between July 2008 and July 2009, the number of ships, ... the number of services and the number of companies have all decreased.**

reduction in the number of carriers, as the mergers and acquisitions among shipping companies have an impact on the level of competition on numerous trade routes. The data on the routing and deployment of container ships provide some further insights into the impacts

of the global economic crisis on different regions. Although the global container ship fleet continues to grow in line with new deliveries, ships are increasingly being withdrawn from service and others have been redeployed on different routes. Between July 2008 and July 2009, the number of ships, their total TEU carrying capacity, the number of services and the number of companies have all decreased. Only the maximum vessel size has continued to increase: in spite of the economic crisis, new and larger vessels are being delivered by the world's shipyards. Many of these larger ships then replace smaller vessels, leading to a significant reduction in the average number of vessels per country. For the first time since UNCTAD began recording the data, the average container-carrying capacity TEU assigned per country has discontinued its rise. Following the continued trend of mergers and acquisitions, the average number of companies offering services per country has decreased by 17 per cent since 2004 (fig. 24).

Figure 24

**Trends in connectivity indicators**  
*Index of country averages 2004 = 100*



Source: UNCTAD secretariat, based on data from *Containerisation International Online*.

## ENDNOTES

- <sup>1</sup> <http://www.lloydlist.com/ll/news/chinese-box-port-volumes-collapse/1236269165316.htm>.
- <sup>2</sup> More details on Africa are included in chapter 7, including port developments on the continent.
- <sup>3</sup> This calculation is based upon the equity share where a port operator has an interest. This is against a total market calculation which would give a higher index figure.
- <sup>4</sup> SSA Marine is a private company whose accounts are not publicly available.
- <sup>5</sup> *Lloyd's List* (2009). PSA International net profit slumps 46 per cent. 30 March 2009.
- <sup>6</sup> <http://www.lloydlist.com/ll/news/viewArticle.htm?articleId=20017635789>.
- <sup>7</sup> The trip from Tianjin to Hamburg usually takes up to 30 days by sea, however by using rail, the journey time can be reduced to about 17 days.
- <sup>8</sup> Business Monitor International. United States Freight Transport Report, fourth quarter 2009. 6 August 2009.
- <sup>9</sup> ERF. Facing the crisis. 18 March 2009.
- <sup>10</sup> International Road Transport Union. <http://www.iru.org>.
- <sup>11</sup> The first version of the 2004 LSCI was introduced in UNCTAD's Transport Newsletter No. 27, first quarter, 2005. The current version of the LSCI is generated from five components: (a) the number of ships; (b) the total container-carrying capacity of those ships; (c) the maximum vessel size; (d) the number of services; and (e) the number of companies that deploy container ships on services from and to a country's ports. The data are derived from *Containerisation International Online*. The index is generated as follows: For each of the five components, a country's value is divided by the maximum value of that component in 2004, and for each country, the average of the five components is calculated. This average is then divided by the maximum average for 2004 and multiplied by 100. In this way, the index generates the value 100 for the country with the highest average index of the five components in 2004.