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The Data Chase:

What's Out There on Trade Costs and Nontariff Barriers?

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Non-Technical Summary

Trade costs and non-tariff barriers are at the forefront of discussions on competitiveness and expanding trade opportunities for developing countries. This paper provides a summary overview of data and indicators relevant to these issues and has been informed by work underway at the World Bank on trade facilitation over the past several years to catalogue data sets and indicators.

Although there has been progress in expanding data sets and developing policy-relevant indicators on trade costs and barriers, much more is needed. In order to assess progress toward achieving the Millennium Development Goals, evaluating the impact of development projects, and whether meeting Aid for Trade goals will be met, for example, a dedicated and expansive new effort to collect and assess data is needed. This document attempts to highlight gaps in data on trade costs and provides insight into the type of new data that might be developed in the future.

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Introduction

Expanding access to international trade is a vital component of a successful strategy for poverty reduction and economic growth. In an era of dynamic and changing global trade patterns, the costs of moving goods across international borders is as important as tariffs in determining the cost of landed goods. The ability of countries to deliver goods and services on time and with increasing lower costs is a key determinant of full integration into the world economy.

As tariff barriers to trade have lowered over the past decades, the cost of complex and non-transparent trade procedures has risen. Programs to remove non-tariff barriers and accelerate the flow of goods and services across borders – trade facilitation measures – are at the forefront of policy debate. There is no commonly accepted definition of trade facilitation. In a relatively narrow concept, trade facilitation relates simply to the logistics of moving goods through customs or more efficiently processing documentation associated with cross-border trade. The definition has broadened recently to include the environment in which trade transactions take place. This includes the transparency and professionalism of customs and regulatory environments. It also includes the harmonization of standards and conformance to international norms (Woo and Wilson 2000). The focus of trade facilitation efforts is now clearly inside the border. Reform involves “domestic” policies and institutional structures where capacity building can play an important role. In addition, the rapid integration of networked information technology into trade suggests that modern definitions of trade facilitation must encompass technology and other infrastructure, as well.

In this paper, we provide a summary of available indicators of trade facilitation. Such indicators can have multiple audiences and purposes. They can provide (1) a basis for the development of further indicators for use in analysis of the impact of trade facilitation on development, (2) a guide for task managers in Bank operations in project preparation, supervision, and evaluating project performance, (3) a benchmark for regional comparisons, (4) track effectiveness of domestic reform processes associated with accelerating trade facilitation, and (5) assist in shaping policy-oriented empirical research in sectors which suffer from lack of data. The goal of this work is to identify gaps in data, and explore the utility of a new measurement tools in trade facilitation that can be readily used for cross-country analysis.

Trade facilitation is today a critical dimension in economic development. This is particularly true from the perspective of a developing country. In an environment of “just-in-time” manufacturing, outsourcing and global production sharing, firms cannot afford delays with complex and inefficient customs rules, lack of modern systems of information technology applied in maritime transport, and other areas of trade facilitation. Identification of bottlenecks – administrative, regulatory, or infrastructure related – can better equip developing countries to compete in international markets for goods. Inefficient and unnecessary import and export procedures impede trade flows. Reducing trade-related transaction costs can expand trade, create employment opportunity, and help achieve long-term poverty reduction goals.

1.1 Trade Costs and Competitiveness

There are various institutional, policy and physical barriers that prevent firms from getting their goods and services to (and from) the markets on time, and with quality.

A number of empirical studies have shown that easier movement of goods and services clearly effect export competitiveness. For example, Subramanian and Arnold (2001) show that logistics accounted for no less than a third of the cost of door-to-door shipment of containerized carpets from Nepal to Germany and teabags from India to the United Kingdom. Using a similar methodology, a World Bank (1997) study of the performance of Brazilian ports reported that per-container costs for administrative procedures and customs clearance could be reduced by more than 20 percent (from \$1,727 to \$1,320) if international best practices were followed. Customs-related transaction costs—red tape—can represent up to 10 percent of a shipment's value in some countries (Staples, 2002). Costs are compounded if there is corruption and delay. More efficient procedures, electronic data exchange and minimizing redundancy can provide important benefits.

In developing countries, transit costs are routinely 2–4 times higher than in rich countries. For small economies, higher logistics costs can translate directly into higher import and export prices. For countries exporting products that have a high import content, as is the case with many developing countries, small differences in transaction costs can determine whether the export venture is commercially viable or not. This particularly holds for labor-intensive industries in developing countries, where high transport costs may preclude wage growth, affecting the standard of living of workers. Reducing logistics cost can also reduce inventory levels, thus freeing up working capital for more productive uses.

Given the importance of just-in-time production systems, minimizing transit time can enable firms to outsource stages of production to geographically dispersed locations. Research by Hummels (2001) showed that rapid delivery of goods is crucial for the maintenance of multinational vertical product chains. Hummels found that each day saved in shipping time due to a faster transport mode and faster customs clearance was worth almost one percent, ad valorem, for manufactured goods. Unreliable logistic services can force firms to maintain higher inventory holdings at every stage of the production chain, necessitating additional working capitalⁱ.

With increased attention to the benefits of reducing non-transport barriers to trade, efforts have been made to assess the importance of trade facilitation. Empirical measures of trade facilitation are lacking, however, and progress in quantifying the impact of modern trade facilitation has been limited. Several recent studies quantify the benefits of improved trade facilitation modeled as a reduction in the costs of international trade or as an improvement in the productivity of the international transportation sectorⁱⁱ. These results show clearly that when trade transaction costs are lowered, imports and exports rise.

The analysis of capacity building in trade facilitation in the Asia Pacific Economic Cooperation (APEC) by Wilson, Mann, and Otsuki (2003), was extended in the World Bank's *Global Economic Prospects 2004: Realizing the Promise of the Doha Agenda*. The authors find that

enhanced capacity in global trade facilitation would increase world trade by approximately \$377 billion dollars—an increase of about 9.7 percent. About \$107 billion of the total gain comes from the improvement in port efficiency and about \$33 billion results from the improvement in customs environment. The gain from the improvement in regulatory environment is \$83 billion. The largest gain comes from the improvement in services sector and e-business usage (\$154 billion). Overall, the gains from exporter’s improvements in trade facilitation dominate those from importer’s improvements. The results also imply that increased capacity to comply with The General Agreement on Tariffs and Trade (GATT) Article V (Freedom of Transit) measured by the ‘port efficiency’ indicator, Article VIII (fees and formalities connected with importation and exportation) measured by the ‘customs environment’ indicator, Article X (publication and administration of trade regulations)- measured by the ‘regulatory environment’ indicator could raise global trade for all World Trade Organization (WTO) members.

1.2.Border Security and Trade Transaction Costs

In the wake of September 11th and global concerns about terrorism, security measures have been adopted worldwide to inject stability into the global economy, raise investor confidence and facilitate trade. Millions of dollars have been spent to enhance port security, install advanced airport security equipment, strengthen customs authorities and bolster border security. While the United States has been the driver of the new protocols, security plans in other parts of the world have also been revised and strengthened.

In quantifying the impact of trade facilitation on growth, the security angle must be included. Greater security can lead to higher levels of foreign investment over time. Terrorist acts increase the risk premium and undermine investor confidence, making investors less keen to invest in new projects. Under such conditions, investors could become risk-averse – favoring low-risk, lower return investments as opposed to riskier, higher yielding long-term investments.

Measuring the impact of security programs on global trade is problematic, given the evolving nature of these initiatives. Security can increase trade costs by requiring costly changes in business practices and new investment in technology and infrastructure. Limited implementation capacity in developing countries to comply with the new requirements can affect export competitiveness. For example, to avoid delays and fines, shippers are adding extra cycle time to their supply chain. It is clear, however, that strengthened security can in the long-term significantly improve trade, growth, and development prospects around the world.

The September 11th terrorist attacks resulted in strengthened transport security that led to higher frictional costs relating to transport, handling, insurance and customs. These additional costs can affect trade even in the medium and long run (Walkenhorst and Dihel, 2002). Their study of the effects of September 11th on international trade indicates that regions with high trade to GDP ratios and sectors with elastic import demand incurred the greatest trade and welfare losses in relative terms. The authors estimate world welfare to decline by \$75 billion per year as a result of a 1% ad valorem increase in frictional costs to trade². While Western Europe and North America suffer the greatest loss in absolute terms; other regions such as South Asia, North Africa

² This figure is comparable to the estimates of \$30-58 billion losses for the insurance industry by OECD (2002).

and Middle East who are more dependent on foreign trade are the primary losers in relative terms.

The initial burden on ship operators due to the International Maritime Organization's International Ship and Port Facility Security (ISPS) Code has been estimated to be at least USD 1 279 million and USD 730 million per year thereafter (Organization for Economic Co-operation and Development (OECD), 2003). The bulk of ship-related costs are related to management staff and security-related equipment expenditures. However, costs stemming from implementation of the ISPS Code for port facilities are likely to be as large if not larger. The ISPS Code provides that where a ship has called at a port facility that does not comply with the ISPS Code or where the facility is deficient in its compliance, that ship may be delayed, detained, or denied entry. This applies even if the ship itself fully complies with the ISPS Code.

At the same time, reduced security threats in the future with technology-intensive initiatives should be considered an investment – resulting in efficiency gains, greater use of electronic commerce, and enhanced security. Automated technology (bar codes, wireless communications etc.), greater information-sharing and security-inspired modernization measures — can accelerate global trade while improving security—a win-win situation. For example, cost-benefit analyses of a new electronic customs manifest handling system can generate direct savings to American importers of USD 22.2 billion over 20 years, and savings to the US government of USD 4.4 billion over the same period. Delays in clearance of goods through customs that currently impedes competitiveness of developing country trade can also be reduced – contributing to port efficiency. According to recent research, automated customs can lower the direct costs of customs clearance by the equivalent of 0.2 percent of the value of traded goods. By accounting for the indirect benefits of reduced delays, costs are reduced by 1 percent of merchandise value. (Hertel, Walmsley, and Ikatara, 2001)

In addition, outdated and corrupt customs systems, for example, not only increase security risks but also impede trade and raise transactions costs. Though customs fees and formalities usually constitute a small part of trade-related transactions costs, complex requirements in cross-border trade, however, clearly increases the scope for corruption. For example, at the key border crossing point between India and Bangladesh as many as 1,500 trucks queue up on both sides of the border with waiting times varying between one and five days to complete documentation requirements. This contributes to higher chances for bribery and corruption on the border. Customs reform can bring in additional revenue as well as cost saving in terms of reduced clearance time and increased efficiency in the movement of goods. Automation can enable Customs to apply principles of risk assessment to select shipments for examination more effectively.

In sum, cooperation in adopting collective measures to promote transport security, improving customs regimes, port facilities and logistics management has to be a priority. The initial costs of new security procedures will pay off in the long run through efficiency gains, better management of information, and greater use of electronic commerce. The end result would then be a global trading system that secures trade and accelerates trade flows simultaneously.

2. Existing Data Sets and Analytical Tools

Performance indicators are necessary to encourage accountability by public agencies, measure the quality of their management, and evaluate the service to users. In addition, performance indicators can help in comparing a country's efficiency with other countries as well as with acceptable benchmarks. They are also helpful in monitoring the impact of policy reform and other measures taken to reduce costs and facilitate trade.

Trade facilitation has most often been proxied by a single indicator, such as (1) import prices, (2) international transport costs, or (3) the productivity of a particular transportation mode (air, maritime, road). The traditional measures have to be replaced by something more consolidated that can be used more widely and that reflects transport and logistics efficiency. In a broader context, however, trade facilitation clearly involves policies and activities that accelerate the flow of goods and services across borders. This includes customs regimes, port infrastructure, transport systems and related infrastructure as well as information technology (as it relates to transport and logistics). Transport infrastructure includes road, railway, and inland waterway networks, as well as warehousing facilities and supporting communication systems that are essential for efficient transport services. With modern inland transportation networks countries are in a better position to supply foreign markets. Exporters can choose among different transport modes, and alternative ports and other transport platforms. Other barriers to trade are institutional and involve unreasonable customs delays or demands for bribes to expedite the movement of goods across borders.

A set of benchmark indicators to measure progress and outcomes based upon comparisons can provide a starting basis for quantifying trade facilitation. A compendium of these data sets and indicators of trade facilitation is provided in the following sections.

2.1 General Economic Indicators

2.1.1 Investment Climate Indicators

[*World Bank's Rapid Response Unit*](#)

Rapid Response is a knowledge service specializing in policy advice on business environment reform and privatization policy in developing countries. Areas of expertise include comprehensive assessments of the business environment in developing countries, through both country-specific reports as well as comparative data used for benchmarking purposes. Their products include:

[*Doing Business database*](#)

The Doing Business database provides objective measures of business regulations and their enforcement. The Doing Business indicators are comparable across 155 economies. They indicate the regulatory costs of business and can be used to analyze specific regulations that enhance or constrain investment, productivity and growth.

The topics covered include:

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- Starting a Business
 - Dealing with Licenses
 - Hiring & Firing Workers
 - Registering Property
 - Getting Credit
 - Protecting Investors
 - Paying Taxes
 - Trading Across Borders
 - Enforcing Contracts
 - Closing a Business

[Investment Climate Surveys \(ICS\)](#)

Investment Climate Surveys (ICS) provide both quantitative and qualitative information on a wide range of investment climate conditions and links them to their impact on firm productivity, investment and employment. The ICS -- including the Business Environment and Enterprise Surveys (BEEPS) joint with the EBRD -- report results from surveys of over 30,000 entrepreneurs in over 50 countries.

Investment climate surveys (ICS) measure entrepreneurs' perceptions of the investment climate in their country, and provide indicators of firm productivity and performance. All investment climate surveys are grounded in a [standard core module](#) (PDF, 180KB) that covers management's perceptions of the severity of obstacles to operation and growth of the business. The standard core investment climate survey module also collects information on firm performance.

In addition to the core module, the investment climate surveys may be supplemented with questions from other detailed modules covering finance, labor, small and medium enterprises, and logistics, to name a few. These supplemental modules are used to explore in greater depth issues that may be topical or particularly relevant in any given country. Standard investment climate surveys are administered to the manufacturing sector in urban areas. Other sector-specific investment climate survey instruments are also being developed, including questionnaires for the hotel and tourism industry, retail-trade sector, rural manufacturing, information technology, and informal firms.

About 20 firm level surveys are being carried out each year, with a 4-5 year cycle. The firm-level survey is complemented with analysis from other studies, as well as discussions and meetings with key stakeholder groups. For example, indicators on entry regulation estimate the procedures, time, cost and minimum capital requirements to register a business formally, thus highlighting the microeconomic and institutional conditions inhibiting productive investment. These assessments will ultimately feed into operations and technical assistance.

Several of the investment climate surveys also contain detailed information on transportation constraints including trade facilitation programs. There are data on questions such as the number of competitors, suppliers, customers, and percentage of firms that find transportation and customs and trade regulations to be "major" or "very severe" constraints, infrastructure

indicators, regulatory and administrative delays (including average days to clear customs). The logistics module for firm surveys is an optional module and is being implemented in selected countries where the logistics module supplements the Core ICS. (Please see [Annex B](#) for the logistics module).

IMD: [World Competitiveness Yearbook](#)

The International Institute for Management Development, based in Switzerland produces an annual publication that ranks nations' environments and analyzes their ability to provide an environment in which enterprises can compete. It is an annual report that measures the competitiveness of 59 countries and regional nations, by 321 different criteria grouped under four competitiveness factors (economic performance, government efficiency, business efficiency, and infrastructure). Through collaboration with 52 institutes worldwide, the yearbook also draws data from international and regional organizations. It differentiates between economies with populations larger and smaller than 20 million since size does determine competitiveness.

Related measures include: Bribing and corruption does not exist in the economy; Bureaucracy does not exist in the economy; Transparency of government policy is satisfactory; Customs authorities facilitate the efficient transit of goods.

[IMD World Competitiveness Online](#)

Using 314 factors, this online version of the IMD's World Competitiveness Yearbook analyzes and ranks the ability of 60 national and regional economies to create and maintain an environment that sustains the competitiveness of enterprises. It allows customized selection of data and countries/regions, and data can be displayed and saved in PDF or Excel format.

European Bank for Reconstruction and Development ([EBRD Transition Report](#))

The Transition Report provides information on developments in central and Eastern Europe and the Commonwealth of Independent States (CIS). The 2002 edition also analyses the second round of the Business Environment and Enterprise Performance Survey, covering close to 6,000 enterprises in 26 countries of the region. The survey provides useful insight into the quality of the business environment in the region and how it varies between countries and different types of firm. The first round of the survey which was analyzed in the 1999 Transition Report, examined how reforms influence the performance of firms, by considering differences in reforms both at the country level, in terms of the pervasiveness of soft budget constraints and assessments of the investment climate, and at the level of enterprises themselves, in particular the degree of competition faced by firms and their origin and ownership.

[World Business Environment Survey \(WBES\)](#)

The World Business Environment Survey (WBES) is a survey of over 10,000 firms in 80 countries and one territory conducted in 1999-2000 that examines a wide range of interactions between firms and the state. Based on face-to-face interviews with firm managers and owners,

WBES is designed to generate comparative measurements in areas like corruption, judiciary, lobbying, and the quality of the business environment. To provide the most transparent, flexible and user-friendly approach to access the data and prepare charts and tables, an interactive web-tool has been developed to work with the WBES. In the data analysis, these business climate constraints are related to specific firm characteristics and firm performance. Some indicators related to trade facilitation include:

- Burden of customs/foreign trade regulations (no obstacle, minor obstacle, moderate obstacle, major obstacle);
- Quality and efficiency of public services (roads, water etc.) (from very bad to very good);
- Quality and efficiency of customs;
- Time taken to clear customs.

Investment Climate Around The World: Voices of The Firms from The Business Environment Survey (G. Batra, D. Kaufmann, A.H.W Stone 2003) presents the core WBES questionnaire and survey findings, and confirms the significance of key country conditions on firm performance and behavior. The findings provide a basis for regional comparison, but suggest the need for caution when averaging across categories, especially in light of country conditions that can significantly affect firm-level sales and investment. (See [Annex A](#) for additional detail)

Investment Climate Assessments (ICAs)

Investment Climate Assessments are comprehensive country reports that draw upon the results of Investment Climate Surveys and other available diagnostic tools. They identify and prioritize investment climate constraints, benchmark reform progress, provide cross-country comparisons of investment climate indicators, and help countries forge broad consensus on priority areas for reform. These assessments ultimately feed into World Bank operations and technical assistance.

Investment Climate Assessments have been completed for 18 countries and more are underway, including Chile, Mongolia, Oman, South Africa, Syria, Thailand, and Turkey.

Dollar, Hallward-Driemeier and Mengistae (2003) provide various infrastructure indicators for 10 countries based on firm-level surveys in Bangladesh, Brazil, China, Honduras, India, Nicaragua, Pakistan, and Peru. The standardized surveys highlight the monetary costs of bottlenecks and delays in infrastructure services such as power, telecom as well as customs administration (See [Annex C](#)).

In addition, work is underway on *country level supply chain/ logistics studies* that are diagnostic assessments of logistics costs for selected strategic products using a supply chain approach in several countries. The methodology is being built on information used for *Forging Subregional Links in Transport and Trade Facilitation (2001)*. Nigeria, Kenya, Lesotho, Ghana, Honduras, Nicaragua are some of the countries where these studies will be carried out.

[World Economic Forum: Global Competitiveness Report \(GCR\)](#)

The World Economic Forum is an independent organization which identifies strategic issues and provides a platform for decision-makers to effect constructive change. The Forum facilitates dialogue between corporate, political, intellectual and other leaders on matters of global, regional, corporate and industry importance.

The fundamental objective of the *Global Competitiveness Report (GCR)* is to evaluate the economic competitiveness of a large sample of countries. Traditionally, the GCR has focused on two complementary approaches to analyzing competitiveness. The first, called the *Growth Competitiveness Index (GCI)*, was developed by Jeffrey D. Sachs of Columbia University and John W. McArthur of The Earth Institute and was presented in *The Global Competitiveness Report 2001–2002*. The second index, now labeled the *Business Competitiveness Index (BCI)*, was developed by Michael Porter of Harvard University and was first introduced in *The Global Competitiveness Report 2000*.

The two indexes combine available hard data and data from the Executive Opinion Survey (Survey) conducted annually by the World Economic Forum. The Survey is conducted in the first half of every year. Input is contributed exclusively by leading business executives and entrepreneurs whose current perceptions of the business environment in which they work are captured in their responses to a comprehensive and scientifically constructed questionnaire.

GCR includes an index based on quality perception for rating railroad services, port facilities and air transport services (Ranking from 1 to 7, with 1=underdeveloped, 7=developed as the world's best). GCI 2004-2005 covers a total of 104 countries and BCI covers a total of 103 countries.

2.1.2 Governance Indicators

The World Bank [Governance Indicators : 1996-2004](#)

This dataset contains composite indicators of six dimensions of governance (Voice and Accountability, Political Stability/Lack of Violence, Government Effectiveness, Regulatory Framework, Rule of Law, and Corruption Control). The indicators reflect the statistical compilation of perceptions of the quality of governance of a large number of enterprise, citizens and expert survey respondents in industrial and developing countries, as well as non-governmental organizations, commercial risk rating agencies, and think-tanks. Data are available for over 160 countries and can be accessed online. Existing indicators of governance and institutional capacity, by source with a brief description of how each indicator differs from one another, as well as selected papers are available at the [public sector website](#).

[Transparency International: Corruption Perceptions Index](#)

The Corruption Perceptions Index ranks countries in terms of the degree to which corruption is perceived to exist among public officials and politicians. It is a composite index, drawing on 14 different polls and surveys from seven independent institutions carried out among business

people and country analysts, including surveys of residents, both local and expatriate. TI focuses on corruption in the public sector and defines corruption as the abuse of public office for private gain.

[*The EBRD-World Bank Business Environment and Enterprise Performance Survey \(BEEPS\)*](#)

BEEPS was developed jointly by the World Bank and the European Bank for Reconstruction and Development, is a survey of managers and owners of more than 20,000 firms across the countries of Central and Eastern Europe, the former Soviet Union, and Turkey. The survey has been carried out in three rounds: [1999](#), [2002](#) and [2005](#).

The BEEPS is designed to examine the quality of the business environment as determined by a wide range of interactions between firms and the state, including in the following areas:

- Problems Doing Business
- Unofficial Payments and Corruption
- Crime
- Regulations and Red Tape
- Customs and Taxes
- Labor Issues
- Firm Financing
- Legal and Judicial Issues
- Infrastructure

[2005 Questionnaire](#)

2.2 Trade Indicators

[*OECD-WTO: Doha Development Agenda Trade Capacity Building Database \(TCBDB\)*](#)

The TCBDB has been established by the WTO jointly with the OECD to provide information on trade-related technical assistance and capacity building projects. It covers national as well as regional projects. It is an on-going activity and the 2004 Joint WTO/OECD Report on Trade-Related Technical Assistance and Capacity Building was circulated in December. At present, the period of coverage is 2001, 2002, 2003, partial 2004 and subsequent years. Data is reported from bilateral donors and multilateral/regional Agencies.

A search of the database can be performed either by trade category or beneficiary country or donor country or agency. The statistical analysis option allows quantitative analysis of trade capacity building data by these categories.

[*COMEXT*](#)

Statistics on the trade flows between European Union Members and between each of them and their approximately 200 partner countries world-wide. Approximately 9,500 product groups based on the Combined Nomenclature, an eight-digit sub-division of the Harmonized System, can be monitored. Annual data from 1988 onwards and monthly data from January 2000 onwards. Produced by Eurostat, the Statistical Office of the European Union.

[Stat-USA](#)

Comprises GLOBUS & NTDB, The International Trade Library, and State of the Nation. Produced by the U.S. Department of Commerce.

GLOBUS (Global Business Opportunities) offers daily trade leads from the U.S. Trade Opportunities Program and U.S. Department of Agriculture. It also offers daily procurement activity from the Defense Logistics Agency, the United Nations and the Commerce Business Daily leads.

NTDB provides access to Country Commercial Guides, Market Research Reports, and Best Market reports. It also provides U.S. import and export statistics and other information.

The International Trade Library is a comprehensive collection of over 40,000 documents related to international trade. All are keyword and full-text searchable.

State of the Nation provides U.S. domestic financial and economic information from throughout the U.S. federal government and other related entities.

[WITS \(World Integrated Trade Solution\)](#)

Commodities trade database designed by the World Bank. Contains trade statistics from the COMTRADE database made available by the United Nations Statistics Division. WITS also contains tariff rates and non-tariff barriers and provides import and export data for 110 countries. For many of the countries, data can go back to 1962 and may be available up to the current year. Annual international trade statistics are detailed by commodity and partner country. Allows data to be viewed by product classification, reporting country, direction of trade flow, product, or year. Users can create and save queries for multiple countries, products, years, and flows; check data availability by country and product classification; create country and product groups; calculate simple averages or weighted tariffs rates; calculate effects of tariff reductions using the simulation function; and extract data in Excel format.

[Global Monitoring Report 2004: Overall Trade Restrictiveness Index \(OTRI\)](#)

Global Monitoring focuses on how the world is doing in implementing the policies and actions for achieving the MDGs and related development outcomes. It is a framework for accountability in global development policy. The 2004 Global Monitoring Report is part of a five-year stocktaking effort to monitor progress towards achieving the Millennium Development Goals by 2015.

When the focus is on measuring the trade effects of policies on an importing economy, the trade restrictiveness index can be defined as the equivalent uniform tariff that would keep imports constant. When the focus is on an exporting country's perspective (market access), the index is the equivalent uniform tariff implied by the set of policies maintained by each country (or all importers) on that economy's export bundle. The OTRI is calculated as the weighted sum of nominal tariffs and the ad valorem equivalent of nontariff measures at the tariff line level.

OTRIs are negatively correlated with GDP per capita—the higher is a country's GDP per capita, the lower is its trade restrictiveness as measured by the OTRI. For developing countries for which such data are available, OTRIs are positively correlated with poverty headcounts: the higher is a country's trade restrictiveness, the poorer it tends to be.

2.2.1 Standards and Technical Regulations

[World Bank Technical Barriers to Trade \(TBT\) Database](#)

The Bank conducted a survey of 690 manufacturing firms in 17 developing countries for the period 2001-02 to obtain information on relevant standards, government regulations, and technical barriers to trade (TBT) confronting exporters wanting to expand output, exports, or enter developed country markets. The country and sectoral coverage is relevant to allow comparisons. The information will include data on:

- Production costs, including fixed costs;
- Output measures, including domestic sales, exports;
- Measures for assessing market structure;
- Major obstacle facing firms;
- Assessment by firm managers of the cost compliance with TBTs.

Firm managers carried out assessments of the costs of compliance with TBTs in 4 activity types (1) investing in equipment and plant, (2) investing in product re-design, (3) hiring labor for production, (4) hiring labor for product testing. The release date is June 7, 2004.

World Bank: *Global Economic Prospects* – Wilson, Mann, Otsuki 2004

This database by Wilson, Mann, Otsuki, includes four variables, and is constructed for 75 global countries from survey data across countries published in year 2000. Each measure is defined as an arithmetic average of multiple inputs from several data sources that are normalized to be a mean of one. A raw series (which is an observation representing a country) of survey inputs is indexed to the maximum of all the countries' value for the raw series (e.g. global best practice). The maximum is used as a benchmark since this easily indicates how far a country's performance is from the best practice country whose indexed value is 1.0. The data set builds on Kaufmann, Kraay and Zoido-Lobaton (2002) (KKZ) and World Economic Forum Global Competitiveness Report (GCR), and World Competitiveness Yearbook 2000 (WCY).

An average of the two indexed inputs is used to form each of four trade facilitation measures. Those survey inputs are:

- Port efficiency: designed to measure the quality of infrastructure of maritime and air ports.
 - Port facilities and inland waterways (GCR);
 - Air transport (GCR);
- Customs environment: designed to measure direct customs costs as well as administrative transparency of customs and border crossings.
 - Hidden import barriers (GCR);
 - Irregular extra payments and bribes (GCR);

-
- Regulatory environment: designed to measure the economy's approach to regulations
 - Transparency of government policy is satisfactory (WCY);
 - Control of Corruption (KKZ);

 - Service sector infrastructure: designed to measure the extent to which an economy has the necessary domestic infrastructure (such as telecommunications, financial intermediaries, and logistics firms) and is using networked information to improve efficiency and to transform activities to enhance economic activity.³
 - Speed and cost of internet access (GCR);
 - Effect of internet on business (GCR).

([Annex E](#) provides the ranking of countries in each trade facilitation measure.)

[*Trade Agreements Database and Archive, Tuck School of Business at Dartmouth*](#)

The Tuck Trade Agreements Database contains the most comprehensive collection of texts of bilateral and regional free trade agreements available on a single online site as well as the only database of free trade and customs union agreements text-searchable by provision or keyword. The database contains searchable versions of all bilateral and regional free trade agreements and customs union agreements notified to the WTO as of June 1, 2003, and are in force, plus many that have not been notified to the WTO. The agreements in the database have been indexed in a format developed by CIB that is a greatly expanded version of the "standard format" for notification to the WTO. The archive contains the full texts of all of the agreements in the database, which can be downloaded in PDF format.

[*European Union \(EU\) Market Access database*](#)

The Market Access Database is an important operational tool of the European Union's Market Access Strategy, supporting a continuous three-way exchange of information between: the EU institutions, Member States and European business. The Market Access Strategy is part of the EU's trade policy approach to reduce obstacles faced by European exporters of goods and services. The Market Access Database provides information on:

- Sectoral and Trade Barriers
Information on export and investment conditions in non-EU countries, including all our major trading partners. In addition, you can identify trade barriers affecting you in the individual countries.
- Applied Tariffs
By simply entering an HS code or product description, this section will provide duties and taxes applicable to your products, allowing you to calculate a landed cost.
- Exporters' Guide to Import Formalities
Information on import procedures and documents required for the import of a particular product is available by simply entering an HS code or product description.

³ For further discussion of the relationship between domestic infrastructure and e-commerce, see Mann, Eckert, and Knight.

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- **Statistical Database**
An overview of trade flows between the EU and non-EU countries, accessed by simply entering an HS code or product description, can be obtained from this section.
 - **Studies**
Full text reports on market access related studies referring to geographical areas, selected business sectors or relevant horizontal issues (e.g. labelling).

[United States International Trade Commission \(USITC\): Dataweb](#)

The USITC Interactive Tariff and Trade DataWeb provides international trade statistics and U.S. tariff data to the public full-time and free of charge. U.S. import statistics, U.S. export statistics, U.S. tariffs, U.S. future tariffs and U.S. tariff preference information are available on a self-service, interactive basis. The USITC DataWeb responds to user-defined queries integrating international trade statistics with complex tariff and customs treatment, and allows both expert and non-expert users to create and save customized country and product lists for future re-use from anywhere in the world.

International trade data are available for years 1989- present on a monthly, quarterly, annual, or year-to-date basis and can be retrieved in a number of classification systems, including the Harmonized Tariff Schedule (HTS), the Standard International Trade Classification (SITC), or the North American Industry Classification System (NAICS). Pre-defined reports on international trade statistics are also available by geographic region and partner country. Current U.S. tariffs, which are maintained and published by the USITC as a statutory responsibility, can be accessed via the USITC DataWeb, and retrieved with relevant international trade data.

The United States Trade Representative [2005 National Trade Estimate Report](#) on Foreign Trade Barriers

The 2005 National Trade Estimate Report on Foreign Trade Barriers (NTE) is the twentieth in an annual series that surveys significant foreign barriers to U.S. exports. The report provides, where feasible, quantitative estimates of the impact of these foreign practices on the value of U.S. exports. Information is also included on actions taken to eliminate barriers.

The NTE provides an account of barriers and unfair trade practices to American exports of goods, services, and farm products. Besides limiting opportunities for U.S. businesses and farmers, such barriers also undermine the benefits that foreign countries, particularly developing countries, see from trade liberalization. The NTE covers 61 major trading partners in each region of the world and profiles policies restricting market access.

[Protection Effect Survey](#)

Ronald Fischer at University of Chile conducted in-depth interviews of 15 Chilean firms in terms of non-tariff barriers. The dataset includes a set of protectionist measures such as administrative measures, invasive inspection of containers, the misuse of phytosanitary and other standards for protection, etc..

The [UNCTAD](#) maintains a database of tariff and non-tariff measures. This database, the Trade Analysis and Information System (TRAINS) database, contains tariff-line information on Trade Control Measures (tariff and non-tariff measures) classified according to the UNCTAD Coding System of Trade Control Measures.

UNCTAD also produces [a Handbook of International Trade and Development Statistics](#). This Handbook, based on existing international and national data sources, is intended to provide a complete basic collection of statistical data relevant to the analysis of world trade and development for the use of the UNCTAD, government officials, university and research specialists, and others interested in these subjects.

A paper by [Francis Ng and Alexander Yeats](#) has a statistical data appendix on trade barriers in 80 developing countries. The tables provides details as to how this information was used to compute country specific information on trade and non-tariff barriers, and also gives detailed statistics on these national trade barriers and the profiles of protection in the developing countries.

[SITPRO](#)

SITPRO is the facilitation body of the U.K. SITPRO started a project in 2002 on measuring and comparing the regulatory cost of international trade on a consistent basis. This initiative called International Trade Regulatory Costs Survey (ITReCS, and recently changed to Interact) develops benchmarks (indicative costs for specific activities) by gathering regulatory costs data of international trade from individual companies in different sectors. Its methodology can allow companies to calculate their own costs of compliance and then compare them with benchmarks covering the core costs that impact the majority of cross-border movements of goods. Costs include direct costs of third parties, such as a forwarder's or broker's account for entry/clearance services, and costs incurred by companies in employing personnel and facilities to achieve customs/trade law compliance and planning. While the pilot surveys are of US companies, SITPRO intends to expand the surveys to the EU, Brazil, India, China, Japan, South Korea, and Eastern Europe.

[PERINOM Database](#)

Perinorm is a bibliographic database, viable on annual subscription, dedicated to standards and technical regulations enquiries. It is the world's leading bibliographic database of national, European and international standards from, [21 countries](#), a total of more than 1,000,000 records. Available in three languages both on CD and online (English, French & German), Perinorm comes with a monthly update. The quality of information is guaranteed by the monthly direct delivery realized by each institute.

Perinorm allows you to make quickly and easily your documentation queries and references management. The quality of the content is due to direct delivery realized monthly, by each institutes.

2.3 Customs and Border Crossing Times

The performance of customs is one of the focal points of international trading. Longer clearance times is normally associated with lower efficiency in port operations management, complex cumbersome procedures and higher transport costs dues to high costs of storage etc. Reducing clearance requirements and guaranteeing fast and predictable release of goods is an important function of customs administrations. The effectiveness of a Customs administration can be measured by the average time taken between the arrival of the goods and their release. This helps Customs identify both the trouble areas and counteractive actions to increase their efficiency. It can also help Customs respond to tight production schedules and just-in-time inventory systems that need forward planning. Computerization of customs procedures at the border crossing stations and electronic filing of customs declarations can increase efficiency, improve compliance, facilitation and reduce long delays in customs clearance.

[Doing Business: Trading Across Borders -- 2006](#)

The Doing Business Database provides objective measures of business regulations and their enforcement. The Doing Business indicators are comparable across 145 economies. They indicate the regulatory costs of business and can be used to analyze specific regulations that enhance or constrain investment, productivity and growth. It provides indicators of the cost of doing business by identifying specific regulations that enhance or constrain business investment, productivity, and growth. The indicators were developed by Bank in cooperation with the Lex Mundi Association of law firms and the International Bar Association.

The principal data collection methods for the indicators are the study of the existing laws and regulations in each economy; targeted interviews with regulators or private sector professionals in each topic; and cooperative arrangements with other departments of the World Bank, other donor agencies, private consulting firms, business and law associations. The project team prepared a set of templates or questionnaires for use by staff of the World Bank Group, or other agencies, in their work on business environment issues.

Trading Across Borders is one of the 12 topics of Doing Business 2006, which compiles procedural requirements for trading a standardized shipment of goods. Every official procedure for importing and exporting the goods is recorded - starting from the final contractual agreement between the two parties, and ending with the delivery of the goods. All documentation and signatures required for country clearance of the goods are also recorded. For importing the goods, the procedures measured range from the vessel's arrival at the port of entry to the shipment's delivery at the factory warehouse. For exporting the goods, the procedures measured range from the packing of the goods at the factory to their departure from the port of exit.

Local freight forwarders, shipping lines, custom brokers, and port officials provided information on required procedures, documents, and signatures, as well as the time to complete each procedure. In all countries, at least one freight forwarder and another source provided the data. Due to the scope of a freight forwarder's daily activity, the respondents have an overall view of the trade process from start to finish.

Global Logistics and Port indicators include:

- Customs Performance (e.g., customs clearance time and cost; percentage of consignments inspected)
- Bureaucracy/red-tape associated with typical trade transactions (e.g. number of signatures; time and costs for processes from order to delivery)
- Port performance (e.g., container waiting time at ports, time to enter port, vessel turn – around time)

[International Exhibition Logistics Associates \(IELA\)](#)

IELA, a trade association has prepared average clearance time through customs for 67 countries. The data on customs clearance is collected from local agents in different countries, who report these times to the association based on their experience. The clearance is related to the exhibition in a particular country, and differs from commercial clearance. The procedures followed for clearance of cargo for an exhibition are normally longer, since the entry is on a temporary basis. Also, there is very little information on developing countries.

[Trade and Transport Facilitation in Southeast Europe Program \(TTFSE\)](#)

The TTFSE regional program was established in 1998 with support from the World Bank, the EU, and bilateral partners. Based on face-to-face interviews and discussions with representatives of companies, the TTFSE is a continuation of the monitoring work during 2001-03 to ascertain whether improvements for customs users are possible or not. Its methodology is participatory in nature – seeking to give ownership to the different stakeholders. Operating in eight southeast European countries⁴, it aims to create a framework for facilitating trade by encouraging more efficient and less costly trade flows, and to modernize customs administrations and other border control agencies. It seeks to reduce non-tariff costs to trade and transport (processing time for traders and transporters, “facilitation payments”, smuggling and corruption at border crossings, reduced waiting times), as well as increase the efficacy of anti-smuggling methods.

TTFSE consists of the following project components: Customs Services Procedures Reform, Trade Facilitation Development, Support to Integrated Customs Information System (ICIS), Improvement of Roads and Border Crossing Facilities, and Program and Project Implementation.

As part of the TTFSE Program, all countries involved agreed to measure performance indicators of two types :

- Data on the performance and efficiency of Customs Administrations in Southeast Europe since 1999
- Data on the border crossing times and clearance times, as experienced by users at the TTFSE pilot sites.

⁴ Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Romania, Serbia, Moldova, FYR Macedonia.

The Excel workbook provides these data both at a regional level and by pilot site. It is based on the methodology described in details in the [TTFSE Manual](#). (Please see [Annex F](#) for definitions) The methodology entails measurement of processing times at pilot sites, usually on a monthly basis, and of the overall Customs performance on an annual basis. Performance at pilot sites are measured by the National Customs Administrations of the countries concerned with support of US Customs consultants under the TTFSE program.

[Global Express Association-Country Market and Customs Barriers Reports](#)

The Global Express Association represents the international express delivery companies that serve over 215 countries, carrying over 30 million packages each day, all of them guaranteed to be delivered within specified time frames. The report is a summary of information about 150 countries based on a detailed questionnaire. Questions asked on market access restrictions include restrictions on entry to the express delivery sector, foreign investment, and the use of local services. Questions asked on customs restrictions are categorized into transparency, customs efficiency, and post-release processes.

[CSCMP: Annual US State of Logistics Report](#)

Delivered each June by Rosalyn Wilson, *The US State of Logistics Report* is published annually by The Council of Supply Chain Management (CSCMP), formerly called the Council of Logistics Management (CLM), which is the association for individuals involved in supply chain management.

Total logistics cost normally includes trade and internal logistics. This often is cited as 10% of GDP for advanced countries, and 20% or more for developing countries. This report is a compilation of statistics about transportation and business logistics, and includes statistics on logistics costs/GDP and inventories.

The 16th annual report published in June 2005 is titled *Security Report Card—Not Making the Grade*.

[World Customs Organization \(WCO\) – Time Release Study](#)

In 2002, the WCO outlined a methodology to help customs administrations measure the time required for the release of goods (normally from the time of arrival of goods at the port/airport/land border until their release to the importer or a third party on his behalf). The methodology can also be used to measure the time necessary for clearance given by customs after the payment of duties and taxes. This could be useful in identifying bottlenecks in the process of clearing goods, reasons and possible solutions to any problems -improving the efficiency and effectiveness of clearance procedures. The study can be used as a basis for future to identify where measures are required to simplify procedures. The methodology chosen can assist a Customs administration in comparing the results obtained by means of the standardized system with previous studies, especially when introducing changes in Customs procedures.

GDP forecasts are based on the latest forecasts of the EU statistical office (Eurostat) in its "Quarterly National Accounts ESA". In those countries where forecasts are not available, trend analysis and average growth of neighboring countries are used to make the forecasts. Registration forecasts are based on time series analyses, taking into account other factors such as the development of transport volumes and GDP. Transport volumes forecasts are made using NEAC Transport Simulation System which quantifies the relationship between production sectors and the transport they generate, using various economic scenarios, to estimate future transport volumes in and between 176 regions.

[Organization for Economic Co-operation and Development \(OECD\)](#)

A paper *Quantitative Assessment of the Benefits of Trade Facilitation* by Walkenhorst and Yasui (2003) presented at the 2003 Bangkok APEC Capacity Building Workshop develops two indicators-border process quality and border waiting time- to measure customs efficiency for 102 and 80 countries worldwide, respectively. Indicator of border quality suggests that those countries with higher per capita income generally have superior border process quality than ones with lower levels of per capita income. The border process quality indicator combines four sub-indicators from three data sources: Global Competitiveness Report, World Competitiveness Yearbook and Compendium of Trade Facilitation Recommendations.

Based on the methodology applied by Wilson, Mann and Otsuki (2003), the survey includes information on the border process environment (customs efficiency, hidden import barriers, administrative integrity), and government commitment toward trade facilitation (based on implementation of nine trade facilitation instruments). The value of the indicator varies from 0.25 to 1.85 implying that the country with the worst indicator value received a score in the rankings that was 75% below average, while the one with the highest value scored 85 percent higher than the average. The Border Waiting Time indicator is constructed by combining Hummel's (2001) estimate of willingness-to-pay for saving time for shipment and WBES on typical border waiting time.

[International Road Transport Union \(IRU\)-Indices on road transport performance](#)

Border delays are a costly handicap for trade and tourism. IRU provides a web application with up-to-date information on delays for coaches and trucks at principle border crossings in Central and Eastern Europe, which is designed to provide road transport operators with a practical planning aid. It is updated daily from Monday to Friday, using information supplied by IRU national Member Associations.

IRU indices on road transport performance give estimates of Western European countries' economic growth, truck registration and transport volumes - indicators that are closely followed in the specialized transport and economic press and by transporters who need to follow the various national trends affecting their operations.

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[United Nations Economic and Social Commission for Asia and The Pacific \(UNESCAP\)](#)

The report *Transit Transport Issues in Landlocked and Transit Developing countries (2003)* includes average and maximum waiting times at the border for several landlocked Asian countries: LAO PDR, Mongolia, Nepal, Uzbekistan and Kazakhstan. The intention is to extend the study to border crossings along the Trans Asian corridors.

For individual countries, the [Moroccan Government](#) provides detailed data for several years on clearance through Customs. Recent DTIS studies and Trade and Transport Facilitation Audits carried out in select countries are also good sources of information.

“[Trade and Transport Facilitation – An Audit Methodology](#)”, published by the World Bank in April 2000, the toolkit has incorporated changes to reflect new developments such as recent anti-terror security requirements, important trade facilitation initiatives. The toolkit seeks to link audit results, through careful analysis, to appropriate remedial Action.

[World Bank Trade and Transport Facilitation Audits \(TTFAs\)](#) are being carried out to identify the obstacles associated with the cross-frontier movements of a routine assignment and means of related payment by both exporters and importers. These standardized audits should: (i) enable more systematic cross-country and historical benchmarking; (ii) be readily reusable by multiple institutions (through an integration of their requirements in surveys/instruments); (iii) improve effectiveness of reviews; (iv) reduce the present duplication of efforts; and (v) enable countries to conduct their self assessment.

Based on interviews, TTFAs focus on the effectiveness of procedures and costs of services available to international trade encompassing:

- Inland, sea, and air transport costs related to movements of both inputs and outputs;
- Quality and range of logistics services and infrastructure;
- Trade finance and sources of commercial risk;
- Procedural and documentary requirements;
- Information exchange and coordination between private and public parties.

Though the audit is tailored mainly for World Bank operations, it can be applied in several projects by other agencies. For example, it can be implemented within the context of a transport or export competitiveness project, or as a stand alone exercise. Additional information is available at: www.worldbank.org/trade.

[Transit Corridors Europe Caucasus Asia \(TRACECA\)](#)

This program was initiated by the European Union in 1993 to develop a transport corridor on west-east axis from Europe, across the Black Sea, through the Caucasus and the Caspian Sea to Central Asia. As part of TRACECA's Harmonization of Border Crossing Procedures Project, a 'BordAudit' Database from 70 border crossing points in several countries⁵ has been established providing detailed information on the procedures observed (including a breakdown of the time spent on each procedure) and main documents required when crossing the borders by road, rail, and sea. Subsequent recommendations concerning harmonized border procedures have been based on this database.

The online country overview includes the list of the Technical Assistance Studies and the Investment Projects for the Rehabilitation of Infrastructure in each country and general information on the country.

2.3.1 Tariff and Customs

The International Chamber of Commerce (ICC) produced [Customs Guidelines](#) with the WCO, a comprehensive set of practices that the ICC consider should characterize all modern Customs administrations. The World Bank produced [Customs Modernization Handbook](#), which provides practical guidelines that draw lessons from successful customs modernization examples and reform initiatives. These reports are useful guidance for the recurring issues of current customs modernization initiatives.

[Asia Pacific Economic Cooperation Tariff Database](#)

Tariff rates for all 21 members of APEC .

The APEC Tariff Database is the Internet site with tariff information for the APEC member economies. After registration, you can access the following features:

- Tariff Chapter Listing Search
- Harmonized System Code or Tariff Heading Search
- Alphabetized Tariff Heading Listing Search
- Description Search
- Customs Guides and other related information (e.g. prohibitions, concessions, contacts, etc.)
- Global Search

The APEC Tariff Database is updated twice each year. Changes to tariff rates may occur between these update periods. These updates are dependent on the submission of data by the participating economies. Users are tariff related information such as Contacts, Prohibitions, Customs Guides, etc., provided by the member economies. Choose the one below that suits your

⁵ Armenia, Azerbaijan, Bulgaria, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Mongolia, Romania, Tajikistan, Turkmenistan, Turkey, Uzbekistan and Ukraine.

needs advised to refer to the official version of the tariff in use in the member economy of dealing.

Five viewing options are available that will allow you to search for tariff-related information. You may search tariffs by chapter, tariff heading, Harmonized System Code, alphabetized order, or description.

[Country and Regional Tariff and Tax Resources](#)

Country specific tariff and tax information, as well as internet links to online sources for 81 countries. EU Tariff and Tax Basics, Shipping to U.S. Territories, How to Get U.S. Import Duty Information.

[Customs Rulings Online Search System \(CROSS\)](#)

CROSS is a searchable database of CBP rulings that can be retrieved based on simple or complex search characteristics using keywords and Boolean operators. CROSS has the added functionality of CROSS referencing rulings from the initial search result set with their modified, revoked or referenced counterparts.

Rulings collections are separated into Headquarters and New York and span the years 1989 to present. Collections can be searched individually or collectively.

Related Trade Information includes;

- Downloadable rulings - from 1990 to present.
- Trade related links - Includes links to the Harmonized Tariff schedule, Customs Bulletins, Informed Compliance, and Code of Federal Regulations.
- Customs Valuation Encyclopedia (1980-2003).

[European Union - Transit-COL](#)

The Transit Customs Office List (COL) Home page comprises the list of authorized customs offices for Community/common transit operations. The Commission develops and operates several databases in conjunction with Member States' Customs and Taxation Services. The databases are parts of the information systems of Taxation and Customs Union. The acronym DDS designates 'Data Dissemination System'.

Tariff information is provided via [Taric code](#), and [Taric description](#). Information on quotas in force [via origin or order number](#). Information on autonomous tariff quotas coming under Council Regulation (EC) No 2505/96, in preparation, via [publication cycle or chapter](#). The EUROPA webserver provides Customs Office Information ([Perform Queries on COL Information](#)) and Customs Office Data ([Download the data](#)).

Other database includes VIES VAT number validation, AUTONOMOUS TARIFF SUSPENSIONS, European Binding Tariff Information (EBTI), and MRN Follow-up Information (international movements only).

[Customs Rulings Online Search System](#)

Database of US Customs rulings.

[Schedule B Export Codes](#)

US Customs codes. Based on Harmonized code system. Download or view the complete list.

[Tariff and Import Fee Information](#)

Links to many resources about tariffs. Includes a tutorial to get started, a glossary of trade terms, an online tariff database, tariff and tax information for 97 countries, helpful tips for importing products into the U.S., and more.

[Online Tariff Database](#)

Provided by [TARIFFIC](#) International. Up-to-the-minute customs tariffs and import taxes, charges and fees levied at time of import for 192 countries round the world, representing over 97% of world trade.

2.4 Transport Infrastructure Indicators

High transport costs in domestic transport are determined to a large extent by the transport infrastructure network. High transport times can affect the competitive position of a country in the world market.

[World Bank: Transport Results Initiative](#)

The central Transport Unit of the World Bank is taking stock of the measures and indicators which are applied for the key transport sector. Initial assessments of data available at the international level, such as through the International Road Federation, confirms significant gaps in relation to both the priority needs of World Bank client countries and the expectations of development agencies.

The revival of interest in indicators for the transport sector is broadly pitched at three interrelated but very different levels. At a global level, the transport sector headlines are proposed to be identified universally and updated regularly. The rural access indicator, one of the five proposed headlines, is a good example in this regard. The indicator has been developed for inclusion in the set of indicators for International Development Association (IDA-14) results measurement system. The transport sector headlines are derived from the set of transport Recent Economic Developments in Infrastructure indicators.

At the national and sub-national level, the transport sector Recent Economic Developments in Infrastructure indicators are included in the more comprehensive Recent Economic Developments in Infrastructure "Snapshot" and "Diagnostic" indicator sets, as proposed by the Infrastructure Action Plan. They are derived from the sets of core measures which have been established for each of the transport sub-sectors.

At the sub-sectoral level, consensus on a set of core measures for each transport sub-sector has been achieved which constitute realistic and meaningful frames in order to monitor the performance of each sub-sector (roads, railways, international ports, waterways, and air transport).

There are different requirements at each level which are related to significant variations in the objectives of different key stakeholders and, therefore, in the information priorities set by each and the ways in which they use data. The differences are particularly pronounced in the road transport sub-sector which, universally, has very little vertical integration between the delivery of transport service and the provision and maintenance of the related infrastructure.

In the short-term, some of the necessary data will not be available for all client countries. Pending collection of the necessary data, "best estimates" of the relevant indicators will be made in consultation with specialists having the necessary country experience.

Indicators for road transport (road network, administration, finance, usage etc.), ports etc. have been summarized on the basis of extensive consultation amongst transport specialists in the World Bank. (See [Annex G](#) for the template on trade logistics indicators).

[Transport Web Library](#)

The main objective of the Library is to make available some of the documents gathered from outside partners or produced by the World Bank on Transport issues, mostly related to ECA. Documents are searchable by Country, Document Type, Modal Themes, Sub-region and topics.

[Transport CD](#)

Combines the databases of three research organizations: OECD's International Road Research Documentation (IRRD); the ECMT TRANSDOC database; and the TRB Transportation Research Information Services database (TRIS). Special emphasis is on road transportation and transportation economics. Coverage: 1988 to the present.

[UN Economic Commission of Latin America and Caribbean \(ECLAC\)](#)

The international transport database covers annual trade and transport statistics of eleven Latin American countries - Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, and Venezuela. The document consists of two main parts: first, the Introduction explains the scope and content of the BTI (International Transport Database) maintained by ECLAC's Transport Unit. It covers annual trade and transport statistics of each country. The second part of the document contains detailed tables and charts about the value and volume of imports and exports of the eleven Latin American countries covered by the BTI. It also includes information about the use of different transport modes, the costs of international freight and insurance, and the traded commodities. Data is annual, for the year 2000, and grouped by the Standard International Trade Classification (SITC) codes.

It also contains a compendium of publications drawn from various sources on ports, maritime transport, links for statistics on LAC, as well as information and useful tools for researchers on

maritime transport. The national maritime profiles of 33 LAC countries have basic statistics and cover the main harbor maritime sectors. The source of the statistics is the Foreign Trade Data Bank for Latin America and the Caribbean (BADECEL), managed by the Statistics and Economic Projections Division of ECLAC. Country data are processed by national customs services. Due to the large quantity of data, it is possible to formulate more detailed queries, combining the different fields of information covered by the database. It is available on the web.

[Statistical Office of The European Communities \(EUROSTAT\) Transportation Statistics](#)

EUROSTAT maintains several databases on transportation (air, rail, road, oil pipeline, internal waterways and multimodal). These databases provide detailed information on cargo and passenger traffic, including the results of Community questionnaires.

Long term indicators include: Volume of freight, passenger transport, Transport growth, and Goods transport. Sustainable Development indicators include: Energy consumption of transport, Car share, Road share, Emissions of air pollutants from transport activities.

[Glossary for Transport Statistics](#)

Document prepared by the Inter-secretariat Working Group on Transport Statistics. EU, UNECE, ECMT, 2003. A helpful resource of terms used in transport statistics. The Glossary for Transport Statistics was published for the first time in 1994 with the purpose of assisting member countries during the collection of data on transport made by the UNECE, ECMT and Eurostat through the Common Questionnaire. The Glossary now comprises 533 definitions and represents a point of reference for all those involved in transport statistics. It covers railway transport, road transport, inland waterway transport, oil pipeline transport, maritime transport, and intermodal transport.

[International Road Federation \(IRF\) World Road Statistics](#)

The International Road Federation (IRF) publishes *World Road Statistics*, available online for its members. Data 1997 to 2001 covering up to 189 countries: road networks; production & export of vehicles; first registration and import of vehicles; vehicles in use; road traffic; multimodal traffic comparisons; motor fuels; road accidents, rates & basis of assessment of road user taxation; examples of taxation for five common categories of motor vehicle; annual receipts from road user taxation; road expenditure.

[US Bureau of Transport Statistics \(USBTS\)](#)

BTS is the only source in the U.S. government for data on U.S. merchandise trade with Canada and Mexico transported by surface modes of transportation. This will include air and water data on the searchable online database in the future. U.S. International Trade and Freight Transportation Trends features over 80 figures and tables and analysis, covering topics from modal trends to security to trade in transportation goods and services. It reviews the linkage between transportation and international travel, examines changing patterns in modal shares, geography and purpose of travel, and identifies key influencing factors. Particular attention is paid to air travel and security issues.

Through the Interchange, United States, Canada and Mexico have developed the [North American Transportation Statistics Database](#) that supplies users with relevant, timely and comparable transportation data and information for North America. The 13 year-old Interchange is a forum for the exchange of information and the initiation of joint projects of the transportation and statistical federal agencies in Canada, Mexico, and the United States. North American Transportation in Figures, available through the Bureau of Transportation Statistics, provides comprehensive information on vehicle ownership, vehicle use, transportation networks, trade and traffic safety for Canada, Mexico and the United States, based on 1996 data. [North American Transportation Highlights](#) is a summary report of this data that can be downloaded from the web for free.

[*UN Economic Commission for Europe Annual Bulletin of transport statistics*](#)

The publication includes data on railway, road, inland waterway, maritime and intermodal transport in Europe and North America.

[*Public Partnership in Highways Toolkit*](#)

This Highways Toolkit provides advice to policy makers in developing countries on the design and implementation of private participation in the highway sector. It includes a number of tools such as a library and interactive financial models. The toolkit provides a detailed guide to introducing private participation in highways, with practical tools for structuring the main contractual and financial terms. This toolkit was prepared by the World Bank and external consultants with funding from [Public Private Infrastructure Advisory Facility](#) (2002).

Visitors can access the entire toolkit online, or go directly to one of its five Sections:

- [Section 1](#): presents the rationale for private participation in the highways sector, alternative options, and a guide to conducting a sector diagnostic.
- [Section 2](#): sets out the key parameters needed in the design of a public-private partnerships and presents detailed case studies of well-known highway contracts.
- [Section 3](#): stresses the important role of the public sector in ensuring the success of the reforms and presents the tools at government's disposal for performing such roles.
- [Section 4](#): provides guidance on the design of legal and contractual frameworks for private participation in highways, with boilerplate provisions.
- [Section 5](#): outlines the key steps for introducing private sector participation, bringing elements from all previous sections and distinguishing by type of private sector contract.

[*World Economic Forum: Global Competitiveness Report \(GCR\)*](#)

It includes an index based on quality perception for rating railroad services, port facilities and air transport services. (Ranking from 1 to 7, with 1=underdeveloped, 7=developed as the world's best).

[*World Bank: Railway Database*](#)

This database provides information on scale, output and performance for over 90 railways worldwide permitting comparisons of performance and facilitating target setting by individual

railways from 1980-99. It compiles data from the annual reports of railway companies, available for free on the web. Railway Data Table contains selected size, scale and productivity data for all railways 1980-99. The Railways Concessions Database provides information on the performance of the railway concessions in Latin America and Africa, for the period beginning 1990 to the present.

[International Union of Railways \(IUR\)](#)

The International Union of Railways offers various statistical publications. The annual volume “International Railway Statistics” provides data on lines, passenger and freight transport stock, staff, train movements, and freight traffic. “Railways time-series data” includes data on personnel, train performance, use of wagons, and industry revenues. “Supplementary Statistics” offers additional and more detailed data on the performance and structure of the railways industry. Extracts are available online (annual and quarterly statistics).

[OECD in Figures](#)

This publication includes information on passenger transport, freight transport and road accidents for 30 countries.

Dutz, Mark (2005). [Road freight logistics, competition, and innovation: downstream benefits and policy implications](#), World Bank Policy Research Working Paper 3768.

This empirical paper sheds light on a significant element of the debate of whether infrastructure services have a strong impact on economic development by exploring the impact of innovative road freight services on downstream business users. The paper uses a new and purpose-specific survey of 165 logistics service providers and 493 user enterprises in food processing, food distribution, and the automotive industry in the Czech Republic, Hungary, and Poland. The main findings are that there are substantial downstream benefits from innovations in road freight services, both dampening cost increases and raising sales revenues of business users. The additional finding that increased intensity of competition in road freight services is significantly associated with the provision of innovative services suggests that easing any remaining barriers to competition in upstream business sectors should be a priority.

2.4.1 Air Transport Indicators

[International Civil Aviation Organization \(ICAO\) Statistics Digests](#)

The “Digests of Statistics” contains financial data and summary traffic data for international airports, monthly and yearly statistics for airports open to international traffic, financial data for commercial air carriers, data on fleet and personnel for commercial air carriers, revenue traffic performed for city-pair, annual data of civil aircraft on register, traffic data for commercial airlines, and statistics on the flow of traffic carried from point to point. The digests are available on a commercial basis as well as electronically.

[International Air Transport Association \(IATA\)](#)

The International Air Transport Association offers two main statistical publications. “World Air Transport Statistics” contains data on individual IATA member airlines, including number of passengers carried, freight tons carried, kilometers flown for international, domestic and system-wide operations by year, fleet information, aircraft utilization, financial results, number of employees by airline, as well as summary analyses of main trends in passenger and freight traffic.

“Custom Statistical Reports” allow customers to order and configure air traffic reports for information on specific markets - passenger or freight-, on specific locations -airports or regions- and for the periods of interest. Regional Outlook provides with highlights on the air transport activity in one specific region for one specific year. Industry Outlook provides with international air traffic figures for one specific year. Airport Outlook provides with international traffic information for one specific airport for one month or one year.

[ICAOData.com](#) is IATA’s new website which increases the availability and visibility of the ICAO statistical data on the air transport industry. The website delivers ICAO’s air transport statistics in a user-friendly interface allowing for easy access and analysis. The database contains detailed financial, traffic, personnel and fleet information for commercial air carriers. It also holds Traffic by Flight Stage (TFS) information for air carriers. Financial and traffic data for airports and air navigation service providers will be added later in 2005. On-flight Origin/Destination statistics will also be added in 2005.

2.4.2 Maritime Transport Costs

Sources for data on Maritime Transport Costs include the following:

[Maersk Sealand](#)

Online business services offer: Schedules by location or vessel, Rates of exchange applicable to shipments, port to port freight rates and surcharges, cutoff times for ports within a country/region, and standard transport statements and certificates.

Data on maritime transport cost can be downloaded per origin and destination from the query rates. The rates vary depending upon the requested origin and destination and are constructed from a combination of ocean, truck, and rail charges. Rate quote may not include local destination charges such as, but not limited to, Cleaning, Port fees, Overweight charges, Documentation fees, or Customs inspections.

[US Department of Transportation \(USDOT\)](#)

The monthly U.S. foreign waterborne transportation statistics are based on the U.S. Bureau of the Census trade data matched to the U.S. Customs vessel entrances and clearances. The cargo summary contains value and weight information by type of service on U.S. waterborne imports and exports.

Maritime transport costs, referring only to US and its trade partner countries are available through the “US Import Waterborne Databank” CDs. This includes a detailed breakdown on liner transport charges, import values, the percentage of containerized cargo, total imports carried by liners, and the market share of tramp services. The containerization variable is

measured in terms of the weight of goods shipped. Tramp services are defined as bulk and tanker services. Data is annual, and can be purchased from USDOT.

[*International Monetary Fund \(IMF\)-International Finance Statistics \(IFS\)*](#)

International Financial Statistics is a standard source of international statistics on all aspects of international and domestic finance. It reports, for most countries of the world, current data needed in the analysis of problems of international payments and of inflation and deflation, i.e., data on exchange rates, international liquidity, international banking, money and banking, interest rates, prices, production, international transactions, government accounts, and national accounts.

The IFS database contains time series data from 1948. The browser software provides an interface for browsing the database, selecting series of interest, displaying the selected series in a spreadsheet format, and saving the selected series for transfer to other software systems, such as Microsoft Excel.

The IFS database contains approximately 32,000 time series covering more than 200 countries and areas and includes all series appearing on the IFS Country Pages; exchange rate series for all Fund member countries, plus Aruba and the Netherlands Antilles; major Fund accounts series; and most other world, area, and country series from the IFS World Tables. The Country, World, and Commodity Prices Tables, as presented in the monthly printed copy of IFS, are available as selection options. The Economic Concept View provides a cross-country view of the concepts in the IFS by individual or groups of countries.

IFS includes the ratio of CIF to FOB, but no breakdown is available for individual commodities – the measure is an aggregate over all commodity types imported. The CIF/FOB comparison is a simple representation of transaction costs, as it covers total imports of each reporting country. The CIF (cost, insurance, freight) price measures the cost of the imported good at the point of entry into the importing country, inclusive of costs of transport, insurance, handling and shipping costs (but excluding customs charges). The FOB (free on board) price measures costs at the point of shipment by the exporter when the good is loaded on to a carrier for transport. This measure understates true door-to-door shipping costs as it only accounts for the international segment of transport. There are also questions concerning the quality of this data. The US customs also provides breakdown by country and commodities.

[*UN Conference on Trade and Development \(UNCTAD\) Review of Maritime Transport*](#)

Published since 1968, the review reports on the worldwide evolution of shipping, ports and multi-modal transport related to the major traffics of liquid bulk, dry bulk and containers. It provides data on maritime transport movements globally, world fleet productivity, trade and transport efficiency (rephrase). Total freight costs for imports in world trade are a useful indicator. High freight costs are like an implicit tariff affecting the competitiveness of a country, reducing its ability to compete in the market.

[*World Trade Organization \(WTO\) Questionnaire on Maritime Transport Services*](#)

In 1994, the WTO Negotiating Group on Maritime Transport Services initiated a survey of member governments' market and regulatory structures applying to the maritime transport services sector. The responses to the survey questionnaire provide detailed descriptions of existing maritime policies and regulations. The structure of the questionnaire follows the GATS classification of sub-sectors and restrictive measures.

2.4.3 Port Efficiency

Maritime transport costs are determined to a large extent by port efficiency. Activities at ports that effect international trade transaction depend upon port infrastructure (like pilot age, towing and tug assistance, cargo handling) and customs related activities. Port efficiency varies from one country to another and from one region to another.

[Port Reform Toolkit](#) – World Bank

The benefits of a successful port reform through more efficient port operations can accrue to all-exporters, consumers, shippers and governments. One of the main challenges facing policy makers in charge of port reform is a lack of useful knowledge that can benefit their own reform process. This World Bank toolkit provides comprehensive background information, case studies, concrete tools and methods to help policy makers in the reform process of ports. It seeks to fill the knowledge gap and can improve the understanding of challenges and risks for sector reform. Through its various modules, the toolkit discussed in-depth different port reform options, financial implications of reform, labor and other social issues, as well as implementation. The toolkit analyzes the specific requirements of the port sector in great detail. Other sector specialists can also learn from such a flexible approach to introducing private sector participation, especially regarding issues such as risk allocation, design of competitive arrangements and consideration of labor issues. Common models are reviewed in depth (including concessions or leases). Tools to review hybrid options and assess their merits and risks are also provided. (see [Annex D](#) for Module-Based Project Guidelines for Trade Facilitation).

Visitors can download the [entire toolkit](#), or go directly to one of the eight modules:

- [Module 1](#): (PDF, 346KB) provides an overall summary and a "road map" to the port reform process.
- [Module 2](#): (PDF, 619KB) describes the forces shaping port dynamics in the 21st century and helps readers put the port they are seeking to privatize in a global context.
- [Module 3](#): (PDF, 411KB) describes the different port structures and ownership models, identifying the strengths and weaknesses of each and presents options for port reform, with alternative implementation strategies and expected results.
- [Module 4](#): (PDF, 1.2MB) describes the legal tools required to carry out port reform and offers examples of model clauses to be used in legal documentation.
- [Module 5](#): (PDF, 806KB) examines the financial implications of port reform, with an analysis of the risk allocation between stakeholders, potential sources of funding and pricing principles.

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- [Module 6](#): (PDF, 600KB) provides a guide to the regulation of port services, and defines the reasons for regulating such services (based on public interest) and the regulatory means for doing so.
 - [Module 7](#): (PDF, 1.2MB) analyzes the PortReform issues that may emerge during reform and ways to address them.
 - [Module 8](#): (PDF, 354KB) introduces practical steps for implementing port reform.
 - [The Annex](#): (PDF, 78KB) contains a glossary of port and shipping terms.

[*The Containerization International Yearbook*](#)

The Containerization International Yearbook is a port-by-port guide to container facilities, handling equipment and traffic statistics (over 450 port/terminal throughputs) for sea and river ports and terminals worldwide. It is an easy way to obtain the information, and is available on a commercial basis.

[*Clark, Dollar, Micco \(2002\) Working Paper on Maritime Transport Costs and Port Efficiency*](#)

Form various sources such as Transport Unit of the World Bank (19 countries), Camara marítima y Portuaria de Chile A.G (12 countries), LSU-National Ports and Waterways Institute (4 countries), this study compiles *Container Handling Charges* (in US\$/TEU). Handling costs are the costs of moving containers through ports. They are determined by port efficiency – countries with more efficient seaports have lower handling costs. An acceptable benchmark for container cargo handling in optimal conditions is about \$US 100 per container.

Very often, higher efficiency and thus lower shipping costs can offset the handling charges. Another indicator of efficiency is the turnaround time of ships at ports which means the average container movements per crane or ship hour within a port. Such costs are incurred by ship owners, who may pass them on to exports and importers.

[*Fink, Mattoo, Neagu \(2001\) Working Paper on Trade in International Maritime Services*](#)

The authors compile a Cargo Handling Restrictions Index, which is a 0-1 index that captures restrictions and special requirements imposed on foreign suppliers of cargo handling services. The index assumes a value of 0, if no restriction exists, 0.25 for minor restrictions, 0.5 if a joint venture condition is imposed, 0.75 if high national participation is needed, and 1 if foreign companies are not permitted to provide cargo handling services. The Mandatory Port Restrictions Index captures the extent to which ports services are mandatory for incoming ships. The variable is constructed adding 0.125 for each of the following services if they are mandatory: pilotage, towing, tug assistance, navigation aids, berthing, waste disposal, anchorage.

Global Competitiveness Report (CCR)

The *Port Efficiency* indicator in the GCR is one-to-seven index ranking port efficiency, based on surveys performed to representative firms of each country. The specific question is “Port facilities and inland waterways are extensive and efficient” (1 being strongly disagree to 7 being strongly agree).

2.4.4 Geography

Transport costs are partially determined by geography. The distance between the origin and destination points of a transport journey affects the variable cost of shipping in the form of fuel, wear and tear of vehicles, and the amount of time goods are traveling.

[Limao and Venables \(1999\) Working Paper on Infrastructure, Geographical Disadvantage, and Transport Costs](#) includes the shipping company quotes for the cost of shipping a standard container from Baltimore to select destinations. While this measure reflects the true cost of a homogenous good, and provides the city of origin, landfall and destination; the charges can be affected by specific routes, frequencies etc.

[UN Center for Human Settlements \(UN-Habitat\) Global Urban Indicators Database](#)

The Global Urban Indicators Database maintained by UN-Habitat provides statistical information on cities throughout the world, from 1993 and 2001. It contains a set of 23 key indicators and nine lists of qualitative data. It covers urban poverty, urban human development, city investment potential, urban environment, urban governance and overall quality of urban life. Two transport indicators are included under urban environment. These are “travel time” (average time in minutes for a one-way work trip, which is formed as an average over all modes of transport) and Transport modes to work (percentage of work trips undertaken by a certain mode). It is available on the web.

Indicators provide a comprehensive picture of cities, which, with other indicators which may be chosen by countries, will provide a quantitative, comparative base for the condition of cities, and show progress towards achieving urban objectives.

Key indicators are both important for policy and relatively easy to collect. They are either numbers, percentages and ratios; Qualitative data or checklists, which give an assessment of areas which cannot easily be measured quantitatively. They are audit questions generally accompanied of checkboxes for yes or no answers.

UITP, *International Association of Public Transport (IAPT)* [Millennium Cities Database -- Mobility In Cities Database](#)

The International Association of Public Transport has compiled a database of 100 of the world's cities, known as the *Millennium Cities Database for Sustainable Transport*. The collected data looks at population, the economy and urban structure, the number of road vehicles, taxis, the road network, parking, public transport networks (offer, usage and cost), individual mobility and choice of transport mode, transport system efficiency and environmental impact (duration and cost of transport, energy consumption, accidents, pollution, etc.). In total, over 200 indicators have been collected for each of the 100 cities for the year 1995.

Indicators per city, statistical analyses and recommendations have been compiled onto CD-ROM available form UITP.

The UITP will publish in October 2005 the results of the Mobility in Cities Database project,

under which urban mobility indicators have been gathered and analyzed in a sample of 50 cities worldwide for the year 2001.

This project follows in the steps of the Millennium Cities Database which made it possible to highlight the existing links between urban planning, use of the various transport modes, and performance of the transport system, by collecting reliable and comparable indicators of urban mobility economics. The comparison of indicators through time also allows a sophisticated analysis of the most recent evolutions in urban mobility, the identification of successful mobility policies, and the outline of future prospects. The database and the analysis report will be available via a CD-ROM enabling easy search and exploitation of data.

2.5 Services and Information Technology Indicators

The role of Information and Communication Technologies (ICT) in economic growth and social change has received considerable attention in recent years. Information and communication technology in the form of state-of-the-art information management systems is an important factor for successful implementation of trade facilitation by reducing costs. Transmission delays, inefficient procedures etc., can be eliminated through automated technology. Computerized systems such as UNCTAD's Automated System for Customs Data (ASYCUDA) and the Advance Cargo Information System (ACIS) (Whose is this system) can speed the flow of information of cargo.

[The WTO Services Database](#)

The WTO Services Database contains the schedules of commitments and lists of Article II (MFN) exemptions of WTO Members. The database is maintained by the Trade in Services Division of the WTO. Only the commitments of countries which were members of WTO prior to 31 December 2004 are included in the database.

By using the predefined reports you can sort information:

- by country (select a country and retrieve details of all commitments of that country, listed by sector)
- by mode of supply (select from commercial presence, consumption abroad, cross-border supply or presence of natural persons to retrieve a list of countries and their commitments)
- by sector and level of development (choose a sector, and within that sector choose a level of development – developed, developing, least developed, transition). To obtain a complete list of commitments in a given sector you need to compile the four resulting lists
- by region
- by level of development

You can also retrieve a complete list of horizontal commitments, or a list of MFN exemptions. Finally, a sector/country matrix report is available. This is a table which identifies instances in which a given Member has made a commitment in a given sector. Totals are supplied for each

country and sector.

2.5.1 Information and Communications Technologies (ICT)

ICT at a Glance Tables

ICT at a Glance tables provide key data on:

- Country background information includes population, GNI per capita, and adult literacy rates
- ICT infrastructure & access covers access to fixed line and mobile telephones, cost of phone calls, and TVs sets available
- Computers and the Internet presents data on access to personal computers and the internet
- ICT expenditures shows ICT spending in per capita and absolute terms and as a percentage of GDP
- ICT business & government environment includes survey data on the effect of the Internet in business and government

ICT at a Glance tables compile data from several sources, including the UNESCO Institute for Statistics, the International Telecommunication Union (ITU), World Information Technology and Services Alliance (WITSA), World Economic Forum (WEF), Netcraft and the World Bank.

OECD Key ICT Indicators

The 15 ICT indicators below are drawn from various publications and databases produced by the OECD's Directorate for Science Technology and Industry (DSTI). They will be updated annually on a rolling basis, as data become available.

1. Access lines and channels in total for OECD
2. Mobile subscribers in total for OECD Data compiled from original and/or official
3. Internet subscribers in total for OECD Data compiled from original and/or official
- 4a. Broadband subscribers per 100 inhabitants in OECD countries
- 4b. Availability of Digital Subscriber Lines (DSL) in OECD countries
5. Cable TV subscribers in total for OECD Data compiled from original and official
- 6a. Households with access to the Internet in selected OECD countries
- 6b. Households with access to a home computer
- 7a. Internet penetration by size class. Percentage of businesses with ten or more employees using the Internet
- 7b. Businesses using the Internet and businesses receiving orders over the Internet
8. Share of ICT-related occupations in the total economy in selected countries
- 9a. Telecommunication services revenue in total for OECD
- 9b. Mobile telecommunication services revenue in total for OECD
- 9c. Telecommunication infrastructure investment in total for OECD
- 10a. Share of ICT value added in the business sector value added
- 10b. R&D expenditure in selected ICT industries

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- 11a. ICT patents as a percentage of national total (EPO) in selected countries
 - 11b. Share of countries in ICT patents at the EPO
 12. Trade in ICT goods and services
 13. Top 50 telecommunications firms and IT firms
 14. Contribution of ICT-using services to value added per person engaged
 15. Contributions of ICT investment to GDP

[International Telecommunication Union \(ITU\) Database](#)

The World Telecommunication Indicators database includes time series data for 200 economies for 1960, 1965, 1970 and annually from 1975-2003 for around [80 sets of telecommunication indicators](#) covering telephone network size and dimension, mobile services, quality of service, traffic, staff, tariffs, revenue, and investment. Selected demographic, macro-economic, broadcasting, and information technology statistics are also included.

The data are collected from an annual questionnaire sent out by the Telecommunication Development Bureau (BDT) of ITU, as well as data obtained from reports provided by telecommunication ministries, regulators and operators, and from ITU staff reports. Additional data are obtained from reports provided by telecommunication ministries, regulators and operators and from ITU staff reports. In some cases, estimates are made by ITU staff; these are noted in the database.

The database is available either for one-time purchase (single issue) or as an annual subscription. The one-time purchase is available either via the July 2004 edition of the CD-ROM or as a download via the Internet (edition of February 2005 now available). Updates and revisions of the data will be posted to the ITU website approximately every three months. Subscribers are entitled to BDT Telecommunication Data & Statistics reference services such as clarification of data, sources and methodology used.

Reports can also be ordered in hardcopy form. Some examples include: telephone mainlines (per 1000 people); waiting List (in thousands); International telecommunications, outgoing traffic (minutes per subscriber); Number of personal computers (per 100 people); Number of Internet Users (in thousands; and users per 100 inhabitants); Number of Internet Hosts etc.

[World Bank: Telecommunications Toolkit](#)

This toolkit was prepared by Canadian telecommunications consultant Hank Intven et.al. (2000) for the World Bank's [InfoDev](#) Program, with assistance by the [International Telecommunication Union \(ITU\)](#).

The toolkit has six modules;

[Module 1:](#) (PDF, 496KB) provides an overview of telecommunication regulation, discusses its objectives and principles, and gives guidance on the regulatory decision-making process.

[Module 2:](#) (PDF, 527KB) provides detailed analysis of issues related to licensing, including a discussion of the types of licensing regimes, practices, and the contents of licenses.

[Module 3:](#) (PDF, 729KB) discusses interconnection principles and procedures.

[Module 4:](#) (PDF, 635KB) reviews price regulation issues, including rate balancing and price caps.

[Module 5:](#) (PDF, 626KB) discusses the rationale for and concepts of competition policy in the sector.

[Module 6:](#) (PDF, 747KB) provides insight into the concept of universal services and discusses universality approaches and funding mechanisms.

[The Appendices:](#) (PDF, 1.0MB) include a World Trade Organization Regulatory Reference Paper and information on the economics of telecommunication prices and costs.

[*World Economic Forumⁱⁱⁱ \(WEF\) Report and The NRI*](#)

Published since 2001, the *Global Information Technology Report* assesses the ability of a country to take advantage of technology to improve productivity. The Networked Readiness Index (NRI) measures "the degree of preparation of a nation or community to participate in and benefit from ICT developments".

The Global Information Technology Report 2004-2005 is the fourth in a series assessing the state of the networked readiness of 104 economies. It is an update of the previous Reports, capturing new insights and best practices and gleaned policy lessons from various country experiences. The Report remains the most comprehensive and authoritative international assessment of the preparedness of countries to capture the benefits of participating in the Networked World.

The NRI is composed of three component indexes which assess:

- the environment for ICT offered by a given country or community
- the readiness of the community's key stakeholders - individuals, business and governments
- the usage of ICT among these stakeholders

[*Organization for Economic Cooperation and Development \(OECD\) Report on Measuring the Information Economy \(2002\)*](#)

Measuring the Information Economy 2002 includes over 80 indicators based on official surveys, providing a comprehensive international comparison of countries' performance in the information economy. It addresses issues such as international differences in the quality and price of the ICT infrastructure, diffusion of Internet technologies in larger and smaller firms, relative size of cross-border electronic transactions, and barriers to Internet commerce. For the first time, data annexes with time series for the ICT sector are made available in the electronic version. Indicators include number of websites, number of internet hosts per 1000 inhabitants, number of businesses with internet access, internet penetration by activity, businesses using internet for purchasing and selling.

[*McConnell International Report: Global E-Readiness*](#)

"E-Readiness" measures the capacity of nations to participate in the global economy, and represents multiple levels of ICT development by benchmarking progress through indicators of Connectivity, E-Leadership, Information Security, Human Capital, and E-Business Climate. The 2001 report analyzes 53 countries, covering two-thirds of the world's population and the biggest potential markets. The assessment was developed in collaboration with experts from public,

private and non-government organizations. It published a second report in May 2001, which evaluated over 50 emerging market economies' position in the digital economy. A third report is under development with a target release in mid 2002.

[Bridges: E-Assessment Reports](#)

Bridges provides a compendium of the tools from different sources available and those that are being developed for assessing e-readiness, along with their own analysis.

The Reports include:

- [Comparison of E-Readiness Assessment Models](#) - describes the various tools that are **available** and what they measure, including the tools' underlying goals and assumptions which shape their outcomes. With this report, we aim to foster informed decisions about approaches to e-readiness assessment, as national governments consider their IT policies and undertake development initiatives.
- [Survey of Who is Doing What and Where](#) - looks at where assessments have already **been conducted in the world**. Updated March 24, 2002.
- [Overview of E-Readiness](#) - bridges.org's overview of the e-readiness processes that was featured in Infodev's 2001 Annual Report.
- [Consultation report on e-readiness for the South African Development Community - World Economic Forum](#) - policies and recommendations for improving e-readiness in SADC countries, in a methodology that can be replicated in other areas of the world.
- [List of other e-readiness resources and sample assessments](#) - a **repository of online tools and resources** for e-readiness assessment and understanding the digital divide.

[NUA.com How Many Online?](#)

Nua was founded in 1996. Nua Internet Surveys was acquired in June 2001 by the Scope Communications Group, Ireland's leading IT Media Company.

This online source for information on Internet demographics and trends maintains a dataset estimating how many people are online, based on extensive examination of surveys and reports from around the world. The data can be viewed by region and country.

Governance and corruption though not related directly to trade are important measures of the environment of investment and business. (See [Annex I](#) for indicators of investment climate, non-tariff barriers and standards)

2.6 Development Indicators

[Development Data Platform \(DDP\)](#)

DDP is a web resource for retrieving and reporting development-related data. It can prepare web reports, charts and maps which can be published and shared over the web. It provides powerful features to customize these reports and manage them. DDP includes both time series (macro) and survey (micro) data on a wide range of topics of interest to development practitioners. It provides basic analytical tools and secure access to time series databases and to surveys, including their

meta-information, documentation and related datasets. DDP is developed and maintained by the Development Data Group (DECDG) and its partners.

The internal database system for the World Bank contains 40 databases from the Bank and other international institutions (IMF, FAO (Food and Agriculture Organization of The UN), UN, ITU, IEA etc.). The time series component of DDP provides access to databases from the World Bank, the Food and Agriculture Organization, the International Monetary Fund, the Organisation for Economic Co-operation and Development, the United Nations, and other international organizations which gather and disseminate international statistics.

The World Bank's central database, GDF & WDI Central combines over 900 key annual indicators taken from many of the other databases and includes the officially published cross-country comparable data from World Development Indicators (WDI) and Global Development Finance (GDF).

World Bank regional databases contain data directly from country management units in the Bank's six regions. These data are intended for country-focused analysis and may differ from officially published data. Other World Bank databases include those from specialized units across the Bank. Infrastructure data (compiled from various sources) can give an indication of the infrastructure network in many countries, and explain costs of domestic transport. (See [Annex H](#) for details)

DDP Microdata, developed and maintained by the Development Data Group (DECDG), is a federated repository of survey data and documentation, providing authorized users with access to unit record-level datasets. The catalog is maintained through collaborative efforts by several depositors and holds information on household, investment climate, service delivery and client feedback surveys. A web-based tool allows users to perform online analysis on selected datasets.

[Best Practices Database](#)

Over 2,150 award-winning solutions to common social, economic and environmental problems in over 140 developing and developed countries. Searchable by country, scale (global, national, regional, village, etc.) and by subject category. Best Practices is a joint product of UN-HABITAT and The Together Foundation and is supported in part by the Dubai Municipality, the Best Practices Partners, and the Government of UK. Coverage: 1996 - present.

[Creditor Reporting System \(CRS\)](#)

Contains data on Official Development Assistance (ODA), Official Aid (OA) and other lending to developing countries and countries in transition. Data are collected from the Members of the Development Assistance Committee, the World Bank, and the regional financial institutions. The system is sponsored jointly by the OECD and the World Bank and operated by the OECD.

[DAC Online](#)

These statistics, collected annually from the Members of the OECD's Development Assistance Committee, measure the flows of aid and other financial resources to aid recipients (developing

countries and countries in transition), and are broken down by major category of expenditure: capital projects, budget and balance of payments support, food and other commodity aid, technical co-operation and emergency relief. Dac Online, together with the Creditor Reporting System (CRS), comprise the OECD's International Development Statistics Online.

[SourceOECD](#)

Provides online access, from 1998 onward, to the full-text of all OECD periodicals, monographs, annuals, outlooks, policy reviews, conference proceedings, analytical reports, guidelines, working papers, and 27 statistical databases.

[UN Development Business Online](#)

provides information on opportunities to supply goods, works, and services for projects financed by the United Nations, governments, and the following development banks: the World Bank, Inter-American Development Bank, African Development Bank Group, Asian Development Bank, Caribbean Development Bank, European Bank for Reconstruction and Development, and North American Development Bank. Searchable by region, country, sector, bank, and other parameters. Published by the United Nations Department of Public Information. Updated several times per week.

Conclusions

There are a number of important cautions and limitations to the data available on the impact of trade costs and facilitation on competitiveness. These include:

- Lack of harmonized definitions and measurement tools which can lead to different indicators of the same barriers;
- Limited country coverage;
- Poor quality data that can be difficult or impossible to replicate;
- Lack of time series data sets;
- Aggregation of various data sources is problematic or impossible;
- Difficulty to use same indicators for cross-country analysis and for measuring project performance.

For example, one measure of trade facilitation is the time required to clear goods through customs. While there exist several sources of such data, there is no uniform and commonly accepted definition of customs clearance times. Measurement methodology differs around the world and there is no standard template or methodology for calculating, on a time series basis, days required to clear customs at national points of entry. The ICAs calculation is based on firm-level surveys, while TTFSE measures clearance at the border. There is a discrepancy between firm surveys and on the ground interviews and observations. For Uzbekistan, WBES gives an average clearance time of 11 days compared to 5 days by UNESCAP. The question is at what point to measure customs clearance.

The data can suffer from limited or unreliable statistical base, or diverging definitions. Moreover, the involvement of different agencies in the clearance process can yield different results in baseline calculations of customs clearance. Other factors such as origin of goods, mode of transport, loading/unloading time, delays due to phytosanitary standards etc., are factors to be considered, as well.

It is necessary to achieve consensus on definitions, as well as focus attention on achievable goals in this area. It is clearly problematic to capture progress in trade facilitation through one indicator. The sequence of the supply chain can provide a beginning: international transport, border crossings, handling and storage, inland transportation. Some indicators measure the performance at a particular point in the supply chain, while others encompass several elements of the chain.

While a comprehensive indicator is useful, often project specific indicators provide a better picture of progress at the country level. A country could have an efficient customs system, for

example, but suffer from poor inland logistics. Specific indicators for different components of the supply chain used for monitoring projects would normally be in a time series database.

Annexes

Annex A. World Business Environment Survey

Regulations can be burdensome in different ways - they can impose direct costs (formal and informal payments, facilitation costs, expenditures of staff time) or indirect costs (the inefficient allocation of firm resources in response to the incentives created by regulation and regulatory enforcement). In the WBES, firms evaluated the severity of several potential regulatory constraints.

More relevant to trade facilitation, *Customs Procedures and Trade Regulations* imposed serious constraints on more than half of all firms in LAC and South Asia, 49 percent of firms in Africa, and 44 percent of firms in the MENA region (Batra, Kaufmann and Stone, 2003). More than one-third of firms in the developing East Asia and the CEE regions considered this as a serious constraint. Small enterprises were significantly less constrained by customs and trade regulations in comparison with large and medium-size firms. The average waiting time for goods to be processed through ports and customs varied substantially, ranging from roughly 2 days in OECD nations, East Asia, and China (a firm's median wait was generally less than half a day), to more than 9 days in Central and Eastern Europe (a median of 5 days), 11 days in South Asia (a median of 7 days), and more than 16 days in Africa (a median of 10 days). These estimates exclude outliers, or processes that take more than 90 days.

Percentage of Firms That Rated Regulatory Constraints on Firms as “Major” or “Moderate”

Constraints	CEE	LAC	CIS	Africa	East Asia Developing	OECD	South Asia	MENA	East Asia NIC/China
High Taxes	89.8	82.9	82.6	76.2	74.5	72.3	71.6	53.6	39.3
Tax Administration and Regulation	74.5	62.5	65.2	59.3	54.6	59.0	52.2	50.8	20.9
Customs/Trade Regulation	36.3	55.9	32.0	48.6	36.0	28.0	58.9	44.3	20.3
Labor Regulation	18.2	52.5	33.7	38.0	35.2	47.7	60.0	32.6	27.4
Business Registration	38.3	55.3	23.4	25.5	27.7	32.4	40.2	25.9	21.6
Environment	26.4	37.2	28.1	21.7	29.4	37.8	43.7	24.1	17.1
Foreign Exchange/Currency	29.8	33.1	20.9	36.1	35.2	19.1	40.5	26.1	17.8
Fire/Safety regulation	22.1	28.5	21.6	15.9	29.4	29.8	27.4	21.6	12.2

Source : Batra, Kaufmann and Stone (2003)

Annex B. Investment Climate Assessments (ICAs)- Logistics Module⁶

Pl. note:

1. Questions below are categorized as those for (i) (senior) management [A] (ii) “operations” staff [B].
2. Where applicable, questions in the logistics module have been cross-referenced to relevant questions in the Productivity and Investment Climate Survey (PICS) Core Survey Instrument.

[A] 1. What are the top 3 products sold by your firm? If one or more of these products are exported please indicate what percentage of sales is exported. *[Links with Question 10 and 11a and b – in the Core PICS Survey Questionnaire]*

Product name(s) (SITC or HS 4-digit)	Value of sales (annual)	Percen. exported if applicable	Value (typical consignment order)	Weight(or Volume) annual	Weight (or Volume) (typical consignment order)	Consignment type (breakbulk, bulk, container)

[A] 2. What are the top 3 inputs that your firm purchases (including domestic *sources and imports)? *[Links with Q12 in the Core PICS]*

Product name(s) (SITC or HS 4-digit)	Value (annual)	% imported if applicable	Value (typical consignment order)	Weight(or Volume) annual	Weight (or Volume) (typical consignment order)	Consignment type (breakbulk, bulk, container)

⁶ Please contact Uma Subramanian (PSAIC) at 202 473 4497 or usubramanian@worldbank.org for any comments/questions.

[A] 3. What are the top 3 destination markets for your top (up to 3) products? *[Links with Question 11.c – in the Core PICS]*

	Product name	Destination (national/ domestic)	Destination (international)
A			
B			
C			

- [A] 4. a. If you are already exporting, have you tried to expand the markets to which you export? Yes__ No__
- b. If you are not already exporting, in the past two years, have you actively tried to enter export markets? Yes__ No__

- [A] 5. What is the method of payment for a typical export order?
- letter of credit
 - open account,
 - cash against document
 - other _____

- [A]6. What INCOTERMS do you use in pricing the product ?
- FOB
 - CIF
 - CFR
 - Other (specify) _____

- [A] 7. a. Do you produce/ manufacture on an order by order basis? ____ 1=Yes ; 2=No
- b. If no, what percentage of sales orders are filled from inventory held? ____*[Link with Question 13 in PICS2002]*
- c. Do you produce against long term contracts? ____ 1=Yes ; 2=No

[A] 8. How do you finance your working capital needed for producing your export products? (Please mark in the table below)

[A]	Auto financing	International sub-contracting	Bank credit (based on collateral)	Other	Total
Working capital (% share)					100%

Do you have access to government export finance insurance or guarantees? - to cover risk of non-payment by foreign buyers : Yes ____ No ____
 - to cover risks that you may be unable or delayed in delivering your exports: Yes ____ No

[B] 10. a. How do you arrange transport services? ____
 1=directly contract ; 2= hire transport intermediary (e.g., freight forwarder)
 3= third party logistics provider ; 4= own transportation

b. How frequently are transport services late in dropping off cargo or picking up cargo at your plant for delivery?

	Outbound		Inbound	
	Sales to domestic markets/firms	Exports sales	Supplies from domestic sources	Imports sales
% of times	%	%	%	%
If late, what are the reasons?	1. 2. 3.	1. 2. 3.	1. 2. 3.	1. 2. 3.

[B] 11. In the last year, what is the average and maximum number of days that your shipment arrived late:

a. At final destination (domestic and/ or international) in comparison with your planned schedule? (Please include all delays including arriving at the port for exports if applicable)

	Final destination (domestic)	Final destination (international)
Average delay in the last year	(days)	(days)
Maximum delay in the last year	(days)	(days)

b. At the gateway port (if applicable) in comparison with your planned schedule? (Please note that this delay may have been included in part (a) of this question).

	Gateway port
Average delay in the last year	(days)
Maximum delay in the last year	(days)

[B] 12. In the last year, have any shipments been rejected/ returned/ taken at discount prices because they reached late?

	Rejected	Returned	Discounted	Other
% value of shipment	%	%	%	%

[B] 13. In the last year, what percentage of total sales (estimated) have you lost because of delays in transportation services?

	Domestic sales	Exports
% of total sales lost	%	%

[B] 14. Of the total number of containers you ship, what percentage is inspected?
Exports (____%) Imports(____%)

[B] 15. If you **import**, what was the average and the longest number of days in the last year that it took from the time your goods arrived in their point of entry (e.g. port, airport) until the time you could claim them from customs?

- a. ____ days on average
- b. ____ days for the longest time in the last year
- c. NA (we don't import)

[B] 16. If you **export**, what was the average and the longest number of days in the last year that it took from the time your goods arrived in their point of exit (e.g., port, airport) until the time they clear customs?

- a. ____ days on average
- b. ____ days was the longest time in the last year
- c. NA (we don't export)

[B]17. What percentage of your total exports are transported by?

	% of tot exports	Port name(s)
1. Ocean	_____ %	1. _____ 2. _____
2. Air	_____ %	1. _____ 2. _____

[B]18. a. Has your export shipment ever been “bumped-off” by the ocean/ air carrier, even though cargo reservation was made? Yes=1 ; No=2

b. What is the frequency of occurrence in the last year?

Ocean	_____ % value of shipments
Air	_____ % value of shipments

[B] 19. If relevant, for air cargo, please indicate the average cost, average and maximum lead time needed for terminal processing for export shipments before flight departure.

	Aver cost	Informal costs	Aver. Time (hours)	Longest time in last year (hours)
Air cargo				

[B] 20. Please estimate the cost and time for transporting a consignment to the final customer (for domestic sales only)) and/or to gateway port (for exports).

	Formal. Cost (ave. per cons) ('000 pesos)	Inf. Cost (ave. per cons) ('000 pesos)	Ave. time last year (hours)	Maximum time last year (hours)
a. Preparatory activities: From receipt of order to the time that the goods are ready for pre-shipment preparation (packing, container stuffing, etc)				
b. Pre-shipment activities: From the time that the goods are ready for inspection/ packing to the time that transportation services arrive at the plant				
Loading/unloading at factory gate				
Line hauling				
<input type="checkbox"/> Truck				
<input type="checkbox"/> Rail				
<input type="checkbox"/> waterways				

<input type="checkbox"/> Other				
FOR FIRMS IN LANDLOCKED COUNTRIES ONLY				
Waiting time to cross land border if any (for landlocked countries)				
Customs clearance for landlocked country (to enter transit country)				
FOR FIRMS THAT EXPORT				
Waiting time to enter gateway port				
Port dues				
Customs clearance at port				
Terminal Handling (include time waiting for vessel/aircraft)				
Other				

[B] 21. a. In the last year, what percentage of your shipment and its corresponding value got lost and/or were damaged due to the following reasons? (Please distinguish between domestic and international transportation)

	Domestic transportation	International transportation
Reason	% value of shipments	% value of shipments
Total (% of shipment value lost or damaged last year)		
Theft		
Accident		
Damage during loading, unloading		
Damage due to delays		
Inclement weather		
Other		

- b. If you experienced cargo loss and/or damage, did you receive adequate compensation from the transport operator? Yes = 1 ; No = 2
- c. **IF NO**, what is the most common reason given? (*circle only one choice*)
- i. no carrier liability regime
 - ii. carrier liability regime exists but not effectively enforced
 - iii. limits of liability too low
 - iv. Other (Specify) _____
- d. If none of them, have you been compensated by your own insurance?
Yes = 1 ; No = 2

Annex C. Infrastructure Indicators

	Latin America				Asia			
	Brazil	Honduras	Nicaragua	Peru	Bangladesh	China	India	Pakistan
% of production/sales lost due to power outages	2.5	5.5	6.2	3.3	3.3	2.0	8.9	5.4
Have own generator (%)	16.8	31.6	21.6	27.6	71.5	27.2	60.8	41.8
No. of days to obtain a telephone connection	18.2	136.0	117.0	9.9	154.8	15.6	46.8	29.5
No. of days to obtain an electricity connection	25.5	29.8	23.8	22.5	79.6	29.0	85.0	38.2
Days to clear customs (for imports) - average	14.0	6.2	5.1	7.8	11.7	7.9	7.1	17.2
Days to clear customs (for imports) - longest	32.0	13.8	10.6	15.7	23.2	12.5	12.8	30.1
Days to clear customs (for exports) - average	8.7	2.1	1.8	5.2	8.8	5.4	5.4	9.6
Days to clear customs (for exports) - longest	16.8	3.4	3.0	--	14.0	8.0	8.0	17.1
Share of foreign invested firms	5.1	9.3	12.4	8.3	3.2	25.4	2.5	1.9
Share of firms that export	30.7	27.9	24.6	28.8	42.4	29.7	21.9	19.8

Source : Dollar, Hallward-Driemeier and Mengistae (2003)

Annex D. Module-Based Project Guidelines for Trade Facilitation

Modules are now available in draft form for port logistics, transit and landlocked countries, and transport and border security. Such guidelines present the major issues, diagnostic tools that can be used to identify potential projects, sample terms of reference, examples of successful reform/modernization programs, as well as cover resources available inside and outside the Bank.

The port module describes the main determinants of port efficiency, the institutional and infrastructure in ports, indicators to measure performance, the delivery of public, statutory mandates on safety, security and environment; as well as a diagnostic tool based on Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis. The guidelines on Transit emphasize international transit-primarily road transportation to and from landlocked countries. It summarizes the main principles of transit, explains what a typical transit operation would look like; reviews existing major transport arrangements based on the TIR (Transport International Routier); and lists bilateral and regional agreements that have been established to facilitate transit trade.

Port Performance Indicators are useful tools to obtain an insight into the performance of a port or terminal on a comparative level. Indicators are useful, but should be used carefully, in particular when it is uncertain how the data were gathered and treated. The most important ones among them, have, in addition, been shaded.

Indicator	Description	Remarks
Operational Indicators		
Ship productivity	Total number of moves (containers) or tons (break-bulk and bulk cargoes) divided by the total number of ship hours in port	
Average ship waiting time	Total number of hours or days vessels wait for a berth (buoy-to-berth time) divided by the total number of hours that ships are at berth	
Average cargo dwell time	The product of the cargo handled and the period of time (in hours or days) between the moment of the unloading of the cargo and the time the cargo exits the port or terminal for export cargo (and vice –versa for import cargo) divided by the total quantity of cargo handled	Terminal operators usually include in their handling tariffs a limited number of days of free storage. If that period is overdue, the operator will start to levy a fee for each period of time that the cargo occupies his area; more and more often on a progressive scale.
Average ship turnaround time	Total number of hours or days ships stay in port from buoy-to-buoy divided by the number of	A useful tool to estimate the overall efficiency of a port. The time that a ship stays in port is related to the call size (the

	ships	<p>number of tons or units to be loaded and / or unloaded), the type(s) of cargo to be handled and the efficiency of the operations. The buoy-to-buoy time can be divided into pre-berth time, actual berth or service time and the de-berth time.</p> <p>In case cargo handling operations are very efficient, but services like pilotage, towage or administrative procedures are not, the turnaround time is adversely influenced.</p>
Berth Occupancy Factor (BOF)	The total time that a vessel/vessels occupies/occupy the berth/berths divided by the total time the berth/berths is/are available	<p>An important indicator for terminal operators / owners. Commonly used BOF values are in the range of 0.5 to 0.6 for container and general cargo terminals, but the value is related to the number of berths. If there is only 1 berth, the recommended maximum BOF is 0.4, but if the number of berths ranges from 6 to 10, a BOF of 0.7 is quite acceptable.</p> <p>As to the interpretation of the value of the BOF: If the BOF is higher than these values, it is quite likely that ships may have to wait for a berth. In view of the high daily costs of ships this is not a desirable situation. On the other hand, if the BOF is lower than the values indicated, this may mean that there more capacity than required which means that expensive investments (quay walls and equipment) may not be used in an optimum way.</p> <p>Generally a BOF is somewhat lower for container berths than for general cargo berths. This is related to the higher daily operational costs of ships and the consequent high costs of waiting.</p> <p>The BOF for liquid and dry bulk terminals usually is much lower. Values between 0.2 and 0.3 are quite common for many terminals in the world.</p>
Ratio working time over berth time	Total time that a vessel/vessels at a berth/berths is/are served divided by the time that the vessel/vessels is/are at berth	See paragraph 5.1. The reasons for the difference between the two periods of time may be related to: labor disputes, unavailability or inefficiency of equipment, labor practices and due to losses like shift changes, meal breaks, limited breakdown of systems or equipment.
Productivity per gang-hour	Total quantity of cargo handled in units or tons divided by the total number of gang-hours worked	This term actually originates from the days of the conventional general cargo, which required large gangs, both on the ship and on shore. Values varied largely in relation to the type and appearance (packaging or

		unitization) of the cargo.
Productivity per crane hour	Total number of tons or units handled divided by the number of crane hours worked	See paragraph 5.1
Tons per ship-day	Total quantity of cargo handled divided by the total number of days the vessel is in port	This value largely varies with the type of cargo: general cargo, unitized or neo-bulk cargo, containerized or liquid bulk or dry bulk cargo.
Financial Indicators		
Cargo handling charge	The total charges for handling a given quantity of cargo in units or tons divided by the total number of units or tons handled	This indicator, certainly when it can be compared on a level playing field with nearby, competing ports, is a good tool to value a port amongst its competitors.
Operating surplus per ton handled	The net operating income from port operations divided by the total number of tons of cargo handled	
Collected charges per billed charges	The total of the collected charges as a percentage of the accounts billed (with a 30-day leg)	

Some ‘Rules of Thumb’ indicative values that are often used for a first Quick Scan of a terminal or port to be analyzed.

- Average capacity of a multipurpose berth: 600 to 700 tons / meter berth / year. Taking the average ship length using such berths at 180 m, this means a capacity of 100,000 to 130,000 tons / berth / year
- Capacity of container terminals: 750 to 1,250 TEU / hectare / year
- Overall personnel requirement of container terminals (non-robotized terminals): 750 to 1,250 TEU / employee / year
- Average container gantry crane production (for a multi-berth terminal with a BOF in the 0.5 range: 60 to 70,000 moves / crane / year

The security guidelines are very timely keeping in mind the additional security requirements that have been adopted around the world. This module seeks to help countries assess their strengths and weaknesses, and provide practical solutions to enable them to conform to the new requirements. It provides a detailed description on the International Ship and Port Security (ISPS) Code of the IMO, Container Security Initiatives (CSI), and other initiatives that have been introduced post September 12. The security guidelines can assist in guiding technical assistance activities with respect to the security component of a project.

Annex E. Country Ranking by WMO Trade Facilitation Indicators

Port Efficiency			Customs Environment			Regulatory Environment			Service Sector Infrastructure		
rank	Country	region	rank	Country	region	rank	Country	region	rank	Country	region
1	Singapore	EA	1	Finland	OECD	1	Finland	OECD	1	Finland	OECD
2	Hong Kong	EA	2	Netherlands	OECD	2	Denmark	OECD	2	United States	OECD
3	Netherlands	OECD	3	New Zealand	OECD	3	Singapore	EA	3	Canada	OECD
4	Germany	OECD	4	Iceland	OECD	4	Switzerland	OECD	4	Iceland	OECD
5	Finland	OECD	5	Denmark	OECD	5	New Zealand	OECD	5	Germany	OECD
6	France	OECD	6	Singapore	EA	6	Netherlands	OECD	6	Netherlands	OECD
7	United States	OECD	7	Hong Kong	EA	7	Australia	OECD	7	Singapore	EA
8	Canada	OECD	8	United Kingdom	OECD	8	Sweden	OECD	8	Hong Kong	EA
9	Denmark	OECD	9	Sweden	OECD	9	Sri Lanka	SA	9	Sweden	OECD
10	Sweden	OECD	10	Chile	LAC	10	Iceland	OECD	10	United Kingdom	OECD
11	Belgium	OECD	11	Austria	OECD	11	Norway	OECD	11	Korea	OECD
12	Iceland	OECD	12	Germany	OECD	12	Canada	OECD	12	Austria	OECD
13	Norway	OECD	13	United States	OECD	13	Austria	OECD	13	France	OECD
14	Japan	OECD	14	Australia	OECD	14	United States	OECD	14	Australia	OECD
15	New Zealand	OECD	15	Norway	OECD	15	Chile	LAC	15	Estonia	ECA
16	United Kingdom	OECD	16	Canada	OECD	16	United Kingdom	OECD	16	Norway	OECD
17	Australia	OECD	17	Ireland	OECD	17	Costa Rica	LAC	17	Switzerland	OECD
18	Switzerland	OECD	18	Belgium	OECD	18	Ireland	OECD	18	Taiwan	EA
19	Malaysia	EA	19	Switzerland	OECD	19	Germany	OECD	19	New Zealand	OECD
20	South Africa	SSA	20	Hungary	ECA	20	Uruguay	LAC	20	Belgium	OECD
21	Israel	MENA	21	Israel	MENA	21	Hong Kong	EA	21	Denmark	OECD
22	Jamaica	LAC	22	Estonia	ECA	22	Trinidad and Tobago	LAC	22	Spain	OECD
23	Austria	OECD	23	France	OECD	23	Mauritius	SSA	23	Chile	LAC
24	Spain	OECD	24	Taiwan	EA	24	Spain	OECD	24	Israel	MENA
25	Taiwan	EA	25	Italy	OECD	25	Estonia	ECA	25	Panama	LAC
26	Mauritius	SSA	26	Portugal	OECD	26	Lithuania	ECA	26	Italy	OECD
27	Panama	LAC	27	Greece	OECD	27	Israel	MENA	27	Czech Republic	ECA
28	Trinidad and Tobago	LAC	28	Spain	OECD	28	Jordan	MENA	28	South Africa	SSA
29	Estonia	ECA	29	Slovenia	ECA	29	Belgium	OECD	29	Ireland	OECD
30	Italy	OECD	30	Japan	OECD	30	Brazil	LAC	30	Japan	OECD
31	Thailand	EA	31	Tunisia	NEMA	31	France	OECD	31	Slovenia	ECA
32	Chile	LAC	32	Slovak Republic	ECA	32	Latvia	ECA	32	Dominican Republic	LAC
33	Tunisia	NEMA	33	Botswana	SSA	33	Taiwan	EA	33	Portugal	OECD
34	Namibia	SSA	34	Peru	LAC	34	Peru	LAC	34	El Salvador	LAC
35	Latvia	ECA	35	Lithuania	ECA	35	Jamaica	LAC	35	Slovak Republic	ECA
36	Korea	OECD	36	South Africa	SSA	36	Bulgaria	ECA	36	Thailand	EA
37	Romania	ECA	37	Trinidad and Tobago	LAC	37	Egypt	MENA	37	Jordan	MENA
38	Greece	OECD	38	Mauritius	SSA	38	Dominican Republic	LAC	38	Mexico	LAC
39	Ireland	OECD	39	Namibia	SSA	39	Italy	OECD	39	Malaysia	EA
40	Slovenia	ECA	40	Czech Republic	ECA	40	Malaysia	EA	40	Romania	ECA
41	Portugal	OECD	41	Malaysia	EA	41	Slovenia	ECA	41	Argentina	LAC
42	Jordan	MENA	42	Mexico	LAC	42	El Salvador	LAC	42	Brazil	LAC
43	Egypt	MENA	43	Uruguay	LAC	43	Mexico	LAC	43	Ukraine	ECA
44	Turkey	ECA	44	Jordan	MENA	44	Japan	OECD	44	Indonesia	EA
45	Argentina	LAC	45	Poland	ECA	45	Czech Republic	ECA	45	Egypt	MENA
46	Ukraine	ECA	46	Jamaica	LAC	46	South Africa	SSA	46	Jamaica	LAC
47	Uruguay	LAC	47	Korea	OECD	47	Greece	OECD	47	Sri Lanka	SA
48	Brazil	LAC	48	Colombia	LAC	48	Panama	LAC	48	Uruguay	LAC
49	Morocco	MENA	49	Bulgaria	ECA	49	Slovak Republic	ECA	49	Hungary	ECA
50	Lithuania	ECA	50	El Salvador	LAC	50	Romania	ECA	50	Venezuela	LAC
51	Dominican Republic	LAC	51	Turkey	ECA	51	Portugal	OECD	51	Peru	LAC
52	Poland	ECA	52	Latvia	ECA	52	Korea	OECD	52	Turkey	ECA
53	Mexico	LAC	53	China	EA	53	China	EA	53	Latvia	ECA
54	Czech Republic	ECA	54	Costa Rica	LAC	54	Honduras	LAC	54	Bolivia	LAC
55	India	SA	55	Argentina	LAC	55	Bangladesh	SA	55	Costa Rica	LAC
56	El Salvador	LAC	56	Thailand	EA	56	Hungary	ECA	56	Colombia	LAC
57	Sri Lanka	SA	57	India	SA	57	Guatemala	LAC	57	Trinidad and Tobago	LAC
58	Russia	ECA	58	Morocco	MENA	58	Bolivia	LAC	58	India	SA
59	Venezuela	LAC	59	Panama	LAC	59	Thailand	EA	59	Philippines	EA
60	China	EA	60	Zimbabwe	SSA	60	Vietnam	EA	60	Poland	ECA
61	Ecuador	LAC	61	Brazil	LAC	61	Nicaragua	LAC	61	Greece	OECD
62	Hungary	ECA	62	Egypt	MENA	62	Poland	ECA	62	China	EA
63	Costa Rica	LAC	63	Bolivia	LAC	63	Ukraine	ECA	63	Bulgaria	ECA
64	Botswana	SSA	64	Venezuela	LAC	64	Paraguay	LAC	64	Honduras	LAC
65	Indonesia	EA	65	Sri Lanka	SA	65	Ecuador	LAC	65	Lithuania	ECA
66	Colombia	LAC	66	Romania	ECA	66	Philippines	EA	66	Ecuador	LAC
67	Honduras	LAC	67	Guatemala	LAC	67	India	SA	67	Guatemala	LAC
68	Guatemala	LAC	68	Dominican Republic	LAC	68	Nigeria	SSA	68	Nicaragua	LAC

69	Peru	LAC	69	Russia	ECA	69	Zimbabwe	SSA	69	Vietnam	EA
70	Bulgaria	ECA	70	Philippines	EA	70	Colombia	LAC	70	Paraguay	LAC
71	Nigeria	SSA	71	Ecuador	LAC	71	Russia	ECA	71	Bangladesh	SA
72	Philippines	EA	72	Nicaragua	LAC	72	Turkey	ECA	72	Russia	ECA
73	Slovak Republic	ECA	73	Ukraine	ECA	73	Indonesia	EA	73	Nigeria	SSA
74	Zimbabwe	SSA	74	Honduras	LAC	74	Argentina	LAC	74	Zimbabwe	SSA
75	Paraguay	LAC	75	Indonesia	EA	75	Venezuela	LAC	75	Mauritius	SSA
76	Vietnam	EA	76	Bangladesh	SA						
77	Nicaragua	LAC	77	Nigeria	SSA						
78	Bangladesh	SA	78	Vietnam	EA						
79	Bolivia	LAC	79	Paraguay	LAC						

Annex F. TTFSE Performance Indicators

Indicators	Description	Remarks
Inland Terminals		
Import clearance time	Time between entrance of truck into the terminal and release of goods	Information on truck identification and time of arrival and departure is recorded with the use of computer terminals or time clocks installed at the terminal entry and exit points.
Physical examination	Number of times that goods are examined or the cargo compartment is searched compared to the total number of import, export and suspense declarations	The information is derived from the computer system that records all declarations and from the requirement to prepare an automated report of the results of each physical examination.
Trucks cleared in less than 15 minutes	Number of times that a truck completes import clearance in less than 15 minutes compared to the total number of import clearances	Information is recorded using the same system that provides the data on import clearance times.
Irregularities/number of examinations	Number of examinations discovered during physical examinations compared to the total number of physical examinations carried out	Information is obtained from the automated reporting of the results of all physical examinations. Data also be assessed, when more reliable, on a monthly basis.
Border crossings		
Truck examinations	Number of trucks actually opened (i.e. seals broken) compared to the total number of trucks processed	Information is compiled through the use of computerized traffic logs and the requirement to prepare an automated report of the results of each truck examination.
Irregularities/Number of examinations	Number of irregularities discovered during examinations compared to the total number of trucks examined	Information is extracted from the automated reports of truck examinations.
Average border exit time	For trucks exiting the country, it is the time between joining the queue and crossing the border	Information on truck identification and times is recorded continuously with the use of computer terminals or time clocks installed at appropriate locations.
Average border entry time	For trucks entering the country, it is the time between crossing the border and departing the station	Same as exit time.
Survey occurrence of corruption	Number of cases when a driver makes or is asked to make an unauthorized payment compared to the	Information to calculate this indicator is derived from surveys of truck drivers using the crossing point. This survey is conducted on a continuous basis through cooperating transport companies.

	total number of trucks/locations surveyed	
Reported occurrence of corruption	Number of cases when a driver makes or is asked to make an unauthorized payment compared to the total number of survey responses	Information to calculate this indicator is derived from records of received reports of corruption maintained by the Customs administrations.
Revenue collected/ Customs staff	Total revenues collected / Total number of customs employees	Information obtained from records maintained by the Customs administrations.
Total Customs administration cost/ revenue collected	Total budget of the administration (including salaries, overtime, bonuses and benefits)/ Total revenue collected irrespective of its destination	Information obtained from records maintained by the Customs administrations.
Revenue collected/ Salaries	Total agency salaries, overtime, bonuses and benefits/ Total revenue collected irrespective of its destination	Information obtained from records maintained by the Customs administrations.
Trade volume/Customs staff	Trade Volume / number of customs employees	Information obtained from country statistical data.
Annual number of declarations/Customs staff	Total number of declarations (import, export, suspense regimes, but excluding transit) irrespective of the number of items/Total staff employed by Customs	Information obtained from records maintained by the Customs administrations.

Source: TTFSE Manual

Annex G. Trade Logistics Indicators: Selected Examples

	Core Measure	Unit	Definition of Term	Sources of data
1.1	Clearance Time	Days	For imports, average time taken from when goods arrive at the port of entry until the time they are claimed from customs	World Business Environment Survey (WBES)
1.2	Longest day to clear customs for imports	Days	For imports, longest time taken from when goods arrive at the port of entry until the time they are claimed from customs	Investment Climate Assessments (ICAs)
1.3	Clearance Time: Temporary Entry			
1.3.1	Clearance Time for sea cargo: Temporary Entry	Days	Clearance time for temporary entry sea cargo (LCL and FCL)	International Exhibition Logistics Associates (IELA)
1.3.2	Clearance Time for air cargo: Temporary Entry	Days	Clearance time for temporary entry air cargo	International Exhibition Logistics Associates (IELA)
1.4	Release Time of goods	Days	Normally from the time of arrival of goods at the port/airport/land border until their release to the importer or a third party on his behalf	World Customs Organization : Time Release Methodology, and (simplified) TTFSE methodology
1.5	Revenue Collected/Customs Employee	USD/employee	Total revenue collected/ Total number of customs employees	TTFSE methodology
1.5.1	Revenue Collected	USD	Revenue collected by customs	TTFSE methodology
1.5.2	Customs Employees	Number of people	Total number of customs employees	TTFSE methodology
1.6	Customs Environment / Efficiency	number 0-1 (The value of 1 stands for the best performer)	Average of two indexed inputs: hidden import barriers other than published tariffs and quotas, irregular extra payment or bribes connected with export and import payments	GEP 2004 database Chapter Five, (2003)

1.7	Transport time	Days	The average time required to transport goods from the place of production / manufacturing / processing to the place from where the goods will be exported, or from the place of import to the final destination / distribution point or processing plant	Freight forwarder
1.8	Transport cost	Currency	The total cost of transporting goods from the place of production / manufacturing / processing to the place from where the goods will be exported - or from the place of import to the final destination / distribution point or processing plant	Freight forwarder

Annex H. Sample of Infrastructure/Facilitation Indicators
(*means available through World Development Indicators 2005)

Energy

- Access to electricity Network (% of population)*
- Electricity production*
- Average end-user prices (US cents/kwh)
- Quality of electricity services
- Electricity supply time (hours/day)
- Waiting time for electricity connection
- Electricity outage time (hours/day)
- Technical efficiency index
- Electric power consumption (kwh per capita) *
- Electric power transmission and distribution losses (% of output) *
- Commercial energy production/use *
- Combustible renewables and waste (% of total energy)*
- Energy imports, net (% of commercial energy use)*
- Energy production (kt of oil equivalent)*
- Energy use (kg of oil equivalent per capita)*
- Energy use (kt of oil equivalent)*
- Energy use per PPP GDP (kg of oil equivalent per constant 2000 PPP \$)*
- GDP per unit of energy use*

Roads

- Roads, total network (km) *
- Road traffic (vehicle per km) *
- Roads, goods transported (million ton-km) *
- Access to “all season” road (% of population)
- Road density, population (road km/1000)
- Travel time to work in main cities (minutes/one-way work trip)
- Paved road (% of total road) *
- Perception of services rendered by road department/public works
- Perception of quality of air transport /railroad services
- Road in good/fair condition
- Access to formal transportation service (% of population)
- Passenger cars (per 1,000 people)*
- Pump price for diesel fuel (US\$ per liter) *
- Pump price for super gasoline (US\$ per liter) *
- Two-wheelers (per 1,000 people)*
- Vehicles (per 1,000 people)*
- Vehicles (per km of road)*

Railways

- Rail lines, total (km) *
- Rail lines density
- Railways, good hauled (ton-km)*

-
- Railways, passengers carried (passenger-km)*

Ports/Border

- Container port traffic (TEU: 20 foot equivalent units) *
- Port handling costs (US\$)
- Average ship turn-around time
- Average cargo dwelling Time
- Percentage of physical control (percentage of boxes opened, % of consignments physically checked)
- Average cost/container
- Gross/Net berth productivity
- Containers per hour handled
- Ship output in tons per ship working hour, or tons per ship hour at berth, or tons per ship hour in port
- Port accessibility
- Congestion inside and outside port area on the land and sea side
- Containerized cargo
- Number of border agencies (can be correlated with time)
- Average Crossing Time
- Days wasted
- Technical efficiency index
- Revenue collected/staff
- Average border exit/entry time
- Customs clearance times
- Quality of customs
- Number of bilateral transit agreements

Air

- Air transport, freight (million tons per km) *
- Average time for cargo delivery
- Air transport, passengers carried *
- Aircraft departures *
- Air transport, passengers carried
- Aircraft departures*

Information and Communication Technology

- Information and communication technology expenditure (% of GDP) *
- Overall quality
- Personal computers (per 1,000 people) *
- Internet users *
- Internet hosts (per 10,000 people)
- Number of internet service providers
- Firm-level technology absorption

-
- Businesses using e-commerce (%)
 - Ports using EDI
 - Use of internet-based transactions with government
 - Presence of wireless e-business applications
 - Number of secure internet servers*
 - Internet service provider/telephone access charges (\$/30 off-peak hours) *
 - Cable television subscribers*
 - Daily newspapers*
 - Internet total monthly price*
 - Radios*
 - Television sets*
 - Broadband internet access (1=not available; 7=widely used)
 - Government online services (1=not available; 7=commonly available)
 - Government prioritization of ICT (1=low; 7=high)
 - Highly-skilled IT workers (1=must leave country; 7=have choice of jobs within country)
 - Internet effects on business (1=no change; 7=huge improvement)
 - ISP competition ensures high quality and low prices (1=no; 7=yes)
 - Laws relating to ICT use (1=nonexistent; 7=well developed and enforced)
 - Local specialized IT services (1=not available; 7=available from world-class institutions)
 - Speed and cost of internet access (1=slow and expensive; 7=fast and cheap)

Telecom

- Ease of obtaining new telephone lines
- Telephone mainlines (per 1,000 people) *
- Number of telephone faults (per 100 main lines)
- Telephone mainlines in largest city (per 1,000 people) *
- Telephone mainlines per employee *
- Telephone mainlines, waiting list *
- Telephone revenue per mainline *
- Fixed line and mobile phone subscribers (per 1,000 people) *
- International telecom, outgoing traffic (minutes per subscriber) *
- Mobile phones*
- Telephone average cost of call to US (US\$ per three minutes)*
- Telephone average cost of local call (US\$ per three minutes)*

Annex I. Summary of Main Data Sources

Data	Coverage	Years	Variables/Description
INVESTMENT CLIMATE			
World Competitiveness Yearbook	59	Since 1989	Competitiveness factors (economic performance, government efficiency, business efficiency, and infrastructure) ^{iv} .
Doing Business Database	155	Annual	Indicators of regulatory costs of business and enforcement
Investment Climate Surveys (ICS)	32,000 entrepreneurs in 62 countries.	Expanded since mid 1990s	Indicators of firm productivity and performance.
EBRD Transition Report	26 Eastern Europe and CIS countries		Quality of business environment
World Business Environment Survey (WBES)	80	1999-2000	Corruption, judiciary, quality of business environment, efficiency of customs (including time taken to clear customs), quality and efficiency of public services
World Bank : Investment Climate Assessments (ICAs)	18		Indicators on entry regulation, infrastructure indicators, regulatory and administrative delays (including customs clearance)
World Economic Forum : Global Competitiveness Report (GCR)	117	annual	Growth Competitiveness Index and other measures of economic performance; Index of perception of roads, railway and air services; Index of Port efficiency
Governance			
Governance database	160	1996-2002	Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Framework, Rule of Law, Corruption Control
Business Environment and Enterprise Performance Survey (BEEPS)	20,000 firms in ECA countries	1999, 2002 and 2005.	Doing Business, Corruption, Crime, Regulations, Customs, Infrastructure
Transparency International	Between 90-100 countries	1995-2002	Corruption Perception Index
Trade			
Global Monitoring		2003	trade effects of policies on an importing

Report 2004; Overall Trade Restrictiveness Index (OTRI)			economy
Doha Development Agenda Trade Capacity Building Database (TCBDB)		annual	information on trade-related technical assistance and capacity building projects
Technical Barriers to Trade (TBT) Database	690 firms in 17 countries	2001-2	
Global Economic Prospects 2004 database (Chapter 5) : Based on Wilson, Mann, Otsuki (2003)	75	For year 2000	Port efficiency; Customs environment; Regulatory environment; Service sector infrastructure
European Union (EU) Market Access database		current	Sectoral and Trade Barriers, Applied Tariffs, Exporters' Guide to Import Formalities
Tuck Trade Agreements Database		2003	bilateral and regional free trade agreements and customs union agreements
PERINOM Database	18 countries, 650,000 records		Bibliographic database on standards and technical regulations
CUSTOMS AND BORDER CROSSINGS			
Doing Business: Trading Across Borders	155	Newly implemented from 2005	Documents for import and export, Signatures for import and export, Time for import and export
International Exhibition Logistics Associates (IELA)	67	Current	Average days required for customs clearance for sea and air cargo
Trade and Transport Facilitation in South East Europe (TTFSE)	8 ECA countries	1999-annual	Performance and efficiency of customs administration, and data on border crossing and clearance times at 23 pilot sites
Global Express Association-Country Market and Customs Barriers Reports	150	Current	Questionnaires about market access restrictions, foreign investment, and the use of local services.
International Road Transport Union	17 ECA countries	weekly data	Waiting Times at Border Crossings
Walkenhorst and Yasui OECD Paper	80-100	2003	Border process quality and Border waiting time
UNESCAP	Asian countries	2003	Average and Maximum Waiting Times at Borders

TRANSPORT INFRASTRUCTURE			
International Road Transport Union	178		Road and railway networks
UN Economic Commission of Latin America and Caribbean (ECLAC)	11 LA countries.	2000	Foreign trade and transport statistics
World Bank : Railways database	90	1980-99	Scale, output and performance
International Road Federation	189	1997-2001	Road and vehicle statistics
Dutz, Mark (2005). Road freight logistics, competition, and innovation: downstream benefits and policy implications	165 logistics service providers and 493 user enterprises	2004	the impact of innovative road freight services on downstream business users
International Air Transport Association			World Air Transport Statistics (data on IATA member airlines), Air Cargo Annual (market trends in air cargo)
PORT Efficiency			
US Department of Transportation	US and trading partners		Maritime Transport Costs
Maersk Sealand		current	Maritime Transport Costs
International Monetary Fund (IMF) : International Finance Statistics			CIF/FOB
UNCTAD Review of Maritime Transport	World	Since 1968	Freight Costs as a percentage of Import Value
Clark, Micco, Dollar (2001) World Bank Working Paper	35		Container Handling Charges
Fink, Mattoo, Neagu (2001) World Bank Working Paper	37 developing and 22 developed countries		Cargo handling restrictions index, Mandatory port restrictions index.
Global Economic Prospects 2004 database (Chapter 5) : Based on Wilson, Mann, Otsuki (2003)	75	For year 2000	Port efficiency

INFORMATION AND COMMUNICATION TECHNOLOGY

The WTO Services Database	Member states	Up to 2004	schedules of commitments and lists of Article II (MFN) exemptions of WTO Members
World Bank : ICT at a Glance	184	2001	ICT infrastructure and access, Computer and internet information, ICD business and government environment data.
McConnell International Report	53	2001-2	E-readiness
International Telecommunications Union : World Telecommunications Indicators Database	200	1960, 1965, 1970, 1975-2003	80 telecommunication indicators (Telephone mainlines per 1000 people; Waiting List in thousands; International telecommunications, outgoing traffic; Number of personal computers; Internet Users; Internet Hosts)
World Economic Forum : Global Information Technology Report The Networked Readiness Index (NRI)	104	annual	Networked Readiness Index; Broadband internet access availability; Local specialized IT services availability;
OECD : Key ICT indicators	80	Current	Number of websites, number of internet hosts per 1000 inhabitants, number of businesses with internet access, internet penetration by activity, businesses using internet for purchasing and selling etc.
Bridges: E-Assessment Reports		2000-2002	Competition in ISPs; Government online services availability
NUA International		current	Number of people online (million)

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Endnotes

ⁱ Gausch and Kogan (2001) found that inventory holdings in the manufacturing sector in many developing countries are two to five times higher than in the United States. Their estimates further show that developing countries could reduce the unit cost of production by as much as 20 percent by reducing inventory holdings by half.

ⁱⁱ - Maskus, Wilson, and Otsuki (2001) address several of the more important empirical methods and approaches to quantifying the gains of trade facilitation related to harmonized regulations.

- In addition, the Australian Department of Foreign Affairs and Trade and Chinese Ministry of Foreign Trade and Economic Cooperation (2001) suggest that moving to electronic documentation for trade would yield a cost savings of some “1.5 to 15 percent of the landed cost of an imported item.”

- UNCTAD (2001) considers trade facilitation in the broader context of creating an environment conducive to developing e-commerce usage and applications. The results show that a reduction of one percentage point in the cost of maritime and air transport services could increase Asian GDP by \$3.3 billion.

- The Asia Pacific Economic Cooperation group (APEC 1999) found that the shock-derived reduction in trade costs ranged from 1 percent of import prices for industrial countries and Korea, Taiwan, and Singapore, to 2 percent for developing countries.ⁱⁱ The study estimated that APEC merchandise exports would increase by 3.3 percent from trade-facilitation efforts.

- Francois, van Meil and van tongeren (2003) found that a uniform 1.5% reduction in TTCs leads to benefits from trade facilitation of \$72 billion

ⁱⁱⁱ Many of the variables used in constructing the Networked Readiness Index of 2002-2003 of the Global Information Technology Report, are relevant to trade facilitation as well.