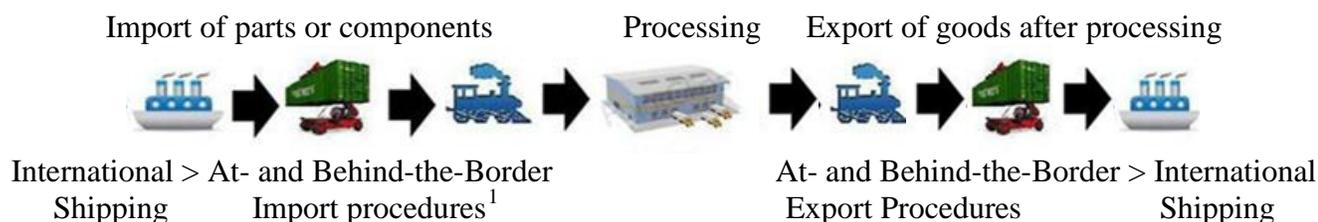


**ESCAP International Supply Chain Connectivity (ISCC) Database:
Explanatory Note for Users**
(last updated on 12 November 2013)

Introduction

In its simplest form, an international supply chain involves, in its simplest form, moving goods from a production facility in one country to a warehouse or distribution center in another country. In a regional and global production network context, facilitating trade for a given country involves not only facilitating movement of final goods from factory to the port, but (1) facilitating import of parts and components and their movement to a production facility, as well as (2) facilitating export of the processed good from the production facility to the port. Taking into account that around 80% of international trade still takes place via seaports, a country's participation in international supply chains therefore depends not only on the efficiency of the procedures associated with moving goods from (to) factory to (from) the port but also on how well that port is connected to other countries (figure 1).

Figure 1. Trade procedures in an international production network context



On that basis, the ESCAP International Supply Chain Connectivity (ISCC) Index is developed to measure the overall trade facilitation performance of a country along the international supply chain.

ISCC: Definition

ISCC is based on the trading across border (TAB) indicators from the World Bank Doing Business Report and the Liner Shipping Connectivity Index (LSCI) of UNCTAD. The Index provides an overall performance score for a particular country based on its performance in terms of (1) TAB underlying import indicators (i.e. number of documents, time, and cost involved in import); (2) TAB underlying export indicators (i.e. number of documents, time, and cost involved in export); and (3) the UNCTAD LSCI score.²

Equal weight (one third) is given to import, export and international shipping performance for non-landlocked countries. The current version of this database includes the data from 2006-2012 for 179 countries. Sub-indicators used in constructing ISCC performance scores at the import, export and international shipping stage are in Table 1.

¹ This may include Document preparation, Inland transportation, Technical & Customs clearance and Port and terminal handling.

² TAB indicators only cover documentation, time and cost involved in moving goods from (to) the factory to (from) the port. In contrast, UNCTAD LSCI measures the level a country's integration into global shipping networks.

Table 1: International Supply Chain Connectivity Index (ISCC Index)

Stage	Sub-indicators	Source
Import	Documents to import (number)	Doing Business www.doingbusiness.org
	Time to import (in calendar days)	
	Cost to import (US Dollar)	
Export	Documents to export (number)	Doing Business www.doingbusiness.org
	Time to export (in calendar days)	
	Cost to export (US Dollar)	
International Shipping	Liner Shipping Connectivity Index ³	UNCTAD data.worldbank.org/indicator/IS.SHP.GCNW.XQ

Each sub-indicator is indexed on the highest sub-indicator value across countries for the year 2006 (base = 100). The performance score for import and export are accordingly calculated as follows:

$$I_{it}^s = \frac{\sum_{a_s=1}^n \left(\frac{x_{max2006}^{a_s}}{x_{it}^{a_s}} \right)}{n} \times 100 \text{ for country } i \text{ at year } t$$

Similarly, the performance score for international shipping is calculated as follows:

$$I_{it}^s = \frac{x_{it}^s}{x_{max2006}^{a_s}} \times 100 \text{ for country } i \text{ at year } t$$

where I denotes performance score
x denotes value of sub-indicator
xmax2006 denotes the best value of sub-indicator in 2006
a denotes sub-indicator in each stage (documents, time, costs)
s denotes stage in supply chain
n denotes number of sub-indicators in each stage

For all countries other than landlocked countries, ISCC is calculated as:

$$ISCC_{it} = \left(\frac{1}{3} \times I_{it}^{export} \right) + \left(\frac{1}{3} \times I_{it}^{import} \right) + \left(\frac{1}{3} \times I_{it}^{shipping} \right)$$

For landlocked countries, since they have no seaports, the study uses LSCI from the main transit country –provided by UNCTAD - as a proxy to calculate their international shipping component $I_{it}^{shipping}$. Given that this particular component is based on the performance of a transit country rather than their own, a rule is added such that the international shipping component cannot account for more than two third of the total ISCC index value of a landlocked country. The rule is as follows:

If $I_{it}^{shipping} > \frac{2}{3} \times (I_{it}^{export} + I_{it}^{import} + I_{it}^{shipping})$, then

$$ISCC_{it} = \left(\frac{1}{3} \times I_{it}^{export} \right) + \left(\frac{1}{3} \times I_{it}^{import} \right) + \frac{1}{3} \left(\frac{\frac{2}{3}}{1 - \left(\frac{2}{3}\right)} \times (I_{it}^{export} + I_{it}^{import}) \right)$$

³ Calculated by UNCTAD based on (1) the number of ships, (2) the total container-capacity, (3) the number of port services, (4) maximum vessel size, and (5) the number of companies involved in container shipping services from and to the country's seaports.

Interpretation of ISCC

ISCC index measures the quality of supply chain connectivity of a country - the higher the value, the better the connectivity. Looking at the relative contribution of each component (import, export, international shipping) to the total ISCC index value for a particular country can provide preliminary information on what stage of the supply chain may be prioritized for improvement.

EXAMPLE: ISCC Index of China

The ISCC index of China in 2006 and 2012 are approximately 68.15 and 75.46, respectively, i.e. ISCC index are calculated as follows:

$$2006: ISCC_{China,2006} = \frac{1}{3} \times (53.77 + 50.67 + 100.00) = 68.15$$

$$2012: ISCC_{China,2012} = \frac{1}{3} \times (42.85 + 45.45 + 138.09) = 75.46$$

China has experienced a significant improvement in overall supply chain connectivity since 2006. While improvements have been made at all stages of the supply chain, the good performance of China is linked to its exceptional international shipping performance and the component scores show that import and export procedures can be further enhanced.

Figure 2. ISCC and Component scores for China

	A	B	C	D	E	F	G	H	I	J	K
1	countryname	country	year	export	import	port	iscc				
205	China	CHN	2006	53.7698	50.6718	100.0040	68.1487				
206	China	CHN	2007	53.7698	50.6718	113.0460	72.4959				
207	China	CHN	2008	48.6974	44.6687	121.4690	71.6116				
208	China	CHN	2009	46.4365	48.0020	117.1290	70.5225				
209	China	CHN	2010	46.4365	48.0020	126.8880	73.7756				
210	China	CHN	2011	46.4365	48.0020	134.4510	76.2963				
211	China	CHN	2012	42.8503	45.4472	138.0950	75.4642				
212	Côte d'Ivoire	CIV	2006	25.1109	18.0797	11.4754	18.2220				
213	Côte d'Ivoire	CIV	2007	25.1109	18.0797	13.2415	18.8107				
214	Côte d'Ivoire	CIV	2008	24.0741	18.1206	14.9694	19.0547				
215	Côte d'Ivoire	CIV	2009	23.2690	18.4508	17.1409	19.6202				
216	Côte d'Ivoire	CIV	2010	23.2690	18.4508	15.4521	19.0573				
217	Côte d'Ivoire	CIV	2011	23.2690	18.4508	15.3643	19.0281				
218	Côte d'Ivoire	CIV	2012	23.1699	18.4357	14.5437	18.7164				
