

Department of Economic Planning and Development  
Prime Minister's Office  
Brunei Darussalam



## BRUNEI DARUSSALAM'S INPUT-OUTPUT TABLES 2005

### 1. Introduction

The Department of Economic Planning and Development (JPKE) has successfully completed the project on the “**Construction of the Input-Output Table for Brunei Darussalam**”. The project was commissioned to a consulting firm, DIW econ GmbH, Germany, and was implemented within two years, starting 1 April 2009, in close collaboration with JPKE staff.

The main objective of the project was to compile a **comprehensive input-output system** for Brunei Darussalam and to provide a **comprehensive economic analysis** based on the resulting input-output table.

The construction and analysis of input-output tables is an essential step towards improving the understanding of structural relations of an economy and its competitiveness in a national, regional or international context. Input-output tables can be used to conduct systematic evaluations of the direct and indirect impacts of government policies, especially given the growing complexity of the economy. Input-output tables allow for better tracking of economic developments from year to year and more accurate determinations of input requirements needed to induce given economic growth targets. Finally input-output tables allow for consistency checks of the national accounts and are held to uncover existing data problems. The input-output system will allow for inter-industry linkages analysis and will lay the foundation for future economic modelling and economic policy impact evaluation.

## **2. The Input-Output System for Brunei Darussalam**

The input-output system for Brunei Darussalam comprises supply and use tables (SUT), input-output tables (IOT) for domestic output and imports and supplementary data for extended input-output tables with satellite systems. Supply and use tables are compiled for the National Accounts while the corresponding input-output tables will be used for economic analysis. Supply, use and input-output tables provide the most detailed information on the structure of the economy.

The year 2005 was chosen as the benchmark year for economic and statistical reasons. First, more statistical information is available for the year 2005 than for many other years; and second, 2005 was a year without exceptional developments in the economy, unlike in the recent past: e.g. the strong price increases of Brunei's main export commodities oil and gas, or the global financial and economic crisis.

The compilation of an input-output table for Brunei Darussalam requires the calculation of supply and use tables at purchasers' prices, the compilation of valuation matrices for trade margins, transport margins and taxes less subsidies on products and the aggregation of results to supply and use tables at basic prices separating the use table into a use table for domestic output and a use table for imports.

In a first step, supply and use tables at purchasers' prices have to be compiled by using a maximum of official information (census, surveys, government's accounts data, foreign trade statistics, etc.). In a second step these supply and use tables at purchasers' prices are transformed into supply and use tables at basic prices by estimating valuation matrices for trade and transport margins and taxes less subsidies on products to bridge the difference between purchasers' prices and basic prices for products. In a final step, these supply and use tables at basic prices are transformed into input-output tables by applying a specific transformation model.

### 3. The Input-Output Table 2005 for Brunei Darussalam

The input-output table describes the production structure of an economy in great detail. It is the ideal presentation of the interdependent production process and shows all inter-industry linkages of the economy. It provides detailed information on the use of goods and services (products) and the income generated in that production.

The input is typically enumerated in the column of an industry while its output is enumerated in its corresponding row. The input-output table describes the flow of goods and services between all sectors of an economy over a period of time. At the same time, it provides the required information on all inputs which are used in production: intermediates, labour, capital, and land.

The most aggregated input-output table is given in the following table (Table A).

**Table A : Input-output table at basic prices, 2005, Brunei Darussalam**

million BND

		ACTIVITIES					FINAL USES				Use at basic prices
ACTIVITIES		Agriculture	Mining	Industry	Construction	Services	Private consumption	Government consumption	Investment	Exports	
No	PRODUCTS	1	2	3	4	5	6	7	8	9	10
1	Products of agriculture	29	44	11	1	86	131		9	3	314
2	Products of mining	17	2 007	365	85	139	5		41	9 794	12 453
3	Products of industry	7	293	129	146	646	1 438	4	680	181	3 522
4	Construction works	0	0	2	19	2	17		526		567
5	Services	27	261	128	186	1 410	2 822	4 150	758	1 154	10 895
6	Net taxes on products	0	- 12	0	4	- 46	- 75		21	1	- 107
7	Salaries	92	308	163	85	3 335					3 983
8	Operating surplus	60	9 544	404	41	3 470					13 519
9	Imports	82	9	2 319		1 853					4 263
10	Supply at basic prices	314	12 453	3 522	567	10 895	4 338	4 154	2 036	11 132	

It is typical for the symmetric input-output tables in Table A that total supply of each industry equals total use of products. In other words, all products of agriculture (domestic and imported) are supplied by the homogeneous production activity 'Agriculture'. It can be

detected in the supply table which industries actually produced products of agriculture in Brunei Darussalam and which products of agriculture have been imported.

For economic analysis the symmetric input-output table in Table B is far more important.

**Table B : Input-output table of domestic output at basic prices, 2005, Brunei Darussalam**

		ACTIVITIES					FINAL USES				Output
ACTIVITIES		Agriculture	Mining	Industry	Construction	Services	Private consumption	Government consumption	Investment	Exports	
No	PRODUCTS	1	2	3	4	5	6	7	8	9	10
1	Products of agriculture	19	28	10	1	67	100		6	2	232
2	Products of mining	17	2 007	364	85	134	3		40	9 794	12 445
3	Products of industry	0	73	44	28	283	591	4	112	67	1 203
4	Construction works	0	0	2	19	2	17		526		567
5	Services	23	221	109	168	1 126	2 394	3 865	741	396	9 042
6	Imports	21	277	106	136	670	1 308	285	589	872	4 263
7	Import duties	0	- 12	0	4	- 46	- 75		21	1	- 107
8	Salaries	92	308	163	85	3 335					3 983
9	Operating surplus	60	9 544	404	41	3 470					13 519
10	Input	232	12 445	1 203	567	9 042	4 338	4 154	2 036	11 132	
<b>EXTENSIONS</b>											
11	Investment (million BND)	7	277	80	229	1 253					1 847
12	Employment (1.000Persons)	3	5	16	12	129					165
13	Energy consumption (1.000 toe)	0	962	1 848	11	251	434			18 403	21 908
14	GHG gas emissions (1.000 tons of CO2)	0	1 281	2 772	33	435	832				5 353

The industries (agriculture, mining, industry, construction, services) are allocated in columns 1-5 while the categories of final demand (consumption, investment, exports) are presented in columns 6-9. The corresponding inputs of these activities are reported in the rows of the matrix. In row 1-5 domestic products (agriculture, mining, industry, construction, services) are shown which are purchased in the economy for intermediate use in production and final use. In row 6 imports are reported which are purchased by industries for intermediate use and by final users for consumption, investment and exports. Finally, in rows 8-9 the compensation of labour and capital (wages and salaries, operating surplus) is reported for the various industries.

Table B separates domestic inputs from imported inputs and refers to total output. For the input-output table of domestic output the identity holds that total output of a homogenous product (column 10) equals total input of economic activities (row 10) which have produced this product.

More specific information on imports is given in Table C.

**Table C : Input-output table of domestic output at basic prices, 2005, Brunei Darussalam**

million BND

		ACTIVITIES					FINAL USES				Use at purchasers' prices
ACTIVITIES		Agriculture	Mining	Industry	Construction	Services	Private consumption	Government consumption	Investment	Exports	
No	PRODUCTS	1	2	3	4	5	6	7	8	9	10
1	Products of agriculture	11	16	1	0	19	31		3	0	82
2	Products of mining	0	0	1	0	5	2		1	0	9
3	Products of industry	6	220	85	118	363	847		567	113	2 319
4	Construction works										
5	Services	4	40	18	18	284	428	285	17	758	1 853
6	Total	21	277	106	136	670	1 308	285	589	872	4 263

The last row of the import matrix (Row 6) is transferred to the input-output table for domestic output (Row 6 in Table B). However, the last column of the import matrix (column 10) is transferred as a transposed vector to the input-output table of supply and use (Row 9 of Table A).

More disaggregated data of the Input-Output Table are provided in the **Appendix Tables**. The tables provide information on the supply and use of products (goods and services) for 50 industries and seven categories of final uses (private consumption, final consumption expenditure by non-profit organisations serving households (NPISH), government consumption, gross fixed capital formation, change in valuables, change in inventories, exports).

They also give information on the generation of income in 50 industries with a distinction of four components of value added (compensation of employees, other taxes on production, capital consumption, net operating surplus).

**Appendix Table 1 : Input-Output Table for Domestic Output and Imports, 2005, Brunei Darussalam**

**Appendix Table 2 : Input-Output Table for Domestic Output, 2005, Brunei Darussalam**

**Appendix Table 3 : Input-Output Table for Imports, 2005, Brunei Darussalam**

#### **4. Gross Domestic Product (GDP) according to the Input-Output Table**

With the construction of the IOT, new figures of the GDP were calculated for the year 2005. The results from the Input-Output Table show for 2005 a higher GDP value of BND 17, 395.9 million compared to BND 15,864.1 million in the current National Accounts. The results of the IOT 2005 will be used to revise the national accounts, as well as to rebase the constant price estimates to the year 2005.