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Material Flow Data Book
~ World Resource Flows around Japan ~
Second Edition

Edited by Yuichi Moriguchi

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Forward

One of the functions of the Center for Global Environmental Research is to provide data on the global environment to researchers and government officials in Japan and abroad. One of the most important aspects of this function is creating databases to serve as a common foundation for research on the global environment. We take the results of research on the global environment provided by the National Institute for Environmental Studies, and publish them as databases for general use.

This publication presents information on material flows, created via research on environmental resource accounting carried out by the Global Environment Research Fund, in map and table form, focusing on Japan's imports of natural resources from the rest of the world. We are beginning to realize that the economic system of mass production, mass consumption, and mass disposal is the root of many of today's global environmental issues, and there is fear about the impact that the harvesting of resources is having on the natural environment. These and other issues make it even more vital that we create a systematic understanding of the use of natural resources. This is especially true in Japan's case; Japan is poor in such underground resources as fossil fuels and metals, and is one of the world's biggest importers of these resources. Understanding Japan's place in the world is the starting point for thinking about the environmental issues caused by the harvest and transport of the resources that we import. The first edition of this data book was published in 1999; the current edition contains new annual data, and also includes a CD-ROM containing maps and tables. This edition of the data book is provided in both English and Japanese, in order to facilitate its international use.

I hope that this publication will be of use to many people with an interest in issues of the global environment and trade in natural resources.

March 2003

Gen Inoue

Director

Center for Global Environmental Research
National Institute for Environmental Studies

Preface

Japan and the other industrialized countries harvest massive quantities of natural resources from the environment, and process them into correspondingly massive quantities of different products. Consuming these products makes lives more convenient and richer. Meanwhile, the pollutants produced during the production and consumption phases, as well as the products after they are consumed, are returned to the environment as waste. The scale of this material cycle between humankind and the natural environment greatly exceeds the environment's natural capacity to regenerate its resources and cleanse itself of waste. In short, the majority of today's environmental issues are linked to the socio-economic pattern of mass production, mass consumption, and mass disposal.

The recognition that the environment has a finite amount of available resources, and a finite capacity to cleanse itself of waste, is fundamental for debating sustainable development. Chapter 4 of Agenda 21 points out that the current pattern of production and consumption of the industrialized nations is not sustainable, and "sustainable consumption" was a key concept at the Rio+10 summit held in Johannesburg.

Today's economy is characterized by this massive consumption of materials. A systematic grasp of the flows of energy and materials between the environment and economic activities, and between the various economic entities, is essential for analyzing the relationship between such an economy and environmental issues. Material flow accounting/material flow analysis is a powerful method for achieving this goal. At the National Institute for Environmental Studies, a study on environmental and natural resource accounting has been carried out since 1991 by the Global Environment Research Fund. For Japan, which relies on massive imports of resources, it is particularly vital to make global issues be reflected in environmental resource accounting. This data book uses data on the trade of natural resources prepared during this process.

Meanwhile, the United States, Germany, the Netherlands and Austria, and other countries have also been developing material flow accounting studies, and there has been international cooperation on research in this area. The first results of joint research with these countries were published in 1997 as *Resource Flows*, and the second in 2000 as *The Weight of Nations*.

(<http://www.wri.org/wri/data/matflows/>, <http://www.wri.org/materials/weightofnations.html>)

The greatest feature of this international joint research is its focus on so-called "hidden flows" (originally dubbed "ecological rucksacks" by German researchers), or the fact that more materials are taken from the environment than are actually input into economic activities. These flows are called "hidden" because they are missed by conventional material-flow tracking. The massive size of Japan's imports in absolute terms shows how large Japan's role in these hidden flows is.

Based on this background, this data book aims to be used as a reference for thinking about resource-related environmental issues, recognizing Japan's role in world resource trade. The data book presents data on the trade of major natural resources, extracted and tabulated from UN trade statistics, in map and matrix format. This second edition adds data from 1998, and is provided in both Japanese and English. It additionally includes a CD-ROM containing maps and matrices.

This data book is intended as a first step toward learning about global issues from the

perspective of international trade. It can also serve as a reference for evaluating products and corporate activities from an environmental perspective from “cradle to grave” (i.e. over their entire life cycle), as well as a source of basic data for research on environmental economic models and other topics.

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Yuichi Moriguchi

Author

Social and Environmental Systems Division

National Institute for Environmental Studies

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Chapter I - Introduction

1.1 Goal of This Publication

(1) How This Publication is Put together

This data book is a revision to the *Material Flow Data Book: World Resource Flows around Japan* (CGER - D022 - '99), published in March 1999. The main changes from the 1999 edition are the addition of trade data from 1998, the inclusion of this English translation of the main text, and the inclusion of trade-flow maps and trade matrices on electronic media (CD-ROM).

This data book consists of Chapter I – Introduction; Chapter II – Method for Creating Trade-flow Map/Trade Matrix; Chapter III – Trade-flow Maps; and the included CD-ROM. Due to limitations of space, most of the trade-flow maps and trade matrices are contained on the CD-ROM; a portion of the trade-flow maps are printed in Chapter III.

The figures contained in Chapter III and the CD-ROM are the core of the data book. These figures contain data on the trade of major resources, extracted and tabulated from UN Trade Statistics, and presented in map and table form. Chapter II gives an overview of the method used to create the trade-flow maps and trade matrices contained in this publication. This data book presents data on material flows in terms of weight. In the UN Trade Statistics, however, sometimes only monetary amounts are reported, and some countries use different units of quantity measurement. Chapter II describes the statistical method used to convert these values into units of weight. Chapter III contains a collection of maps, and is put together in such a way as to allow an overview of the trade flows of major resources between worldwide regional blocks. For some commodities, a trade-flow map for trade among the Asian countries was added. In addition to the trade-flow maps, the included CD-ROM also contains trade matrices.

This chapter (Chapter I) contains some brief explanatory notes for interpreting the figures in this data book. Section 1.1 describes the purpose of this publication, including the background of and need for the preparation of data on material flows, as well as the involvement of the National Institute for Environmental Studies in this issue. Section 1.2 defines the significance of the import and export of resources for Japan, and contains a figure and some brief explanatory notes in order to get an overview of material flows in Japan. Section 1.3 describes the characteristics of the resource trade-flow data contained in Chapter III and the CD-ROM, focusing on the role of Japanese imports and exports in the world and the recent changes in Asia.

(2) A Society of Mass Production, Mass Consumption, and Mass Disposal, and Environmental Issues

Japan and the other industrialized nations take large quantities of resources from the natural environment, and process them into a wide variety of products. By consuming these products, our lives are made richer and more convenient. Meanwhile, however, pollutants produced at the

production and consumption stages, and waste produced by consumed products, returns to the environment. The scale of this cycle of material between people and the environment far exceeds the environment's capacity to regenerate its resources and clean up our waste. Accumulation of carbon dioxide, CFCs, and other greenhouse gases in the atmosphere is changing the global climate. Forested area is shrinking as trees are harvested for fuel, building materials, paper and the like. These are prime examples of how huge human-induced flows of materials are changing the environment on the global scale. At a local level, we are running out of space for landfills, and the incinerators for reducing the quantity of waste encounter the environmental pollution with dioxins. In other words, the majority of today's environmental issues are linked to our socio-economic system of mass production, mass consumption, and mass disposal.

Perspectives are widening from the traditional focus on pollution, toward more global environmental issues and sustainable development. It has thus come to be realized how important it is to have a quantitative measure of natural resources and the environment. The realization that the quantity of available resources and the environment's carrying capacity are limited is one of the fundamental awarenesses for discussing sustainable development. Chapter 4, "Changing Consumption Patterns" of Agenda 21, which was adopted at the 1992 Earth Summit, points out that the current pattern of production and consumption of the industrialized nations is not sustainable. More recently, the Johannesburg Declaration made at the 2002 World Summit on Sustainable Development (WSSD) stated the need to change our patterns of production and consumption, and protect and manage our natural resources. In Japan, a Basic Environmental Plan was formulated in 1994, based on the Basic Environment Law. This plan calls into question the socio-economic activities and lifestyles of mass production, mass consumption, and mass disposal, and declares the need to change to sustainable production and consumption patterns, advocating a heightened awareness of the dangers of pursuing material wealth alone. Additionally, in 2000 the Basic Law for Establishing a Recycling-based Society was established, with the goal of changing from the current economy fueled by mass production, mass consumption, and mass disposal to a closed-loop economy.

(3) The National Institute for Environmental Studies' Involvement in Material Flow Accounting

Thus, today's society and economy are characterized by huge quantities of materials. In order to analyze the relationship between society/the economy and environmental issues, it is necessary to systematically track the flow of materials and energy between the natural environment and economic activities, and among the various major economic sectors. Environmental resource accounting, and Material Flow Accounting/Analysis (MFA) in particular, is a powerful tool for accomplishing this goal. For more than 10 years, the National Institute for Environmental Studies has researched environmental resource accounting via the Global Environmental Research Fund. Japan depends on large amounts of imports of natural resources,

and is the world's fourth-largest emitter of greenhouse gases. For this reason, it is particularly vital for Japan to reflect global issues in its environmental resource accounting, and we have thus focused our efforts on preparing data to enable this. The data on the trade of natural resources contained in this data book was created in this process.

Meanwhile, there is an active commitment to Material Flow Accounting in Europe and other countries, and communication and joint research is taking place on the international level. In November 1995, SCOPE (Scientific Committee on Problems of the Environment), which was leading a research project to develop indicators for measuring the achievement level of sustainable development, held an expert workshop in Wuppertal, Germany. At the workshop, it was concluded that Material Flow Analysis was one of the most important fields of indicator development. The workshop spurred four of the attending institutions to launch an international comparative research project on material flows. These four institutions were Japan's National Institute for Environmental Studies, Germany's Wuppertal Institute, the United States' World Resources Institute, and the Netherlands' Ministry of Housing, Spatial Planning and the Environment. 1996 was spent creating a common framework for analysis and gathering data, and in April 1997, the four institutions jointly published their results¹⁾. Then in the fall of 2000, the results of the second period of research were published by 5 countries (Austria joined the group)²⁾.

(4) “Hidden Flows” and the Latent Meaning of Resource Trade

This international joint research project is based on the Material Flow Accounting framework developed by the Wuppertal Institute. The initial stage of the project focused on tracking the flow of resources from the natural environment (the Ecosphere) to the sphere of human activity (the Anthroposphere), by cross-sectioning the flow of resources at the boundary of these two spheres. This was due to a focus on the issues of resource depletion and allocation, and the consideration for the fact that all collected resources are potential waste, and the association between resource flows in general and a host of types of environmental impact.

The biggest feature of this framework is the focus on “hidden flows.” This refers to flows of materials that are not caught by conventional means of tracking material flows, because although they are harvested by people, they are not considered to be commodities. Taking mining as an example, the quantity of soil and stone removed during the mining process, and impurities removed when the ore is processed, is much larger than the quantity of refined ore that actually enters the economy. For countries like Japan depending on imports for the majority of their mineral resources, this type of waste produced by the countries supplying the resources does not show up on any table. This is a typical case of a “hidden flow.” It should be understood that more resources are being consumed than the imports we actually see. Other examples are the additional lumber harvested for wood products, and the feed given to livestock. Note that the term “hidden flow” is the English translation of the Wuppertal Institute's (German) term “Ecological Rucksack”, which was accepted by the international joint research project.

A similar concept has been incorporated into the framework of the ecological footprint analysis³⁾ advocated by Wackernagel et al. An “ecological footprint” signifies the imprint left on the earth by human activity, and is calculated as the area required to supply resources and clean up pollution. This concept is an attempt at measuring the size of the impact of human activities on the environment. Large areas of land in the United States and other countries around the world are used to produce the agricultural products that Japan imports, and the ecological footprint is suited to expressing this situation.

The considerations used to select resource-trade data to incorporate in this data book include these hidden flows and the concept of the ecological footprint, as well as absolute quantities imported by Japan (e.g. fossil fuels and iron ore). This criteria applies to meats, grains, non-ferrous metals and the like.

(5) Using this Data Book

The goal of this data book is to provide a reference for thinking about resource-related environmental issues, recognizing Japan's place in worldwide resource trade. It therefore includes a large number of color maps based on the collected data, in order to facilitate an intuitive understanding. Additionally, the numerical data used to create these figures is also included, in order to enable its use in model analysis incorporating trade data and other research studies. Meanwhile, companies are starting to trace material procurement as part of their Life-Cycle Assessments and other environmental evaluations, and one issue in this is grasping the environmental impact of natural resources procured abroad. We believe that this data book will be a useful reference in this field as well.

1.2 Overview of Japan's Material Flows

Although the main focus of this data book is facilitating the understanding of the place of Japanese imports in the world, it is also essential to get an overall understanding of material flows inside Japan, and the place of imported resources within these flows. Thus, we will here summarize the data relating to material flows in Japan, and compare it internationally.

Over the past decade, there has been a call in Japan for the need to get a grasp of material flows in the country as a whole, mainly from the point of view of promoting recycling. Since the fiscal 1993 edition, the Japanese Environment Agency's Environmental White Paper has included calculations of the material balance. The information in this publication is based on the data that the authors prepared as part of the above-mentioned international joint research project, and the Environmental White Paper has used the same calculation methods since the fiscal 1997 version.

According to the fiscal 2002 edition of the Environmental White Paper, a total of about 1,120 million tons of resources taken from the natural environment in Japan that year. Adding to this the approximately 710 million tons of imported resources, and the 70 million tons of imported

products, a total of about 1,900 million tons of new materials entered the Japanese economy that year. By weight, about 40% of these new sources are imports. Adding to these materials the flow of recycled resources, approximately 2,100 million tons of materials passed through the Japanese economy.

Fig. I-1 shows the balance between materials input into the Anthroposphere from the environment, and the materials output from the Anthroposphere into the environment. On the output side, what is generally tracked as “waste” includes about 50 million tons of municipal solid waste, and about 400 million tons of industrial waste. As industrial sludge, livestock manure, and the like contain considerable amounts of water, the dry weight of this waste is considerably lower. The input resources outweighs the output wastes. Some of this remainder is returned to the environment in a form not normally considered waste, and some remains stockpiled in the Anthroposphere.

Of the material flows that return to the Ecosphere from the Anthroposphere in a form other than waste, the largest is the emission of carbon dioxide into the atmosphere resulting from the combustion of fossil fuels. Because carbon dioxide is emitted into the air in a gas state, it is hard to get an intuitive sense of how much is being released. Performing this type of calculation, however, shows that carbon dioxide, currently the focus of much attention for its contribution to global warming, is actually humankind’s most weighty waste product. In addition, the food that we eat, and the agricultural products fed to livestock, are emitted into the Ecosphere by human and animal respiratory and excretory systems, mainly as carbon dioxide and water. There are also materials produced by humans whose use presupposes that they will be emitted into the environment. These include fertilizers, agricultural chemicals, and solvents for paints.

Thus, about 700 million tons of resources flow from the Anthroposphere to the Ecosphere in a number of forms. Further, 110 million tons enter the Anthropospheres of other countries as exports. Correcting the balance of resource flows for water, the remaining approximately 1,200 million tons remains in the Anthroposphere, adding to human stockpiles. Most of these stockpiled resources take the form of buildings and other structures, i.e. roads, bridges, dams, river embankments, waterworks, sewage systems, and other public works (infrastructure), office buildings, houses, factories, and the like. These stockpiles also include increased ownership of cars, appliances, furniture and other durable consumer goods, stocks of plant equipment, and the like. Most of these durable goods are disassembled and discarded after their lifetime has ended, and so these increased stockpiles are actually latent waste.

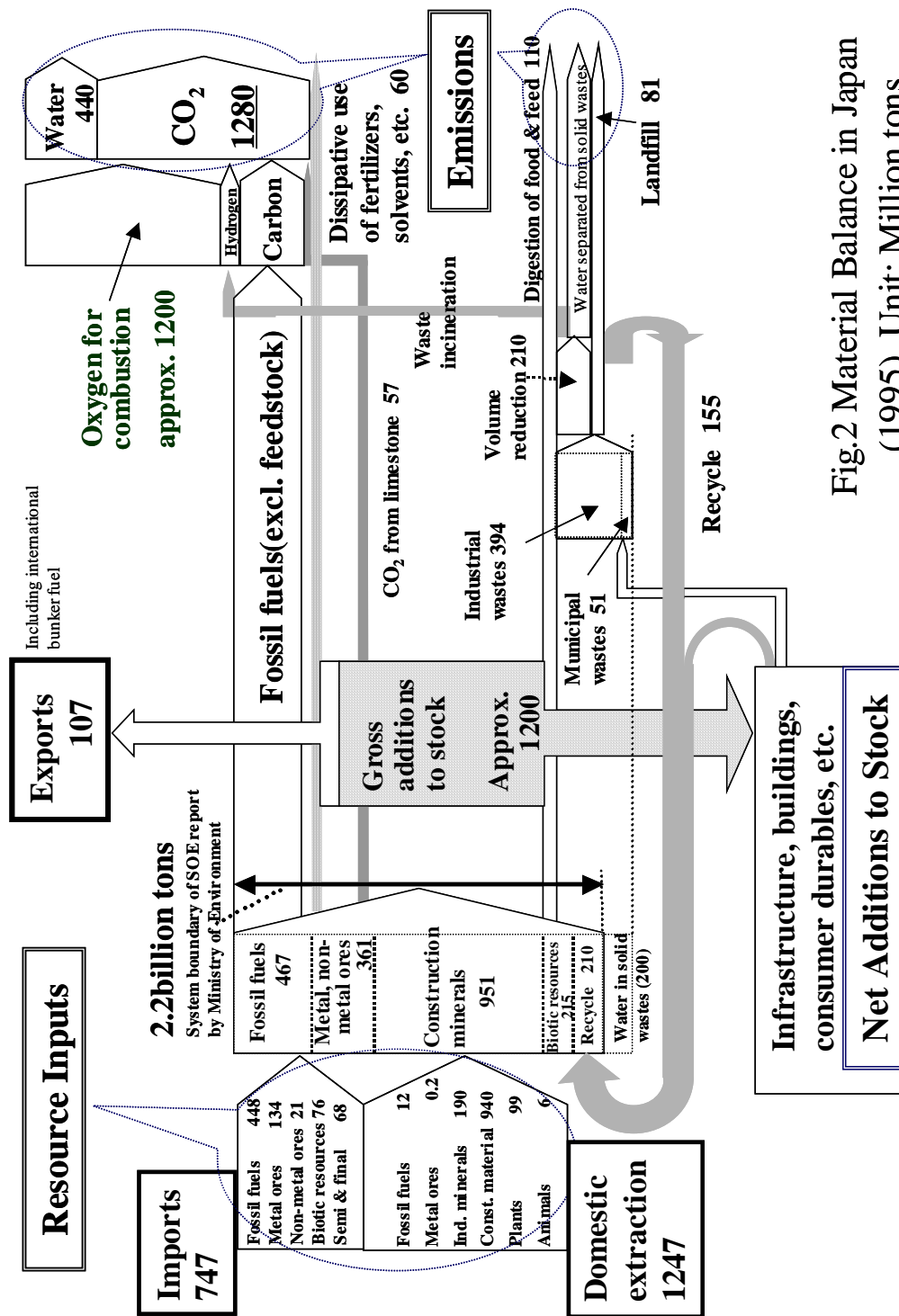


Fig.2 Material Balance in Japan (1995) Unit: Million tons

Fig.1-1 Material Balance in Japan (1995, in millions of tons)

1.3 Overview of Global Resource Trade Flows

This section provides an overview of the characteristics of the trade of natural resources between the various regions of the world, based on the worldwide trade-flow maps in Chapter III of this publication and the included CD-ROM. Particular focus is placed on the role of Japanese imports and exports in this flow. As this overview focuses on the flow of resources between the world's regional blocks, intra-block trade (e.g. trade between European nations) does not appear on the maps. Information about intra-block trade can be obtained from the trade matrices contained on the CD-ROM. Additionally, the arrows from one regional block to another represent the balance of trade; in most cases, resources are actually being traded in both directions. This can also be confirmed in the trade matrices on the CD-ROM. Note that the printing of historical trends was minimized, in order to reduce the number of color-print pages. Trade-flow maps showing historical trends of major commodities can also be found on the CD-ROM.

Note that this data book focuses on trade-flows of resources taken from the Ecosphere, and materials with low levels of processing. Data on machinery, chemicals, and other commodities with high levels of processing have been excluded. Resources are exported from resource producers to resource consumers with little or no processing, but are also exported as highly processed products. Recently, exports of products have been trending upward. Home appliances in particular were once mostly domestically manufactured, but in recent years, an increasing number of them are being imported.

For this reason, it is necessary to take note of the hidden resource consumption behind trade of highly processed products, in order to accurately ascertain resource consumption. This topic, however, will be left for a future opportunity.

(1) Total Worldwide Material Flow

Figs. 1-A to 1-D show trends in worldwide trade of the following three main types of resource from 1983 to 1998: fossil fuels, biomass (agricultural, forestry, and marine resources), and base metals. Of these, the largest flow in terms of quantity is fossil fuels. The flow of exports from the oil-producing countries of western Asia to Japan and Europe is particularly notable. Other noticeable trends are the increase of imports to other Asian countries besides Japan (fossil fuels and metals), and the increase of exports (metals) from South America.

Figs. 2-A to 2-D show flows of biomass broken down into food and wood resources, and flows of base metals broken down into ferrous and non-ferrous metals, excluding fossil fuels, which dominate the figures above. These figures show that North America is a major source of non-fossil fuel resources. Additionally, the southern hemisphere – e.g. Australia, South America, and Africa – is a major supplier of base metals. Japan, along with Europe, is shown to be a clear net importer of resources. The figures also point to an increase of imports of base metals into Asia in recent years. This is to be discussed in (4), below.

(2) Flow of Food Resources

Figs. 3 to 8 show the flow of food resources. Figs. 3 and 4 show trade in meats, classified into beef, chicken, pork, mutton, and other. Although Japan's imports make up a rather small proportion of worldwide trade in food commodities, this amount has been growing in recent years. Trade on a worldwide level is on the rise. Although Europe and North America do import some foods, they stand out as overall suppliers. Figs. 5 and 6 show trade in fish and shellfish. Japan's imports make up a large part of total trade, and the levels of imports are growing rapidly. Additionally, other Asian countries besides Japan are also becoming more involved in trade in this area. Figs. 7 and 8 show trade in grains, classified into wheat, maize, rice, barley, and other. It is clear from the data that North America is a major exporter to other regions worldwide. Although Japan is also an importer, since the flow to other regions is also large, its relative contribution to total trade in this area is small.

(3) Flow of Wood Resources

Fig. 9 shows trade of wood resources, classified into roundwood, sawnwood, wood manufactures, pulpwood (e.g. woodchips), pulp, and paper. Japan imports wood in many forms from North America, Southeast Asia, Australia, the former Soviet Union, and other countries. Thus, its wood imports make up a fairly large proportion of total world trade. In addition to Japan, Europe is also a major importer of wood resources, and although not shown in the figure, there is also a great deal of trade within Western Europe. In recent years, Asian countries other than Japan have been increasing their imports of pulp and paper from North America.

Figs. 10A-D show historical trends in the Asian region. In Southeast Asia, Malaysia and Indonesia stand out for their export levels. Additionally, while in the past most exports were in the form of roundwood, recently levels of such processed products as sawnwood and plywood, pulp, and paper have been rising, and this also applies to imports to Japan from these countries. In addition to Japan, the growth of imports to Korea and China has been striking.

(4) Flow of Metal Resources

Figs. 11 to 16 show the flow of metal resources. Firstly, Fig. 11 shows trade of iron ore, steel, and scrap iron. Australia and South America are major exporters of iron ore, while Japan and Western Europe are major importers. In recent years, imports to Asian countries other than Japan have also been rising. Japan and Western Europe are major exporters of steel; imports of iron ore to these regions are being exported as steel. Another notable trend has been the increase of steel exports to countries in the Asian region other than Japan, and this region also imports scrap iron from North America and Western Europe.

Fig. 12 shows a detailed view of the Asian region. As can be seen in the figure, India and the Philippines are also producers of iron ore, and export to Japan and Korea. Steel exports from

Japan reach many Asian nations. In recent years, imports of iron ore and scrap iron to Korea have been on the rise, and as a result, Korea has begun to export steel to Japan and China. Additionally, imports of iron ore and steel to China are surging, and its trading partners are numerous. As mentioned at the beginning of this section, it must also be noted that steel travels the world in many processed forms, i.e. as industrial machinery, automobiles, ships, and other transportation machines, and other products.

Fig. 13 shows trade of aluminum ore (bauxite), alumina, and aluminum (including refined aluminum). Australia, South America, and Africa are major producers of bauxite, and export bauxite and alumina to consumption/processing centers in Japan, Western Europe, North America, and the like. As typified by exports from Australia to Japan, however, in recent years more exports have been in the form of refined metal aluminum from the producing country. In the case of Japan, the large amount of electric power required to refine aluminum is prohibitively expensive in Japan, leading to this shift in trade pattern.

Fig. 14 shows trade in base metals other than iron and aluminum. Trade is classified and tabulated in terms of ore, and refined metal. As with iron and aluminum, Australia, South America, and Africa are producers of this category, and are major exporters as well. Additionally, Japan and Western Europe are net importers? in this case as well.

Fig. 15 shows trade in base-metal ore, classified as copper, nickel, zinc, lead, and others. Imports of copper and nickel ore to Japan make up a large proportion of worldwide trade. Europe is also a major importer of zinc and other ores. Although Asian countries besides Japan export copper and nickel ore to Japan, in recent years their imports from other regions have been on the rise.

Fig. 16 shows a breakdown of trade in the refined versions of these metals. In terms of producers, South America and Africa are major exporters of copper, while Australia is a major exporter of lead and zinc. In recent years, exports from the former Soviet Union are also being seen. Although Japan imports refined copper from a number of regions, it is an exporter of copper to the Asian region. Aside from copper, imports of the refined versions of these metals to Japan are small, showing that unlike the example of aluminum, above, these metals are being refined domestically. There is a similar trend between Western Europe and Japan, in that Western Europe is a large importer of these metals, and also an exporter to the Asian region. The Asian region other than Japan is characterized by importing from around the world.

(5) Flow of Fossil Fuel Resources

Fig. 17 shows trade in fossil fuels, broken down into coal, petroleum (both crude oil and petroleum products), and natural gas. As is well known, Western Asia is a major exporter of petroleum. Other exporters include the former Soviet Union, South America, and Africa. Coal exporters include Australia, North America, and Eastern Europe, while Japan and Western Europe are importers. As natural gas cannot be transported without a pipeline or liquefaction

plant, trade is limited to countries with these facilities. Japan imports liquid natural gas from Indonesia and other countries.

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Related Research Topics

Global Environmental Research Fund

Fiscal 1991	Feasibility study on establishing environmental accounting system
Fiscal 1992 – 1994	Establishment of environmental and natural resource accounting system
Fiscal 1995 – 1997	Study on the integrated environmental and economic evaluation methodologies for the sustainable development
Fiscal 1998 – 2000	Studies on integrated environmental economic analysis towards a sustainable global society

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Chapter II – Method for Creating Trade-flow Map/Trade Matrix

Chapter III contains representative trade-flow maps, and the CD-ROM contains the trade-flow maps and matrices from 1983, 1988, 1993, and 1998. A trade matrix is a numerical table showing data on trade between region blocks and between major countries, in matrix format. All numerical data in the trade matrices stored on the CD has been converted into weight units for uniformity. A trade-flow map shows world trade by means of arrows on a map, and is created from trade matrices. This chapter describes the method for creating trade-flow maps and trade matrices.

1. The Data

Every year, the United Nations tabulates trade statistics from the trade data reported by various countries, and offers these statistics on magnetic media (henceforth, the “United Nations Trade Statistics Dataset”). In addition, the International Trade Center (ITC) offers a Personal Computer Trade Analysis System (PC-TAS), which is derived from and processes UN Trade Datasets since 1995. Data has been compiled for 4 years: 1983, 1988, 1993, and 1998.

Some of the original trade data is only reported in monetary units, and different countries use different units of quantity measurement for their trade data. For this reason, when creating a trade matrix, it was not possible to simply tabulate the data for a given region; it was also necessary to convert all transactions into units of weight. The statistical method for doing this is described in detail in section 3. Below are described the salient features of the data.

(1) Data Format

For each type of trade, the UN Trade Dataset contains data on trade-flow type (import, export, or re-export), commodity, reporting country, partner country, transaction amount, unit of quantity measurement, quantity traded, and summation period. As there are both import and export reports, if every country in the world correctly reports its trading, then all trade data will be contained in the dataset twice, once as import data and once as export data.

(2) Level of Coverage of Total Trade

There are currently about 100 reporting countries (94 in 1983, 84 in 1988, 91 in 1993, and 100 in 1998). Since the developed countries, which consume the majority of resources, generally report their trade, it is thought that most trading by non-reporting countries is accounted for as well via their partners. It must nevertheless be noted that trade between non-reporting countries is completely missed.

(3) Commodity Categories and Category Codes

Commodities are classified according to the UN's Standard International Trade Classification (SITC). There are 3 versions of the SITC: Rev. 1 (about 1,800 categories), Rev. 2 (about 2,600), and Rev. 3 (about 4,200). With each revision the classifications become finer, providing a more detailed breakdown of commodities, while at the same time with each revision, there are fewer reporting countries. Thus, in order to strike a balance between granularity of classifications and

number of reporting countries, the data from Rev. 2 was used. Each commodity has a commodity code of up to 5 digits, with each additional digit providing a finer-grained classification. For example: 0:FOOD AND LIVE ANIMAL / 01:MEAT AND PREPARATIONS / 011:MEAT FRESH,CHILLD,FROZEN.

(4) Level of Coverage of Quantity Data

Unlike monetary data, quantity data for trade sometimes contains empty (blank) fields. In some cases, all fields for a given commodity will be blank, while in others only some of them will be blank. Trade quantity is measured using many different units, including weight, volume, area, and count. Quantities of different commodities are reported using different units, and in some cases different countries may report the same commodity using different units.

2. Commodities Covered

As shown below, the trade matrix contains resources taken from nature, and raw materials with low levels of processing, which have relatively high trade flows, and which are considered vital from an environmental standpoint. It excludes resources with low trade flows, such as precious metals, and commodities with high levels of processing, like machinery and chemicals. Lime, gravel, and other non-metal minerals were also excluded.

- Food resources (meat, fish and grains)
- Wood resources (wood and products made from wood with little processing)
- Metal resources (ore and metal products)
- Fossil fuel resources (including converted fuels)

Fig. 1 is a trade matrix showing the hierarchical relationships of these resources.

3. Creating the Trade Matrix

Fig. 2 shows the trade-matrix compilation process, while Table 1 lists the commodities included in the matrix. The trade matrix covers 50 commodities over 3 years, and thus contains 150 items. Note that in cases where commodities covered by the matrix corresponded to commodities in Japanese Ministry of Finance (MOF) trade statistics, it was confirmed that the data on Japanese imports (the section corresponding to column 9 of the trade matrix) matched the MOF trade statistics nearly exactly. Below is a description of the process used to create the trade matrix.

(1) Convert 1998 Trade Data (PC-TAS)

After extracting necessary 1998 trade data from PC-TAS, it was converted to United Nations Trade Statistics Dataset record format. Additionally, as PC-TAS uses the SITC Rev. 3 commodity codes, a correspondence table provided by the United Nations was used to convert the codes to SITC Rev. 2.

(2) Extract Corresponding Commodity Records (create Workfile 1)

Records matching the commodities described in 2 were extracted from a set of several million

trade-data records.

(3) Adjust Import/Export Data (create Workfile 3)

As described in 1-(1), the UN Trade Dataset consists of import data and export data; if both are used, trade between reporting countries will be double counted. It is therefore necessary to use one or the other. For the present tabulation, it was decided to use the import data, and discard the export data. This discarded export data, however, includes data on trade with non-reporting countries, which is not contained in the import data. Thus, data on exports to non-reporting countries was converted to import data, and used in lieu thereof. Additionally, in the case of trade with Japan, the values reported by Japan to the UN are used in all cases; namely, out of the values extracted from the import data of the UN Trade Dataset, the records showing imports from Japan were removed, and replaced by Japan's export values to the country contained in the discarded export data. It further must be noted that trade between non-reporting countries is completely unaccounted for.

(4) Statistically Extrapolate Quantity Data (create Workfile 3)

As described in 1-(4), the transaction quantity fields of some of the records in the United Nations Trade Statistics Dataset are blank, and in some cases units of quantity measurement other than weight are used. For these records, it is necessary to statistically extrapolate the transaction quantities in units of weight. Before conducting this extrapolation, the reporting of quantity units for each commodity was reviewed; this review showed that weights were reported in a large number of cases for all commodities except "Saw-, Veneer-logs" for 1988. Thus, the following method was used to statistically extrapolate the weight units for all records except "Saw-, Veneer-logs" for 1988:

- First, records for which weights were reported were extracted, and transaction amounts and weights tabulated. This information was used to calculate an average price per unit of weight.
- The average price per unit weight was then used as the divisor in dividing transaction amount of records where a non-weight unit of measurement quantity was used, or where the quantity field was blank, in order to obtain estimated transaction weight.

Meanwhile, for "Saw-, Veneer-logs," about the same number of records had quantities in terms of volume as weight. Believing that it would be inappropriate to discard one portion of the data and use the other, it was decided convert volumes to weights by applying a conversion coefficient obtained from another source, and then apply the method described above.

During the course of the check, the unit price of each record for a given commodity was calculated. When these calculations were compared, it was found that in a small number of records, the prices were off by several orders of magnitude from the other records. Although it was believed that in most cases, the discrepancy was due to simple input error during reporting, it was hard to decide which cases were actually mistakes. Thus, it was decided to compare the price of each record with the median value, and if there was a difference of 3 digits or greater, to treat the quantity for that transaction as an empty field.

(5) Convert to Matrix Format

Commodity codes with few digits, i.e. high-level commodities, represent several different lower-level commodities as a single category. Thus a high-level commodity may subsume items with substantially different unit prices, due to different levels of processing and different qualities. The statistical method used here, however, converts all monetary amounts for given commodity to weights using the same unit price, which in the case of these commodities would cause the calculated weights to be too high for expensive commodities, and too low for inexpensive commodities, significantly degrading the accuracy of the statistical extrapolation. In order to avoid this problem, the method described in (4) was not used for high-level commodities. Instead, it was necessary to sum up the data created for lower-level commodities.

Additionally, it was necessary to create a trade matrix of commodities not contained in the SITC, as in the case of biomass where a new trade matrix was created by combining the food resource and wood resource trade matrices (see Fig. 1).

Trade matrices were first created for commodities relatively low on the hierarchy, as “base” commodities. Next, these trade matrices were summed, in order to create trade matrices for higher-level commodities, and commodities not in the SITC. If, however, there are cases where only higher-level commodities are reported, and lower-level commodities are not reported, then there is a chance that some trade will be missed. For this reason, the monetary amounts of commodities summed for estimation purposes were compared with the monetary amounts of the higher-level commodities, in order to make sure that there were no problems with this process.

Table 2 shows the correspondence relationship when totaling and recombining commodities. The commodity codes for trade matrices created via this summation process are determined as follows:

- Commodity codes starting with “T” indicate that the commodity has been uniquely defined here, due to the fact that it represents a broad category of major resources.
- Commodity codes ending with “A” exist in the SITC except for the “A,” but indicate that the commodity has been recombined into a different makeup.
- Commodity codes ending in “O” indicate that the commodity was created by summing lower-level commodities.

a) Creation of Base-commodity Trade Matrices

Base-commodity trade matrices were created from Workfile 3 using a trade-matrix creation program (a program that creates trade matrices from data in OD pair-record format, and outputs them in spreadsheet format) developed by the National Institute for Environmental Studies. The commodities in the trade matrices created by this program include commodities not containing a “T”, “A”, or “O” in Table 1. Tables 4 and 5, respectively, list the names of the region block classifications (Country/Region Block Tabulation Codes), and the names of each country in each region, used for the tabulation.

b) Commodity Summation and Recombination

A commercial spreadsheet application was used to sum and recombine the trade matrices created in a).

4. Creating the Trade-flow Map

A trade-flow map was created using Acclaim, a system developed by the National Institute for Environmental Studies that shows the international trade balance of environmental resources. Table 6 lists the items contained in the map.

5. Notes on Interpreting the Trade Matrix and Trade-flow Map

Below are notes on interpreting the trade matrix and trade-flow map.

(1) The Trade Matrix

- The rows of the matrix are the exporters, and the columns the importers.
- An ID code is assigned to each trade matrix. The ID has the format YY-XXXXX, where YY is the two-digit data year, and XXXXX is the (up to 5-digit) commodity code.
- It must be noted that this data has been statistically derived from the United Nations Trade Statistics Dataset.

(2) The Trade-flow Map

- The arrow flows show the net trade quantities (balances) between two countries/regions.
- Due to the nature of the trade-flow map, flows within a single region (e.g. between European countries) are not shown. Refer to the trade matrices for this information.
- Due to the nature of the trade-flow map, trade with Other East/South Asia is not shown. Refer to the trade matrices for this information.
- For ease of viewing, the Asian Region version does not show trade between non-Asian region blocks.

(3) Re-export

- The UN Trade Datasets from 1983 to 1993 carried trade data on re-exports. Here, the data on re-exports was counted as export data.
- Note that the 1998 PC-TAS does not deal with data on re-exports.

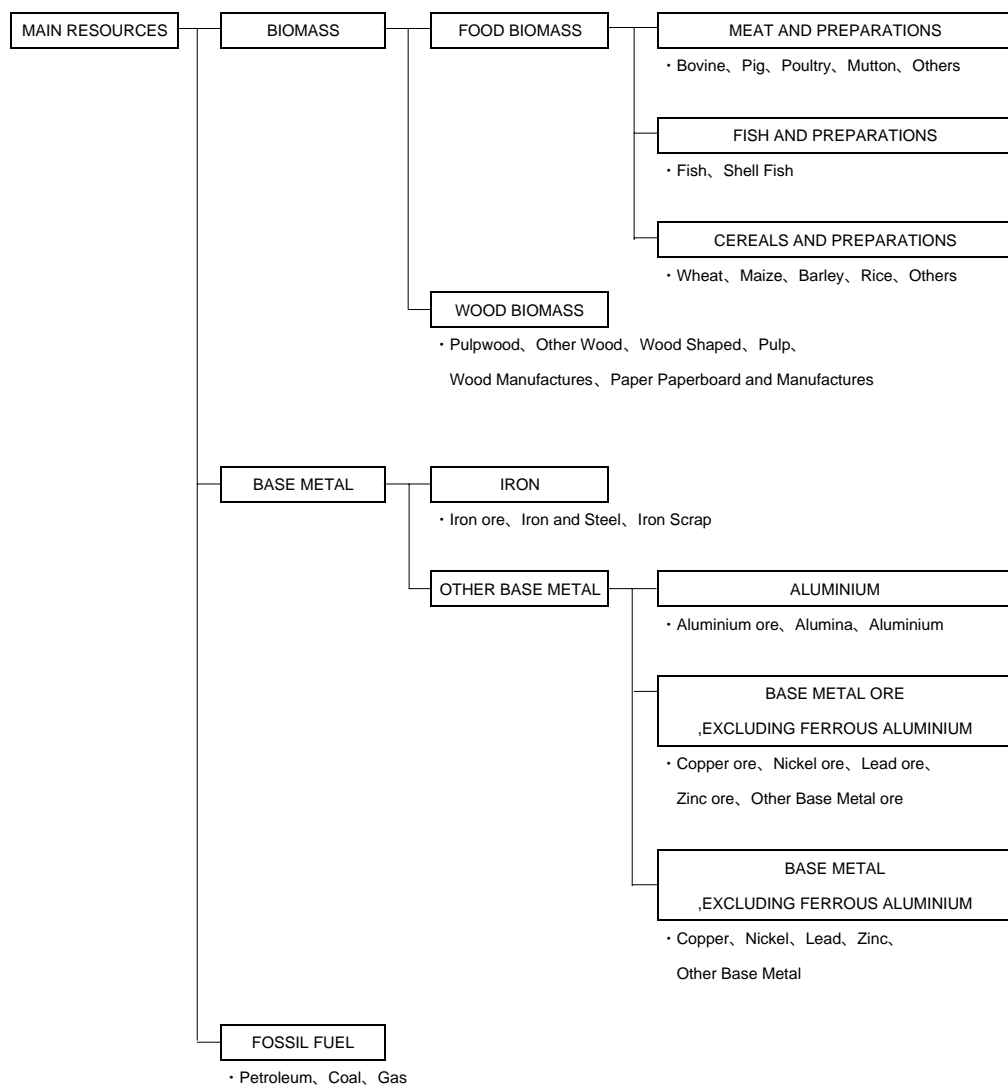


Fig.1 Hierarchical Tree of Commodities Covered by Trade Matrix

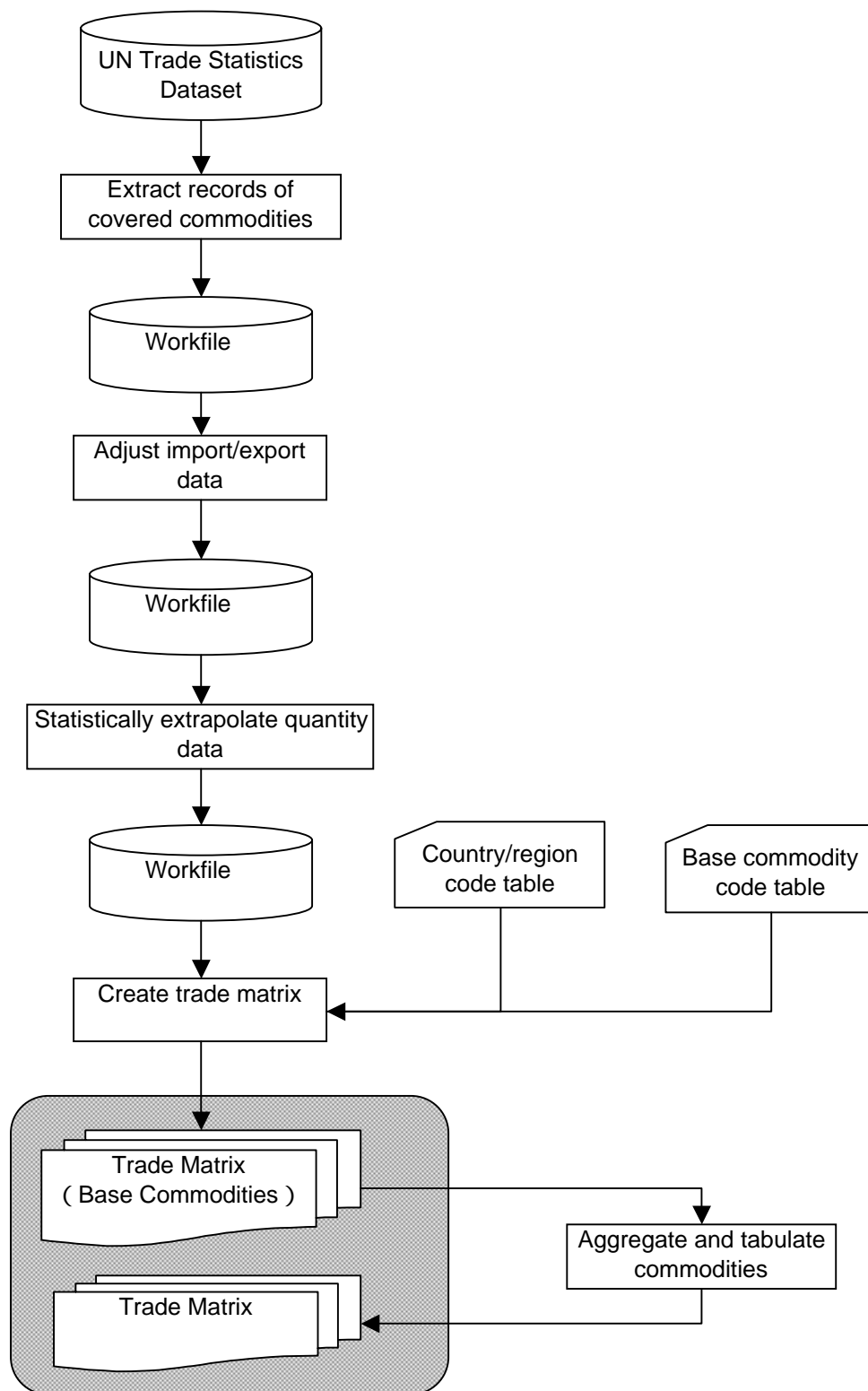


Fig.2 Trade Matrix Creation Process

Table 1 Commodities Covered by Trade Matrix

NO.	CODE	COMMODITY	DESCRIPTION
1	T10	BIOMASS RESOURCE	Biomass Resource
2	T11	FOOD BIOMASS RESOURCE	Food Biomass Resource
3	010	MEAT AND PREPARATIONS	Meat and Preparations
4	0111	BOVINE MEAT FRESH,FROZEN	Bovine Meat(Fresh,Frozen)
5	0112	MUTTON ETC FRSH,CHLD,FRN	Mutton etc(Fresh,Chilled,Frozen)
6	0113	PIG MEAT FRESH,CHLD,FRZN	Pig Meat(Fresh,Chilled,Frozen)
7	0114	POULTRY FRESH CHLLD,FRZN	Poultry(Fresh,Chilled,Frozen)
8	019A	OTH MEAT, EXCL 0111-0114	Other Meats,Excluding 0111-0114
9	030	FISH AND PREPARATIONS	Fish and Preparations
10	034A	FISH	Fish
11	036A	SHELLFISH	Shellfish and Molluscs
12	040	CEREALS AND PREPARATIONS	Cereals and Preparations
13	041	WHEAT ETC UNMILLED	Wheat(Unmilled)
14	042	RICE	Rice
15	043	BARLEY UNMILLED	Barley(Unmilled)
16	044	MAIZE UNMILLED	Maize(Unmilled)
17	049A	OTH CEREAL, EXCL 041-044	Other Cereals,Excluding 041-043
18	T12	WOOD BIOMASS RESOURCE	Wood Biomass Resource
19	240	CORK AND WOOD	Cork and Wood
20	246	PULPWOOD,CHIPS,WOODWASTE	Pulpwood,Woodchip,Wood Waste
21	2470	OTH WOOD ROUGH,SQUARED	Other Wood(Rough,Squared)
22	2480	WOOD SHAPED,SLEEPERS	Sawing,Wood Sleeper
23	250	PULP AND WASTE PAPER	Pulp and Waste Paper
24	630	WOOD,CORK MANUFACTRS NES	Wood,Cork Manufactures
25	640	PAPER,PAPERBOARD AND MFR	Paper,Paperboard and Manufactures
26	T20	BASE METAL RESOURCE	Base Metal Resource
27	T21	IRON RESOURCE	Iron Resource
28	2810	IRON ORE,CONCENTRATES	Iron Ore,Concentrates
29	282	IRON AND STEEL SCRAP	Iron and Steel Scrap
30	670	IRON AND STEEL	Iron and Steel
31	T22	OTH BASE METAL RESOURCE	Oter Base Metal Resource
32	28731	ALUMINIUM ORE,CONCNRATE	Aluminium Ore,Concentrates
33	28732	ALUMINA(ALUMINIUM OXIDE)	Alumina(Aluminium Oxide)
34	6840	ALUMINIUM	Aluminium
35	287A	BASE MTL ORE,EXC FER ALM	Base Metal Ore,Excluding Ferrous and Aluminium
36	28710	CPR ORE ETC,CEMENT COPPR	Copper Ore etc,Cement Copper
37	28720	NICKEL ORES,CONCENTRATES	Nickel Ores,Concentrates
38	2874	LEAD ORES,CONCENTRATES	Lead Ores,Concentrates
39	2875	ZINC ORES,CONCENTRATES	Zinc Ores,Concentrates
40	2879A	OTH BASE MTL ORE,CON NES	Other Base Metal Ore,Concentrates
41	68A	BASE MTLS, EXCL FER ALM	Base Metals,Excluding Ferrous and Aluminium
42	6820	COPPER EXC CEMENT COPPER	Copper(Excluding Cement Copper)
43	6830	NICKEL	Nickel
44	6850	LEAD	Lead
45	6860	ZINC	Zinc
46	689A	OTH BASE MTLS	Other Base Metal
47	T30	FOSSIL FUEL RESOURCE	Fossile Fuel Resource
48	320	COAL,COKE AND BRIQUETTES	Coal,Coke and Briquettes
49	330	PETROLEUM AND PRODUCTS	Petroleum and Products
50	340	GAS,NATURAL AND MANUFCTD	Gas,Natural and Manufactured

Table 2 Commodities Aggregated for Trade Matrix

COMMODITY(1)	COMMODITY(2)	COMMODITY(3)	COMMODITY(4)	Rev.2	Rev.3
T10 BIOMASS RESOURCE	T11 FOOD BIOMASS RESOURCE	010 MEAT AND PREPARATIONS	0111 BOVINE MEAT FRESH,FROZEN	0111	01111 01112 01121 01122
			0112 MUTTON ETC FRSH,CHLD,FRN	0112	0121
			0113 PIG MEAT FRESH,CHLD,FRZN	0113	0122
			0114 POULTRY FRESH CHLLD,FRZN	0114	01231 01232 01234 01235
			019A OTH MEAT,EXCL 0111-0114	0115 0116 0118 012 014	01233 01236 0124 0125 0129 0161 01681 01689 0171 0172 0173 0174 0175 0176 0179 09811
		030 FISH AND PREPARATIONS	034A FISH	034 035 0371	0341 0342 0344 0345 0351 0352 0353 0354 0355 0371
			036A SHELL FISH	036 0372	0361 0362 0363 0372
		040 CEREALS AND PREPARATIONS	041 WHEAT ETC UNMILLED	041	0411 0412
			042 RICE	042	04231 04232 0421 0422
			043 BARLEY UNMILLED	043	0430
			044 MAIZE UNMILLED	044	0441 0449
			049A OTH CEREAL,EXCL 041-044	045 046 047 048	0451 0452 0453 0459 0461 0471 0472 0481 0482 0483 0484 0485 09891 09893 09894
	T12 WOOD BIOMASS RESOURCE	240 CORK AND WOOD	244 CORK,NATURAL,RAW,WASTE	244	2440
			245 FUEL WOOD NES, CHARCOAL	245	2450
			246 PULPWOOD,CHIPS,WOODWASTE	246	2461 2462
			2470 OTH WOOD ROUGH,SQUARED	2471 2472 2479	2473 2474 2475
			2480 WOOD SHAPED,SLEEPERS	2481 2482 2483	2481 2482 2483 2484 2485
		250 PULP AND WASTE PAPER	2511 WASTE PAPER,PPRBOARD ETC	2511	2511
			2512 MECHANICAL WOOD PULP	2512	2512
			2516 CHEM WOOD PULP DISSOLVNG	2516	2513
			2517 SODA,SULPHATE WOOD PULP	2517	2514 2515
			2518 SULPHITE WOOD PULP	2518	2516
			2519 OTHER CELLULOSIC PULPS	2519	2519
		630 WOOD,CORK MANUFACTRS NES	633 CORK MANUFACTURES	633	6331 6332
			634 VENEERS,PLYWOOD,ETC	634	6341 6342 6343 6344 6349
			635 WOOD MANUFACTURES NES	635	6351 6352 6353 6354 6359 8110
		640 PAPER,PAPERBOARD AND MFR	641 PAPER AND PAPERBOARD	641	6345 6411 6412

COMMODITY(1)	COMMODITY(2)	COMMODITY(3)	COMMODITY(4)	Rev.2	Rev.3
T10 BIOMASS RESOURCE	T12 WOOD BIOMASS RESOURCE	640 PAPER,PAPERBOARD AND MFR	641 PAPER AND PAPERBOARD	641	6413 6414 64151 64152 64153 64154 64156 64157 64158 64159 6416 6417 6419 64245
			642 PAPER,ETC,PRECUT,ARTS OF	642	64155 6421 6422 6423 64241 64242 64243 64244 64249
T20 BASE METAL RESOURCE	T21 IRON RESOURCE	2810 IRON ORE,CONCENRATES	2814 ROASTED IRON PYRITES	2814	2814
			2815 IRON ORE,CONC,NOT AGGLOM	2815	2815
			2816 IRON ORE AGGLOMERATES	2816	2816
		282 IRON AND STEEL SCRAP		282	2821 2822 28231 28232 28239
		670 IRON AND STEEL	671 PIG IRON ETC	671	6712 6713 6714 6715
			672 IRON,STEEL PRIMARY FORMS	672	28233 6724 6726 6727 6728 67311 67312 67313 67321 67322 67323 67531 67532 67533 67541
			673 IRON,STEEL SHAPES ETC	673	6761 6762 6763 6764 6768
			674 IRN,STL UNIV,PLATE,SHEET	674	67314 67315 67316 67317 67319 67324 67325 67326 67327 67329 6733 6734 6735 6741 6742 6743 6744 6745 6751 6752 67534 67535 67536 67537 67538 67542 67543 6755 6756 6757
			675 IRON,STEEL HOOP,STRIP*	-	-
			676 RAILWY RAILS ETC IRN,STL	676	6770
			677 IRN,STL WIRE(EXCL W ROD)	677	6781 6782
			678 IRON,STL TUBES,PIPES,ETC	678	6791 6793 6794 6795
			679 IRN,STL CASTINGS UNWORKD	679	69962 69963 69965 74913
	T22 OTH BASE METAL RESOURCE	28730 ALUMINIUM ORES,ALUMINA	28731 ALUMINIUM ORE,CONCNRATE	28731	2851
			28732 ALUMINA(ALUMINIUM OXIDE)	28732	2852
		6840 ALUMINIUM	6841 ALUMINIUM,ALLOYS,UNWRGHT	6841	6841
			6842 ALUMINIUM,ALLOYS WORKED	6842	6842

COMMODITY(1)	COMMODITY(2)	COMMODITY(3)	COMMODITY(4)	Rev.2	Rev.3
T20 BASE METAL RESOURCE	T22 OTH BASE METAL RESOURCE	287A BASE MTL ORE,EXC FER ALM	28710 CPR ORE ETC,CEMENT COPPR	28711 28712	2831 2832
			28720 NICKEL ORES,CONCENTRATES	28721 28722	2841 2842
			2874 LEAD ORES,CONCENTRATES	2874	2874
			2875 ZINC ORES,CONCENTRATES	2875	2875
			2879A OTH BASE MTL ORE,CON NES**	2876 2877 28791 28792 28793 28799	2876 2877 2878 28791 28792 28793 28799
		68A BASE MTLs,EXCL FER ALM	6820 COPPER EXC CEMENT COPPER	6821 6822	6821 6823 6824 6825 6826 6827
			6830 NICKEL	6831 6832	6831 6832
			6850 LEAD	6851 6852	6851 6852
			6860 ZINC	6861 6863	6861 6863
			689A OTH BASE MTLs*	6871 6872 68911 68912 68913 68914 68915 6899	6871 6872 68911 68912 68913 68914 68915 6899
T30 FOSSIL FUEL RESOURCE		320 COAL,COKE AND PRODUCTS	322 COAL,LIGNITE AND PEAT	322	3211 3212 32221 3223
			323 BRIQUETS,COKE,SEMI-COKE	323	3221 3222 3250
		330 PETROLEUM AND PRODUCTS	333 CRUDE PETROLEUM	333	3330
			334 PETROLEUM PRODUCTS,REFIN	334	3341 3342 3343 3344 3345 5977
			335 RESIDUAL PETRLM PROD NES	335	3351 3352 3353 3354
		340 GAS,NATURAL AND MANUFCTD	34130 PETROLM GASES,LIQUEFIED	34131 34139	3421 3431 3441 3442
			3414 PETROLEUM GASES, GASEOUS	3414	3432 3449
			3415 COAL GAS,WATER GAS, ETC	3415	3450

* 675 of SITC Rev.2 is corresponds partially to 673, 674, and 675 in SITC Rev. 3
** Base metals excluding iron, aluminum, copper, nickel, lead, and zinc

Table 3 Commodity Codes

Intensive Commodity

CODE	COMMODITY	CODE	COMMODITY
T10	BIOMASS RESOURCE	670	IRON AND STEEL
T11	FOOD BIOMASS RESOURCE	T22	OTH BASE METAL RESOURCE
010	MEAT AND PREPARATIONS	28730	ALUMINIUM ORES,ALUMINA
019A	OTH MEAT, EXCL 0111-0114	6840	ALUMINIUM
030	FISH AND PREPARATIONS	287A	BASE MTL ORE,EXC FER ALM
034A	FISH	28710	CPR ORE ETC,CEMENT COPPR
036A	SHELLFISH	28720	NICKEL ORES,CONCENTRATES
040	CEREALS AND PREPARATIONS	2879A	OTH BASE MTL ORE,CON NES*
049A	OTH CEREAL, EXCL 041-044	68A	BASE MTLS, EXCL FER ALM
T12	WOOD BIOMASS RESOURCE	6820	COPPER EXC CEMENT COPPER
240	CORK AND WOOD	6830	NICKEL
2470	OTH WOOD ROUGH,SQUARED	6850	LEAD
2480	WOOD SHAPED,SLEEPERS	6860	ZINC
250	PULP AND WASTE PAPER	689A	OTH BASE MTLS*
630	WOOD,CORK MANUFACTRS NES	T30	FOSSIL FUEL RESOURCE
640	PAPER,PAPERBOARD AND MFR	320	COAL,COKE AND BRIQUETTES
T20	BASE METAL RESOURCE	330	PETROLEUM AND PRODUCTS
T21	IRON RESOURCE	340	GAS,NATURAL AND MANUFCTD
2810	IRON ORE,CONCENTRATES	34130	PETROLM GASES,LIQUEFIED

SITC Rev.2

CODE	COMMODITY	CODE	COMMODITY
0111	BOVINE MEAT FRESH,FROZEN	245	FUEL WOOD NES, CHARCOAL
0112	MUTTON ETC FRSH,CHLD,FRN	246	PULPWOOD,CHIPS,WOODWASTE
0113	PIG MEAT FRESH,CHLD,FRZN	2471	SAW-,VENEER-LOGS CONIFER
0114	POULTRY FRESH CHLLD,FRZN	2472	SAW-,VENEER-LOGS NON-CON
0115	HORSE MEAT FRSH,CHLD,FRN	2479	PTPROPS,POLES,PILING,ETC
0116	EDIBLE OFFAL FRESH,CH,FR	2481	RAILWAY SLEEPERS,TIES
0118	MEAT NES FRESH,CHLD,FRZN	2482	LUMBER SHAPED CONIFER
012	MEAT DRIED,SALTED,SMOKED	2483	LUMBER SHAPED NON-CONIFR
014	MEAT PREPD,PRSVVD,NES ETC	2511	WASTE PAPER,PPRBOARD ETC
034	FISH,FRESH,CHILLED,FROZN	2512	MECHANICAL WOOD PULP
035	FISH SALTED,DRIED,SMOKED	2516	CHEM WOOD PULP DISSOLVNG
036	SHELL FISH FRESH,FROZEN	2517	SODA,SULPHATE WOOD PULP
0371	FISH PREPARD,PRESRVD NES	2518	SULPHITE WOOD PULP
0372	SHELL FISH PREPRD,PRESVD	2519	OTHER CELLULOSIC PULPS
041	WHEAT ETC UNMILLED	2814	ROASTED IRON PYRITES
042	RICE	2815	IRON ORE,CONC,NOT AGGLOM
043	BARLEY UNMILLED	2816	IRON ORE AGGLOMERATES
044	MAIZE UNMILLED	282	IRON AND STEEL SCRAP
045	CEREALS NES UNMILLED	28711	COPPER ORES,EXCL MATTE
046	WHEAT ETC MEAL OR FLOUR	28712	COPPER MATTE,CEMENT COPR
047	OTHER CEREAL MEALS,FLOUR	28721	NICKEL ORES,EXCL MATTE
048	CEREAL ETC PREPARATIONS	28722	NICKEL MATTE,SINTERS,ETC
244	CORK,NATURAL,RAW,WASTE	28731	ALUMINIUM ORE,CONCNTRATE

28732	ALUMINA(ALUMINIUM OXIDE)	673	IRON,STEEL SHAPES ETC
2874	LEAD ORES,CONCENTRATES	674	IRN,STL UNIV,PLATE,SHEET
2875	ZINC ORES,CONCENTRATES	675	IRON,STEEL HOOP,STRIP
2876	TIN ORES,CONCENTRATES	676	RAILWY RAILS ETC IRN,STL
2877	MANGANESE ORE,CONCENTRTE	677	IRN,STL WIRE(EXCL W ROD)
28791	CHROMIUM ORE,CONCENTRATE	678	IRON,STL TUBES,PIPES,ETC
28792	TUNGSTEN ORE,CONCENTRATE	679	IRN,STL CASTINGS UNWORKD
28793	MOLYBD, NIOBIUM ETC ORES	6821	COPPER NES,ALLOYS,UNWRT
28799	OTH BASE MTL ORE,CON NES	6822	COPPER,ALLOYS WORKED
322	COAL,LIGNITE AND PEAT	6831	NICKEL,ALLOYS UNWROUGHT
323	BRIQUETS,COKE,SEMI-COKE	6832	NICKEL,ALLOYS WORKED
333	CRUDE PETROLEUM	6841	ALUMINIUM,ALLOYS,UNWRGHT
334	PETROLEUM PRODUCTS,REFIN	6842	ALUMINIUM,ALLOYS WORKED
335	RESIDUAL PETRLM PROD NES	6851	LEAD,ALLOYS UNWROUGHT
34131	LIQUEFIED PROPANE,BUTANE	6852	LEAD,ALLOYS WORKED
34139	OTH HYDROCARBON GAS LQFD	6861	ZINC,ALLOYS UNWROUGHT
3414	PETROLEUM GASES, GASEOUS	6863	ZINC,ALLOYS WKD,INC DUST
3415	COAL GAS,WATER GAS, ETC	6871	TIN,ALLOYS UNWROUGHT
633	CORK MANUFACTURES	6872	TIN,ALLOYS WORKED
634	ENEERS,PLYWOOD,ETC	68911	TUNGSTEN UNWROUGHT,WASTE
635	WOOD MANUFACTURES NES	68912	MOLYBDENUM UNWRGHT,WASTE
641	PAPER AND PAPERBOARD	68913	TANTALUM UNWROUGHT,WASTE
642	PAPER,ETC,PRECUT,ARTS OF	68914	MAGNESIUM WASTE,SCRAP
671	PIG IRON ETC	68915	MAGNESIUM UNWROUGHT
672	IRON,STEEL PRIMARY FORMS	6899	BASE METALS NES,CERMETS

Source:United Nations Statistics Division

SITC Rev.3

CODE	COMMODITY	CODE	COMMODITY
01111	BOVINE MEAT,FH,CH,W.BONE	0175	PORK,PREPRED,PRESRVD,NES
01112	BOVINE MEAT,FH,CH,BNLESS	0176	BOV.MEAT,PRPD,PRSRVD,NES
01121	BOVINE MEAT,FROZN,W.BONE	0179	OTH.MEAT,PRPD,PRSRVD NES
01122	BOVINE MEAT,FRZ,BONELESS	0341	FISH,FRESH,CHILLED,WHOLE
0121	MEAT OF SHEEP OR GOATS	0342	FISH,FROZEN EX.FILLETS
0122	MEAT OF SWINE	0344	FISH FILLETS, FROZEN
01231	POULTRY,WHOLE,FRSH,CHLLD	0345	FISH FILLETS,FRSH,CHILLD
01232	POULTRY,WHOLE, FROZEN	0351	FISH,DRIED,SALTED
01233	LIVER,GOOSE,DUCK,FH,CHLL	0352	FISH SALTED OR IN BRINE
01234	POULTRY,PARTS,FRSH,CHLLD	0353	FISH, SMOKED
01235	POULTRY,PRTS,FRZN.EX.LIV	0354	FISH LIVER,ROE,DRD,SMKD.
01236	POULTRY LIVERS, FROZEN	0355	FISH MEAL, FIT FOR FOOD
0124	MEAT OF HORSES,MULES,ETC	0361	CRUSTACEANS, FROZEN
0125	EDIBLE OFFAL	0362	CRUSTACEANS, NOT FROZEN
0129	MEAT,EDIBLE OFFAL, NES	0363	MOLLUSCS
0161	PIGMEAT,DRY,SALT,SMOKED	0371	FISH,PREPARD,PRESRVD,NES
01681	BOV.MEAT,DRIED,SMKD,SALT	0372	CRUSTACEA,MOLLC.PRPD NES
01689	OTH.MT,OFF.FLR.DR,SK,SLT	0411	DURUM WHEAT, UNMILLED
0171	EXTRACT,JUICE MEAT,FISH	0412	OTH.WHEAT,MESLIN,UNMLLED
0172	SAUSAGE OF MEAT,OFFL.ETC	0421	RICE IN THE HUSK
0173	LIVER,PREPRD,PRESRVD,NES	0422	RICE HUSKED
0174	POULTRY,PRPRD,PRSRVD,NES	04231	RICE,MILLED,UNBROKEN

CODE	COMMODITY	CODE	COMMODITY
04232	BROKEN RICE	2832	COPPER MATTES, ETC.
0430	BARLEY UNMILLED	2841	NICKEL ORES,CONCENTRATES
0441	MAIZE SEED	2842	NICKEL MATTES,SINTRS.ETC
0449	MAIZE, OTHER UNMILLED	2851	ALUMINIUM ORE,CONCENTRAT
0451	RYE, UNMILLED	2852	ALUMINA(ALUMINIUM OXIDE)
0452	OATS, UNMILLED	2874	LEAD ORES, CONCENTRATES
0453	GRAIN SORGHUM, UNMILLED	2875	ZINC ORES, CONCENTRATES
0459	BUCKWHEAT ETC. UNMILLED	2876	TIN ORES, CONCENTRATES
0461	FLOUR OF WHEAT, MESLIN	2877	MANGANESE ORES,CONCENTRS
0471	OTHER CEREAL FLOURS	2878	ORE ETC.MOLYBDN.NIOB.ETC
0472	CEREAL GROAT,MEAL,PELLTS	28791	CHROMIUM ORE,CONCENTRATE
0481	CEREAL GRAINS,PREPRD NES	28792	TUNGSTEN ORE,CONCENTRATE
0482	MALT, INCL. MALT FLOUR	28793	COBALT ORES,CONCENTRATES
0483	PASTA,UNCOOKED,UNPREPRD.	28799	BASE METAL ORE,CNCTR.NES
0484	BREAD, BAKED GOODS	3211	ANTHRACITE,NOT AGGLOMRD
0485	MIXES,DOUGHS FOR 048.4	3212	OTH.COAL,NOT AGGLOMERATD
09811	HOMOGENIZED PREP.OF MEAT	3221	BRIQUETTES,COAL
09891	PASTA, COOKED, STUFFED	32221	LIGNITE,NOT AGGLOMERATED
09893	FOOD,INFANT,RETAIL, NES	32222	LIGNITE, AGGLOMERATED
09894	MALT EXTRACT	3223	PEAT
2440	CORK,NATURAL,RAW;WASTE	3250	COKE,SEMI-COKE,RET.CARBN
2450	FUEL WOOD, WOOD CHARCOAL	3330	CRUDE PETROLEUM
2461	WOOD IN CHIPS, PARTICLES	3341	MOTOR GASOLENE,LIGHT OIL
2462	SAWDUST,WOOD WASTE,SCRAP	3342	KEROSENE, MEDIUM OILS
2473	WOOD ROUGH,PAINTED,PRSVD	3343	GAS OILS
2474	WOOD,CONIF,ROUGH,UNTRTD	3344	FUEL OILS, NES
2475	WOOD,NON-CONIF,ROUGH,UNT	3345	LUBRICANTS
2481	RAILWAY,TRAMWAY SLEEPERS	3351	PETROLEUM JELLY, WAX ETC
2482	WOOD,CONIFER, SAWN	3352	MINERAL TARS AND PRODUCT
2483	WOOD,CONIF,WORKED,SHAPED	3353	MINERAL TAR PITCH,P.COKE
2484	WOOD,NON-CONIFER, SAWN	3354	PETROLM.BITUMEN,COKE,ETC
2485	WOOD,NON-CONIF.WRKD,SHPD	3421	PROPANE, LIQUEFIED
2511	WASTE,SCRAP PAPER,PBOARD	3431	NATURAL GAS, LIQUEFIED
2512	MECHANICAL WOOD PULP	3432	NATURAL GAS, GASEOUS
2513	CHEM.WOOD PULP,DISSOLVNG	3441	ETHYLENE,ETC., LIQUEFIED
2514	CHEM.WOOD PULP,SODA,UNBL	3442	GAS.HYDROCARBON,LIQ.,NES
2515	CHEM.WOOD PULP,SODA,BLCH	3449	GAS.HYDROCARBON,GAS.,NES
2516	CHEM.WOOD PULP,SULPHITE	3450	COAL GAS,WATER GAS, ETC.
2519	SEMI-CHEMICAL PULPS	5977	LUBRICATING PREPARATIONS
2814	ROASTED IRON PYRITES	6331	ARTICLES OF NATURAL CORK
2815	IRON ORE,CONCNR.NOT AGG	6332	AGGLMRD.CORK,CORK ARTCL
2816	IRON ORE AGGLOMERATES	6341	VENEER,PLYWOOD SHEETS
2821	WASTE,SCRAP OF CAST IRON	6342	DENSIFIED,RECONSTIT.WOOD
2822	WASTE,SCRAP, ALLOY STEEL	6343	PLYWOOD,SOLELY OF WOOD
28231	WASTE,TINNED IRON, STEEL	6344	OTH.PLYWOOD,VENRD.PANELS
28232	FERROUS TURNINGS, ETC.	6345	FIBREBOARD
28233	REMELTING INGOT.IRON,STL	6349	WOOD, SIMPLY SHAPED, NES
28239	FERROUS WASTE,SCRAP, NES	6351	PACKINGS,PALLETS ETC.
2831	COPPER ORES,CONCENTRATES	6352	CASKS,BARRELS,ETC.STAVES

CODE	COMMODITY	CODE	COMMODITY
6353	BUILDERS.JOINERY,WOOD ETC	67326	FL.4FC.IRON,150-600MM
6354	WOOD,DOMEST.USE EX.FURNT	67327	FL.OTH.IRON,<600X4.75+MM
6359	MANUFACT.ARTICL.WOOD,NES	67329	FL.OTH.IRON,<600MM
6411	NEWSPRINT,ROLLS,SHEETS	6733	FLAT,COLD-ROLLD,PROD.IRN
6412	PAPER,PAPERBRD.UNCOATED	6734	FLAT,COLD-ROLLD,PROD.IRN
6413	PAPER,PAPERBD,COATED,ETC	6735	FLAT-ROLLD.PROD.IRON NES
6414	KRAFT PAPER,BRD,UNCOATED	6741	FLAT-ROLLD.IRON,ZINC PLT
64151	SEMI-CHEM.FLUTING PAPER	6742	FLAT-ROLLD.IRON,TIN PLTD
64152	SULPHITE WRAPPING PAPER	6743	FLAT-ROLLD.IRON,PNTD,ETC
64153	GLAZED TRANSPARENT PAPER	6744	FLAT-ROLLD.IRN600+MM,PLT
64154	MULTI-PLY PAPER,BRD,UNCT	6745	FLAT-ROLLD.IRN<600MM,PLT
64155	CIGARETTE PAPER, NES	6751	FLAT-ROLLD.SILC-ELEC.STL
64156	FILTER,FELT PAPER,UNCOAT	6752	FLAT-ROLLED.HI-SPEED STL
64157	OTH.PPR,BRD,UNC.<150G/M2	67531	FLT,S.STL600X4.75+MM,CLS
64158	OTH.PPR,UNCTD150-225G/M2	67532	FLT,S.STL600X3-4.75MM,CL
64159	OTH.PPR,UNCTD,OVR225G/M2	67533	FLT,S.STL600X<3MM,COILS
6416	PAPER,PAPERBRD,CORRG,ETC	67534	FLAT,S.STEEL600X4.75+MM
6417	PAPER,PAPERBD,COATED NES	67535	FLAT,S.STEEL600X3-4.75MM
6419	CONVRTD.PAPER,PPRBRD,NES	67536	FLAT,S.STEEL600X<3MM
6421	CONTAINERS,ETC.OF PAPER	67537	FLAT,S.STEEL<600X4.75+MM
6422	STATIONERY,ETC.	67538	FLAT,S.STEEL<600X<4.75MM
6423	REGISTERS,ACCT.BOOKS,ETC	67541	FLAT,ALLOY STL600+MM,CLS
64241	CIGARETTE PAPER, CUT	67542	FLAT,ALLOY STEEL,600+MM
64242	CARBON PAPER,ETC.CUT	67543	FLAT,ALLOY STEEL,<600MM
64243	TOILET PAPER,CUT TO SIZE	6755	FLAT,COLD-ROLLED S.STEEL
64244	GUMMED PAPER,STRIP,ROLLS	6756	FLT,COLD-ROLLD.ALLOY STL
64245	FILTER PAPER,PAPERBOARD	6757	FLAT-ROLLD,ALLOY STL.NES
6429	ARTCLS,PULP,PAPR,BRD NES	6761	BAR,ROD IRON,HOT-FD,COIL
6712	PIG IRON,ETC.PRIMRY.FORM	6762	BAR,ROD IRON,STL.HOT-FD
6713	PELLETS,ETC.PIG IRON,ETC	6763	BAR,ROD IRON,STL.COLD-FD
6714	FERRO-MANGANESE	6764	OTH.BAR,ROD IRON,STEEL
6715	OTHER FERRO-ALLOYS	6768	ANGLES,SHAPED,IRON,STEEL
6724	INGOTS OF IRON OR STEEL	6770	RAILWAY CONSTR.MATRL.IRN
6726	SEMI-FINISH.IRON,STEEL	6781	WIRE,IRON,NON-ALLOY STL
6727	SEMI-FIN.IRON,ETC..25%+C	6782	WIRE,S.STL,OTH.ALLOY STL
6728	SEMI-FIN.ALLOY STL.25%+C	6791	TUBE,ETC.SEAMLESS,IRN.ST
67311	FLAT.IRN,600X4.75+MM,CLS	6793	OTH.TUBE,D406.4MM+,IR,ST
67312	FLAT.IRN,600X<4.75MM,CLS	6794	OTH.TUBE,PIPE,IRON,STEEL
67313	FL.4FC.IRN,600-1250X<4MM	6795	TUBE,PIPE FTTNGS,IRN.STL
67314	FL.OTH.IRON,600X4.75+MM	6821	COPPER;ANODES;ALLOYS
67315	FL.OTH.IRON,600X<4.75MM	6823	COPPER BARS,RODS,PROFILS
67316	FL.4FC.IRON,150-600MM	6824	COPPER WIRE
67317	FL.OTH.IRON,<600X4.75+MM	6825	COPPER PLATE,ETC.15MM+TH
67319	FL.OTH.IRON,<600MM	6826	COPPER FOIL,POWDR,FLAKES
67321	FLAT.IRN,600X4.75+MM,CLS	6827	COPPER TUBE,PIPE,FITTNGS
67322	FLAT.IRN,600X<4.75MM,CLS	6831	NICKEL,NCKL.ALLOY,UNWRGT
67323	FL.4FC.IRN,600-1250X<4MM	6832	NICKEL,NICKEL ALLOY,WRKD
67324	FL.OTH.IRON,600X4.75+MM	6841	ALUM.,ALUM.ALLOY,UNWRGHT
67325	FL.OTH.IRON,600X<4.75MM	6842	ALUMINIUM,ALUM.ALLOY,WRK

CODE	COMMODITY	CODE	COMMODITY
6851	LEAD,LEAD ALLOY,UNWRGHT.	68914	MAGNESIUM WASTE, SCRAP
6852	LEAD,LEAD ALLOYS, WORKED	68915	MAGNESIUM, UNWROUGHT
6861	ZINC,ZINC ALLOY,UNWRGHT.	6898	COBALT,CADMIUM,ETC.UNWRT
6863	ZINC,ZINC ALLOYS, WORKED	6899	BASE METAL NES,WST,SCRAP
6871	TIN,TIN ALLOYS,UNWROUGHT	69962	ARTCL.NON-MALL.CAST IRON
6872	TIN, TIN ALLOYS, WORKED	69963	CAST ARTCLS.OTH.IRON,NES
68911	TUNGSTEN UNWRGHT,WST,SCP	69965	ARTCL.IRON,FORGD ETC.NES
68912	MOLYBDENUM,UNWRT,WST,SCP	74913	MOULDING PATTERNS
68913	TANTALUM,UNWRGHT,WST,SCP	8110	PREFABRICATED BUILDINGS

Source:United Nations Statistics Division

Table 4 Country/Region Blocks for Trade Matrix

NO.	REGION/COUNTRY	DESCRIPTION
01	AFRICA	Africa
02	NORTH AMERICA	North America
03	OTHER AMERICA	Other America
04	WEST ASIA	West Asia
05	WEST EUROPE	West Europe
06	EAST EUROPE	East Europe
07	USSR/FM USSR	USSR/Former USSR
08	OCEANIA	Oceania
09	JAPAN	Japan
10	SOUTH/EAST ASIA *	South and East Asia
11	AFGHANISTAN	Afghanistan
12	BANGLADESH	Bangladesh
13	BHUTAN	Bhutan
14	BRUNEI DRSLM	Brunei Darussalam
15	MYANMAR	Myanmar
16	CAMBODIA	Cambodia
17	SRI LANKA	Sri Lanka
18	CHINA	China
19	HONG KONG	Hong Kong
20	INDIA	India
21	INDONESIA	Indonesia
22	KOREA D P RP	Democratic People's Republic of Korea
23	KOREA REP.	Republic of Korea
24	LAO P.DEM.R	Lao People's Democratic Republic
25	MACAO	Macao
26	MALAYSIA	Malaysia
27	MALDIVES	Maldives
28	MONGOLIA	Mongolia
29	NEPAL	Nepal
30	PAKISTAN	Pakistan
31	PHILIPPINES	Philippines
32	SINGAPORE	Singapore
33	VIET NAM	Vietnam
34	THAILAND	Thailand
35	OTH S/E ASIA	Other Southeast Asia
36	OTHERS	Other Country
37	WORLD TOTAL	World Total

* South and East Asia excluding Japan

Notes: * No. 10 is the combination of Nos. 11 to 35

* No. 37 is the combination of Nos. 01 to 10 and 36

Table 5 Country/Region Block Tabulation Codes for Trade Matrix

COUNTRY CODE	COUNTRY	CODE 1)	CODE 2)	COUNTRY CODE	COUNTRY	CODE 1)	CODE 2)
11710	S.AFR.CUS.UN	01	0	16706	SOMALIA	01	0
11711	S.AFR.CUS.UN	01	0	16716	ZIMBABWE	01	0
13012	ALGERIA	01	0	16717	FM RHOD NYAS	01	0
13290	AFRICA N.NES	01	0	16768	TOGO	01	0
13434	LIBYA	01	0	16800	UGANDA	01	0
13504	MOROCCO	01	0	16834	TANZANIA	01	0
13732	WESTN.SAHARA	01	0	16835	FM TANGANYIK	01	0
13736	SUDAN	01	0	16836	FM ZANZ-PEMB	01	0
13788	TUNISIA	01	0	16854	BURKINA FASO	01	0
13818	EGYPT	01	0	16894	ZAMBIA	01	0
13896	N AFRICA NES	01	0	16896	OTH.AFR NES	01	0
13897	NRTHRN.AF.NS	01	0	21124	CANADA	02	0
14120	CAMEROON	01	0	21840	USA	02	0
14140	CENT.AFR.REP	01	0	21841	USA, P.RICO	02	0
14148	CHAD	01	0	21842	USA,PR,USVI	02	0
14178	CONGO	01	0	22060	BERMUDA	02	0
14180	CONGO, D.R.	01	0	22304	GREENLAND	02	0
14266	GABON	01	0	22666	ST.PIERRE,MQ	02	0
14472	AFR.CEUCA NS	01	0	22896	REST AMER.NES	02	0
14896	CEUCA N.E.S.	01	0	33032	ARGENTINA	03	0
16024	ANGOLA	01	0	33068	BOLIVIA	03	0
16086	BR.IND.OC.TR	01	0	33076	BRAZIL	03	0
16108	BURUNDI	01	0	33152	CHILE	03	0
16132	CAPE VERDE	01	0	33170	COLOMBIA	03	0
16174	COMOROS	01	0	33218	ECUADOR	03	0
16180	ZAIRE	01	0	33473	LAIA NES	03	0
16204	BENIN	01	0	33484	MEXICO	03	0
16226	EQ.GUINEA	01	0	33600	PARAGUAY	03	0
16230	FMR ETHIOPIA	01	0	33604	PERU	03	0
16231	ETHIOPIA	01	0	33858	URUGUAY	03	0
16232	ERITREA	01	0	33862	VENEZUELA	03	0
16260	FR.SO.ANT.TR	01	0	33896	LAIA N.E.S.	03	0
16262	DJIBOUTI	01	0	34188	COSTA RICA	03	0
16270	GAMBIA	01	0	34222	EL SALVADOR	03	0
16288	GHANA	01	0	34320	GUATEMALA	03	0
16324	GUINEA	01	0	34340	HONDURAS	03	0
16384	COTE DIVOIRE	01	0	34471	CACM NES	03	0
16404	KENYA	01	0	34558	NICARAGUA	03	0
16430	LIBERIA	01	0	34896	CACM N.E.S.	03	0
16450	MADAGASCAR	01	0	35028	ANTIGUA,BARB	03	0
16454	MALAWI	01	0	35044	BAHAMAS	03	0
16466	MALI	01	0	35052	BARBADOS	03	0
16478	MAURITANIA	01	0	35092	BR.VIRGIN IS	03	0
16480	MAURITIUS	01	0	35129	CARIB. NES	03	0
16508	MOZAMBIQUE	01	0	35136	CAYMAN IS	03	0
16516	NAMIBIA	01	0	35192	CUBA	03	0
16562	NIGER	01	0	35212	DOMINICA	03	0
16566	NIGERIA	01	0	35214	DOMINICAN RP	03	0
16577	AFR.OTHER NS	01	0	35308	GRENADA	03	0
16624	GUINEABISSAU	01	0	35312	GUADELOUPE	03	0
16638	REUNION	01	0	35332	HAITI	03	0
16646	RWANDA	01	0	35388	JAMAICA	03	0
16654	ST.HELENA	01	0	35474	MARTINIQUE	03	0
16678	SAO TOME PRN	01	0	35500	MONTSERRAT	03	0
16686	SENEGAL	01	0	35530	NETH.ANTILES	03	0
16690	SEYCHELLES	01	0	35532	NETH.ANT.ARU	03	0
16694	SIERRA LEONE	01	0	35533	ARUBA	03	0
35658	ST.KT-NEV-AN	03	0	53752	SWEDEN	05	0

COUNTRY CODE	COUNTRY	CODE 1)	CODE 2)	COUNTRY CODE	COUNTRY	CODE 1)	CODE 2)
35659	ST.KITTS-NEV	03	0	53826	UNTD.KINGDOM	05	0
35660	ANGUILLA	03	0	53896	ECC N.E.S.	05	0
35662	ST.LUCIA	03	0	55040	AUSTRIA	05	0
35670	ST.VINCENT,G	03	0	55208	DENMARK	05	0
35780	TRINIDAD TBG	03	0	55246	FINLAND	05	0
35796	TURKS,CAICOS	03	0	55352	ICELAND	05	0
35850	US.VIRGIN IS	03	0	55578	NORWAY	05	0
35896	CARIB N.E.S.	03	0	55579	NORWAY,SB,JM	05	0
36080	BR.ANTR.TERR	03	0	55620	PORTUGAL	05	0
36084	BELIZE	03	0	55697	EUR. EFTA NS	05	0
36238	FALKLAND IS	03	0	55752	SWEDEN	05	0
36254	FR.GUIANA	03	0	55756	SWITZERLAND	05	0
36328	GUYANA	03	0	55757	SWITZ.LIECHT	05	0
36590	FM PAN.EX-CZ	03	0	55826	UNTD.KINGDOM	05	0
36591	PANAMA	03	0	55896	EFTA N.E.S.	05	0
36592	FM PANAMA CZ	03	0	57020	ANDORRA	05	0
36636	AMER.REST NS	03	0	57234	FAEROE IS	05	0
36740	SURINAME	03	0	57292	GIBRALTAR	05	0
36896	RST AMER NES	03	0	57300	GREECE	05	0
36898	CARIBBEAN NS	03	0	57352	ICELAND	05	0
41376	ISRAEL	04	0	57372	IRELAND	05	0
44048	BAHRAIN	04	0	57470	MALTA	05	0
44196	CYPRUS	04	0	57568	EUR. OTHR.NS	05	0
44364	IRAN-ISLAM.RR	04	0	57724	SPAIN	05	0
44368	IRAQ	04	0	57896	OTH EUR NES	05	0
44400	JORDAN	04	0	56008	ALBANIA	06	0
44414	KUWAIT	04	0	56100	BULGARIA	06	0
44422	LEBANON	04	0	56200	CZECHOSLOVAK	06	0
44512	OMAN	04	0	56203	CZECH REP	06	0
44536	NEUTRAL ZONE	04	0	56221	EUR. EAST NS	06	0
44634	QATAR	04	0	56278	FM GERMAN DR	06	0
44682	SAUDI ARABIA	04	0	56348	HUNGARY	06	0
44720	FM YEMEN DM	04	0	56616	POLAND	06	0
44760	SYRIAN A.R.	04	0	56642	ROMANIA	06	0
44784	UNTD ARAB EM	04	0	56703	SLOVAKIA	06	0
44792	TURKEY	04	0	56896	EUR CPE NES	06	0
44879	ASIA WEST NS	04	0	57890	FM YUGOSLAV	06	0
44886	FM YEMEN AR	04	0	59070	BOSNIA HERZG	06	0
44887	YEMEN	04	0	59191	CROATIA	06	0
44896	MID EAST NES	04	0	59705	SLOVENIA	06	0
53040	AUSTRIA	05	0	59807	TFYR MACEDNA	06	0
53056	BELGIUM-LUX	05	0	59890	YUGOSLAVIA	06	0
53058	BELGIUM-LUX	05	0	59891	YUGOSLAVIA	06	0
53208	DENMARK	05	0	46031	AZERBAIJAN	07	0
53246	FINLAND	05	0	46051	ARMENIA	07	0
53250	FRANCE	05	0	46268	GEORGIA	07	0
53251	FRANCE,MONAC	05	0	46398	KAZAKSTAN	07	0
53276	GERMANY	05	0	46417	KYRGYZSTAN	07	0
53280	FM GERMAN FR	05	0	46762	TAJIKISTAN	07	0
53300	GREECE	05	0	46795	TURKMENISTAN	07	0
53372	IRELAND	05	0	46860	UZBEKISTAN	07	0
53380	ITALY	05	0	58112	BELARUS	07	0
53381	ITALY	05	0	58233	ESTONIA	07	0
53492	EUROPE EU NS	05	0	58428	LATVIA	07	0
53528	NETHERLANDS	05	0	58440	LITHUANIA	07	0
53620	PORTUGAL	05	0	58498	REP.MOLDOVA	07	0
53724	SPAIN	05	0	58643	RUSSIAN FED	07	0
58804	UKRAINE	07	0	45104	MYANMAR	10	15
68810	FM USSR	07	0	45116	CAMBODIA	10	16
71036	AUSTRALIA	08	0	45144	SRI LANKA	10	17

COUNTRY CODE	COUNTRY	CODE 1)	CODE 2)	COUNTRY CODE	COUNTRY	CODE 1)	CODE 2)
71554	NEW ZEALAND	08	0	45156	CHINA	10	18
72016	AMER.SAMOA	08	0	45344	HONG KONG	10	19
72090	SOLOMON IS	08	0	45356	INDIA EX SIK	10	20
72162	CHRISTMAS IS	08	0	45698	SIKKIM	10	20
72166	COCOS IS	08	0	45699	INDIA	10	20
72184	COOK IS	08	0	45360	INDONESIA	10	21
72242	FIJI	08	0	45626	EAST TIMOR	10	21
72258	FR.POLYNESIA	08	0	45408	KOREA D P RP	10	22
72296	KIRIBATI	08	0	45410	KOREA REP.	10	23
72316	GUAM	08	0	45418	LAO P.DEM.R	10	24
72488	MIDWAY ISLDS	08	0	45446	MACAU	10	25
72520	NAURU	08	0	45457	SARAWAK	10	26
72527	OCEANIA NES	08	0	45458	MALAYSIA	10	26
72540	NEW CALEDNIA	08	0	45459	PEN MALAYSIA	10	26
72544	NEW GUINEA	08	0	45461	SABAH	10	26
72548	VANUATU	08	0	45462	MALDIVES	10	27
72570	NIUE	08	0	45496	MONGOLIA	10	28
72574	NORFOLK IS	08	0	45524	NEPAL	10	29
72580	N.MARIANA IS	08	0	45586	PAKISTAN	10	30
72582	FM PACIFIC I	08	0	45588	PAKISTAN E/W	10	30
72583	MICRONESIA	08	0	45608	PHILIPPINES	10	31
72584	MARSHALL IS	08	0	45702	SINGAPORE	10	32
72585	PALAU	08	0	45704	VIET NAM	10	33
72596	PAPUA	08	0	45866	FM VIETNM RP	10	33
72598	PAPUA N.GUIN	08	0	45868	FM VIETNM DR	10	33
72612	PITCAIRN	08	0	48866	VIETNAM D RP	10	33
72772	TOKELAU	08	0	45764	THAILAND	10	34
72776	TONGA	08	0	45158	TAIWAN (POC)	10	35
72798	TUVALU	08	0	45490	ASIA OTHR.NS	10	35
72849	US MSC.PAC.I	08	0	45896	OTH ASIA NES	10	35
72872	WAKE ISLAND	08	0	90837	BUNKERS	36	0
72876	WALLIS FUT.I	08	0	90838	FREE ZONES	36	0
72882	SAMOA	08	0	90839	SPEC CATS	36	0
72896	OTH OCE NES	08	0	90896	AREAS N.E.S.	36	0
41392	JAPAN	09	0	90898	NOT SPEC.	36	0
45647	RYUKYU IS	09	0	90899	AREAS NES	36	0
45650	RYUKYU ISLDS	09	0	90900	FREE ZONES	36	0
45004	AFGHANISTAN	10	11	90904	FOR SHIPS	36	0
45050	BANGLADESH	10	12	90908	SPEC CATS	36	0
45064	BHUTAN	10	13	99999	BLANK	36	0
45096	BRUNEI DARSM	10	14				

1) Code for which region to tabulate under (Nos. 1 to 10, 36, 37)

2) Code for tabulating under East/South Asian countries (Nos. 11 to 35)

Source:United Nations Statistics Division

Table 6 List of Items in Trade-flow Map

NO.	Flow Map Item	Trade Matrix Used			
		CODE	COMMODITY	DESCRIPTION	Map Legend
1	MAIN RESOURCES	T30	FOSSIL FUEL RESOURCE	Fossil Fuel Resource	Fossil Fuel
		T10	BIOMASS RESOURCE	Biomass Resource	Biomass
		T20	BASE METAL RESOURCE	Base Metal Resource	Base Metal
2	MAIN RESOURCES (Excluding Fossil Fuel)	T11	FOOD BIOMASS RESOURCE	Food Biomass Resource	Food
		T12	WOOD BIOMASS RESOURCE	Wood Biomass Resource	Wood
		T21	IRON RESOURCE	Iron Resource	Iron
		T22	OTH BASE METAL RESOURCE	Other Base Metal Resource	Oth Metal
3	MEAT	0111	BOVINE MEAT FRESH,FROZEN	Bovine Meat(Fresh,Frozen)	Bovine
		0114	POULTRY FRESH CHLLD,FRZN	Poultry(Fresh,Chilled,Frozen)	Poultry
		0113	PIG MEAT FRESH,CHLD,FRZN	Pig Meat(Fresh,Chilled,Frozen)	Pig
		0112	MUTTON ETC FRSH,CHLD,FRN	Mutton etc(Fresh,Chilled,Frozen)	Mutton
		019A	OTH MEAT, EXCL 0111-0114	Other Meats,Excluding 0111-0114	Others
4	FISH	034A	FISH	Fish	Fish
		036A	SHELLFISH	Shellfish and Molluscs	Shellfish
5	CEREALS	041	WHEAT ETC UNMILLED	Wheat(Unmilled)	Wheat
		044	MAIZE UNMILLED	Maize(Unmilled)	Maize
		042	RICE	Rice	Rice
		043	BARLEY UNMILLED	Barley(Unmilled)	Barley
		049A	OTH CEREAL, EXCL 041-043	Other Cereals,Excluding 041-043	Others
6	WOOD	2470	OTH WOOD ROUGH,SQUARED	Other Wood(Rough,Squared)	Log
		2480	WOOD SHAPED,SLEEPERS	Sawing,Wood Sleeper	Sawnwood
		630	WOOD,CORK MANUFACTRS NES	Wood,Cork Manufactures	Wood Mfrs
		246	PULPWOOD,CHIPS,WOODWASTE	Pulpwood,Woodchip,Wood Waste	Pulpwood
		250	PULP AND WASTE PAPER	Pulp and Waste Paper	Pulp
		640	PAPER,PAPERBOARD AND MFR	Paper,Paperboard and Manufactures	Paper
7	IRON	2810	IRON ORE,CONCENTRATES	Iron Ore,Concentrates	Iron Ore
		670	IRON AND STEEL	Iron and Steel	Iron & Steel
		282	IRON AND STEEL SCRAP	Iron and Steel Scrap	Scrap
8	ALUMINIUM	28731	ALUMINIUM ORE,CONCNRATE	Aluminium Ore,Concentrates	Aluminium Ore
		28732	ALUMINA(ALUMINIUM OXIDE)	Alumina(Aluminium Oxide)	Alumina
		6840	ALUMINIUM	Aluminium	Aluminium
9	OTHER BASE METAL ,EXCLUDING FERROUS ALUMINIUM	287A	BASE MTL ORE,EXC FER ALM	Base Metal Ore,Excluding Ferrous and Aluminium	Oth Mtl Ore
		68A	BASE MTLs, EXCL FER ALM	Base Metals,Excluding Ferrous and Aluminium	Oth Mtl Prd
10	BASE METAL ORE,EXCLUDING FERROUS ALUMINIUM	28710	CPR ORE ETC,CEMENT COPPR	Copper Ore etc,Cement Copper	Copper Ore
		28720	NICKEL ORES,CONCENTRATES	Nickel Ores,Concentrates	Nickel Ore
		2875	ZINC ORES,CONCENTRATES	Zinc Ores,Concentrates	Zinc Ore
		2874	LEAD ORES,CONCENTRATES	Lead Ores,Concentrates	Lead Ore
		2879A	OTH BASE MTL ORE,CON NES	Other Base Metal Ore,Concentrates	Oth Ore
11	BASE METAL ORE,EXCLUDING FERROUS ALUMINIUM	6820	COPPER EXC CEMENT COPPER	Copper(Excluding Cement Copper)	Copper Prd
		6830	NICKEL	Nickel	Nickel Prd
		6860	ZINC	Zinc	Zinc Prd
		6850	LEAD	Lead	Lead Prd
		689A	OTH BASE MTLs	Other Base Metal	Oth Prd
12	FOSSIL FUEL	330	PETROLEUM AND PRODUCTS	Petroleum and Products	Petroleum
		320	COAL,COKE AND BRIQUETTES	Coal,Coke and Briquettes	Coal
		340	GAS,NATURAL AND MANUFCTD	Gas,Natural and Manufactured	Gas

* The map legends do not always exactly match the commodity name. These legends were used due to limitations on the length of legend text imposed by the software used to create the trade-flow map.

Edited by

Dr. Yuichi Moriguchi

Social and Environmental Systems Division, National Institute for Environmental Studies

Data Editing, Support of making of Figure

Shigekazu Matui, Shigesada Takagi

FUJI RESEARCH INSTITUTE CORPORATION

If you have questions and comments on Material Flow Data Book, please use the contact info below.

Dr. Yuichi Moriguchi

National Institute for Environmental Studies

16-2 Onogawa, Tsukuba, Ibaraki, 305-8506, Japan

Tel. +81 29-850-2540 Fax +81 29-850-2572

E-mail: moriguti@nies.go.jp