



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

15956

Distr.
LIMITED

PPD. 69
28 December 1987

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

ENGLISH

TARIFF AND NON-TARIFF MEASURES
IN THE WORLD TRADE OF PESTICIDES
(prepared by the UNCTAD secretariat for UNIDO)

Sectoral Working Paper Series

No. 65

Sectoral Studies Branch
Studies and Research Division

SECTORAL WORKING PAPERS

In the course of the work on major sectoral studies carried out by UNIDO, Studies and Research Division, several working papers are produced by the secretariat and by outside experts. Selected papers that are believed to be of interest to a wider audience are presented in the Sectoral Working Papers Series. These papers are more exploratory and tentative than the sectoral studies. They are therefore subject to revision and modification before being incorporated into the sectoral studies.

This document has been reproduced without formal editing.

The designations employed and the presentation of material in this document do not imply the expression of any opinion whatsoever on the part of the secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Mention of company names and commercial products does not imply the endorsement of UNIDO.

This paper was prepared for UNIDO by Karen McCusker under guidance of the UNCTAD secretariat. The views expressed do not necessarily reflect the views of the UNIDO secretariat.

Preface

This paper has been prepared by the UNCTAD secretariat for UNIDO's Studies and Research Division, Sectoral Studies Branch, in connection with its ongoing activities in the area of the pesticide industry, a sector which is of growing importance to the developing countries since the rate of food production does not keep pace with population growth.

The report reviews international trade in pesticides, discusses tariff and non-tariff barriers to trade and gives an analysis of potential trade expansion both as an effect of trade liberalization and among developing countries.

This paper has been prepared with the assistance of Ms. Karen McCusker, UNCTAD secretariat. UNIDO expresses its appreciation for this valued inter-agency co-operation.

Contents

	<u>Page</u>
1. INTRODUCTION	1
2. INTERNATIONAL TRADE IN PESTICIDES	3
3. OBSTACLES TO TRADE IN THE PESTICIDES INDUSTRY	7
3.1 Tariffs	7
3.2 Non-tariff measures	9
4. POTENTIAL TRADE EXPANSION EFFECTS OF TRADE LIBERALIZATION	12
5. POTENTIAL TRADE EXPANSION AMONG DEVELOPING COUNTRIES	15
6. AREAS OF NORTH-SOUTH CO-OPERATION	17
7. SUMMARY AND CONCLUSIONS	18

Tables

1. World exports of pesticides	4
2. World imports of pesticides	5
3. Regional trade flows	6
4. Weighted average applied 1983 tariff rates facing imports of pesticides	9
5. Trade effects of simulated changes in tariff rates applied by major DMEs to pesticides	13
6. Potential trade expansion effects assuming duty-free imports of pesticides into major developed market economies	14
7. Potential trade expansion effects in developing countries' imports of pesticides from different sources	16

EXPLANATORY NOTES

References to dollars (\$) are to United States dollars, unless otherwise stated.

- ... indicates that data are not available or are not separately reported;
- indicates that the amount is nil or negligible;
- blank indicates that the item is not applicable;

In tables totals may not add exactly because of rounding.

Abbreviations

CCCN	Customs Co-operation Council Nomenclature
CPE	Centrally planned economies
DME	Developed market economy countries
EEC	European Economic Community
EFTA	European Free Trade Association
GATT	General Agreement on Tariffs and Trade
GSP	Generalized System of Preferences
NTMs	Non-tariff measures
SITC	Standard International Trade Classifications
UNSO	United Nations Statistical Office

Country Groupings

Developed market economies:

North America:	Canada, United States and United States Territories
West Europe (North):	Austria, Belgium, Denmark, Federal Republic of Germany, Finland, France, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Sweden, Switzerland, United Kingdom
West Europe (South):	Greece, Malta, Portugal, Spain, Yugoslavia, Israel
Japan:	Japan
Other:	Australia, New Zealand, Republic of South Africa

Developing countries:

Latin America:	South and Central America and the Caribbean, except Puerto Rico and the U.S. Virgin Islands
----------------	---

Developing countries: (cont'd)

Tropical Africa:	All of Africa South of the Sahara, except for the Sudan and the Republic of South Africa
North Africa:	Rest of Africa except for the Republic of South Africa
West Asia:	The Arab countries of Asia, and Iran, Turkey and Cyprus
South Asia:	Afghanistan, Bangladesh, Bhutan, Burma, India, Nepal, Pakistan, Sri Lanka
East Asia (Mfg):	The area of Hong Kong, Republic of Korea, Philippines, Singapore, Thailand
Southeast Asia:	Rest of Asia except CPE Asia, Taiwan Province of China and Japan, plus the South Pacific Islands

Central planned economies:

Asian:	People's Republic of China, Democratic Kampuchea, Democratic People's Republic of Korea, People's Democratic Republic of Lao, Mongolia, Viet Nam
European:	Albania, Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Romania, Union of Soviet Socialist Republics

1. INTRODUCTION

Pesticides,^{1/} which include insecticides, fungicides, weed killers (herbicides), rodenticides and plant growth regulators, play an important role in both agricultural production and in public health programmes. It has been estimated that pests destroy on average one-third of the world potential crop production^{2/} so that pesticides, in tandem with integrated farm management are a critical factor in increasing crop yields and preventing crop losses.

There are important interlinkages between the pesticide sector and industries of special export interest to developing countries. Developing countries which rely on agricultural exports for much of their foreign exchange earnings need access to pesticides to improve their crop production and raise their own living standards. Meanwhile, the rate of food production in developing countries is slowing in relation to population growth so that achieving food self-sufficiency remains an elusive goal for many.

While pesticides are essential inputs to increase the world food supply as well as to control vector-borne diseases such as malaria, they are also toxic products and their careless use may be damaging to the environment and human or animal health. As in the pharmaceuticals industry, brand names and product registration can guarantee product quality but the inapproximate or excessive use of pesticides is an additional hazard. Human errors based on lack of information will not only lead to unnecessary expenditures but may result, for instance, in intolerable levels of pesticide residues in food or in contamination of drinking water.

In deference to the potential dangers of pesticides, their production, consumption, distribution and marketing tends to be strictly regulated, at least in many industrialized countries. At the international level, the Food and Agriculture Organization (FAO), in co-operation with member governments and other UN agencies, has been instrumental in establishing uniform standards such as guidelines on the harmonization of pesticide registration requirements and control procedures and more recently an international code of conduct on the distribution and use of pesticides.^{3/}

The elaborate but necessary regulatory procedures set up to control the production and use of pesticides evidently affects the internationalization of production and impacts world trade in pesticides. When a ban or restriction, such as on organochlorines, is imposed on the use of a pesticide in one country that country's neighbours and its trading partners are immediately

^{1/} SITC Rev.1 = 5992; CCCN = 3811; TSUS = 408.16-408,432.15.

^{2/} G. Zweig and A.L. Aspelin, "The Role of Pesticides in Developing Countries", in UNIDO, Formulation of Pesticides in Developing Countries; United Nations, New York, 1983, page 2.

^{3/} FAO, Plant Protection Bulletin, Vol. 33:4, 1985.

affected.^{4/} Technical barriers, such as health and safety requirements or packaging practices to meet safety standards, present obstacles to trade for producers without the necessary know-how or administrative apparatus.

The purpose of this study is to identify trade barriers, tariff and non-tariff measures, in the pesticide industry, as applied by both developed market economies and developing countries, and to estimate potential trade expansion effects of tariff liberalization in both North-South and South-South commerce.

^{4/} Economic Commission for Europe, "The influence of environmental protection measures on the development of pesticide production and consumption", ECE/CHEM/43, United Nations, New York, July 1982, page 74.

2. INTERNATIONAL TRADE IN PESTICIDES

World trade in pesticides amounted to over \$US 5 billion in 1984 compared to \$US 3 billion in 1975.^{5/} The salient feature of trade in pesticides is the dominance of the developed market economies whose ability to handle information effectively is a comparative advantage. In 1984, developed market economies accounted for over 96 per cent of exports and 56 per cent of imports. Developing countries^{6/} accounted for less than 4 per cent of exports but 38 per cent of imports.

Among developed market economy regions, Northern Europe is both the largest importer (representing 35 per cent of world pesticide imports in 1984) and exporter of pesticides; the majority of this can be accounted for by intra-European trade. The share of world imports held by North America has risen slightly to 13 per cent, while the share of Japan, 2 per cent, has actually fallen, although her exports, particularly between 1980 and 1984, have risen very rapidly. In European centrally-planned economies, a major crop-producing region, exports are a small fraction of imports; these represented 6 per cent of global imports in 1984.

In developing countries imports exceed exports by as much as ten to one and the largest part of exports are intra-regional. Trade figures indicate that exports from developing countries to both developed market economies and to other developing countries increased between 1975 and 1980 as a percentage of world trade.^{7/}

While the Latin American region (mainly Brazil, Argentina and Mexico) has traditionally been the major exporting region amongst developing countries, exports from Asia, particularly East Asia (the People's Republic of China, the Republic of Korea, the area of Hong Kong and Malaysia were the principal exporters to developed market economies in 1983) have grown more rapidly than world exports of pesticides in the last decade; concurrently the growth of Asian imports of pesticides has exceeded that of Latin America. The export-to-import ratio for Asia has improved in the ten-year period, except in the case of the centrally planned economies where imports are fifteen times exports, presumably a result of the increased demand following the People's Republic of China's relatively recent open-door policy. Africa (Kenya, Côte d'Ivoire and Tunisia are the principal exporters to the developed market economies) has experienced a dramatic decline in both exports and imports over a period of time which simultaneously has brought drought and famine to parts of the continent.

^{5/} Recent trade data are invariably subject to some uncertainty. However, it should be mentioned that developing country trade data for the most recent years are probable incomplete and, while partner-reported data are included, this does not eliminate the discrepancy caused by belated reporting of South-South trade flows and will therefore bias the data in favour of those countries who trade with timely reporters.

^{6/} Includes Asian centrally-planned economies.

^{7/} Although the data show a decline in the exports of developing countries between 1980 and 1984 this could be due to either incomplete data or debt problems faced by developing countries which led to import contraction during this particular period.

Table 1. World exports of pesticides
(thousands of constant^{a/} 1980 dollars)

<i>REGION</i>	<i>1975</i>	<i>1980</i>	<i>1984</i>
World	3 038 973	4 454 322	5 261 131
Developed market economies, of which:	2 897 712	4 200 586	5 068 359
West Europe (North)	2 048 607	2 794 511	3 145 063
North America	579 341	1 094 785	1 586 084
Japan	109 579	140 603	250 752
Developing countries, of which:	148 884	226 027	181 035
Africa	24 373	19 786	1 095
Asia -			
(a) market economies	36 890	66 525	93 062
(b) centrally planned economies	5 607	11 294	14 425
Latin America	82 012	119 531	72 452
Centrally planned economies,			
Europe	32 378	27 708	11 716

a/ UNIDO Fisher type price indices.

Note: 1984 data should be considered tentative due to late recording.

Source: UNSO Trade Tapes (using partner-reported data).

Table 2. World imports of pesticides
(thousands of constant^{a/} 1980 dollars)

<i>REGION</i>	<i>1975</i>	<i>1980</i>	<i>1984</i>
World	3 250 612	4 272 412	4 881 595
Developed market economies, of which:	1 493 628	2 349 783	2 731 151
West Europe (North)	870 448	1 548 354	1 707 015
North America	309 530	468 063	634 536
Japan	68 459	91 037	89 002
Developing countries: of which:	1 413 360	1 518 909	1 835 555
Africa	436 815	421 448	360 805
Asia			
(a) market economies	461 412	568 613	749 348
(b) centrally planned economies	13 468	71 143	214 054
Latin America	501 665	451 705	511 349
Centrally planned economies,			
Europe	343 624	403 720	314 889

a/ UNIDO Fisher type price indices.

Note: 1984 data should be considered tentative due to late recording.

Source: UNSO Trade Tapes (using partner-reported data).

Table 3. Regional trade flows (percentage share)

(a) Regional export flows

<i>Destination</i>	<i>Developed market economies</i>	<i>Developing countries</i>	<i>Centrally planned economies (European)</i>	<i>World</i>
<i>Origin</i>				
Developed market economies				
1975	49.2	38.2	11.7	100.0
1980	57.2	33.5	8.8	100.0
1984	58.4	35.4	6.2	100.0
Developing countries				
1975	8.0	92.0	0.0	100.0
1980	15.9	83.6	0.1	100.0
1984	38.7	59.1	-	100.0
Centrally planned economies (European)				
1975	50.6	49.3	-	100.0
1980	40.2	25.2	34.5	100.0
1984	61.8	38.1	-	100.0

(b) Regional import flows

<i>Supplier</i>	<i>Developed market economies</i>	<i>Developing countries</i>	<i>Centrally planned economies (European)</i>	<i>World</i>
<i>Importer</i>				
Developed market economies				
1975	97.3	1.5	1.1	100.0
1980	98.2	1.4	0.3	100.0
1984	97.8	1.9	0.3	100.0
Developing countries				
1975	89.5	9.3	1.1	100.0
1980	88.3	11.1	0.3	100.0
1984	93.9	5.8	0.2	100.0
Centrally planned economies (European)				
1975	100.0	-	-	100.0
1980	97.5	-	2.5	100.0
1984	100.0	-	-	100.0

Note: The shares for 1984 should be considered preliminary as trade data is not complete.

Source: UNSO Commodity Trade Statistics.

3. OBSTACLES TO TRADE IN THE PESTICIDES INDUSTRY

International trade as an "engine" of growth is crucial in promoting economic development and for decades, primarily through the General Agreement on Tariffs and Trade (GATT), industrialized and developing countries have taken steps to liberalize trade. The benefits of free trade are widely recognized as is the fact that protectionist policies will incur costs of allocative inefficiencies and slow technological progress. Restrictions to trade consist of both import duties, or tariffs, and non-tariff measures defined as all types of governmental non-tariff actions with a potential effect on trade.

3.1 Tariffs

A tariff is a tax placed on a product as it enters the country, calculated either as a monetary amount in relation to the volume of goods entered, or as a percentage of the value of the goods as assessed at the point of entry. Comparing levels of tariff protection in various countries is complicated by a lack of detailed computerized tariff-line data on tariffs and trade for many countries. For those countries for which detailed information is available, trade-weighted average tariff rates have been calculated.^{8/} That is, a tariff average for each tariff line is calculated using actual trade weights together with the import duty; subsequently, the average rate for each tariff line is aggregated to the product group level using weights based on the tariff line's importance in the total imports of a product group. Such an average is widely considered to give an unduly low reflection of the tariff situation since imports will tend to be inversely related to tariff levels; however, a simple unweighted average gives a less meaningful picture.^{9/}

Although the cornerstone of trade liberalization and the strengthening of the trading system rests on the foundation of unconditional, non-discriminatory and reciprocal treatment between trading partners, the most-favoured-nation principle, in practice there are many preferential trade arrangements. The need to raise the competitiveness of developing countries and the existence of non-tariff barriers and other market imperfections can be an adequate rationale for preferential or unequal treatment even though it should be recognized that preferential treatment in turn introduces trade distortions and allocation inefficiencies.

In the major developed market economies (DMEs), tariff rates are applied differentially in accordance with trade agreements such as the Generalized System of Preferences (GSP), European Free Trade Association (EFTA) agreements and others. The Generalized System of Preferences, adopted in 1970 with the view of increasing the export earnings of developing countries and promoting industrialization, comprises a set of multilateral and non-reciprocal reductions in import duties by preference-giving countries. In 1984, preferential imports into OECD preference-giving countries amounted to \$US 32.3 billion or about 26 per cent of dutiable imports from beneficiary

^{8/} The tariff rates used are 1983 real or applied rates weighted by 1983 trade weights.

^{9/} See Yeats and Laird, *Journal of Developing Economies*, forthcoming.

developing countries.^{10/} However, it should be noted that the GSP can be revoked at any time and that preference-granting countries use limitations, such as tariff quotas, maximum country amounts or the right to invoke the escape clause in order to reduce the effective coverage of the GSP scheme.

As can be seen from table 4, weighted average tariffs in 1983 against all trading partners were, in descending order, highest in New Zealand, the United States, Japan and Australia.^{11/} The margin of preference applied to GSP beneficiaries^{12/} varies considerably between importing markets. The preferential margin is highest in the United States in favour of GSP partners (0.0 versus 12.7 per cent) and most unfavourable in the EEC and Austria.^{13/} In the major importing markets, the United States and the European Economic Community, the GSP programme allows duty-free imports of pesticides into the former while tariffs on imports from GSP partners into the latter market are two to three times higher than on imports from non-GSP trading partners. Although GSP beneficiaries enjoy a margin of preference in the EEC vis-à-vis the United States, Canada and Japan, sizeable imports from Switzerland, which enter duty-free, reduce the weighted average tariff on imports from non-GSP suppliers.

For those developing countries for which the required information is available in UNCTAD's Trade Information System,^{14/} the trade-weighted tariff rate on pesticide imports from the world is 15.2 per cent. Pesticides are imported duty-free by Singapore and Saudi Arabia but tariffs range as high as 75 per cent in other developing country markets.

^{10/} UNCTAD, "Review of the Implementation, Maintenance, Improvement and Utilization of the Generalized System of Preferences" (Tenth general report on the implementation of the generalized system of preferences), TD/B/C.5/105, Geneva, May 1986, page 1.

^{11/} In January 1986, the Government of Australia announced the introduction of a revised scheme of generalized preferences with effect from 1 July 1986. Under the revised scheme developing country tariff rates have been set at 5 percentage points below the general tariff rate where that general rate exceeds 5 per cent.

^{12/} The majority of imports from GSP beneficiaries were supplied by Brazil, Israel, Argentina and Mexico.

^{13/} However, it should be noted, that Austria is part of a group of countries that by this year (1986) have completed tariff reductions negotiated during the Tokyo Round.

^{14/} A UNDP-supported project related to economic co-operation between developing countries. Information is being expanded, but at present relatively little information is held on preference rates under regional trade agreements.

Table 4. Weighted average applied 1983 tariff rates facing imports of pesticides (percentages)

<i>Imports from:</i> <i>Importer</i>	<i>GSP</i> <i>beneficiaries</i>	<i>Non-GSP</i> <i>beneficiaries</i>	<i>All</i> <i>countries</i>
Australia	2.7	5.7	5.4
Austria	12.1	1.1	1.1
Canada	0.1	0.1	0.1
EEC (10 countries)	4.8	1.9	1.9
Finland	0.0	0.0	0.0
Hungary	...	3.1	3.1
Japan	2.6	6.4	6.3
New Zealand	10.0	19.8	19.4
Norway	...	0.0	0.0
Sweden	2.2	0.7	0.7
Switzerland	0.5	0.1	0.1
United States of America	0.0	12.7	11.1
ALL	0.8	4.0	3.9

Note: ... = no imports.

Source: GATT trade and tariff tapes.

3.2 Non-tariff measures

The fundamental idea behind the inclusion of a measure in the UNCTAD Data Base on Trade Measures is that it has, either in practice or potentially, a trade distorting effect and introduces differential treatment for domestic and foreign production whether because of the basic nature of the measure or the way it is applied.^{15/}

Non-tariff measures for which information is stored in the UNCTAD Data Base on Trade Measures^{16/} could be classified into at least three broad categories: direct import control measures consisting of (i) price controls (to ensure that goods do not sell below a certain minimum level); (ii) volume controls (which include import authorizations and prohibitions); and (iii) technical barriers (intended to ensure that products meet certain domestic or

^{15/} UNCTAD, "Consideration of the Questions of Definitions and Methodology employed in the UNCTAD Data Base on Trade Measures", TD/B/AC.42/2, Geneva, September 1985.

^{16/} To date the geographic coverage of the Data Base includes 23 developed market economies, 29 developing countries and one centrally planned economy.

international standards).^{17/} The Data Base does not include non-border measures such as those regulating domestic sale or assistance to import-competing industries.

While tariff production has declined following several rounds of multilateral negotiations, the application of non-tariff measures (NTMs) and their restrictive effects has become more intensive in both absolute and relative terms. There is some evidence that, like tariffs, non-tariff barriers tend to increase or escalate with the level of product fabrication. The concept of non-tariff measures embraces all types of governmental measures which have an actual or potential effect on trade flows. They introduce unequal treatment between domestic and foreign goods of the same or similar production, thereby actually creating distortions in trade flows.

From the viewpoint of international price stability, a quantitative restraint is more detrimental than a tariff, since, under a fixed import quota, demand is rather insensitive to changes in world prices. Under tariffs, domestic firms are still faced with the threat of foreign competition if their prices become excessive. However, where a quota is applied, this competitive stimulus is missing since this sets a limit on the extent of potential entry of foreign firms.^{18/} Furthermore, non-tariff distortions create uncertainty and curtail transparency in the international trading system; in general they are considered more detrimental than tariffs for the international community.

Technical barriers, such as health and safety regulations, are normally part of domestic policy; under Article XX of the GATT, hazardous goods, such as pesticides, may be exempted from GATT rules, in order to "protect human, animal or plant life or health". National priorities on use or control will be determined by climatic conditions as well as the level of social concern directed towards the management of ecosystems^{19/} so the extent to which standards exist will necessarily vary from country to country. Technical barriers need not introduce differential treatment even though domestic producers enjoy readier access to the necessary information channels, while foreign producers may be unfamiliar with the standards and methods of certification.

In the pesticides industry, technical barriers, such as health and safety regulations or making and packaging requirements, are documented to exist in Australia, Canada, Chile, Japan, Colombia, Paraguay, Saudi Arabia and Venezuela. Anti-dumping duties are currently in effect in the United States and the European Economic Communities against the People's Republic of China and Romania, respectively. Volume control measures appear to be the most

^{17/} For methodological reasons the information on technical barriers in the Data Base is incomplete in terms of country and product coverage and cross-country comparisons should be made with care.

^{18/} See A. Yeats, "Trade Barriers facing Developing Countries", London, Macmillan Press, 1979.

^{19/} OECD, "The Problems of Persistent Chemicals: Implications of pesticides and other chemicals in the environment", Paris, 1971.

commonly applied non-tariff measures. Licenses, discretionary or automatic, are used to restrict imports by Argentina, the area of Hong Kong, Côte d'Ivoire, Jamaica, Mexico, New Zealand, Nigeria, Norway, Pakistan, Spain and Sri Lanka. Quotas, global or by country, are another commonly used measure and evident in Guatemala, Hungary, Italy, Kenya (on some products) and New Zealand (on products not subject to a discretionary license). More restrictive measures, either outright prohibition or import authorization, occur in some selected products in Argentina, Brazil, Chile, Ecuador, Guatemala, the Philippines and Tunisia. (Note that this is a very partial list as, inter alia, the Data Base is continuously being updated in accordance with information from official sources.)

4. POTENTIAL TRADE EXPANSION EFFECTS OF TRADE LIBERALIZATION

Despite a lack of detailed and comprehensive statistics on obstacles to trade, and in an industry where technical standards, a method of quality control, most likely outweigh price considerations, a partial and tentative evaluation of the effects of tariff liberalization is presented below, using UNCTAD's Trade Policy Simulation Model.^{20/}

The estimate of potential expansion of imports into major developed market economies may be explored through a number of different scenarios. Here the following simulations are included:

(a) Removal of tariffs on all imports, i.e. the elimination of all preferences by setting the MFN (most favoured nation) rate equal to zero for all products from all sources;

(b) Elimination of preferences for developing countries by moving their preferential rates to the level of the MFN rate as applied in 1983; and

(c) Full extension of preferences by reducing preferential rates to zero on all products in all importing markets.

The latter two simulations then enable one to assess the actual and potential benefits of the Generalized System of Preferences.

In all of the simulations two distinct effects are calculated, trade creation and trade diversion. The trade creation (or loss) effect results from the change in domestic demand for imports as reflected by the domestic price change after the tariff change. The trade diversion effect results from the changes in the relative domestic prices of imported goods from preference receiving and non-preference receiving countries resulting from changes in the preferential margin.

Tariff liberalization in the pesticides sector would be relatively insignificant for developing countries, due to the small amount of trade involved as well as the already low level of tariffs in the industry. It is however clear that the current scheme of preferences has been positive for GSP beneficiaries^{21/} since the simulation (see table 5, column 3) shows a drop of nearly one-third in imports from these countries if preferences were to be eliminated or revoked. This evidence is substantiated by the \$US 4 million of imports diverted from GSP to non-GSP exporters as well as by the scant increase in trade that could follow from a full extension of the GSP (column 2), that is reducing the preferential rate to zero.

^{20/} For a description of the model, see S. Laird and A. Yeats "The UNCTAD Trade Policy Simulation Model", UNCTAD discussion paper (forthcoming).

^{21/} GSP beneficiaries include Israel and Yugoslavia which in other regional groupings are included in developed market economies; in UNSO data they are included in Southern Europe and thus their exports form part of those of developed market economies.

Table 5. Trade effects of simulated changes in tariff rates applied by major DMEs to pesticides

SUPPLIER	Total imports 1983	Change in trade resulting from:					
		(1) MFN = 0		(2) GSP = 0		(3) GSP = MFN	
	\$ million	\$ million	%	\$ million	%	\$ million	%
GSP beneficiaries	41.2	-4.2	-10.1	.8	+2.0	-11.8	-28.6
Non-GSP beneficiaries	1 025.8	65.5	+6.4	-.3	0.0	4.1	+0.4
TOTAL	1 067.0	61.3	+5.8	.5	0.0	-7.7	-0.7

Note: (1) Elimination of all preferences by setting the MFN rate equal to zero for all products from all sources. (2) Preference rate reduced to zero on all products in all markets. (3) Complete elimination of preference for developing countries by moving their preference rate to the level of the MFN rate, as applied in 1983.

Source: UNCTAD Trade Policy Simulation Model.

The preferential margin is quite significant in the major market, the United States, which accounted for three-quarters of the 1983 imports of pesticides from GSP beneficiaries (table 6). Here imports from GSP beneficiaries enter duty-free. In contrast, in the comparatively large EEC market (*nota bene* intra-EEC trade is not included), GSP beneficiaries do not receive preferential treatment; in this important market, zero tariffs on all imports could increase imports from GSP partners by over 10 per cent and extending absolute preferences would increase imports even more, by 12.5 per cent. The negligible quantity (\$US 3.3 million) of imports in 1983, representing less than two per cent of EEC imports from non-EEC partners, can be traced to preferential trading arrangements between the EEC and EFTA members, creating discriminatory tariffs on imports from GSP beneficiaries. In Japan, while GSP beneficiaries enjoy a preferential margin of 3.8 per cent, imports from developing countries accounted for 3.8 per cent of 1983 imports compared with 1.2 per cent in the EEC and 12.5 per cent in the United States.

Thus, despite the existence of technical barriers, the simulations suggest that there is a strong correlation between the margin of preference extended by importers and the level of imports from developing countries. This situation illustrates the impact tariffs may have on reducing imports, that is, that imports will be inversely related to tariff levels, although their direct effect, particularly in an industry replete with technical barriers, would be difficult to estimate.

Table 6. Potential trade expansion effects assuming duty-free imports of pesticides into major DMEs

Origin IMPORTING MARKET	ALL			GSP beneficiaries			Non-GSP beneficiaries		
	1983 Imports \$ million	Trade change		1983 Imports \$ million	Trade change		1983 Imports \$ million	Trade change	
		\$ million	%		\$ million	%		\$ million	%
ALL	1 067.0	61.3	5.8	41.2	-4.2	-10.1	1 025.8	65.5	6.4
Of which:									
EEC	256.8(*)	7.5	2.9	3.3	0.3	10.4	253.5	7.2	2.8
USA	247.0	40.3	16.3	31.0	-4.6	-14.7	216.0	44.8	20.8
JAPAN	69.3	6.9	9.9	2.4	...	1.0	66.9	6.8	10.2

(*) Excludes intra-EEC trade.

Source: UNCTAD Trade Policy Simulation Model.

5. POTENTIAL TRADE EXPANSION AMONG DEVELOPING COUNTRIES

In 1983, industrialized countries provided outlets for 59 per cent of manufactures from developing countries.^{22/} While the North remains the largest market for most exports from developing countries, in recent years sales to other developing countries have been the fastest growing component of manufactured exports from the South.^{23/} Almost 40 per cent of all manufactured exports from developing countries are sent to other developing countries^{24/} and the share of exports of pesticides is even larger. But imports of developing countries are still predominantly from the North.

It has been shown that developing countries derive considerably larger benefits from multilateral trade liberalization than from the GSP^{25/} which is logical given that the GSP only applies to certain products in certain preference-giving markets. Furthermore, the schemes are non-binding and can be revoked; such uncertainty of continued preferential treatment affects long-term investment decisions made by current beneficiaries. The likelihood that growth in industrialized countries will remain slow provides a powerful rationale for developing countries to trade with one another.

The conclusion that multilateral trade liberalization provides more significant benefits from developing countries may be applied to pesticides as well in that GSP beneficiaries do not profit exceptionally under further liberalization scenarios. However, in South-South trade where there is evidence that developing country imports receive no favourable treatment, there would be a larger relative expansion of trade, assuming a sufficient reduction in non-tariff barriers, from the elimination of tariffs on imports from developing countries. Simulating tariff liberalization in trade between developing countries for the limited number of countries for whom data are available and extending full preferences on imports from developing countries, as envisaged under the Global System of Trade Preferences (GSTP),^{26/} has a very positive effect; in theory, the \$US 53 million of South-South trade

22/ B. Balassa and C. Michalopoulos, "Liberalizing Trade Between Developed and Developing Countries", *Journal of World Trade Law* 20,1, January-February 1986, page 11.

23/ Sanjaya Lall, "Trade Between Developing Countries", in *Trade and Development*, an UNCTAD Review No. 6, United Nations, New York, 1985, page 5.

24/ UNCTAD, "Strengthening the Weakest Link", TAD/INF/PUB/86/2, United Nations, New York, 1986, page 7.

25/ Thomas B. Birnberg, "Trade Reform Options: Economic Effects on Developing and Developed Countries", in *Policy Alternatives for A New International Economic Order* (William R. Cline, ed.), New York, Praeger, 1979, pp. 217-283.

26/ The proposal was made in 1976 to establish the GSTP in order to "promote the development of national production and mutual trade" among developing countries; since then, the UNCTAD secretariat has been active in collecting information and producing a number of studies on the potential of the GSTP.

comprising 5.5 per cent of pesticide imports of developing countries in 1983, rises by \$US 18 million or 34 per cent^{27/} (see table 7). In this case, this phenomenon can be accounted for by the higher tariffs encountered in developing country markets.

Table 7. Potential trade expansion effects in developing countries' imports of pesticides from different sources

<i>All countries</i>		<i>Developed countries</i>		<i>Developing countries</i>	
<i>Imports \$ million</i>	<i>Trade change \$ million %</i>	<i>Imports \$ million</i>	<i>Trade change \$ million %</i>	<i>Imports \$ million</i>	<i>Trade change \$ million %</i>
1 014	+ 9.3 (0.9)	961	-8.9 (-0.1)	53	+ 18.2 (34.3)

Continued growth in South-South trade flows would be particularly relevant for a sector with important interlinkages with industries of special export interest to developing countries such as food crops, cotton, etc. Protection of industrial activities in developing countries discriminates against agriculture and^{28/} the pesticides industry may provide an example whereby reducing protectionism in developing countries in this sector would make an important contribution to improving incentives in agriculture. Alternatively, as a means to conserve foreign exchange, countertrade between exporters of pesticides and exporters of agricultural products may be an expedient form of South-South co-operation.

27/ This simulation is based on the assumption that (i) tariffs are completely eliminated amongst developing countries; (ii) NTBs are lifted sufficiently to permit the predicted expansion to take place; (iii) the developing countries can fully meet the rise in demand (perfectly elastic supply) and (iv) an elasticity of substitution between developed and developing countries equal to 1.5. For a discussion on this latter point, see Cline, et al., "Trade Negotiations in the Tokyo Round - A Quantitative Assessment", The Brookings Institution, Washington, D.C., 1978, pp. 60-62.

28/ Balassa and Michalopoulos, *op. cit.*, page 18.

6. AREAS OF NORTH-SOUTH CO-OPERATION

Increasing global interdependence both demands and creates additional scope for economic co-operation. While the removal of tariffs in importing markets is an important modality for North-South co-operation it would not have a significant impact on exports of pesticides from developing countries. In fact, tariffs have been reduced considerably in products such as pesticides, products that are capital-intensive, incorporate advanced product and process technologies and are of greater interest in trade between industrialized countries.^{29/} Nevertheless, the continuation and wide application of preferences would improve the entry of imports from developing countries even though in value terms, or percentage of developing country exports, pesticides are not an important issue in South-North exports.

More importantly, technical barriers, in the form of conflicting and complicated domestic standards combined with the inadequate information infrastructure in many developing countries, present less quantifiable but more real trade barriers. The advantage that large international trading companies or transnational corporations have with regard to information networks and ability to handle complex and varied requirements is one reason behind the dominance of transnationals in a technology-intensive sector such as the pesticides industry. In consequence, the openness of the international market is to a large extent a function of the receptiveness of developing countries to the conditions "negotiated" with transnational enterprises.

From another vantage point, efforts to harmonize requirements and establish international codes of conduct in this sector might be the most equitable way to increase exports of pesticides from developing countries. Although the intent of safety standards is to protect public health and the environment, the secondary and trade-related effect is to clarify the minimum international requirements, to reduce uncertainty and improve market transparency.

^{29/} Gerald K. Helleiner, "The new industrial protectionism and developing countries", in Trade and Development, an UNCTAD Review No.1, United Nations, 1979., p.19.

7. SUMMARY AND CONCLUSIONS

Pesticides are a critical factor in improving world food and agricultural production and thus vital to the interests of developing countries. World trade in pesticides amounted to \$US 5 billion in 1984, but developing countries accounted for less than 4 per cent of exports. Given the hazardous nature of pesticides their production and use is subject to various restrictions which have trade-distorting effects. Non-tariff measures and technical barriers, whose direct trade-restrictive effects are not adequately quantifiable, are systemic in the industry. As in most industries tariffs on pesticide products are low and in some developed market economies imports from developing countries benefit from preferences.

While further tariff liberalization may lead to additional trade, trade creation will depend not only on the export supply availability from developing countries but also on the producer's ability to obtain information required to meet national and international standards. The trade-restrictive effects of technical barriers will be mitigated as the development process continues, bringing with it the skills and complex organizational forms that industrial activities require.

For certain of the more advanced countries the foregoing analysis of trading conditions in the pesticides industry may be a useful aid in formulating investment and export promotion strategies. But the recognition of political realities needs to go hand in hand with the simple economics of trade. In spite of high tariffs, the bulk of exports of pesticides of developing countries are destined for other developing countries. Trade liberalization in South-South trade may be a particularly viable form of improving export prospects of present or potential developing country producers of pesticides.

For the guidance of our publications programme in order to assist in our publication activities, we would appreciate your completing the questionnaire below and returning it to UNIDO, Studies and Research Division, Sectoral Studies Branch, D-2073, P.O. Box 300, A-1400 Vienna, Austria

Q U E S T I O N N A I R E

Tariff and non-tariff measures in the world trade of pesticides

(please check appropriate box)

- | | yes | no |
|--|--------------------------|--------------------------|
| (1) Were the data contained in the study useful? | <input type="checkbox"/> | <input type="checkbox"/> |
| (2) Was the analysis sound? | <input type="checkbox"/> | <input type="checkbox"/> |
| (3) Was the information provided new? | <input type="checkbox"/> | <input type="checkbox"/> |
| (4) Did you agree with the conclusion? | <input type="checkbox"/> | <input type="checkbox"/> |
| (5) Did you find the recommendations sound? | <input type="checkbox"/> | <input type="checkbox"/> |
| (6) Were the format and style easy to read? | <input type="checkbox"/> | <input type="checkbox"/> |
| (7) Do you wish to be put on our documents mailing list? | <input type="checkbox"/> | <input type="checkbox"/> |

If yes, please specify subjects of interest

- | | | |
|--|--------------------------|--------------------------|
| (8) Do you wish to receive the latest list of documents prepared by the Sectoral Studies Branch? | <input type="checkbox"/> | <input type="checkbox"/> |
| (9) Any other comments? | | |

Name:
(in capitals)

Institution:
(please give full address)

Date: