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Liberalisation of Trade in Environmentally Preferable Products

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Joint Working Party on Trade and Environment

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Abstract

It addresses the issue of environmentally preferable products (EPPs) in the context of the Doha Development Round and the Johannesburg Plan of Implementation. It reviews available definitions; describes existing compilations of products and identifies broad categories of EPPs; and offers case studies on three groups of products addressing benefits (and costs) of liberalisation for selected countries and products. Three groups of products, including their parts and complements, were identified for case studies owing to their potential trade, environmental and developmental benefits: sisal and other fibres of the genus *Agave*, bicycles and solid-fuel cooking stoves.

JEL Classifications: F14, F18, Q56

Keywords: environmental goods, environmental services, trade, developing countries

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LIBERALISATION OF TRADE IN ENVIRONMENTALLY PREFERABLE PRODUCTS

This working paper presents exploratory work. The mention or discussion of any particular product should not be regarded as necessarily implying an endorsement of that product by either the OECD or the Joint Working Party on Trade and Environment (JWPTE).

Executive Summary

This paper is a study of the potential benefits of liberalising international trade in certain goods designated "environmentally preferable products" (EPPs) in the context of the Doha Development Round of multilateral trade negotiations and the Johannesburg Plan of Implementation. EPPs are defined as "products that cause significantly less 'environmental harm' at some stage of their 'life cycle' than alternative products that serve the same purpose." (UNCTAD, 2004)

Because environmental goods can potentially come from any of the commodity chapters of the Harmonized Commodity Description and Coding System (the "HS"), but encompass none of them, discussions of possible environmental goods relies on positive lists to identify products of interest. This report builds on the list of EPPs from UNCTAD (1995) and suggests a long number of possible qualifying products. It divides the illustrative additions into seven broad categories: environmentally preferable (EP) transportation, energy, pollution control, life-cycle extension, EP alternatives, and waste and scrap. Each category includes several sub-categories, including complements, parts, and infrastructure, where applicable. The illustrative list presented in the Annex covers almost every chapter of the HS dealing with non-agricultural products.

Three groups of products were chosen for case studies: sisal (from the original UNCTAD list), bicycles (a form of environmentally preferable transportation), and cooking appliances (pollution control, specifically air-quality improvement). Each case study points out trade, environmental and developmental benefits and stresses the need to supplement trade liberalisation with proper domestic policies.

Sisal and other textile fibres of the genus *Agave* are the coarsest "hard" fibres of many varieties grown in tropical and subtropical conditions. The largest sisal producers are Brazil, Tanzania, Kenya, and Madagascar. A large number of countries apply higher tariffs on processed sisal products than on the raw material. The global market for sisal (and its major product, agricultural twine) has contracted since the development of synthetic substitutes for natural fibre. However, new applications exploit the attribute that sisal is a faster renewable alternative to wood-derived fibre, and stress its promising use in the recycled paper industry as a reinforcing fibre in paper with a high recycled wood-fibre content.

The environmental and developmental benefits of bicycles as a flexible, affordable and non-motorised form of transportation have long been recognised, although their full potential is yet to be realised. The largest exporter of assembled bicycles and delivery tricycles is China, followed by OECD countries. Production of bicycle parts is less geographically concentrated, and includes a number of developing countries. Countries tend to levy higher tariffs on assembled units than on individual parts.

In many developing countries food is cooked on open fires fuelled by low-grade solid fuels (wood, dung and crop residues), resulting in high levels of indoor smoke pollution. One of the remedies for reducing indoor pollution is to improve the cooking devices so that they use fuel more efficiently. Stoves are generally subject to high levels of tariffs. In addition, co-operation in research and development activities is needed to develop a basic fuel-efficient stove frame that ensures proper ventilation.

Introduction

The notion of "environmentally sound technologies" appears to have preceded that of "environmentally preferable goods" by several years. In 1992 the United Nations Conference on Environment and Development (UNCED) defined *environmentally sound technologies* as "those which protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substitutes".[1]

The term *environmentally preferable products* was first defined at the international level by UNCTAD in 1995 as "products which cause significantly less environmental harm at some stage of their life cycle (production, processing, consumption, [or] waste disposal)[2] than alternative products that serve the same purpose, or products the production and sales of which contribute significantly to the preservation of the environment". UNCTAD also sometimes uses a shorter definition, namely "products that cause significantly less 'environmental harm' at some stage of their 'life cycle' than alternative products that serve the same purpose". (WTO, 2004)

Many (mostly developed) countries have adopted an assortment of terms and definitions to designate goods with environmentally superior characteristics. "Environmentally preferable" is common, but so is "environmentally friendly" and "green", especially in the context of government procurement. For example, in the United States, Section 201 of the Executive Order 13101 of September 1998 directs executive agencies to identify and purchase environmentally preferable products, *i.e.* products or services that "have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials, acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product or service."[3]

The EU uses the term "*green* public procurement" in reference to procedures that address environmental elements contracting authorities may take into account when procuring goods or services, such as energy-efficient computers and buildings, office furniture made from sustainably grown timber, recyclable paper, electric cars and electricity derived from renewable energy sources.[4] The Australian State of Queensland uses "environmentally *friendly* procurement" for goods or practices that conserve resources, save energy, minimise waste, protect human health, protect public amenity (in respect of noise, dust, odour and light pollution) and maintain environmental quality and safety.[5]

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1 Agenda 21, the Rio Declaration on Environment and Development, and the Statement of Principles for the Sustainable Management of Forests were adopted by more than 178 governments at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, 3-14 June 1992. See: www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter34.htm.

2 For details on life cycle assessment, see UNCTAD (1995).

3 www.ofee.gov/eo/13101.htm.

4 http://europa.eu.int/comm/environment/gpp/background.htm.

5 www.qgm.qld.gov.au/bpguides/envir/4frien.html.

Given the nature of environmental goods, the lack of agreed definitions, and reliance on positive lists identifying goods in trade negotiations, considerable uncertainty exists among governments and analysts on whether the 2001 Doha Ministerial mandate on EGS [Paragraph 31(iii)] covers, or could be interpreted to include, EPPs.

A definition from the joint OECD/Eurostat publication, *Environmental Goods & Services Industry: Manual for Data Collection and Analysis*, declares that the "environmental goods and services industry consists of activities which produce goods and services to measure, prevent, limit, minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and eco-systems. This includes cleaner technologies, products and services that reduce environmental risk and minimise pollution and resource use." (OECD/Eurostat, 1999) In addition to accommodating traditional environmental remedies ("measure or correct"), it also accommodates environmentally preferable products ("prevent, limit or minimise"). The definitions of UNCTAD and others noted above complement the definition of environmental goods and services (EG&S) by extending the coverage to the entire life cycle of a product, including production, processing, consumption and disposal.

Illustrative lists of environmental goods

Earlier lists

The negotiations on liberalising trade in environmental goods and services have similarities with previous multilateral sectoral initiatives. However, environmental goods and services are not easy to define. This group of products cuts through a number of chapters of the Harmonized Commodity Description and Coding System (HS)[6] and often covers multiple-use goods. Moreover, few of the possible candidates for EPPs can qualify as such in all circumstances.[7] Therefore, to facilitate trade negotiations, positive lists of products have to be compiled, often including ex-outs.[8] For a variety of reasons, efforts to compose lists of candidates for environmental goods by various institutions and countries' submissions to the WTO have so far largely focused on environmental remedies or goods that can be readily identified as a discrete (end use) category, such as renewable energy technologies.

In its 1995 analysis, UNCTAD grouped EPPs into several broad categories, including "products which are more environmentally friendly than petroleum-based competitors" [*i.e.* biomass fuels, jute and kenaf], "products which are produced in an environment-friendly way" [*i.e.* tropically grown products and tropical timber from sustainably managed forests], and "products which contribute to the preservation of the environment [*i.e.* some non-timber forest products]".[9]

The submission of the European communities to the WTO (TN/TE/W/47) identified EPPs as "goods that have a high environmental performance or low environmental impact" identified "on the basis of objective parameters" such as composition (*e.g.* the renewable character of components) or environmental

6 The Harmonized Commodity Description and Coding System, generally referred to as the "Harmonized System" or "HS", is a multipurpose international nomenclature developed by the World Customs Organization. It comprises about 5 000 commodity groups, each identified by a 6-digit code, arranged in a legal and logical structure. The system is used by more than 190 countries and economies as a basis for their customs tariffs and for the collection of international trade statistics (WCO, 2005).

7 For example, boats provide environmentally preferable transport. However, improperly operated boats can pollute.

8 In the language of trade negotiations "ex outs" are goods which are not separately identified at the 6-digit level of the HS and have to be identified in national tariff schedules at the 8- or 10-digit level.

9 Products identified on the UNCTAD list are referenced in Annex A2 as "U".

performance (*e.g.* energy consumption, efficiency, recyclability or biodegradability, low or zero pollution) and provided examples of such products.[10] At the time of writing, several other countries were compiling lists for submission to the WTO.

Illustrative list of environmentally preferable products

When searching for products beyond the UNCTAD list for discussion in the case studies, a broad interpretation of the UNCTAD definition was used. That is, a product can be classified as environmentally preferable on the basis of : *i)* the function the product performs by design or function (for example, baking soda or soap); *ii)* its own environmental impact using life cycle analysis (for example, bicycles as a form of transport); or *iii)* the environmental impact of other goods which the product could improve (for example, assuming that a longer life cycle is related to lower environmental impact, small repair tools can extend the useful life of some products).

However, the categories are not absolute and may overlap: products considered EPPs based on the function the good may perform can be made "more environmentally preferable" by lowering its environmental impact. Products with positive effects on the environmental impact of other goods can themselves have less environmental impact. And longer life does not necessarily imply lower environmental impact, as in the case of inefficient appliances.

Lacking a clear definition of EPPs, partially owing to cultural and societal differences, several examples of broad groups emerged from the search for qualifying products in each category discussed above. Categories were extended to include infrastructure and complements (see Annexes A1 and A2). The following are examples of product categories characterised as EPPs based on different criteria:

- Environmentally preferable (EP) transport:
  - EP transport core (both people and cargo): bicycles, boats, locomotives, cross-country skis, rollerblades. This category includes public transport, water transport, and self-propelled transport.
  - EP transport infrastructure: rails, sleepers, ski bindings, ski shoes.
  - EP transport complements: bike helmets, trailers.
  - EP transport parts and associated tools: chains, tyres.
- Energy:
  - Relatively energy-efficient technologies:[11] centrifugal dryers, fluorescent lamps.
  - Goods powered by renewable energy: solar heaters, solar food dryers.
  - Passive energy-efficient goods: insulation boards, double-glazed windows, thermal flasks.

10 Products identified in the EC submission, if not already on the UNCTAD list, are referenced in Annex A2 as "EC".

11 "Relatively energy-efficient" goods are understood as goods used to improve energy efficiency and those that are efficient in their use of energy relative to existing goods that deliver an equivalent service (*i.e.* lumens of light).

  - Parts of passive energy-efficient goods: glass for windows.
  - Manual tools.
- Pollution control:
  - Air quality improvement: efficient cooking stoves and other cooking appliances.
  - Air quality improvement complements: fuel for stoves, linings.
  - Cleaning and hygiene supplies.
  - Pollution control miscellaneous: passive pollution protection (masks, air filters).
- EP alternatives (generic):
  - Sustainable agriculture and fisheries (inputs): dolomite.
  - EP alternatives made of renewable materials ("lower environmental impact"): soy ink, soy candles.
  - EP alternatives to disposable products.
  - EP alternatives that are biodegradable:[12] baking soda in cleaning.[13]
  - EP alternatives miscellaneous: kenaf paper, waste reduction, soap refills in pouches, supplies for air drying laundry.
- The environmental impact of other goods that a product could improve:
  - Life cycle extension: mattress covers, repair tools. (See Annex A2 for a comparison of life-cycle extension and utilisation of waste and scrap.
- A combination of the product's own environmental impact *and* the environmental impact of other goods that it could improve:
  - Waste and scrap:
    - Waste and scrap: encourages re-use and proper disposal. For the purposes of this list, "waste and scrap" are defined as lines in the HS that have a potential to be re-used, further worked or somehow utilised, but such uses are not clear from the HS subheading description.

12 Biodegradability: "To be truly biodegradable, a substance or material should break down into carbon dioxide (a nutrient for plants), water, and naturally occurring minerals that do not cause harm to the ecosystem (salt or baking soda, for example, are already in their natural mineral state and do not need to biodegrade)." See www.worldwise.com/biodegradable.html.

13 Vinegar (HS 2209.00) is also a biodegradable cleaning alternative. It is not listed here as it is classified as an agricultural product in the HS.

- Utilisation of waste and scrap: defines a category of products obtained from waste and scrap, such as reconstructed stones and recycled paper.

- By-product utilisation: a category of products produced from by-products and by-products themselves, if suitable for further processing, such as wood tar, wood naphtha and other by-products of wood carbonisation used to impregnate ships' cables.[14]

The illustrative list of EPPs that satisfy a broadly interpreted UNCTAD definition using the criteria discussed above, covering almost all chapters of the HS, and containing goods of interest of both developed and developing countries, can be found in Annex A2. The examples were drawn up in an effort to complement the original APEC and OECD lists, which focused primarily on environmental remedies, taking the UNCTAD list as a starting point. Products from the UNCTAD list and the EC submission are not classified or assigned to a category and are listed without explanation. Technical and explanatory notes accompany the illustrative list (see Annexes A1 and A2).

Case studies

Three groups of products were chosen for case studies: sisal, bicycles, and cooking appliances. Sisal was chosen from the original UNCTAD list, bicycles and cooking appliances were identified as examples of EPPs that facilitate EP transport and air-quality improvement.

The benefits of liberalising trade in EPPs are likely to be even greater if their parts, infrastructure and complements are also liberalised. Therefore, the case studies do not focus solely on specific products (represented by a single line in the HS) but also take into account groups of products clustered around categories of goods. Unless otherwise indicated, the trade data is from 2003, the latest year for which a full data set for all countries was available at the time of writing. Each case study describes the product, its benefits and trade situation, and discusses possible complementary measures. Non-tariff barriers and conformity assessment procedures are not considered.

A common observation for all of the case studies points to the "water" in the bound tariffs. A sub-set of WTO members apply only nuisance tariffs (on an MFN basis), while maintaining bound levels[15] at 50% or higher.[16]

***Sisal and other fibres of the genus* Agave**

Sisal and other textile fibres of the genus *Agave* are the coarsest vegetable "hard" fibre of many varieties grown in tropical and subtropical conditions; they are coarser than jute and other textile bast fibres. The most important in commercial terms are *Agave sisalana* (and its hybrids) and *Agave fourcroydes* (better known as henequen).[17] *Agave sisalana* yields hard, flexible fibres, which are suitable for making rope and twine, cord matting, padding and upholstery. Related fibres are Haiti hemp (*Agave*

14 Many by-products already have commercial value. For example, propane (C_3H_8) is a by-product of natural-gas processing, and commands an even higher price per cubic meter.

15 A bound tariff is a legal commitment that the country will not apply a tariff higher than that rate.

16 Countries agree to lower their bound tariff rates, not necessarily their applied rates. Thus, once the current round of multilateral trade negotiations is finished and tariff cuts are negotiated, countries may still be able to apply their currently applied tariffs.

17 See www.wigglesworthfibres.com/products/sisal/history.html. In Mexico, henequen production (largely in the Yucatan peninsular) has fallen from a peak of about 160 000 tonnes in the 1960s to about 15 000 tonnes today, all of which is used locally.

foetida), and istle or ixtle (Tampico or Mexican hemp). These fibres, extracted from *Agave funkiana* or *Agave lechugilla*, are used mainly in brush making, but they are occasionally used for textiles. The category also includes maguey and cantala, obtained from *Agave cantala* (Philippines or Indonesia), or *Agave tequilana* (Mexico) and pita (*Agave americana*) (WCO, 2005).

Sisal, the most widespread of these fibres, originated in Mexico, and was introduced to Tanganyika (now mainland Tanzania) at the end of the 19th century. Following its success in that country, the crop was introduced in 1903 to Kenya (UNIDO, n.d.). Brazil saw its first commercial planting of sisal in the late 1930s. Sisal accounts for two-thirds of world production of hard fibres, and about three-quarters of sisal is used for agricultural twine (UNIDO, n.d.). Box 1 summarises the agronomic and production characteristics of sisal.

Box 1. Sisal

The sisal plant has a 7-10 year life span (longer in Mexico, where growth is slower) and is usually cut first after two or three years and then at 6-12 month intervals. A typical plant produces 200-250 commercially usable leaves in its lifetime (hybrid varieties produce up to 400-450), and each leaf contains an average of around 1 000 fibres. The fibre element, which accounts for only about 4% of the plant by weight, is extracted by a process known as decortication.

In eastern Africa, where sisal is grown on estates, the leaves are in the main transported to a central decortication plant, after which the fibre is dried, brushed and baled for export or for use in domestic mills. In Brazil it is mainly grown by smallholders and the fibre is extracted by teams using portable raspadors.

East African sisal, once washed and decorticated, is considered to be superior in quality to Brazilian sisal (although the latter is more than adequate for the manufacture of agricultural twines and general cordage and is used domestically in the production of kraft paper). In normal times, it commands a significant price premium on the world market.

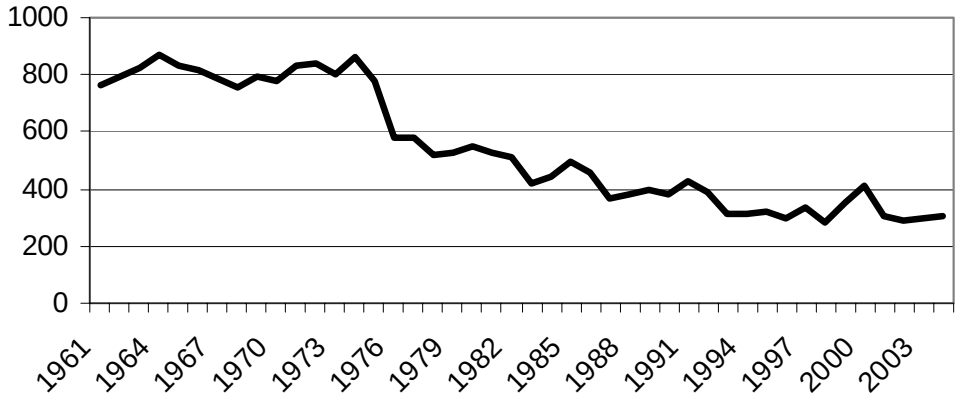
Source: www.wigglesworthfibres.com/products/sisal/history.html.

The area planted to sisal peaked in the late 1960s, when it exceeded 1 million hectares worldwide, and has since stabilised at around 350 000 hectares. Production[18] has been even at around 300 000 tonnes a year, having fallen from more than 800 000 tonnes in the 1960s and 1970s (Figure 1). The largest sisal producers are Brazil (191 000 tonnes in 2004), Tanzania (23 500 tonnes), Kenya (20 000 tonnes), Madagascar (17 500 tonnes), Mexico (16 635 tonnes), and China (16 000 tonnes). Small quantities are also harvested in Cuba, Haiti, Venezuela, Morocco, South Africa, Ethiopia, Mozambique, Angola, Dominican Republic, Indonesia, Central African Republic, Jamaica, Guinea, Malawi, and Thailand (declining order of production volume). In total, least-developed countries (LDCs) harvested 48 855 tonnes from 77 830 hectares in 2004. Trends in production by the four leading producers are illustrated in Figure 2.

[18] Data on production are from FAOSTAT. According to the documentation on *Agave sisalana*, sisal fibre is obtained from the leaves of the plant. It also is used as an ornamental plant. Trade data cover fibres that are raw, prepared for spinning, and tow and waste, including yarn waste and garnetted stock.

Figure 1. World sisal production, 1961-2004

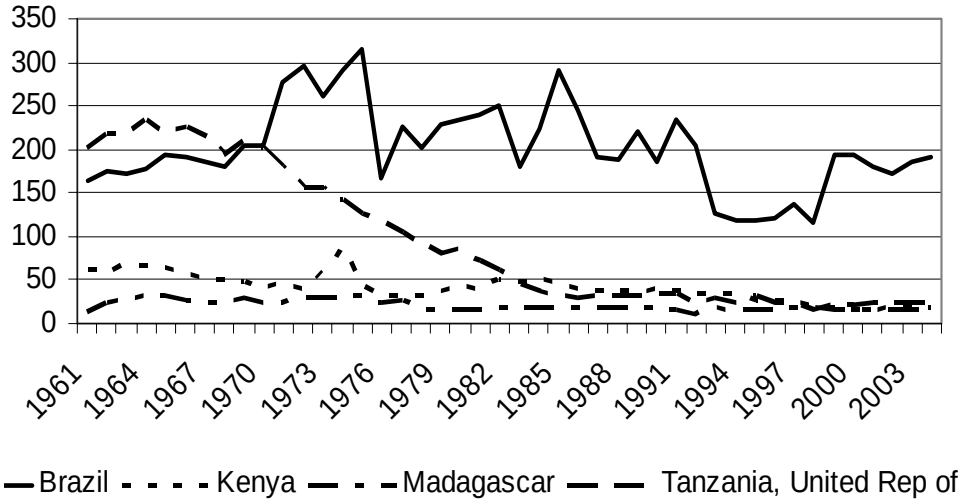
Thousands of metric tons



Source: FAOSTAT Data, 2004.

Figure 2. Sisal production in selected countries, 1961-2004

Thousands of metric tons



Source: FAOSTAT Data, 2004.

Trade

Table 1 lists HS codes of products relevant to sisal.

Table 1. HS codes relevant to sisal and other fibres of the genus *Agave*

HS	Description
46	Manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork (ex-out: made of sisal)
4706.9x	Other pulps derived from other fibrous cellulosic material
5304.10	Sisal and other textile fibres of the genus *Agave*, raw
5304.90	Sisal and other textile fibres of the genus *Agave*, processed but not spun; tow and waste of these fibres (including yarn waste and garnetted stock).
5308.90ex	Other yarn of other vegetable textile fibres; paper yarn
5311.00	Woven fabrics of other vegetable textile fibres; woven fabrics of paper yarn
5607.21	Twine, cordage, ropes and cables, whether or not plaited or braided and whether or not impregnated, coated, covered or sheathed with rubber or plastics; Of sisal or other textile fibres of the genus Agave; Binder or Baler twine
5607.29	Twine, cordage, ropes and cables, whether or not plaited or braided and whether or not impregnated, coated, covered or sheathed with rubber or plastics; Of sisal or other textile fibres of the genus Agave; Other
5702.99	Carpets and other textile floor coverings, woven, not tufted or flocked, whether or not made up; Of other textile materials
9209.99 ex*	Parts and accessories of musical instruments (ex-out: strings made of sisal for percussion instruments)

* not an EPP *per se* since it is not an alternative. It is listed to illustrate uses of sisal.

Source: OECD, based on the 2002 edition of the Harmonized System.

Table A3.1 summarises the leading exporters and the countries with the highest applied and bound tariffs on raw sisal and selected products of interest.[19] Highlighted are major exporters as well as the share of the LDCs. Sisal production represents the majority in the *Agave* genre and tends to be exported raw. The leading exporters of raw sisal are Brazil (supplying 43% of exports), Kenya (26%), Tanzania (13%), Madagascar (3%) and India (2%). Other countries supply less than 1%. In 2003 the OECD countries and China were the main importers of raw sisal. The OECD countries imported 45% of Brazilian exports, 39% of Kenyan exports, 51% of Madagascan exports and 72% of Tanzanian exports. China, the biggest rope producer, imported 38% of Brazilian exports, 27% of Kenyan exports, and 22% of Madagascan exports.

Several countries apply tariffs exceeding 20% on both raw sisal and products. However, a significantly larger number of countries apply higher tariffs on processed products than on the raw material. Such tariff escalation may be one of the reasons why the largest raw sisal exporters choose to export raw material rather than add value at source. Brazil is a notable exception, with the majority of its binder (or baler) twine directed to the US market.

South–South trade

Sisal is a plant that grows well in many developing countries. Given its environmental attributes and alternative uses, if there were suitable policies in place, part of the demand lost with the advent of synthetic fibres could be recovered. Trade liberalisation would contribute, especially if it brought tariffs on raw and manufactured products into parity, as this would encourage adding value at source. Increased demand for the raw product, generated by alternative uses, and adding value at source would increase employment opportunities in several LDCs.

Many traditional and alternative uses of sisal are relatively labour-intensive. Because of their geographical proximity to producers of raw sisal, some neighbouring developing countries could become involved in processing the fibre and manufacturing.

[19] Not all products are listed since many of them are ex-outs, for which data are not available.

Traditional and alternative uses

Traditional uses of sisal and other textile fibres include agricultural twine ("binder" and "baler" twine), rope and cordage. The global market for sisal (and its major product, agricultural twine) has contracted since the development of synthetic substitutes for natural fibre, particularly the use of polypropylene for baler twine and other cordage (FAO, 2000). Nevertheless, with increasing interest in natural, renewable and biodegradable products, there is a potential for sisal trade to grow once traditional uses are re-discovered and new uses are explored.

New (or reinvented) applications would exploit the fact that sisal is a faster renewable alternative to wood-derived fibre. It can also be used as a strengthening agent (replacing asbestos and glass fibre) in wire-rope cores, speciality pulps and plaster. Decorative and insulation uses include carpets, wall coverings and macramé, mattresses, bags and handicrafts. Other uses are in padding, buffing cloths, filters, geotextiles used in civil and environmental engineering, as a component of automobiles. Waste from sisal production can be used as livestock feed, as a soil amendment, and to produce biogas. Research on alternative uses is taking place at the international level, led by the FAO (FAO, 2000). With the increasing popularity of recycling, a promising use of sisal is emerging in the recycled paper industry as a reinforcing fibre in paper with a high recycled wood-fibre content (Hurter, 2000).

Complementary policies

Technical research is needed to improve varieties, introduce new hybrids and new production techniques, especially in eastern Africa and Madagascar. Production there has stagnated, old varieties are still being planted (FAO, 2000), and most of the product is exported in its raw state.[20]

Bicycles[21]

The environmental benefits of bicycles as flexible, affordable and non-motorised transport have long been recognised, but their full potential has yet to be realised. Although bicycles are not expressly mentioned in the Johannesburg Plan of Implementation, they are ideal technologies for assisting in poverty reduction, sustainable development and changing patterns of consumption. OECD countries are increasingly supporting local cycling initiatives and bringing bicycling to full parity with other modes of transport. For example, in 1998 US President Clinton signed the Transportation Equity Act, thereby setting the stage for further integration of bicycles into transport planning (Brown and Larsen, 2002).[22] In Europe, from 1998 to 2001, the European Conference of Ministers of Transport (ECMT), jointly with the OECD, conducted a project, Implementing Sustainable Urban Travel Policies, which encouraged countries to adopt a comprehensive national cycling policy and to raise awareness and "de-marginalise" cycling as a sustainable mode of transport (ECMT, 2004). The Netherlands, Denmark and the United Kingdom are in the vanguard in implementing national cycling plans.

While developed countries are rediscovering bicycles mostly for their environmental merits, NGOs and many developing-country governments see bicycles as a means of improving welfare. However, as developing countries define their national transport strategies and planning cities, it is appropriate to consider the bicycle from the beginning, to ensure suitable urban planning and bicycle infrastructure, such

20 UNIDO (n.d.) reports co-operation between Brazil and the Tanzania Sisal Board.

21 Since many studies are available (see the references), this case study briefly summarises the benefits of bicycles, and focuses on trade liberalisation. It emphasises the need for broad and systematic trade liberalisation of bicycles, including parts and complements. The World Bank has conducted extensive research on the health and mobility benefits of non-motorised transport.

22 A fact sheet on bicycle transport is available at www.fhwa.dot.gov/tea21/factsheets/b-ped.htm.

as available, properly positioned and smoothly accessible bike lanes, secure facilities for parking, and smooth connection to public transport. China, still the most prominent cycling country, now faces this issue. Its economic boom and increased purchasing power, combined with a desire by many to own a motorised vehicle, has led the government to invest massively in motorways, possibly marginalising bicycle riders.

The environmental benefits of bicycles include, but are not limited to, reducing congestion[23], avoiding air pollution and CO_2 emissions, and conserving fuels. A bicycle places fewer demands on space than a motorised vehicle, in terms of both operation and parking. Among the developmental benefits are: empowerment of vulnerable groups, increased income-generating opportunities, accessibility, low capital investment and low maintenance costs. Health-care and social workers and their patients also benefit: for example, bikes are helping HIV/AIDS educators in Ghana reach 50% more people than they would if they travelled by foot (Brown and Larsen, 2002).

Adult bicycle use can be divided into utility and recreational cycling. Utility cycling consists, for example, of commuting, commercial transport of cargo and persons, delivery and messenger services, bicycle ambulances and bicycle policing. While the personal and societal benefits of recreational cycling in the form of physical activity and environmentally benign recreation are important, especially as more and more countries — some developing countries included — are fighting obesity epidemics, the focus here is on utility cycling. No distinction is made in the analysis among different kinds of bicycles, which are commonly grouped into mountain bikes, racing bikes and touring (or city) bikes.[24] This reflects the fact that, the HS has only one 6-digit subheading for bicycles and delivery tricycles; it does not differentiate according to types of bicycle or final use.

In addition to employment in production, benefits generated by the bicycle include employment in related services. Bicycle repair is relatively low technology, involves only a moderate amount of investment, and the staff does not require extensive training. The bike cab and rickshaw business provides employment in several developing countries. However, some countries and cities (*i.e.* Burundi and Dhaka, Bangladesh), are starting to ban bicycle-based services on safety grounds.

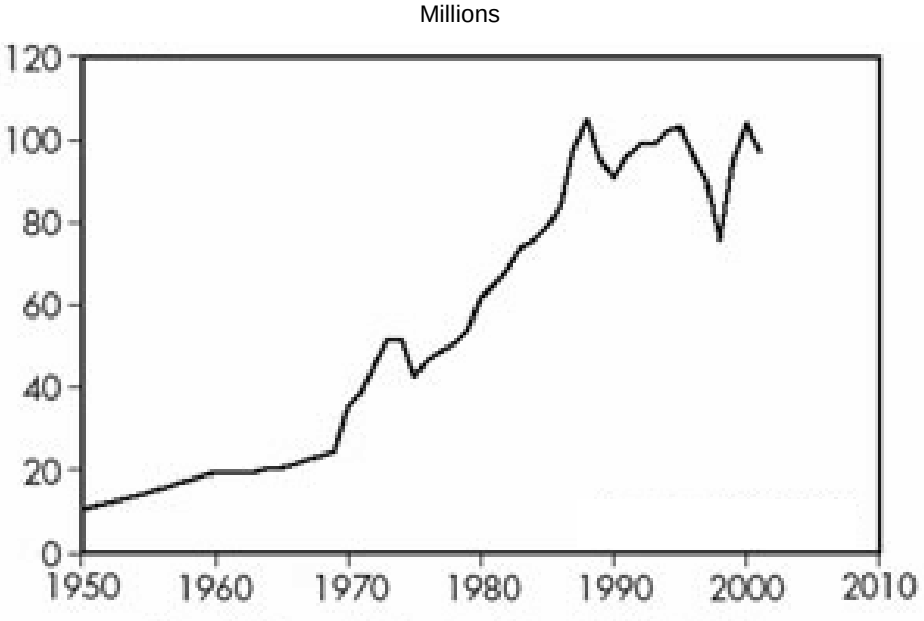
The Earth Policy Institute, drawing on data compiled in 2002 by the World Watch Institute, reports there were 97 million bicycles produced worldwide in 2001.[25] The World Watch Institute cites excess inventory as the reason for decreasing production in recent years (Figure 3).

23 In extreme cases, with a lack of urban planning, congestion of different sort could occur.

24 A detailed taxonomy of bicycles is presented in UNCTAD (1985).

25 The last year for which information on production was readily available.

Figure 3. World bicycle production, 1950-2001



Source: www.worldwatch.org/features/vsow/2003/06/18/ .

Core, parts and complementary products

Trade liberalisation of bicycles, if accompanied by liberalisation of spare parts and complements (Table 2), such as safety gear, would deliver greater benefits than liberalisation of trade in bicycles alone. An important complement is a trailer, which can extend a bicycle's functions. For example, trailers are used in bicycle ambulances.[26] At the 6-digit level, bicycles are grouped with non-motorised delivery tricycles. Many tools needed to assemble a bicycle are multiple-use and not bicycle-specific, and hence not listed. Because of their multiple-use characteristics, and for the sake of simplicity, goods related to certain technical steps in the production process, such as painting, are also ignored. Many of the bicycle complements are multiple-use as well, and are marked as such. Since bicycle infrastructure, although important for the safe operation of bicycles, is not specific to that mode of transport (unlike rails for trains and trams), no goods associated with infrastructure are listed.

[26] www.itdg.org/?id=bicycle_ambulances.

Table 2. HS codes for bicycles, parts and components

HS code	Description
EP transport core	
8712.00	Bicycles and other cycles (including delivery tricycles), not motorised
EP transport parts and tools	
4011.50	New pneumatic tyres, of rubber of a kind used on bicycles
4013.20	Inner tubes, of rubber of a kind used on bicycles
7315.11ex	Roller chain (ex-out: bicycle chain)
7515.19ex	Parts of roller chains
8204.1x	Non-adjustable hand-operated spanners and wrenches * multiple use*
8306.10ex	Bells, gongs and the like (ex-out: bicycle bells)
8414.20	Hand- or foot-operated air pumps *multiple use*
8414.90	Parts of hand- or foot-operated air pumps *multiple use*
8512.10	Lighting or visual signalling of a kind used on bicycles
8512.90	Parts of lighting
8714.91	Frames and forks, and parts thereof
8714.92	Wheel rims and spokes
8714.93	Hubs, other than coaster braking hubs and hub brakes, and free-wheel sprocket-wheels
8714.94	Brakes, including coaster braking hubs and hub brakes, and parts thereof
8714.95	Saddles
8714.96	Pedals and crank gear, and parts thereof
8714.99	Other
EP Transport complements	
6506.10ex	Safety headgear (ex-out: bicycle helmets)
8301.10	Padlocks *multiple use*
8301.60	Parts of padlocks *multiple use*
8301.70	Keys presented separately *multiple use*
8716.40ex	Other trailers and semi-trailers (ex-out: bicycle trailers)
8716.90	Parts of Other trailers and semi-trailers (ex-out: parts of bicycle trailers)
9029.20ex	Speed indicators and tachometers, stroboscopes (ex-out: speed indicators for bicycles)
9029.90	Parts and accessories *multiple use*

Note: Environmentally preferable transport devices also include two- and three-wheel scooters, classified as an ex-out under HS 9501.00, "Wheeled toys designed to be ridden by children (*i.e.* tricycles, scooters, pedal cars); dolls' carriages)."

Source: OECD, based on the 2002 edition of the Harmonized System.

Trade

The international trade statistics used for this study focus on a sample of goods irrespective of quality differences; because they are available only at the 6-digit level of aggregation, it is not possible to collect comparable trade data on ex-outs. Data on export values, bound and applied tariffs for HS 8712.00 and 8714.9x are presented in Table A3.2.

The total value of bicycle exports (HS 8712.00, including delivery tricycles) exceeded USD 2.8 billion in 2003, the latest year for which a full set of data is available. The total value of exports of parts (HS 8714.91 to 8714.99) topped USD 3.2 billion, surpassing the value of assembled units. China is the leading exporter of assembled bicycles and delivery tricycles, accounting for 51% of total exports, followed by OECD countries (42%). Within the OECD countries, the Netherlands supplies 18% of total OECD exports, Italy 15%, and Belgium 10%. China is also a leading supplier of bicycle parts, although its share is generally smaller than its share of the assembled bicycle market. Among the countries contributing at least 1% of the world's supply of bicycle parts, measured in value terms (hence likely to contain re-exports), are India, Thailand, Malaysia, Bulgaria, Singapore, Brazil and Romania, in addition to the OECD countries. The share of the LDCs in this trade is minuscule for both categories.

Several additional observations stand out:

- There are notable differences in the numbers of tariff lines used by countries. Applied MFN tariffs vary widely among and within WTO members' economies, observers and non-members, in some cases exceeding 50%.

- Trade in parts exceeds trade in assembled units. The HS is organised such that a complete bicycle can be assembled from parts from HS 8714.91 through 8714.99. Some countries apply higher tariffs on assembled units than on parts and import more parts than assembled bikes in value terms.

- Production of bicycle parts is diversified among many countries, likely because production of parts is less capital-intensive than assembly of complete units. Many developing countries are able to compete globally by developing a strong brand image for their products.

South–South trade

In order to explore the opportunities for developing countries in this market, the direction of Indian exports of bicycle parts and components was analysed (Table 3). While India exports less than China, it is still a major player. Most of its trade has been with other developing countries.[27]

Table 3. Top Indian export destinations, bicycle parts, 2003

HS subheading	Total Indian exports (thousands $)	% of world exports	Comments
8712.00	43 277	1.53	
8714.91	9 431	1.95	
8714.92	24 003	11.06	Nigeria 12.5%; OECD countries 11.5%; Tanzania 7.9%; Malawi 7.4%; Burkina Faso 7%; Egypt, Syrian Arab Rep. 6.8%; Uganda 6%
8714.93	40 357	20.52	OECD countries 21.6%; Nigeria 9.2%; Brazil 8.9%; Tanzania 6.1%
8714.94	7 984	2.57	
8714.95	4 667	3.61	
8714.96	8 161	3.24	
8714.99	47 011	2.77	

Source: COMTRADE.

Bicycles and bicycle parts are often produced under a copyright brand name for export to countries with relatively well-established biking infrastructure. However, conditions in many developing countries require bicycles that can safely transport people and heavy cargo over unpaved roads. While some bicycles on the market (*i.e.* mountain bicycles) are well suited for off-road conditions, they often contain luxury features, tend to be sold in niche markets at a premium and require access to sophisticated repair shops. Any one of these characteristics can make them prohibitively expensive for a large segment of a country's population. This suggests there may be opportunities for South–South co-operation in research and development of a simple, affordable bicycle, one that well fits the needs of developing countries. In addition, there are both learning curves and economies of scale in the production of individual parts; this

[27] For comparison, during India's 1981/82 fiscal year, Nigeria, the Islamic Republic of Iran, and Iraq were the final destinations for 75% of India's total bicycle exports. Other export markets for bicycles included Uganda, Sri Lanka, Hong Kong (China), Ghana and Egypt. Exports of bicycle components were directed towards a larger number of countries and were slightly less geographically concentrated (UNCTAD, 1985).

may encourage concentrated production of individual parts and trade, and possibly the assembly of units in the importing country. Such an arrangement could deliver employment benefits and lower transport costs.

Refurbishing initiatives and other bicycle support programs

Although a new bicycle, especially a basic model, can be a relatively inexpensive form of transport, its cost may be still out of reach for people living in poverty. Refurbished bicycles, by comparison, can cost considerably less than new ones and are often donated by charities in developed countries. Statistics on trade in refurbished bicycles are not available, however, and they are likely to escape production statistics if not refurbished by a bicycle manufacturer.

While projects that refurbish bicycles for local users are common in OECD countries,[28] several initiatives to ship refurbished bicycles to developing countries have emerged recently. An example is the Bicycle Refurbishing Initiative (Velo Mondial[29]), which plans to collect bicycles in the Netherlands, Ireland, England and the United States and refurbish them in South Africa after training local personnel. These projects will extend the life of the products and provide local employment. If bicycles are refurbished in developing countries, using imported parts, it is crucial that trade in these parts be liberalised as well.[30]

Complementary policies

While trade liberalisation is a crucial step, full implementation of environmentally preferable transport policies might require rectification of domestic policies as well. Encouragement of bicycling requires a multisectoral approach: a proper marriage of trade, environment, development and urban-planning policies. For example, in Kenya a luxury tax on bicycles was levied at the rate of 80% until 1986 and was gradually reduced and finally eliminated in 2002 (UN DESA, 2004). Supporting policies sometimes encourage bicycle use indirectly by discouraging use of other means of transport. Bicycles, because of their light weight, put less wear and tear on roads than motorised vehicles, and this translates into lower road maintenance and repair costs. In Nagoya, Japan, employer contributions for commuting by bicycle were doubled in 2000, while allowances for automobile commuters were halved.[31]

While bicycles have great potential as a transport mode in cities in both developing and developed countries, prevalent social attitudes can significantly limit their use. Biking policies, infrastructure and biking culture are closely related. Some countries perceive bicycles and other forms of non-motorised transport as having less status than a car, and most city infrastructure is planned around cars.[32] In many developing countries, despite the benefits they could receive from access to better transport, women are often discouraged from using bicycles by a perception that is it inappropriate for them to use bicycles on public streets (Bamberger *et al.*, 2001).

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28 For example, the "Share-a-bike program", set up by a Michigan volunteer group, repairs bicycles and gives them away to needy citizens in East Lansing. See www.bikes.msu.edu/.

29 See www.velomondial.net/. For an opposing view on foreign refurbishing initiatives, see www.afriwheels.org/afri/bestbike.html.

30 Some refurbishing projects refurbish bicycles, often to be donated to developing countries, in a developed country by otherwise marginalised groups. A refurbished bicycle belongs to the same HS subheading as a new one.

31 Additional success stories at www.earth-policy.org/Updates/Update13_data.htm.

32 However, cars are more private and perceived as safer in high-crime areas.

Cooking appliances

Stoves and other cooking appliances are basic necessities. Around 95% of staple foods, a great part of the diet of poor people, must be cooked before they can be eaten (Warwick and Doig, 2004). In much of the developing world, food is cooked on open fires fuelled by low-grade solid fuels (wood, dung and crop residues). Indoor smoke from burning these fuels is a major contributor to respiratory disease, including pneumonia, which is the leading cause of mortality in developing nations and kills four to five million children worldwide every year (Kammen, 1995). Warwick and Doig (2004) report that indoor air pollution from the burning of solid fuels kills over 1.6 million people, predominantly women and children, each year, a death toll higher than that caused by malaria. In addition, the burden of collecting wood, mostly by women and children, takes children away from school to assist in domestic chores. The chief environmental impacts relate to inefficient charcoal production and unsustainable harvesting of fuelwood (UNDP, 2000), and consist mainly of air pollution, deforestation and desertification. Reducing problems caused by inefficient cooking appliances is one of the Millennium Development Goals.

The developmental, environmental and health literature presents alarming facts (Warwick and Doig, 2004). An estimated 2.4 billion people burned traditional biomass for cooking and heating in 2002. Of these, approximately 800 million depend solely on crop residues and dung. When coal is included, a total of 3 billion people cook with solid fuel. Over half of all people cooking with biomass live in India and China. The highest proportions of the population cooking with biomass are found in Sub-Saharan Africa, and are over 90% in many countries. On current trends, an extra 200 million people worldwide will rely only on traditional biomass for cooking and heating by 2030, according to the International Energy Agency (IEA, 2004). The increase is partly due to increasing population, but households in some countries — for example in Central Asia and some formerly centrally planned economies (*i.e.* Tajikistan and the Kyrgyz Republic) — are also reverting back to solid fuels in response to inadequate domestic policies and collapsing natural gas infrastructure, especially in rural areas.

The problem is not confined to rural areas: the urban poor frequently spend a significant fraction of their income on the purchase of charcoal (considered an urban fuel) and wood (Kammen, 1995), and the increased concentration worsens the outdoor air pollution. If current trends in fuel use in Sub-Saharan Africa continue, cooking fires will pump 6.7 billion tonnes of carbon into the atmosphere as greenhouse gases over the next 45 years (Bailis *et al*., 2005).[33]

The health effects of indoor smoke pollution tend to appear relatively slowly compared with other health hazards, such as malaria or infectious diseases. However, they deteriorate quality of life for those affected, mostly already vulnerable groups. Table 4 summarises the pollutants generated from burning one kilogram of wood in an environment without proper ventilation, and compares the concentrations with typical standards set to protect health in developed countries.

[33] The estimate assumes a BAU (business as usual) scenario, defined such that the proportion of people in rural and urban areas using each fuel remains unchanged from the baseline year. However, differential rates of population growth and urbanisation in different countries in the region result in regional changes in household fuel choice during the period of analysis. No changes occur in wood-fuel harvesting practices or in charcoal production techniques, in which 20% of trees removed for charcoal and 80% of those removed for wood regenerate (Bailis *et al.*, 2005).

Table 4. Pollutants generated from burning one kilogram of wood

Pollutant	Typical concentrations *	Typical standards set to protect health	Number of times in excess of guidelines
Carbon monoxide (ppm**)	129	8.6	15
Particles (µg/m^3)	3 300	100	33
Benzene (µg/m^3)	800	2	400
1-3 Butadiene (µg/m^3)	150	3	50
Formaldehyde (µg/m^3)	700	100	7

* From burning 1 kg of wood in a traditional stove in a 40 m^3 kitchen with 15 air changes per hour.

** Parts per million.

Source: UNDP (2000) in Warwick and Doig (2004).

The health consequences of indoor smoke pollution are primarily reflected in problems of the respiratory system, from respiratory infections to asthma, tuberculosis and lung cancer. Secondary problems, such as eye cataract, low birth weight and infant mortality, are also attributed to chronic exposure to wood-smoke pollutants. The most affected by indoor smoke pollution are women and children: children aged under five account for 56% of total deaths attributed to indoor air pollution (Warwick and Doig, 2004). In Sub-Saharan Africa, the number of premature deaths among women and young children exposed to wood smoke from stoves could, on current trends, reach nearly 10 million by 2030, from about 400 000 in 2000 (Bailis *et al*., 2005).

Indoor smoke pollution depends on the type of fuel used, construction of the cooking stove, and ventilation of the cooking space. Solutions to the problem range from the simple to the sophisticated, from reducing smoke by avoiding it to reducing the need for fire. Table 5 summarises potential interventions for reducing exposure to indoor air pollution. Short-term tactics include, for example, "passive" control in the form of improved ventilation, and "manual" improvements of the stoves (installing chimneys, hoods, etc).[34] Long-term strategies include development and adaptation of more efficient stoves, delivery of alternative fuels, and building infrastructure to deliver fuels.

Most research attention is given to alternative cooking fuels. A switch from burning wood to burning petroleum-based fuels such as kerosene would reduce indoor air pollution by at least 90%, and prevent as many as 3.7 million deaths a year from respiratory illness, depending the speed of the transition (Bailis *et al*., 2005). Household fuels are ranked on an energy ladder, a scale that rates the quality of household fuels. On the lower end of the ladder are traditional biomass fuels such as dried animal dung, scavenged twigs and grass, crop residues, wood and charcoal. Next are coal, kerosene, bottled and piped gas, biogas (from animal dung) and electricity (Smith *et al.,* 2000 in Warwick and Doig, 2004). As the welfare of poor people improves, they tend to switch to fuels higher on the energy ladder.

Some cleaner fuels cost less per unit than wood. However, infrastructure is necessary to ensure reliable delivery. Some research suggests that similar health and environmental benefits, at least in terms of lower pollution, would be achieved by encouraging a shift from burning wood to burning charcoal (Bailis *et al*., 2005), an approach objected to by some environmentalists owing to current production processes for charcoal (OECD, 2005).

34 Moving cooking outdoors, seemingly a simple solution for removing indoor smoke pollution, is not technically and culturally feasible in some regions and would not resolve any of the environmental problems of outdoor air pollution.

Table 5. Potential interventions for the reduction of exposure to indoor air pollution

Source of smoke	*Living environment*	*User*
Improve the cooking devices Chimney-less improved biomass stoves Improved stoves with chimneys **Change the fuel used to one of the following:** Briquettes and pellets Charcoal Kerosene LPG Biogas Producer gas Solar energy Other low-smoke fuels Electricity **Reduce the need for fire** Insulate houses Install solar water heaters	**Improve ventilation** Dust all hoods and fireplaces Increase the number of windows and ventilation holes **Kitchen design and placement of stove** Create a shelter for cooking (move stove to a better ventilated area) Place the stove at waist height	**Reduce exposure through operation of source** Dry the fuel first Use pot lids Maintain the stoves better Operate them more efficiently **Avoid exposure** Keep children away from the smoke

Source: Adapted from Ballard-Tremeer *et al.* (2000) in Warwick and Doig (2004).

Core, parts and complementary products

One of the remedies for reducing indoor smoke pollution is to improve cooking devices so that they use fuel more efficiently. Table 6 lists HS subheadings related to improved cooking appliances. Basic headings are from Chapters 73 (incorporating a range of fuels) and 69. Multiple-use products which could be used in passive (*i.e.* improved ventilation) and active (more efficient cooking stoves, alternative fuels, infrastructure development) indoor smoke pollution control are not listed.

Table 6. Products related to improved cooking appliances

HS code	Description
2710.19ex	Other petroleum oils and oils obtained from bituminous materials, other than crude… (ex-out: kerosene for cooking stoves)
6914.10ex	Other ceramic articles of porcelain or china (ex-out: linings for wood burning stoves of porcelain or china, stoves of porcelain and china)
6914.90ex	Other ceramic articles (ex-out: linings for wood burning stoves of ceramics other than porcelain or china, ceramic stoves other than of porcelain and china)
7321.11	Cooking appliances and plate warmers – non-electric domestic stoves and ranges for gas fuel or both gas and other fuels [includes solar stoves]
7321.12	Cooking appliances and plate warmers – non-electric domestic stoves and ranges for liquid fuel [includes vegetable oil stoves, kerosene stoves]
7321.13	Cooking appliances and plate warmers – non-electric domestic stoves and ranges for solid fuels
7321.90ex	Parts of 7321 (ex-out: as applicable)
8516.60ex	Other ovens; cookers, cooking plates, boiling rings, grillers and roasters (ex-out: domestic electric stoves)
8516.90ex	Parts of 8516.90 (ex-out: as applicable)

Source: OECD, based on the 2002 edition of the Harmonized System.

Trade

Total trade in non-electric cooking appliances and plate warmers (cooking appliances for short) that use different types of fuels are presented in Table A3.3. Trade statistics do not provide a comprehensive

view of improved cooking appliances because of non-specificity at the 6-digit level. However, several observations can be made:

- By far the greatest number of traded stoves use gas. The export value of trade in cooking appliances using gas or both gas and other fuels is eight times greater than the export value of trade in cooking appliances using solid fuels, and 24 times the value of cooking appliances using liquid fuels.

- Cooking appliances are generally subject to high tariff levels regardless of the type of fuel they use, although some countries vary the tariff on stoves according to the type of fuel used. Such treatment could indicate a preference for a specific type of fuel (gas, solid, or liquid).

- There are notable differences in the numbers of tariff lines used by countries. Applied tariffs vary widely among and within the WTO members, observers and non-members, in some cases exceeding 50%.

- Trade in parts is small compared with trade in cooking appliances using gas. Countries tend to levy lower tariffs on parts than on complete units.

- The share of LDCs in both categories is miniscule.

South–South trade

The long-term goal of many countries and development agencies has been to replace inefficient stoves that burn solid fuel with more efficient models using gas or liquid fuels. This is often not feasible because of high costs and high demands on infrastructure. Cooking appliances, especially those beyond a simple fireplace or a self-made device, tend to require a large monetary outlay for a household. In addition, to achieve high rates of adoption, stove designs have to be field-tested and accepted by users.[35]

Owing to the lack or unreliability of infrastructure for delivering less polluting fuels, solid fuels are likely to remain the main energy source in many developing countries. Although local conditions and cooking cultures differ across countries, resulting in differences in desirable stove designs, the problem of indoor smoke pollution is the same. However, trade in cooking appliances using solid fuels is relatively small, indicating a possible gap in the market that developing countries could fill. Co-operation in research and development, drawing upon existing knowledge on liners, combustion temperatures and ventilation, is needed to develop a basic fuel-efficient stove frame with proper ventilation.[36]

The largest potential for involvement of developing countries seems to be in the production and trade in parts that could be assembled in their destination countries to fit local conditions and cooking practices. There are economies of scale in the production of parts to be exploited. In addition, final adjustments in the consuming country would provide employment opportunities for local artisans.

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35 For example, in Kenya the first improved stoves began to appear in the early 1980s and were designed by aid groups such as UNICEF and CARE Kenya. Seeking to improve the efficiency of the common metal stove, these groups only carried out brief field tests and the stoves received a mixed response from users (Kamman, 1995). The results in India were also mixed, owing to high breakdown rates and poor stove design. Success stories include the *plancha* in Guatemala, LPG in Ghana, the Mirte *injera* (flat bread) stove in Ethiopia and smoke hoods in Kenya (Bess and Mazzoni, 2001), biogas in Nepal, rocket stoves and Ecostoves in Central America, various stove programmes in China, and fuel-efficient stoves in Sri Lanka.

36 For a treatment of the transfer of environmentally sound technologies, see Tébar Less and McMillan (2005).

Complementary policies

Liberalisation of trade in stoves and related parts is a necessary but not sufficient condition to deal with the indoor smoke pollution problem caused by burning raw biomass. To maximise benefits, any reduction in tariffs would need to be complemented by research and development to develop appliances fitting local conditions, domestic policy incentives (for example, changes in taxes on appliances and alternative fuels), availability of micro-credit schemes, incentives for adoption, and education and extension programmes. Although alternative fuels may be preferable in some circumstances, encouraging the adoption of new cooking appliances without having set up a proper infrastructure to deliver the fuels is likely to be a wasteful exercise. Some innovations for cooking appliances could be extended to water heaters and other domestic appliances.

Health benefits from using improved cooking appliances go beyond the immediate effects of indoor smoke reduction. Improved health conditions have far-reaching developmental benefits, such as facilitating work outside home, freeing children from the chore of wood collection (increasing the likelihood they will remain in school), and opening small businesses. Kammen (1995) shows that one effect of the ceramic *Jiko* stove on household finances was savings typically of around 1 300 pounds (almost 600 kg) of fuel a year, freeing up about USD 65 per household — up to a fifth of the annual income of urban dwellers. In India, installing improved *chula* stoves halved cooking time and fuel requirements.[37]

Concluding remarks

The case studies examine two manufactured products (bicycles and stoves) and one commodity (sisal) and extend the analysis to parts and complements. They suggest opportunities for further removal of tariffs as well as South-South co-operation. Nevertheless, trade liberalisation may not be sufficient on its own to achieve environmental and developmental goals, and may require additional or complementary reforms at the domestic level. The chapter also proposes an illustrative list of EPPs that may interest both developed and developing countries. The list includes products from almost every chapter of the HS.

[37] www.shellfoundation.org/flag_programmes/breath_news/02.htm.

ANNEX A1
CODES FOR EXPLAINING ENVIRONMENTAL BENEFITS IN THE ILLUSTRATIVE LIST OF ENVIRONMENTALLY PREFERABLE PRODUCTS IN ANNEX A2

Category	Code
Environmentally preferable (EP) transport	
EP transport core (for the conveyance of people or cargo)	TCR
EP transport infrastructure	TIN
EP transport complements	TCM
EP transport parts and associated tools	TPAT
Energy	
Relatively energy efficient technologies	REEF
Goods powered by renewable energy	GPRE
Manual tools	MT
Passive energy-efficient goods	PEFG
Parts of passive energy-efficient goods	PGP
Pollution control	
Air quality improvement	AQI
Air quality improvement complements	AQIC
Cleaning and hygiene supplies	CSS
Pollution control miscellaneous	PCM
Life-cycle extension	LCE
EP alternatives (generic)	
Sustainable agriculture and fisheries (inputs)	SAF
EP alternatives made of renewable materials	AMRM
EP alternatives to disposable products	ADP
EP alternatives that are biodegradable	AB
EP alternatives miscellaneous	AM
Waste and scrap	
Waste and scrap: encourages proper disposal	WAS
Utilization of waste and scrap: for material recovery	UWS
By-product utilization	BU

ANNEX A2. ILLUSTRATIVE LIST OF ENVIRONMENTALLY PREFERABLE PRODUCTS

Explanatory and technical notes

In coding the table in this annex, only environmental benefits were identified. Codes are shown in Annex A1. Not all products are environmentally preferable in all circumstances: for example, diatomatious earth, an input in organic agriculture, can be mixed with nitro-glycerine to make dynamite.[38] Compared with earlier lists of environmental goods and services, this illustrative list may appear to contain some rather unsophisticated products. However, if one considers environmental performance in use, many consumer goods can also qualify as EPPs.

Almost every manufactured good in the HS can be made more environmentally preferable by using recycled or renewable materials (*i.e.* filling upholstered furniture with renewable natural materials), changing the packaging (*i.e.* designing furniture to be packed flat for shipping), etc. These alternatives are not included on the illustrative list since in most cases the changes do not alter their HS classification. Since not every good can qualify as an EPP in all circumstances, the illustrative list should be read in connection with the explanatory and technical notes.

Explanatory notes

Categorisation: Goods may belong to more than one category at the same time.

Waste and scrap: When traded, waste and scrap has an intrinsic value, and the importing party provides a payment for the good, there is a reasonable indication it will be somehow utilised. However, when waste and scrap are destined to be disposed of in the target country, a payment is provided by the exporter, and the disposal is considered to be a service: the receiving country is exporting an environmental service (solid or hazardous waste management). It must be stressed that nothing in this chapter should be read as contradicting the Basel Convention and its decisions which, by applying "environmentally sound management" to hazardous waste, aims to minimise the generation of hazardous wastes in terms of quantity and hazardousness, to dispose of them as close to the source of generation as possible, and to reduce the movement of hazardous waste.[39]

Life-cycle extension vs. utilisation of waste and scrap: Utilisation of waste and scrap or materials recovered from waste and scrap is in a sense life-cycle extension. For the purposes of this list, life-cycle extension incorporates goods that have not been disposed of. Utilisation of waste and scrap involves products recovered or recoverable from waste and scrap, such as metals, organic waste used as a fertiliser, or recycled paper for further use. Products listed in the life-cycle extension category, such as floor and window coverings, also serve as insulation, both against temperature extremes and noise (almost all thermal insulation is also sound insulation).

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38 On the other hand, even dynamite, in controlled explosions, saves energy in mining.

39 www.basel.int/pub/basics.html.

Parts: Parts and replacements could also belong to the life-extension category. This use, rather trivial, is not mentioned, and parts are listed under their primary use (*e.g.* bicycle tyres and associated tools).

Upstream and downstream movements in a chain: All categories identified include relevant parts if they pertain to a specific use and are fairly explicit. For example, nails and screws, although they are essential, are not included owing to their multiple uses. Immediate parts and necessary complements are included, however; luxury or non-mandatory complements which are not essential for using the product were omitted. For example, ski boots and ski fastenings are essentials for cross-country skiing, ski outfits are (probably) not.

Agricultural products: Although the UNCTAD list and the EC submission contain examples of agricultural products (HS Chapters 1–24), they were omitted from the illustrative list of EPP examples listed in this paper.

Overlaps: Some products (*e.g.* brooms) occurred on the OECD list of environmental goods and services. Some renewable energy technologies could appear on the list of EPPs as well, since by some definitions renewables are environmentally preferable alternatives to other forms of energy.

Technical notes regarding filing into the HS:

- Products are often identified as ex-outs of a 6-digit HS subheading.

- An HS heading (4-digit) normally contains more than one subheading (6-digit), and, when so listed, all subheadings are considered EPP candidates. For example, HS 4406 (Railway or tramway sleepers [cross-ties) of wood) contains subheadings 4406.10 (Not impregnated) and 4406.90 (Other). In the list only HS 4406 is listed.

- "x" instead of the sixth digit is used when products differ on the sixth digit, but the entire category can be considered an EPP candidate. For example, HS 6306.31 are Sails of synthetic material, HS 6306.39 are Sails of other textile materials. The list gives HS 6306.3x (Sails).

For consideration as possible qualifying products (not filed in the illustrative list): plant-based pesticides; composting toilets; rainwater harvesting; plant oil sold directly as fuel (Chapter 15); fuel cell based power systems; hydrogen cars; devices to minimise summertime solar overheating while maximising daylight and winter time solar gains such as: daylight collection and guidance devices, daylight optimisation blinds and photosensitive glazing; building heat recovery systems such as certain types of heat exchanger; building thermal energy storage systems including phase change materials purposely designed for this task; [electronic?] building energy management systems.

Other notes:

- Note 1: Insulated or energy-controlling glazing (double or triple-glazing, argon-filled double glazing, glazing with infrared reflecting coatings, special types of solar control glazing, etc.)

- "Ref" column: indicates the origin of the good: "U" from the UNTAD list; "EC" from the EC submission to the WTO (TN/TE/W/47); "H" in house.

HS	Description	Ex-out	R	Cat	Rationale, if applicable
2512.00	Siliceous fossil meals (for example, kieselguhr, tripolite and diatomite), whether or not calcined, other or not calcined)	diatomous earth	H	SAF	Diatomite used in organic agriculture.
25.13	Pumice; emery; natural corundum, natural garnet and other natural abrasives, whether or not heat-treated		U		
2517.10	Pebbles, gravel, broken or crushed stone, of a kind commonly used for concrete aggregates, for road metalling or for railway ballast, shingle and flint, whether or not heat treated	gravel for railroads	H	TIN	Complement: used in railroad construction.
2518.10	Dolomite, not calcined or sintered	dolomite dust	H	SAF	Rock dust is a soil amendment.
2525.30	Mica waste		H	UWS	Used in joint compound, paint, roofing, oil well drilling additives, and rubber products, making mica paper and as a filler and reinforcer in plastics.
2618.00	Granulated slag (slag sand) from the manufacture of iron or steel		H	UWS	Obtained, for example, by pouring liquid dross into water as it leaves the blast furnace; can be used to make cement.
2619.00	Slag, dross (other than granulated slag), scalings and other waste from the manufacture or iron or steel		H	UWS	Might include sufficient iron to permit recovery of the metal. Otherwise used in the manufacture of cement, for ballast and in road construction.
26.20	Ash and residues (other than from the manufacture of iron and steel), containing arsenic, metals or their compounds		H	UWS	Can be used for the extraction of arsenic or metals or as basis for the manufacture of their chemical compounds.
26.21	Other slag and ash, including seaweed ash (kelp); ash and residues from the incineration of municipal waste		H	UWS	Used as fertilizers, material for cement manufacture, supplement to cement in concrete and mine backfill, as a mineral filler in plastics and paints, as a lightweight aggregate in block manufacture, and in civil structures, for extracting iodine or in the glass industry.
2710.19	Other [petroleum oils and oils obtained from bituminous materials, other than crude…]	kerosene for cooking stoves	H	AQIC	If kerosene stoves to be included as a way to reduce pollution from solid fuels.
2710.9x	Waste oils		H	WAC	Encourages proper disposal.
2836.30	Sodium hydrogencarbonate (sodium bicarbonate)		H	CSS AB	Baking soda – cleaning.
3006.80	Waste pharmaceuticals		H	WAC	Pharmaceutical products which are unfit for their original intended purpose. Encourages proper disposal of waste pharmaceuticals.
3101.00	Animal or vegetable fertilizers, whether or not mixed together or chemically treated; fertilizers produced by the mixing or chemical treatment of animal or vegetable products	includes compost	U		
3103.20	Basic slag		H	UWS	A by-product of iron and steel manufacturing, see WCO notes.
3105.10	[Fertilisers] In tablets or similar forms or in packages of a gross weight not exceeding 10 kg	fertilisers included in this list	H	UWS	
32.01	Tanning extracts of vegetable origin; tannins and their salts, ethers, esters and other derivatives		H	AB AMRM	Biodegradable tanning extracts, renewable source.
3203.00	Colouring matter of vegetable or animal origin …		H	AB AMRM UWS	
32.15	Printing ink, writing or drawing ink and other inks, whether or not concentrated or solid	soy ink	H	AMRM	Soy ink is more easily degradable [despite popular beliefs, it is not 100 % degradable] than conventional ink and is renewable.
34.01	Soap; organic surface-active products and preparations for use as soap		U		
3401.19	Soap; organic surface-active products and preparations for use as soap: Other: natural soaps made from vegetable oil		U		
3401.30	Organic surface-active products …. Put up for retail sale, …..	refills (concentrated in pouches, consumer adds water)	H	AM	Waste reduction. In addition, pouch can be made biodegradable.

34.02	Organic surface-active agents (other than soap); surface-active preparations, washing preparations and cleaning preparations, whether or not containing soap, other than those of heading 3401		U		
3402.20	Preparations put up for retail sale	refills (concentrated in pouches, consumer adds water)	H	AM	Waste reduction. In addition, pouch can be made biodegradable.
34.04	Artificial waxes and prepared waxes		H	LCE	Extend life cycle of protected items, resulting in slower replacement and resource preservation.
34.05	Polishes and creams, for footwear, furniture, floors, coachwork, glass or metal…		H	LCE	Extend life cycle of protected items, resulting in slower replacement and resource preservation.
3406.00	Candles, tapers and the like	soy, palm oil candles; recycled candles	H	AMRM AM	Soy candles - cleaner and longer burning. Renewable source
3505.20	Glues		H	LCE	Facilitate repairs and extend life cycle of items.
3606.10	Liquid or liquefied-gas fuels in containers of a kind used for filling or refilling cigarette or similar lighters and of a capacity not exceeding 300 cm^2		H	AM	For refillable lighters.
3803.00	Tall oil, whether or not refined		H	BU	By-product of wood pulp manufacturing, variety of uses - in soaps, road-surfacing, plasticizer.
3804.00	Residual lyes from the manufacture of wood pulp, whether or not concentrated, desuraged or chemically treated, including lignin sulphonates, but excluding tall oil of heading 3808		H	BU	By-product of wood pulp manufacturing, variety of uses – binder for compressed blocks of fuel, glue preparation, etc.
3807.00	Wood tar; wood tar oils; wood creosote; wood naphtha; vegetable pitch; brewers' pitch and similar preparations based on rosin, resin acids or on vegetable pitch		H	BU	By-product of wood carbonization. Variety of uses – impregnation of ships' cables, medicine, etc.
3825.41	Waste organic solvents halogenated [Residual products of the chemical or allied industries, not elsewhere specified or included; municipal waste; sewage sludge; other wastes]		H	UWS	Can be used for recovery of the solvents.
3825.49	Waste organic solvents other [Residual products of the chemical or allied industries, not elsewhere specified or included; municipal waste; sewage sludge; other wastes]		H	UWS	Can be used for recovery of the solvents.
3825.50	Wastes of metal pickling liquors, hydraulic fuels, brake fluids and anti-freeze fluids [Residual products of the chemical or allied industries, not elsewhere specified or included; municipal waste; sewage sludge; other wastes]		H	UWS	Generally used for recovery of primary products.
3825.90	Other [Residual products of the chemical or allied industries, not elsewhere specified or included; municipal waste; sewage sludge; other wastes]	residues from the manufacture of antibiotics	H	UWS	Suitable for use for the preparation of compound animal feeds.
3825.90	Other [Residual products of the chemical or allied industries, not elsewhere specified or included; municipal waste; sewage sludge; other wastes]	spent oxide	H	UWS	From gas purification, used as a source of sulphur and cyanides, as fertilizer and insecticide.
39.12	Cellulose and its chemical derivatives, not elsewhere specified or included, in primary forms		U		
3913.90	Natural polymers: Other: Chemical derivatives of natural rubber		U		
39.15	Waste, parings and scrap, of plastics		H	UWS	Includes PET for recycling.
39.18	Floor coverings of plastics, whether or not self-adhesive, in rolls or in the form of tiles; wall or ceiling coverings of plastics		H	LCE	Protected floors last longer, also insulation.
39.21	Other plates, sheets, film, foil and strip, of plastics	insulation panels	H	PEEG	
3926.30	Fittings for furniture, coachwork or the like		H	LCE	Protected furniture lasts longer.
3926.90	Other articles of plastics	clothes pins	H	AM	Facilitate air drying of laundry (energy saving)
3926.90	Other articles of plastics	refillable printer cartridges [to be refilled with soy ink]	H	LCE UWS	
40.01	Natural rubber, balata, gutta-percha, guayule, chicle, and similar natural gums, in primary forms or in plates, sheets		U		
4003.00	Reclaimed rubber in primary forms or in plates, sheets or strip		H	UWS	Obtained from used rubber articles, esp. tyres, from waste scrap, etc. by various chemical or mechanical means.

4004.00	Waste, parings and scrap of rubber (other then hard rubber) and powders and granulates obtained there from		H	UWS	Can be used as a filler or for moulding rubber articles not requiring great strength.
40.10	Conveyor or transmission belts or belting, of vulcanised rubber	conveyor belts	H	TIN	
4011.50	Of a kind used on bicycles [new pneumatic tyres, of rubber]		H	TPAT	Complementing bicycles.
40.12	Retreated or used pneumatic tyres of rubber; solid or cushion type, tyre treads and tyre flaps, of rubber		H	LCE UWS	Retreating extends life cycle of tyres.
4013.20	Of a kind used on bicycles [inner tubes, of rubber]		H	TPAT	Complementing bicycles.
4016.91	Floor coverings and mats [of vulcanised rubber other than hard rubber]		H	LCE	Protected floors last longer, also insulation.
4017.00	Hard rubber in all forms, incl. waste and scrap; articles of hard rubber	waste and scrap	H	UWS	
41.15	Composition leather with a basis of leather or leather fibre, in slabs, sheets or strip, whether or not in rolls; parings and other waste of leather or of composition leather, not suitable for the manufacture of leather articles; leather dust, powder and flour		H	UWS	
42.03	Articles of apparel and clothing accessories, of leather or of composition leather	articles of composition leather	H	UWS	
4204.00	Articles of leather or of composition leather, of a kind used in machinery or mechanical appliances or for other technical uses	articles of composition leather	H	UWS	
4205.00	Other articles of leather or of composition leather	articles of composition leather	H	UWS	
44	Wood and articles of wood; wood charcoal		H	AMRM AB	
4401.30	Sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms		H	UWS	
44.06	Railway or tramway sleepers (cross-ties) of wood		H	TIN	Complementing rail transport.
44.10	Particle board and similar board of wood or other ligneous materials, whether or not agglomerated with resins or other organic binding substances		H	UWS	Can be made using waste and scrap.
44.11	Fibreboard of wood or other ligneous materials, whether or not bonded with resins or other organic substances		H	UWS	Can be made using waste and scrap.
44.12	Plywood, veneered panels and similar laminated wood		H	UWS	Can be made using waste and scrap.
44.15	Packing cases, boxes, crates, drums and similar packings, of wood; cable drums of wood; pallets, box pallets and other load boards, of wood; pallet collars of wood		H	ADP AMRM	Reusable packaging made of renewable material.
4416.00	Casks, barrels, vats, tubs and other coopers' products and parts of thereof, of wood, including staves		H	ADP AMRM	Reusable and made of renewable material.
4417.00	Tools, tool bodies, tool handles, broom or brush bodies and handles, of wood; boot or shoe lasts and trees, of wood	hand tools, broom handles, snow shovels	H	LCE MT	Tools, if properly used, help with small repairs to extend life cycle of repaired products.
4418.10	Windows, French-windows and their frames	See Note 1, ¶66	H	PGP	
4421.90	Other articles of wood	clothes pins	H	AM	Facilitate air drying of laundry (energy saving).
4421.90	Other articles of wood	wood mulch	H	AB AM	Biodegradable, water savings from mulching.
45	Cork and articles of cork		H	AMRM AB	Renewable, reusable, biodegradable.
45.01	Natural cork, raw or simply prepared; waste cork; crushed granulated or ground cork		H	AMRM AB	Renewable, biodegradable, also some scrap utilization.
4502.00	Natural cork, debacked or roughly squared, ….		H	AMRM AB	
45.03	Articles of natural cork		H	AMRM AB	
45.04	Agglomerated cork (with or without a binding substance) and articles of agglomerated cork	includes insulation sheets of cork	U		
46	Manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork		U		

47.06	Pulps of fibres derived from recovered (waste and scrap) paper or paperboard or from other fibrous cellulosic material		H	UWS	Includes pulp from kenaf, sisal and other fibrous materials.
47.07	Recovered (waste and scrap) paper or paperboard		H	UWS	To be used for pulping, occasionally for packing.
48	Paper and paperboard; articles of paper pulp, of paper or of paperboard	made of recycled paper	H	UWS	
48.14	Wallpaper and similar wall coverings; window transparencies of paper		H	LCE	Protected walls last longer, better insulation, biodegradable window transparencies.
4815.00	Floor coverings on a base of paper or of paperboard, whether or not cut to size		H	LCE	Protected floors last longer, also insulation.
48.19	Cartons, boxes, cases, bags and other packing containers, of paper, paperboard, cellulose wadding or webs of cellulose fibres; …		H	ADP AB	Reusable, biodegradable.
4823.90	Other paper, paperboard, cellulose wadding and webs of cellulose fibres, cut to size or shape; other articles of paper pulp, paper, paperboard, cellulose wadding or webs of cellulose fibres	cup sleeves, paper insulation	H	PEEG	
4823.90	Other paper, paperboard, cellulose wadding and webs of cellulose fibres, cut to size or shape; other articles of paper pulp, paper, paperboard, cellulose wadding or webs of cellulose fibres	paper dog poop scoopers	H	CSS AB	Biodegradable.
4823.90	Other paper, paperboard, cellulose wadding and webs of cellulose fibres, cut to size or shape; other articles of paper pulp, paper, paperboard, cellulose wadding or webs of cellulose fibres	paper mulch	H	AB AM	Biodegradable, water savings from mulching.
50.03	Silk waste (incl. cocoons unsuitable for reeling, yarn waste and garnetted stock)		H	UWS	
5005.00	Yarn spun from silk waste, not put up for retain sale		H	UWS	
5006.00	Silk yarn and yarn spun from silk waste, put up for retail sale; silk-worn gut	yarn spun from silk waste	H	UWS	
50.07	Woven fabrics of silk or of silk waste	woven fabric of silk waste	H	UWS	
51	Wool, fine or coarse animal hair; horsehair yarn and woven fabric		H	AMRM AB	Utilizing by-product (horsehair).
51.03	Waste of wool or of fine or coarse animal hair, incl. yarn waste but excluding garnetted stock		H	UWS	
5104.00	Garnetted stock of wool or of fine or coarse animal hair	garnetted = reworked, reclaimed	H	UWS	Obtained by garnetting rags of knitted, woven, etc., material or by garnetting the waste yarns obtained during the spinning, weaving, knitting, etc operations. Used for fabrics manufacturing or padding or stuffing purposes.
52	Cotton		H	AMRM AB	
52.02	Cotton waste (incl. yarn waste and garnetted stock)		H	UWS	May be used for spinning or other purposes.
52.04	Cotton sewing thread, whether or not put up for retail sale		H	LCE	Can extend life cycle of clothes and other textiles, repairs.
53	Other vegetable textile fibres; paper yarn and woven fabrics of paper yarn			AMRM AB	The entire chapter, with the exception of true hemp (53.02) is already on the UNCTAD list. Many headings also include waste and scrap.
53.01	Flax, raw or processed but not spun; flax tow and waste		U		
53.03	Jute and other textile bast fibers (excluding flax, true hemp and ramie), raw or processed but not spun; tow and waste of these fibres (including yarn waste and garnetted stock)	includes kenaf	U		
53.04	Sisal and other textile fibres of the genus Agave, raw or processed but not spun; tow and waste of these fibres (including yarn waste and garnetted stock)		U		
53.05	Coconut, abaca (Manila hemp or Musa garnetted Nee), ramie and other vegetable textile fibres, not elsewhere specified or included, raw or processed but not spun; tow, noils and waste of these fibres (including yarn waste and garnetted stock)		U		
53.06	Flax yarn		U		
53.07	Yarn of jute or other textile bast fibres		U		
53.08	Yarn of other vegetable textile fibres; paper yarn		U		

53.09	Woven fabric of flax		U		
53.10	Woven fabrics of jute or of other textile bast fibres		U		
53.11	Woven fabrics of other vegetable textile fibres; woven fabrics of paper yarn		U		
54.01	Sewing thread of man-made filaments, whether or not put up for retail sale		H	LCE	Can extend life cycle of clothes and other textiles, repairs.
55.05	Waste (incl noils, yarn waste and garnetted stock) of man-made fibres		H	UWS	
5604.90	Other [Rubber thread and cord, textile covered; textile yarn, and strip and the like of heading 54.04 or 54.05, impregnated, coated or sheathed with rubber or plastics	clothes line for drying	H	AM	Facilitate air drying of laundry (energy saving).
5607.10	Twine, cordage, ropes and cables of jute or other textile bast fibres		U		
5607.2x	Twine, cordage, ropes and cables of sisal or other textile fibres of the genus Agave		U		
56.08	Knotted netting of twine, cordage or rope; made up fishing nets and other made up nets, of textile materials		U		
57	Carpets and other textile floor coverings		H	LCE	Protected floors last longer, also insulation.
5811.00	Quilted textile products in the piece, composed of one or more layers of textile materials assembled with padding by stitching or otherwise, other than embroidery of heading 58.10	with scrap material as a quilt fill	H	UWS	
59.01	Textile fabrics coated with gum or amylaceous substances, of a kind used for the outer covers of books or the like		H	LCE	Extends life cycle of books.
59.04	Linoleum, whether or not cut to shape; floor coverings consisting of coating or covering applied on a textile backing, whether or not cut to shape		H	LCE	protected floors last longer, insulation
5905.00	Textile wall coverings		H	LCE	Protects walls; can serve as insulation.
5908.00	Textile wicks, woven, plaited or knitted, for lamps, stoves, lighters, candles or the like, …		H	AM	Complements soy candles, also used in some stoves.
5910.00	Transmission or conveyor belts or belting, of textile material, whether or not impregnated, coated, covered or laminated with plastics…		H	TIN	
63.02	Bed linen, table linen, toilet linen and kitchen linen		H	LCE	Among other uses: EP alternative to disposable products (towels and table cloths), extend life cycle of products they cover (bed linens, table cloths).
6305.10	Sacks and bags, of a kind used for the packaging of goods of jute or of other textile bast fibers		U		Subheading singled out by UNCTAD.
63.03	Curtains (incl. drapes) and interior blinds; curtain or bed valances		H	PEEG	Provide some thermal insulation.
63.05	Sacks and bags, of a kind used for the packing of goods		H	ADP	Reusable packaging.
6306.1x	Tarpaulins		H	CSS ADP	Protect cargo - thus limit pollution, also reusable.
6306.2x	Tents		H	AM	Disaster management: for example, temporary shelters after natural disasters.
6306.3x	Sails		H	TIN	Complements EP transport.
6306.4x	Pneumatic mattresses		H	AM	Disaster management: for example, temporary shelters after natural disasters.
6307.10	Floor-cloths, dish-cloths, dusters and similar cleaning products [Other made up articles, including dress patterns]		H	CSS	
6307.10	Floor-cloths, dish-cloths, dusters and similar cleaning products [Other made up articles, including dress patterns]	electrostatic dust cloths, other treated dust cloths	H	CSS	Washable, ease cleaning. Include … cloths whether or not impregnated with a cleaning preparation, but excl 34.01 or 34.05
6307.20	Life-jackets and life-belts [Other made up articles, including dress patterns]		H	TCM	Complements EP transport (on water).
6307.90	Other [Other made up articles, including dress patterns]	domestic laundry or shoe bags, …	H	CSS	Also life cycle extension.
6307.90	Other [Other made up articles, including dress patterns]	garment bags (other than 42.02 - suitcases)	H	LCE	
6307.90	Other [Other made up articles, including dress patterns]	flat protective sheets	H	LCE	

6307.90	Other [Other made up articles, including dress patterns]	textile coffee filters, icing bags, etc.	H	LCE	
6307.90	Other [Other made up articles, including dress patterns]	shoe polishing pads	H	LCE	
6307.90	Other [Other made up articles, including dress patterns]	tea cosy covers	H	PEEG	
6307.90	Other [Other made up articles, including dress patterns]	fans and hand screens (those with frames of precious metal classified separately)	H	AM	
6307.90	Other [Other made up articles, including dress patterns]	packing cloths	H	LCE	
6307.90	Other [Other made up articles, including dress patterns]	textile face masks of a kind worn by surgeons	H	PCM	Cross-cutting with public health.
6307.90	Other [Other made up articles, including dress patterns]	face masks for protection against dust, odours	H	PCM	Passive pollution control.
6307.90	Other [Other made up articles, including dress patterns]	draught excluders	H	PEEG	
6309.00	Worn clothing and other worn articles		H	LCE	
63.10	Used or new rags, scrap twine, cordage, rope and cables and worn out articles of twine, cordage, rope or cables, of textile materials		H	LCE	
6402.12	Ski-boots, cross-country ski footwear and snowboards boots [Other footwear with outer soles and uppers of rubber or plastics]	cross country	H	TIN	Complements EP transport.
6403.12	Ski-boots, cross-country ski footwear and snowboards boots [footwear with outer soles of rubber, plastics, leather or composition leather and uppers of leather]	cross country	H	TIN	Complements EP transport.
6404.11	Sports footwear; tennis shoes, basketball shoes, gym shoes, training shoes and the like [ftwear with outer soles of rubber, plastics, leather or composition leather and uppers of textile materials]		H	TIN	Sports footwear encourages walking.
6506.10	Safety headgear	bike, ski, fire-fighter helmets, …	H	TCM	Complements EP transport.
66.01	Umbrella and sun umbrellas		H	TCM	Complements EP transport, protect walker in an inclement weather.
6602.00	Walking sticks, seat sticks, whips, riding-crops and the like	walking sticks	H	TCM	Complements EP transport, walking stick eases walking.
66.03	Parts, trimmings, and accessories of articles of heading 66.01 or 66.02		H	TCM	
67.01	Skins and other parts of birds with their feathers or down, parts of feathers, down and articles thereof		U		
68.06	Slag wool, rock wool and similar mineral woods, exfoliated vermiculite, expanded clays, foamed slag and similar expanded mineral materials; mixtures and articles of heat-insulating, sound-insulating or sound-absorbing mineral materials, other than those of heading 68.11 or 68.12 or of Chapter 69	thermal insulation	H	PEEG	
6807.90	Other articles of asphalt or of similar material	insulating boards of asphalt, of a kind used for roofing or siding	H	PEEG	
6808.00	Panels, boards, tiles, blocks and similar articles of vegetable fibre, of straw or of shavings, chips, particles, sawdust or other waste, ….	thermal insulation	H	PEEG	Also possible utilization of waste and scrap.
6809.90	Other articles of plaster or of compositions based on it	thermal insulation	H	PEEG	
68.14	Worked mica and articles of mica, including agglomerated or reconstituted mica, …	reconstituted mica	H	UWS	Includes reconstructed mica.
6901.00	Bricks, blocks, tiles and other ceramic goods of siliceous fossil meals or of similar siliceous earths	thermal insulation	H	PEEG	

6914.10	Other ceramic articles of porcelain or china	linings for wood burning stoves of porcelain or china, stoves of porcelain and china	H	AQIC	
6914.90	Other ceramic articles	linings for wood burning stoves of ceramics other than porcelain or china, ceramic stoves other than of porcelain and china	H	AQI AQIC	
7001.00	Cullet {broken or refuse glass} and other waste and scrap of glass; glass in the mass	Scrap	H	WAS	Further workable.
70.03	Cast glass and rolled glass, in sheets or profiles, whether or not having an absorbent, reflecting or non-reflecting layer, but not otherwise worked	window glass, see Note 1, ¶66	H	PGP	
70.04	Drawn glass and blown glass, in sheets, whether or not having an absorbent, reflecting or non-reflecting layer, but not otherwise worked	window glass, see Note 1, ¶66	H	PGP	
70.05	Float glass and surface ground or polished glass, in sheets, whether or not having an absorbent, reflecting or non-reflecting layer, but not otherwise worked	window glass, see Note 1, ¶66	H	PGP	
70.06	Glass of heading 70.03, 70.04, or 70.05, bent, edge-worked, engraved, drilled, enamelled or otherwise worked, but not framed or fitted with other material	window glass, see Note 1, ¶66	H	PGP	
7008.00	Multiple-walled insulating units of glass		H	PGP	
7012.00	Glass inners for vacuum flasks or for other vacuum vessels		H	PGP	Considerably extend life cycle of vacuum flasks.
7016.90	Articles of pressed or moulded glass , multicellular or foam glass in blocks, panels, plates, shells or similar forms	thermal insulation	H	PEEG	
7019.3x	Thin sheets (voiles), webs, mats, mattresses, boards and similar non-woven products	thermal insulation	H	PEEG	
7019.40	Woven fabrics of rovings	thermal insulation	H	PEEG	
7019.5x	Other woven fabrics	thermal insulation	H	PEEG	
7019.90	Other	thermal insulation	H	PEEG	
71.04	Synthetic or reconstr. precious or semiprecious stones	reconstructed stones	H	UWS	
71.05	Dust and powder of natural or synthetic precious or semiprecious stones		H		
71.12	Waste and scrap of precious metal or of metal clad with precious metal; other waste and scrap containing precious metal or precious metal compounds, of a kind used principally for the recovery of precious metal		H	WAS	
72.04	Ferrous waste and scrap; remelting scrap ingots of iron or steel		H	WAS	Can be used for the recovery of metal by re-melting or for the manufacture of chemicals.
73.02	Railway or tramway track construction material of iron or steel, the following: rails, check-rails and rack rails, switch blades, crossing frogs, etc.…		H	TIN	complements EP transport
7308.30	Doors, windows and their frames and thresholds for doors	See Note 1, ¶66	H	PEEG	
7315.11	Roller chain	bicycle chain	H	TPAT	Complements bicycles.
7315.90	Parts	parts of bicycle chains	H	TPAT	Complements bicycles.
73.19	Sewing needles, knitting needles, bodkins, crochet hooks, embroidery stilettos and similar articles, for use in the hand, of iron or steel; safety pins and other pins of iron and steel, not elsewhere specified or included		H	LCE	Facilitate repairs.
7321.11	For gas fuel or both gas and other fuels [Cooking appliances and plate warmers - non-electric domestic stoves and ranges]	includes solar stoves	H	AQI	
7321.12	For liquid fuel [Cooking appliances and plate warmers - non-electric domestic stoves and ranges]	vegetable-oil stoves, kerosene stoves, ..	H	AQI	

7321.13	For solid fuel [Cooking appliances and plate warmers - non-electric domestic stoves and ranges]		H	AQI	
7321.90	Parts of 73.21		H	AQI	
7323.93	Of stainless steel [Other: Table , kitchen or other household articles and parts …, of iron and steel]	solar food dehydrator	H	GPRE	
7323.9x	Other table and kitchen or household appliances and parts thereof, of iron or steel; …	pressure cookers of iron or steel	H	REEF	Shortens cooking time, energy saving.
7323.9x	Other table and kitchen or household appliances and parts thereof, of iron or steel; …	pot lids	H	REEF	Shortens cooking time, energy saving.
7404.00	Copper waste and scrap		H	UWS	Used in further recovery and production.
7503.00	Nickel waste and scrap		H	UWS	Used in further recovery and production.
7508.90	Other articles of nickel {incl. windows}	See Note 1, ¶66	H	PEEG	
7602.00	Aluminium waste and scrap		H	UWS	Used in further recovery and production.
7615.19	Other table, kitchen or other household articles and parts thereof, of aluminium	pressure cookers of aluminium	H	REEF	Shortens cooking time, energy saving.
7615.19	Other table, kitchen or other household articles and parts thereof, of aluminium	pot lids	H	REEF	Shortens cooking time, energy saving.
7802.00	Lead waste and scrap		H	UWS	Used in further recovery and production.
7902.00	Zinc waste and scrap		H	UWS	Used in further recovery and production.
7907.00	Other articles of zinc {incl. windows}	See Note 1, ¶66	H	PEEG	
8002.00	Tin waste and scrap		H	UWS	Used in further recovery and production.
8101.97	Waste and scrap [tungsten]		H	UWS	Used in further recovery and production.
8102.97	Waste and scrap [molybdenum]		H	UWS	Used in further recovery and production.
8103.30	Waste and scrap [tantalum]		H	UWS	Used in further recovery and production.
8104.20	Waste and scrap [magnesium]		H	UWS	Used in further recovery and production.
8105.30	Waste and scrap [cobalt]		H	UWS	Used in further recovery and production.
8106.00	Bismuth and articles thereof, inc waste and scrap	waste and scrap	H	UWS	Used in further recovery and production.
8107.30	Waste and scrap [cadmium]		H	UWS	Used in further recovery and production.
8108.30	Waste and scrap [titanium]		H	UWS	Used in further recovery and production.
8109.30	Waste and scrap [zirconium]		H	UWS	Used in further recovery and production.
8110.20	Waste and scrap [antimony]		H	UWS	Used in further recovery and production.
8110.00	Manganese …, incl. waste and scrap	waste and scrap	H	UWS	Used in further recovery and production.
8112.13	Waste and scrap [beryllium]		H	UWS	Used in further recovery and production.
8112.22	Waste and scrap [chromium]		H	UWS	Used in further recovery and production.
8112.30	Germanium [includes waste and scrap]	waste and scrap	H	UWS	Used in further recovery and production.
8112.40	Vanadium [includes waste and scrap]	waste and scrap	H	UWS	Used in further recovery and production.
8112.52	Waste and scrap [thallium]		H	UWS	Used in further recovery and production.
8112.92	Unwrought; waste and scrap; powders [other]		H	UWS	Used in further recovery and production.
8113.00	Cerments (note: A composite material consisting of a combination of ceramic and metallic materials) and articles thereof, including waste and scrap	waste and scrap	H	UWS	Used in further recovery and production.
82.01	Hand tools, the following: spades, shovels, mattocks, picks, hoes, forks and rakes; axes, bill hooks and similar hewing tools, secateurs and pruners of any kind; scythes, sickles, hay knives, hedge shears, timber wedges and other tools of a kind used in agriculture, horticulture or forestry	includes snow shovels of metal, pooper scooper	H	LCE MT	To conduct small repairs, prevent further detoriation, and prolong life cycle.
8202.10	Hand saws		H	MT	Hand tools – mechanic.
8202.39	Other, including parts		H	MT	Hand tools – mechanic.
8203.30	Metal cutting shears and similar tools		H	MT	Hand tools – mechanic.
8203.40	Pipe-cutters, bolt croppers, perforating punches and similar tools		H	MT	Hand tools – mechanic.
8204.1x	Hand-operated wrenches	wrenches for bicycles	H	TPAT	Complements bicycles.
8205.10	Drilling, threading or tapping tools [Hand tools]		H	MT	Hand tools – mechanic.
8205.20	Hammers and sledge hammers [Hand tools]		H	MT	Hand tools – mechanic.
8205.30	Planes, chisels, gouges and similar cutting tools for working wood [Hand tools]		H	MT	Hand tools – mechanic.
8205.40	Screwdrivers [Hand tools]		H	MT	Hand tools – mechanic.
8205.51	Household tools [Other hand tools (including glaziers' diamonds)]		H	MT	Hand tools – mechanic.
8205.59	Other [Other hand tools (including glaziers' diamonds)]		H	MT	Hand tools – mechanic.
8206.00	Tools of two or more of the headings 82.02 to 82.05, put up in sets for retail sale		H	MT	Hand tools – mechanic.
8210.00	Hand-operated mechanical appliances, weighting 10 kg or less, used in the preparation, conditioning or serving of food or drink		H	MT	Mechanic, such as coffee or spice mills, bread slicers, fruit slicers, etc.
8301.10	Padlocks	bicycle locks	H	TCM	Complements bicycles.

8301.60	Parts	parts of bicycle locks	H	TCM	Complements bicycles.
8301.70	Keys presented separately	parts of bicycle locks	H	TCM	Complements bicycles.
8306.10	Bells, gongs, and the like	bells for bicycles	H	TPAT	Complements bicycles.
	many products from Ch 84 already on the A+O list				
8414.20	Hand- or foot-operated air pumps	bicycle pumps	H	TPAT	Complements bicycles.
8414.51	Table, floor, wall, window, ceiling or roof fans, with a self-contained electric motor is an output not exceeding 125 W		H	REEF	
8414.5x	Fans	with a variable or rated-speed drive system	H	REEF	
8414.90	Parts [Air or vacuum pumps…]	as relevant	H	TPAT REEF	
84.15	Air-conditioning machines, …	water cooled	H	REEF	
84.15	Air-conditioning machines, …	with a variable or rated-speed drive system	H	REEF	
8418.10	Combined refrigerator-freezers, fitted with separate external doors	with a variable or rated-speed drive system	H	REEF	Also using vacuum insulation panels.
8418.2x	Refrigerators, household type	with a variable or rated-speed drive system	H	REEF	Also using vacuum insulation panels.
8418.30	Freezers of the chest type, not exceeding 800 l capacity	with a variable or rated-speed drive system	H	REEF	Also using vacuum insulation panels.
8418.40	Freezers of the upright type, not exceeding 900 l capacity	with a variable or rated-speed drive system	H	REEF	Also using vacuum insulation panels.
8418.50	Other refrigerating or freezing chests, cabinets, display counters, show-cases and similar refrigerating or freezing furniture	with a variable or rated-speed drive system	H	REEF	Also using vacuum insulation panels.
8418.61	Other refrigerating or freezing equipment, heat pumps	water cooled	H	REEF	
8418.61	Other refrigerating or freezing equipment, heat pumps	with a variable or rated-speed drive system	H	REEF	Also using vacuum insulation panels.
8418.99	Parts	as relevant	H	REEF	
8419.19	Other [Instantaneous or storage water heaters, non-electric]	solar water heaters	H	GPRE	Not necessarily more efficient in a narrow engineering sense.
8419.90	Parts	solar water heaters, parts	H	GPRE	
8421.12	Clothes-dryers [Centrifuges, including centrifugal dryers]		H	REEF	The big advantages of centrifugal dryers are speed and energy efficiency because most of the water is rapidly flung off rather than having to be evaporated.
8421.21	For filtering or purifying water [Filtering or purifying machinery and apparatus for liquids]	domestic water filters	H	CSS AM	Also saves packaging of bottled water.
8421.91	Parts of Centrifuges, including centrifugal dryers		H		
8424.81	Agricultural or horticultural sprinkles		H	SAF	Water savings.
8424.90	Parts	as relevant	H		
8431.41	Buckets, shovels, grabs and grips [parts of machinery of heading 84.30]	parts of snow-ploughs and snow blowers	H	CSS MT	
8451.2x	Drying machines	using a heat pump	H	REEF	
8462.99	Machine tools (including presses) for working metal…	can crushers	H	CSS	Also waste reduction.
8470.10	Electronic calculators capable of operation without an external source of electric power and pocket sized data recording, reproducing and displaying machines with calculating functions	solar calculators	H	GPRE	
8471.60	Input or output units, whether or not containing storage units in the same housing	LCD monitors	H	REEF	
	many products from Ch 85 already on the A+O list				
8504.40	Static converters	battery chargers	H	REEF	
85.07	Electric accumulators, incl. separators thereof, whether or not rectangular (incl. square)	rechargeable cells (batteries)	H	REEF	Rechargeable cells and batteries are NOT part of 85.06 (primary cells and primary batteries).

8512.10	Lighting or visual signalling equipment of a kind used on bicycles		H	TPAT	Complements bicycles.
8512.90	Parts of 8512.10				
85.13	Portable electric lamps designed to function by their own source of energy (*i.e.* dry batteries, accumulators, magnetos), other than lighting equipment of hdng 85.12	solar lamps	H	GPRE	
8516.10	Electric instantaneous or storage water heaters and immersion heaters	using a heat pump	H	REEF	Typically two to three times as efficient as their electric counterparts using resistance heaters.
8516.2x	Electric space heating apparatus and electric soil heating apparatus	using a heat pump	H	REEF	Typically two to three times as efficient as their electric counterparts using resistance heaters.
8539.39	Other [Discharge lamps, other than ultra-violet lamps]	fluorescent tubes	H	REEF	Longer life cycle.
8541.40	Photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light emitting diodes	solar cells	H	GPRE	
8516.33	Hand-drying apparatus		H	CSS	Reduces amount of waste.
8548.10	Waste and scrap of primary cells, primary batteries and electric accumulators; spent primary cells, spent primary batteries and spent electric accumulators		H	WAS	
86	Railway or tramway locomotives, rolling-stock and parts thereof; railway or tramway track fixtures and fittings, …		H	TCR	
86.01	Rail locomotives powered from an external source of electricity or by electric accumulators		H	TCR	
86.02	Other rail locomotives; locomotive tenders		H	TCR	
86.03	Self-propelled railway or tramway coaches, vans and trucks, other than those of heading 86.04		H	TCR	
86.04	Railway or tramway maintenance or service vehicles….		H	TCR	
86.05	Railway or tramway passenger coaches….		H	TCR	
86.06	Railway or tramway goods vans and wagons…		H	TCR	
86.07	Parts of railway or tramway locomotives or rolling stocks		H	TCR	
8608.00	Railway or tramway track fixtures…..		H	TCR	
8609.00	Containers (including containers for the transport of fluids) specially designed and equipped for carriage by one or more modes of transport)		H	TCM	Reusable, facilitates transport by rail.
87.02	Motor vehicles for the transport of ten or more persons, including the driver		H	TCR	
87.03	Motor cars and other motor vehicles principally designed with for the transport of persons (other than those of heading 87.02), …	hybrid engine vehicles, fuel efficient cars	H	AQI	
8703.10	Vehicles specially designed for travelling on snow; golf cars and similar vehicles	golf cars	H	TCR	Rechargeable.
8705.90	Other [special purpose vehicles, *i.e.* mobile workshops, mobile radiological units]	includes snow ploughs with build-in equipment	H	TCR	Includes snow blowers, street sweepers, mobile clinics, field kitchens, mobile libraries, …
8706.00	Chassis fitted with engines, for the motor vehicles of headings 87.01 to 87.05	as relevant	H	TPAT	Complement public transport, fire protection, etc.
87.07	Bodies (including cabs), for the motor vehicles of headings 87.01 to 87.07		H	TPAT	Complement public transport
87.08	Parts and accessories of the motor vehicles of headings 87.01 to 87.05		H	TPAT	Complement public transport
87.09	Works trucks, self-propelled, not fitted with lifting or handling equipment, of the type used in factories, warehouses, dock areas or airports for short distance transport of goods; tractors of the type used on railway station platforms; parts of the foregoing vehicles		H	TCR	Also, some can be electrical.
8712.00	Bicycles and other cycles (incl. delivery tricycles), not motorised		H	TCR	
87.13	Carriages for disabled persons, whether or not motorised or otherwise mechanically propelled		H	TCR	
8714.9x	Parts and accessories of vehicles of headings 87.11 to 87.13	parts of bicycles	H	TPAT	Complement public transport, fire protection, etc.
8715.00	Baby carriages and parts of thereof		H	TCM	

8716.40	Other trailers and semitrailers	for bicycles	H	TCM	By attaching a trailer, one has to make fewer trips.
8716.90	Parts [Other trailers and semitrailers]	for bicycles	H	TCM	
8801.90	Other [Balloons and dirigibles; gliders, hang gliders and other non-powered aircraft]	dirigibles	H	TCR	Meteorology, environment changes.
88.03	Parts of goods of heading 8801		H	TPAT	Complement EP transport.
8804.00	Parachutes (including dirigible parachutes and paragliders) and rotochutes; parts of thereof and accessories thereto	Paraglides	H	TCR	Paraglides are foot launched, and may allow ascending trajectories. Unlike glides, paraglides are carried on foot.
89.01	Cruise ships, excursion boats, ferry boats, cargo ships, barges and similar vessels for the transport of persons or goods	all but cruise ships and excursion boats	H	TCR	EP mode of transport.
89.03	Yachts and other vessels for pleasure or sports; rowing boats and canoes		H	TCR	EP mode of transport.
8904.00	Tugs and pusher crafts		H	TCR	EP mode of transport, support to other vessels.
89.05	Light-vessels, fire-floats, dredgers, floating cranes and other vessels the navigability of which is subsidiary to their main function; floating docks; floating or submersible drilling or production platforms		H	TCR	EP mode of transport.
8906.90	Other - other vessels other than rowing boats,*i.e.* lifeboats		H	TCR	Complement EP mode of transport.
89.07	Other floating structures (for example, rafts, tanks, cofferdams, landing-stages, buyons and beacons) *many products from Ch 90 already on the A+O list*		H	TCR	Complement EP mode of transport.
9029.10	Revolution counters, production counters, taximeters, mileometers, pedometers and the like	pedometers	H	TPAT	Pedometers encourage walking and other activities, an EP mode of transport.
9029.20	Speed indicators and tachometer; stroboscopes	related to bicycles	H	TPAT	
9029.90	Parts and accessories of revolution counters, production counters, pedometers, speed indicators, …	relevant headings mentioned in this list	H	TPAT	Pedometers encourage walking and other activities, an EP mode of transport.
91.01-91.05	Watches ... Which device which drives the movement "runs on" changes in temperature or atmospheric pressure	solar watch	H	GPRE	Alternative source of energy.
91.08	Watch movements, complete and assembled	solar-powered	H	GPRE	as above
91.09	Clock movements, complete and assembled	solar-powered	H	GPRE	as above
91.10	Complete watch or clock movements	solar-powered	H	GPRE	as above
9401.50	Seats of cane, osier, bamboo or similar materials		H	AMRM	Made of quickly renewable materials.
9403.80	Furniture of other materials, including cane, osier, bamboo or similar materials		H	AMRM	Made of quickly renewable materials.
9404.90	Other [mattress supports; articles of bedding etc, incl. mattress covers (protectors, pads)]	mattress pads	H	LCE	Mattress pad protects mattress, and extends its life cycle.
9405.50	Non-electrical lamps and lighting fittings [candelabra, candlesticks]	candelabra	H	AM	Complement soy candles.
9406.00	Prefabricated buildings		H	AM	EP alternative to on-site building, better control of pollution, likely more efficient, less messy.
9501.00	Wheeled toys designed to be ridden by children (*i.e.* tricycles, scooters, pedal cars); dolls' carriages (DOES NOT INCLUDE BIKES)		H	TCR	According to notes, two and three wheels scooters ridden by adults belong here too, which makes them a EP transport device for all age groups.
9506.11	Skis	for cross-country skiing	H	TCR	Alternative transport.
9506.12	Ski-fastenings (ski-bindings)	for cross-country skis	H	TIN	Alternative transport and accessories.
9506.19	Other [other snow ski equipment]	for cross-country skis	H	TCR	Alternative transport and accessories.
9506.70	Ice skates and roller skates, including skating boots with skates attached		H	TCR	
9506.99	Other [Articles and equipment for general physical exercise…}	snowshoes and parts and accessories thereof	H	TCR	
9603.10	Brooms and brushes, consisting of twigs or other vegetable materials bound together, with or without handles		H	CSS	Also can utilize by-products, waste and scrap.
9604.00	Hand sieves and hand riddles		H	MT	Mechanic way to separate solid substances according to particle size (WCO notes).

96.08	Ball point pens; felt tipped pens and markers; fountain pens, stylograph pens and other pens; duplicating stylos; propelling or sliding pencils; pen-holders, pencil holders and similar holders; parts (incl. caps and clips) of the foregoing articles, other than those of heading 96.09	If filled with soy ink	H	LCE	
96.09	Pencils (other than 96.08), crayons, pencil leads, drawing charcoals, writing or drawing chalks and tailors chalks	chalk	H	AM	Chalk - EP alternative to inky markers.
9610.00ex	Slates or boards, with writing or drawing surfaces, whether or not framed	chalk board	H	AM	An EP alternative to a board to be used with markers (although both under same heading).
9613.20	Pocket lighters, gas fuelled, refillable		H	LCE	Reusable, re-gas-able.
9613.90	Parts		H	LCE	Complement refillable lighters.
96.16	Scent sprays and similar toilet sprays, and mounts and heads thereof; powder-puffs and pads for the application of cosmetics or toilet preparations	refillable perfume flacons and bottles	H	LCE	More EP than individual perfume bottles (that is not to say for single use), reusable.
9617.00	Vacuum flasks and other vacuum vessels, complete with cases; parts thereof other then glass inners		H	PEEG	Reusable, energy-saving, models with the space between the casting and glass inners can use recyclables, like cork, glass fibre, felt. Outer sleeve adds additional isolation.
9703.00	Original sculptures and statuary, in any material	if made of scrap materials	H	UWS	

ANNEX A3

TOTAL WORLD TRADE IN SELECTED EPPS AND HIGHEST TARIFFS APPLIED

For all tables in Annex III:

Tariff rates listed as min-max range.

OECD trade values include intra-EU trade and possibly re-exports.

Ethiopia excludes Eritrea.

Bound rate column legend:

NA: a country is either a WTO Observer or non-member.

"–": no tariff was bound on the particular line.

Source: Comtrade (trade values), TRAINS (applied and bound tariff rates).

Table A3.1. Total world trade in sisal and products and highest tariffs applied

Product [HS Code]	*Leading Exporters, 2003*	*Export Value (USD 000)*	*Importers with the highest level of duty (data year)*	*Applied tariff, in % (number of tariff lines)*	*Bound Rate, in % (number of tariff lines)*
Sisal and other textile fibres [5304]	***World***	***51 471***	Bahamas, The (2002)	35 (2)	NA
	Brazil	22 017	Djibouti (2002)	33 (2)	40 (2)
	Kenya	13 614	India (2004)	30 (4)	40 (2)
	Tanzania	6 678	Maldives (2003)	25 (2)	30 (2)
	OECD Countries	*5 892*	Sudan (2002)	25 (2)	NA
	– of which Belgium	*1 987*	Bangladesh (2004)	22.5 (2)	–
	– of which Korea	121	Bhutan (2004)	20 (2)	NA
	– of which Mexico	12	Kenya (2004)	20 (2)	–
	Madagascar	1 688			
	India	1 063	Congo, Dem. Rep. (2003)	5 (2)	100 (2)
			Kuwait (2002)	4 (2)	100 (2)
	LDC	8 349	Mozambique (2003)	2.5 (2)	100 (2)
			Rwanda (2003)	5 (2)	100 (2)
			Solomon Islands (1995)	0 (2)	80 (2)
			Barbados (2003)	5 (2)	70 (2)
			St. Kitts and Nevis (2003)	0 (2)	70 (2)
			Angola (2002)	2 (2)	60 (2)
			Lesotho (2001)	0 (2)	60 (2)
			Tunisia (2004)	0 (2)	60 (2)
			Antigua and Barbuda (2003)	5 (2)	50 (2)
			Belize (2003)	5 (2)	50 (2)
			Dominica (2003)	0 (2)	50 (2)
			Grenada (2003)	5 (2)	50 (2)
			Guinea-Bissau (2004)	5 (2)	50 (2)
			Guyana (2003)	5 (2)	50 (2)
			Jamaica (2003)	0 (2)	50 (2)
			Niger (2004)	5 (2)	50 (2)
			St. Lucia (2003)	0 (2)	50 (2)
			St. Vincent and the Grenadines (2003)	5 (2)	50 (2)
			Trinidad and Tobago (2003)	0 (2)	50 (2)
Sisal and other textile fibres of the genus Agave, raw [5304.10]	***World***	***46 005***	Bahamas, The (2002)	35 (1)	NA
	Brazil	21 991	Djibouti (2002)	33 (1)	40 (1)
	Kenya	11 339	India (2004)	30 (3)	40 (1)
	Tanzania	6 572	Maldives (2003)	25 (1)	30 (1)
	OECD Countries	*3 220*	Sudan (2002)	25 (1)	NA
	– of which Belgium	*1 389*	Bangladesh (2004)	22.5 (1)	–
	– of which Mexico	7	Bhutan (2004)	20 (1)	NA
	– of which Turkey	1	Kenya (2004)	20 (1)	–
	Madagascar	1 662			

	India	754	Congo, Dem. Rep. (2003)	5 (1)	100 (1)
	South Africa	288	Kuwait (2002)	4 (1)	100 (1)
	Morocco	153	Mozambique (2003)	2.5 (1)	100 (1)
	China	20	Rwanda (2003)	5 (1)	100 (1)
			Solomon Islands (1995)	0 (1)	80 (1)
	LDC	8 234	Barbados (2003)	5 (1)	70 (1)
			St. Kitts and Nevis (2003)	0 (1)	70 (1)
			Angola (2002)	2 (1)	60 (1)
			Lesotho (2001)	0 (1)	60 (1)
			Tunisia (2004)	0 (1)	60 (1)
			Antigua and Barbuda (2003)	5 (1)	50 (1)
			Belize (2003)	5 (1)	50 (1)
			Dominica (2003)	0 (1)	50 (1)
			Grenada (2003)	5 (1)	50 (1)
			Guinea-Bissau (2004)	5 (1)	50 (1)
			Guyana (2003)	5 (1)	50 (1)
			Jamaica (2003)	0 (1)	50 (1)
			Niger (2004)	5 (1)	50 (1)
			St. Lucia (2003)	0 (1)	50 (1)
			St. Vincent and the Grenadines (2003)	5 (1)	50 (1)
			Trinidad and Tobago (2003)	0 (1)	50 (1)
Sisal and other textile fibres of the genus Agave other {processed but not spun; tow and waste of these fibres including yarn waste and garnetted stock} [5304.90]	***World***	***5 466***	Bahamas, The (2002)	35 (1)	NA
	OECD Countries	*2 673*	Djibouti (2002)	33 (1)	40 (1)
	– of which Korea	121	India (2004)	30 (1)	40 (1)
	– of which Mexico	5	Maldives (2003)	25 (1)	30 (1)
	Kenya	2 274	Sudan (2002)	25 (1)	NA
	India	310	Bangladesh (2004)	22.5 (1)	–
	Tanzania	106	Bhutan (2004)	20 (1)	NA
			Kenya (2004)	20 (1)	–
	LDC	115			
			Congo, Dem. Rep. (2003)	5 (1)	100 (1)
			Kuwait (2002)	4 (1)	100 (1)
			Mozambique (2003)	2.5 (1)	100 (1)
			Rwanda (2003)	5 (1)	100 (1)
			Solomon Islands (1995)	0 (1)	80 (1)
			Barbados (2003)	5 (1)	70 (1)
			St. Kitts and Nevis (2003)	0 (1)	70 (1)
			Angola (2002)	2 (1)	60 (1)
			Lesotho (2001)	0 (1)	60 (1)
			Tunisia (2004)	0 (1)	60 (1)
			Antigua and Barbuda (2003)	5 (1)	50 (1)
			Belize (2003)	5 (1)	50 (1)
			Dominica (2003)	0 (1)	50 (1)
			Grenada (2003)	5 (1)	50 (1)
			Guinea-Bissau (2004)	5 (1)	50 (1)
			Guyana (2003)	5 (1)	50 (1)
			Jamaica (2003)	0 (1)	50 (1)
			Niger (2004)	5 (1)	50 (1)
			St. Lucia (2003)	0 (1)	50 (1)
			St. Vincent and the Grenadines (2003)	5 (1)	50 (1)
			Trinidad and Tobago (2003)	0 (1)	50 (1)
Yarn of other vegetable textile fibres; paper yarn, other [5308.90]	***World***	***110 579***	Burundi (2002)	40 (1)	–
	China	78 786	Bahamas, The (2002)	35 (1)	NA
	OECD Countries	*21 528*	Djibouti (2002)	33 (1)	33 (1)
	– of which Korea	581	Morocco (2003)	32.5 (21)	40 (6)
	– of which Mexico	27	Egypt, Arab Rep. (2002)	15 – 30 (3)	15 (3)
	– of which Turkey	3	Algeria (2003)	15 – 30 (4)	NA
	Brazil	8 499	India (2004)	30 (2)	40 (2)
	India	874	Nigeria (2002)	25 (1)	–
	Tanzania	198	Maldives (2003)	25 (1)	30 (2)
	Hong Kong, China	166	Sudan (2002)	25 (1)	NA
	Kenya	166	Bangladesh (2004)	22.5 (1)	–
			Bhutan (2004)	20 (1)	NA
	LDC	212	Ethiopia[3] (2002)	20 (1)	NA
			Kenya (2004)	20 (1)	–
			Solomon Islands (1995)	20 (1)	80 (1)
			Vietnam (2004)	20 (1)	NA
			Congo, Dem. Rep. (2003)	10 (1)	100 (2)

			Kuwait (2002)	4 (1)	100 (1)
			Mozambique (2003)	7.5 (1)	100 (2)
			Rwanda (2003)	5 (2)	100 (1)
			Solomon Islands (1995)	20 (1)	80 (1)
			Barbados (2003)	5 (1)	70 (1)
			St. Kitts and Nevis (2003)	0 (1)	70 (1)
			Angola (2002)	2 (1)	60 (1)
			Lesotho (2001)	0 (1)	60 (1)
			Tunisia (2004)	15 (4)	60 (2)
			Antigua and Barbuda (2003)	5 (1)	50 (1)
			Belize (2003)	5 (1)	50 (1)
			Dominica (2003)	5 (1)	50 (1)
			Grenada (2003)	5 (1)	50 (1)
			Guinea-Bissau (2004)	10 (2)	50 (2)
			Guyana (2003)	5 (1)	50 (1)
			Jamaica (2003)	0 (1)	50 (1)
			Niger (2004)	10 (2)	50 (2)
			St. Lucia (2003)	0 (1)	50 (1)
			St. Vincent and the Grenadines (2003)	5 (1)	50 (1)
			Trinidad and Tobago (2003)	0 (1)	50 (1)
Woven fabric of other vegetable textile fibres or paper yarn [5311.00]	**World**	**157 684**	Solomon Islands (1995)	230 (1)	80 (1)
	China	96 668	Burundi (2002)	40 (1)	20 (1)
	OECD Countries	*56 970*	Ethiopia[3] (2002)	20 – 40 (3)	NA
	– of which Korea	7 661	Morocco (2003)	40 (20)	40 (3)
	– of which Mexico	1 008	Vietnam (2004)	40 (1)	NA
	– of which Turkey	156	Nigeria (2002)	35 (1)	–
	Hong Kong, China.	1 743	Djibouti (2002)	33 (1)	40 (1)
	Sri Lanka	1 259	Bangladesh (2004)	30 (2)	–
	Thailand	284	Bhutan (2004)	30 (1)	NA
	India	180	Egypt, Arab Rep. (2002)	30 (2)	30 (2)
	Singapore	156	India (2004)	30 (10)	40 (1)
			Syrian Arab Rep. (2002)	15 – 30 (5)	NA
			Kenya (2004)	25 (3)	–
			Maldives (2003)	25 (2)	30 (1)
			Mozambique (2003)	25 (1)	100 (1)
			Pakistan (2004)	25 (1)	25 (1)
			Romania (2001)	25 (2)	35 (2)
			Sudan (2002)	25 (1)	NA
			Congo, Dem. Rep. (2003)	10 (1)	100 (3)
			Kuwait (2002)	4 (1)	100 (1)
			Mozambique (2003)	25 (1)	100 (1)
			Solomon Islands (1995)	230 (1)	80 (1)
			Barbados (2003)	5 (1)	70 (1)
			St. Kitts and Nevis (2003)	5 (1)	70 (1)
			Angola (2002)	20 (1)	60 (1)
			Lesotho (2001)	0 (1)	60 (1)
			Tunisia (2004)	15 (8)	60 (5)
			Antigua and Barbuda (2003)	5 (1)	50 (1)
			Belize (2003)	5 (1)	50 (1)
			Dominica (2003)	5 (1)	50 (1)
			Grenada (2003)	5 (1)	50 (1)
			Guinea-Bissau (2004)	20 (1)	50 (1)
			Guyana (2003)	5 (1)	50 (1)
			Jamaica (2003)	0 (1)	50 (1)
			Niger (2004)	20 (1)	50 (1)
			St. Lucia (2003)	5 (1)	50 (1)
			St. Vincent and the Grenadines (2003)	5 (1)	50 (1)
			Trinidad and Tobago (2003)	0 (1)	50 (1)
Binder or baler twine [5607.21]	**World**	**47 336**	Morocco (2003)	50 (1)	40 (1)
	Brazil	24 470	Syrian Arab Rep. (2002)	15 – 50 (2)	NA
	OECD Countries	*16 179*	Tunisia (2004)	43 (1)	–
	– of which Korea	273	Mauritius (2002)	40 (1)	–
	– of which Mexico	238	Zimbabwe (2002)	40 (1)	–
	– of which Turkey	4	Bahamas, The (2002)	35 (1)	NA
	Nepal	2 657	Cambodia (2003)	35 (1)	–
	Tanzania	988	Djibouti (2002)	33 (1)	40 (1)
	Kenya	764	Algeria (2003)	30 (1)	NA
	Madagascar	547	Egypt, Arab Rep. (2002)	30 (1)	30 (1)

			Jordan (2003)	30 (1)	20 (1)
	LDC	4 258	Nigeria (2002)	30 (1)	–
			Vietnam (2004)	30 (1)	NA
			Sri Lanka (2004)	27.5 (1)	25 (1)
			Israel (1993)	27.4 (1)	15 (1)
			Kenya (2004)	25 (1)	–
			Maldives (2003)	25 (1)	30 (1)
			Pakistan (2004)	25 (1)	25 (1)
			Romania (2001)	25 (1)	35 (1)
			Sudan (2002)	25 (1)	NA
			Zambia (2003)	25 (1)	–
			Congo, Dem. Rep. (2003)	20 (1)	100 (1)
			Kuwait (2002)	4 (1)	100 (1)
			Mozambique (2003)	7.5 (1)	100 (1)
			Rwanda (2003)	5 (1)	100 (1)
			Solomon Islands (1995)	10 (1)	80 (1)
			Barbados (2003)	15 (1)	70 (1)
			St. Kitts and Nevis (2003)	5 (1)	70 (1)
			Trinidad and Tobago (2003)	15 (1)	70 (1)
			Angola (2002)	10 (1)	60 (1)
			Lesotho (2001)	20 (1)	60 (1)
			Tunisia (2004)	43 (1)	60 (1)
			Papua New Guinea (2004)	0 (1)	55 (1)
			Antigua and Barbuda (2003)	15 (1)	50 (1)
			Belize (2003)	15 (1)	50 (1)
			Dominica (2003)	15 (1)	50 (1)
			Grenada (2003)	15 (1)	50 (1)
			Guinea-Bissau (2004)	10 (1)	50 (1)
			Guyana (2003)	15 (1)	50 (1)
			Jamaica (2003)	15 (1)	50 (1)
			Niger (2004)	10 (1)	50 (1)
			St. Lucia (2003)	15 (1)	50 (1)
			St. Vincent and the Grenadines (2003)	15 (1)	50 (1)
Other	**World**	**36 909**	Morocco (2003)	50 (1)	40 (1)
[5607.29]	*OECD Countries*	*24 940*	Syrian Arab Rep. (2002)	15 – 50 (2)	NA
	– of which Korea	941	Tunisia (2004)	43 (4)	60 (2)
	– of which Mexico	3 675	Mauritius (2002)	40 (1)	–
	– of which Turkey	82	Zimbabwe (2002)	40 (1)	–
	Tunisia	2 984	Bahamas, The (2002)	15 – 35 (2)	NA
	China	2 802	Cambodia (2003)	35 (1)	–
	Brazil	1 942	Djibouti (2002)	33 (1)	40 (1)
	India	1 579	Algeria (2003)	30 (2)	NA
	Tanzania	900	Egypt, Arab Rep. (2002)	30 (1)	30 (1)
			Nigeria (2002)	30 (1)	–
	LDC	922	Vietnam (2004)	30 (1)	NA
			Israel (1993)	27.4 (1)	15 (1)
			Kenya (2004)	25 (1)	–
			Maldives (2003)	25 (1)	30 (1)
			Pakistan (2004)	25 (1)	25 (1)
			Romania (2001)	25 (2)	35 (2)
			Sudan (2002)	25 (1)	NA
			Zambia (2003)	25 (1)	–
			Congo, Dem. Rep. (2003)	20 (1)	100 (1)
			Kuwait (2002)	4 (1)	100 (1)
			Mozambique (2003)	7.5 (1)	100 (1)
			Rwanda (2003)	5 (1)	100 (1)
			Solomon Islands (1995)	10 (1)	80 (1)
			Barbados (2003)	5 – 15 (2)	70 (2)
			St. Kitts and Nevis (2003)	5 (2)	70 (3)
			Trinidad and Tobago (2003)	5 – 15 (2)	70 (2)
			Angola (2002)	10 (1)	60 (1)
			Lesotho (2001)	20 (1)	60 (1)
			Tunisia (2004)	43 (4)	60 (2)
			Papua New Guinea (2004)	0 (1)	55 (1)
			Antigua and Barbuda (2003)	5 – 15 (2)	50 (3)
			Belize (2003)	5 – 15 (2)	50 (3)
			Dominica (2003)	5 – 15 (2)	50 (2)
			Grenada (2003)	5 – 15 (2)	50 (2)

			Guinea-Bissau (2004)	10 (1)	50 (1)
			Guyana (2003)	5 – 15 (2)	50 (2)
			Jamaica (2003)	0 – 15 (2)	50 (2)
			Niger (2004)	10 (1)	50 (1)
			St. Lucia (2003)	5 – 15 (2)	50 (2)
			St. Vincent & Grenadines (2003)	5 – 15 (2)	50 (3)
Of other	**World**	**143 630**	Solomon Islands (1995)	250 (1)	80 (1)
textile	*OECD Countries*	*75 369*	Mauritius (2002)	80 (1)	–
materials	– of which Turkey	2 142	Syrian Arab Rep. (2002)	30 – 75 (4)	NA
[5702.99]	Iran, Islamic Rep.	37 775	Nigeria (2002)	65 (1)	–
	China	12 560	Iran, Islamic Rep. (2004)	50 (1)	NA
	India	9 200	Morocco (2003)	50 (2)	40 (1)
	Romania	3 266	Seychelles (2001)	50 (2)	NA
			Turkmenistan (2002)	50 (1)	NA
	LDC	0.06	Sudan (2002)	45 (1)	NA
			Tunisia (2004)	43 (2)	–
			Burundi (2002)	40 (1)	20 (1)
			Egypt, Arab Rep. (2002)	40 (1)	60 (1)
			Ethiopia (2002)	40 (1)	NA
			Romania (2001)	40 (1)	40 (1)
			Vietnam (2004)	40 (1)	NA
			Zimbabwe (2002)	40 (1)	–
			Bahamas, The (2002)	35 (1)	NA
			Cambodia (2003)	35 (1)	–
			Djibouti (2002)	33 (1)	40 (1)
			Congo, Dem. Rep. (2003)	20 (1)	100 (1)
			Kuwait (2002)	4 (1)	100 (1)
			Mozambique (2003)	25 (1)	100 (1)
			Solomon Islands (1995)	250 (1)	80 (1)
			Barbados (2003)	20 (1)	70 (1)
			St. Kitts and Nevis (2003)	25 (1)	70 (1)
			Angola (2002)	20 (1)	60 (1)
			Egypt, Arab Rep. (2002)	40 (1)	60 (1)
			Lesotho (2001)	30 (1)	60 (1)
			Antigua and Barbuda (2003)	20 (1)	50 (1)
			Belize (2003)	20 (1)	50 (1)
			Dominica (2003)	20 (1)	50 (1)
			Grenada (2003)	20 (1)	50 (1)
			Guinea-Bissau (2004)	20 (1)	50 (1)
			Guyana (2003)	20 (1)	50 (1)
			Jamaica (2003)	20 (1)	50 (1)
			Niger (2004)	20 (1)	50 (1)
			Philippines (2003)	10 (1)	50 (1)
			St. Lucia (2003)	20 (1)	50 (1)
			St. Vincent & Grenadines (2003)	20 (1)	50 (1)
			Trinidad and Tobago (2003)	20 (1)	50 (1)

Table A3.2. Total world trade in bicycles and parts and highest tariffs applied

Product [HS Code]	*Leading Exporters, 2003*	*Export Value (USD 000)*	*Importers with the highest level of duty (data year)*	*Applied tariff, in % (number of tariff lines)*	*Bound Rate, in % (number of tariff lines)*
Bicycles	***World***	***2 827 135***	Vietnam (2004)	5 – 80 (4)	NA
and	*OECD Countries*	*1 195 425*	Iran, Islamic Rep. (2004)	70 (1)	NA
other cycles	– of which Korea	984	Morocco (2003)	25 – 50 (4)	40 (2)
(including	– of which Mexico	3 562	Tunisia (2004)	43 (4)	–
delivery	– of which Turkey	14 449	Thailand (2003)	40 (3)	–
tricycles),	China	1 441 491	Egypt, Arab Rep. (2002)	20 – 40 (2)	60 (1)
not	India	43 277	Burundi (2002)	40 (1)	–
motorised	Lithuania	37 375	Romania (2001)	35 (3)	35 (3)
[8712.00]			Bahamas, The (2002)	35 (1)	NA
	LDCs	11 638	Djibouti (2004)	33 (1)	40 (1)
			Mexico (2004)	23 – 30 (5)	35 (5)
			Algeria (2003)	30 (3)	NA
			India (2004)	30 (2)	–
			Cuba (2004)	10 – 30 (2)	–
			Syrian Arab Rep. (2002)	30 (1)	NA
			Pakistan (2004)	30 (1)	–
			Jordan (2003)	30 (1)	20 (1)
			Gabon (2002)	30 (1)	15 (1)
			Equatorial Guinea (2002)	30 (1)	NA
			Congo, Rep. (2002)	30 (1)	–
			Chad (2002)	30 (1)	–
			Central African Rep. (2002)	30 (1)	25 (1)
			Cameroon (2002)	30 (1)	–
			Bangladesh (2004)	30 (1)	–
			Angola (2002)	5 (1)	100 (2)
			Antigua and Barbuda (2003)	5 – 20 (2)	100 (1)
			Barbados (2003)	5 – 20 (2)	100 (1)
			Belize (2003)	0 – 5 (2)	100 (1)
			Congo, Dem. Rep. (2003)	20 (1)	80 (1)
			Costa Rica (2004)	15 (1)	70 (2)
			Dominica (2003)	5 – 10 (2)	70 (2)
			Egypt, Arab Rep. (2002)	20 – 40 (2)	60 (1)
			Grenada (2003)	5 – 20 (2)	60 (1)
			Trinidad and Tobago (2003)	2.5 – 20 (2)	30 – 60 (2)
			Guyana (2003)	5 – 20 (2)	50 (2)
			Jamaica (2003)	0 – 20 (2)	50 (2)
			Kuwait (2002)	4 (1)	50 (2)
			Lesotho (2001)	0 – 15 (2)	50 (2)
			Mozambique (2003)	5 – 25 (3)	50 (2)
			Niger (2004)	20 (1)	5 – 50 (2)
			Rwanda (2003)	5 (1)	50 (3)
			Solomon Islands (1995)	10 (1)	50 (2)
			St. Kitts and Nevis (2003)	5 – 25 (2)	50 (2)
			St. Lucia (2003)	0 – 25 (2)	50 (2)
			St. Vincent & Grenadines (2003)	5 – 20 (2)	45 (3)
Frames and	***World***	***483 290***	Iran, Islamic Rep. (2004)	10 – 70 (3)	NA
forks, and	*OECD Countries*	*224 472*	Morocco (2003)	50 (3)	40 (1)
parts thereof	– of which Korea	1 034	Vietnam (2004)	50 (5)	NA
[8714.91]	– of which Mexico	175	Tunisia (2004)	43 (3)	–
	– of which Turkey	162	Thailand (2003)	40 (2)	–
	China	263 889	Bahamas, The (2002)	35 (1)	NA
	India	9 431	Pakistan (2004)	35 (1)	–
	Thailand	5 425	Djibouti (2002)	33 (1)	40 (1)
			Algeria (2003)	30 (1)	NA
	LDCs	538	Bangladesh (2004)	30 (2)	–
			Egypt, Arab Rep. (2002)	20 – 30 (2)	30 (1)
			India (2004)	30 (1)	–
			Jordan (2003)	30 (1)	20 (1)
			Nigeria (2002)	30 (1)	–
			Romania (2001)	30 (3)	35 (3)
			Syrian Arab Rep. (2002)	30 (1)	NA
			Kuwait (2002)	4 (1)	100 (1)
			Mozambique (2003)	7.5 (1)	100 (1)
			Rwanda (2003)	5 (1)	100 (1)
			Solomon Islands (1995)	10 (1)	80 (1)

Product [HS Code]	*Leading Exporters, 2003*	*Export Value (USD 000)*	*Importers with the highest level of duty (data year)*	*Applied tariff, in % (number of tariff lines)*	*Bound Rate, in % (number of tariff lines)*
			Barbados (2003)	5 (1)	70 (1)
			St. Kitts and Nevis (2003)	5 (1)	70 (1)
			Malawi (2001)	5 (1)	65 (1)
			Angola (2002)	5 (1)	60 (1)
			Lesotho (2001)	5 (1)	60 (1)
			Antigua and Barbuda (2003)	5 (1)	50 (1)
			Belize (2003)	5 (1)	50 (1)
			Dominica (2003)	5 (1)	50 (1)
			Grenada (2003)	5 (1)	50 (1)
			Guatemala (2004)	5 – 10 (2)	50 (2)
			Guyana (2003)	5 (1)	50 (1)
			Jamaica (2004)	0 (1)	50 (1)
			Niger (2004)	5 – 20 (2)	50 (1)
			St. Lucia (2003)	0 (1)	50 (1)
			St. Vincent & Grenadines (2003)	5 (1)	50 (1)
			Trinidad and Tobago (2003)	5 (1)	50 (1)
Wheel rims	***World***	***217 011***	Morocco (2003)	50 (4)	40 (1)
and spokes	*OECD Countries*	*121 313*	Vietnam (2004)	50 (2)	NA
[8714.92]	– of which Korea	113	Tunisia (2004)	43 (2)	–
	– of which Mexico	612	Iran, Islamic Rep. (2004)	40 (1)	NA
	– of which Turkey	146	Thailand (2003)	40 (2)	–
	China	34 547	Bahamas, The (2002)	35 (1)	NA
	India	24 003	Pakistan (2004)	35 (1)	–
	Thailand	23 076	Djibouti (2002)	33 (1)	40 (1)
	Malaysia	7 049	Algeria (2003)	30 (1)	NA
	Bulgaria	3 546	Bangladesh (2004)	30 (2)	–
			Egypt, Arab Rep. (2002)	20 – 30 (2)	30 (1)
	LDCs	504	India (2004)	30 (1)	–
			Jordan (2003)	30 (1)	30 (1)
			Malaysia (2003)	0 – 30 (4)	30 (4)
			Nigeria (2002)	30 (1)	–
			Romania (2001)	30 (2)	35 (2)
			Syrian Arab Rep. (2002)	30 (1)	NA
			Kuwait (2002)	4 (1)	100 (1)
			Mozambique (2003)	7.5 (1)	100 (1)
			Rwanda (2003)	5 (1)	100 (1)
			Solomon Islands (1995)	10 (1)	80 (1)
			Barbados (2003)	5 (1)	70 (1)
			St. Kitts and Nevis (2003)	5 (1)	70 (1)
			Malawi (2001)	5 (1)	65 (1)
			Angola (2002)	5 (1)	60 (1)
			Lesotho (2001)	0 (1)	60 (1)
			Antigua and Barbuda (2003)	5 (1)	50 (1)
			Belize (2003)	5 (1)	50 (1)
			Dominica (2003)	5 (1)	50 (1)
			Grenada (2003)	5 (1)	50 (1)
			Guatemala (2004)	0 – 10 (2)	50 (2)
			Guyana (2003)	5 (1)	50 (1)
			Jamaica (2004)	0 (1)	50 (1)
			Niger (2004)	5 – 20 (2)	50 (1)
			St. Lucia (2003)	0 (1)	50 (1)
			St. Vincent & Grenadines (2003)	5 (1)	50 (1)
			Trinidad and Tobago (2003)	5 (1)	50 (1)
Hubs, other	***World***	***196 635***	Morocco (2003)	50 (3)	40 (1)
than coaster	*OECD Countries*	*76 914*	Vietnam (2004)	50 (2)	NA
braking	– of which Korea	366	Thailand (2003)	40 (2)	–
Hubs	– of which Mexico	46	Bahamas, The (2002)	35 (1)	NA
and hub	– of which Turkey	9	Pakistan (2004)	35 (1)	–
brakes, and	China	46 598	Djibouti (2002)	33 (1)	40 (1)
free-wheel	India	40 357	Algeria (2003)	30 (1)	NA
Sprocket-	Singapore	25 153	Bangladesh (2004)	22.5 – 30 (2)	–
Wheels	Thailand	3 641	India (2004)	30 (3)	–
[8714.93]	Malaysia	2 159	Jordan (2003)	30 (1)	20 (1)
			Romania (2001)	30 (2)	35 (2)
	LDCs	543	Syrian Arab Rep. (2002)	30 (1)	NA
			Kuwait (2002)	4 (1)	100 (1)
			Mozambique (2003)	7.5 (1)	100 (1)

Product [HS Code]	*Leading Exporters, 2003*	*Export Value (USD 000)*	*Importers with the highest level of duty (data year)*	*Applied tariff, in % (number of tariff lines)*	*Bound Rate, in % (number of tariff lines)*
			Rwanda (2003)	5 (1)	100 (1)
			Solomon Islands (1995)	10 (1)	80 (1)
			Barbados (2003)	5 (1)	70 (1)
			St. Kitts and Nevis (2003)	5 (1)	70 (1)
			Malawi (2001)	5 (1)	65 (1)
			Angola (2002)	5 (1)	60 (1)
			Lesotho (2001)	0 (1)	60 (1)
			Antigua and Barbuda (2003)	5 (1)	50 (1)
			Belize (2003)	5 (1)	50 (1)
			Dominica (2003)	5 (1)	50 (1)
			Grenada (2003)	5 (1)	50 (1)
			Guyana (2003)	5 (1)	50 (1)
			Jamaica (2003)	0 (1)	50 (1)
			Niger (2004)	5 – 10 (2)	50 (1)
			St. Lucia (2003)	0 (1)	50 (1)
			St. Vincent & Grenadines (2003)	5 (1)	50 (1)
			Trinidad and Tobago (2003)	5 (1)	50 (1)
Brakes, and	***World***	***310 974***	Morocco (2003)	50 (3)	40 (1)
including	*OECD Countries*	*239 217*	Vietnam (2004)	50 (2)	NA
coaster	– of which Korea	692	Thailand (2003)	40 (2)	–
braking	– of which Mexico	19	Bahamas, The (2002)	35 (1)	NA
hubs	– of which Turkey	89	Pakistan (2004)	35 (1)	–
hub brakes,	China	45 549	Djibouti (2002)	33 (1)	40 (1)
and parts	Thailand	10 959	Algeria (2003)	30 (1)	NA
thereof	India	7 984	Bangladesh (2004)	15 – 30 (2)	–
[8714.94]			India (2004)	30 (1)	–
	LDCs	37	Jordan (2003)	30 (1)	30 (1)
			Romania (2001)	30 (3)	35 (3)
			Syrian Arab Rep. (2002)	30 (1)	NA
			Kuwait (2002)	4 (1)	100 (1)
			Mozambique (2003)	7.5 (1)	100 (1)
			Rwanda (2003)	5 (1)	100 (1)
			Solomon Islands (1995)	10 (1)	80 (1)
			Barbados (2003)	5 (1)	70 (1)
			St. Kitts and Nevis (2003)	5 (1)	70 (1)
			Malawi (2001)	5 (1)	65 (1)
			Angola (2002)	5 (1)	60 (1)
			Lesotho (2001)	0 (1)	60 (1)
			Antigua and Barbuda (2003)	missing (1)	50 (1)
			Belize (2003)	5 (1)	50 (1)
			Dominica (2003)	5 (1)	50 (1)
			Grenada (2003)	5 (1)	50 (1)
			Guyana (2003)	5 (1)	50 (1)
			Jamaica (2003)	0 (1)	50 (1)
			Niger (2004)	5 – 10 (2)	50 (1)
			St. Lucia (2003)	0 (1)	50 (1)
			St. Vincent & Grenadines (2003)	5 (1)	50 (1)
			Trinidad and Tobago (2003)	5 (1)	50 (1)
Saddles	***World***	***129 362***	Maldives (2003)	15 – 100 (2)	–
[8714.95]	*OECD Countries*	*92 711*	Iran, Islamic Rep. (2004)	57 (1)	NA
	– of which Mexico	0.4	Morocco (2003)	50 (3)	40 (1)
	– of which Turkey	5	Vietnam (2004)	50 (2)	NA
	China	27 153	Tunisia (2004)	43 (1)	–
	India	4 667	Thailand (2003)	40 (2)	–
	Brazil	1 501	Bahamas, The (2002)	35 (1)	NA
			Pakistan (2004)	35 (1)	–
	LDCs	30	Djibouti (2002)	33 (1)	40 (1)
			Algeria (2003)	30 (1)	NA
			Bangladesh (2004)	15 – 30 (2)	–
			India (2004)	30 (2)	–
			Jordan (2003)	30 (1)	30 (1)
			Nigeria (2002)	30 (1)	–
			Romania (2001)	30 (1)	35 (1)
			Syrian Arab Rep. (2002)	30 (1)	NA
			Kuwait (2002)	4 (1)	100 (1)
			Mozambique (2003)	7.5 (1)	100 (1)
			Rwanda (2003)	5 (1)	100 (1)

Product [HS Code]	*Leading Exporters, 2003*	*Export Value (USD 000)*	*Importers with the highest level of duty (data year)*	*Applied tariff, in % (number of tariff lines)*	*Bound Rate, in % (number of tariff lines)*
			Solomon Islands (1995)	10 (1)	80 (1)
			Barbados (2003)	5 (1)	70 (1)
			St. Kitts and Nevis (2003)	5 (1)	70 (1)
			Malawi (2001)	5 (1)	65 (1)
			Angola (2002)	5 (1)	60 (1)
			Lesotho (2001)	0 (1)	60 (1)
			Antigua and Barbuda (2003)	5 (1)	50 (1)
			Belize (2003)	5 (1)	50 (1)
			Dominica (2003)	5 (1)	50 (1)
			Grenada (2003)	5 (1)	50 (1)
			Guyana (2003)	5 (1)	50 (1)
			Jamaica (2003)	0 (1)	50 (1)
			Niger (2004)	5 – 10 (2)	50 (1)
			St. Lucia (2003)	0 (1)	50 (1)
			St. Vincent & Grenadines (2003)	5 (1)	50 (1)
			Trinidad and Tobago (2003)	5 (1)	50 (1)
Pedals and	***World***	***251 365***	Maldives (2003)	15 – 100 (2)	–
crank gear,	*OECD Countries*	*187 966*	Morocco (2003)	50 (7)	40 (1)
and parts	– of which Korea	50	Vietnam (2004)	50 (3)	NA
thereof	– of which Mexico	3	Iran, Islamic Rep. (2004)	10 – 40 (3)	NA
[8714.96]	– of which Turkey	155	Thailand (2003)	40 (2)	–
	China	45 599	Bahamas, The (2002)	35 (1)	NA
	India	8 161	Pakistan (2004)	35 (1)	–
	Singapore	7 609	Djibouti (2002)	33 (1)	40 (1)
			Algeria (2003)	30 (1)	NA
	LDCs	244	Bangladesh (2004)	15 – 30 (2)	–
			India (2004)	30 (1)	–
			Jordan (2003)	30 (1)	20 (1)
			Nigeria (2002)	30 (1)	–
			Romania (2001)	30 (3)	35 (3)
			Syrian Arab Rep. (2002)	30 (1)	NA
			Kuwait (2002)	4 (1)	100 (1)
			Mozambique (2003)	7.5 (1)	100 (1)
			Rwanda (2003)	5 (1)	100 (1)
			Solomon Islands (1995)	10 (1)	80 (1)
			Barbados (2003)	5 (1)	70 (1)
			St. Kitts and Nevis (2003)	5 (1)	70 (1)
			Malawi (2001)	5 (1)	65 (1)
			Angola (2002)	5 (1)	60 (1)
			Lesotho (2001)	0 (1)	60 (1)
			Antigua and Barbuda (2003)	5 (1)	50 (1)
			Belize (2003)	5 (1)	50 (1)
			Dominica (2003)	5 (1)	50 (1)
			Grenada (2003)	5 (1)	50 (1)
			Guyana (2003)	5 (1)	50 (1)
			Jamaica (2003)	0 (1)	50 (1)
			Niger (2004)	5 – 10 (2)	50 (1)
			St. Lucia (2003)	0 (1)	50 (1)
			St. Vincent & Grenadines (2003)	5 (1)	50 (1)
			Trinidad and Tobago (2003)	5 (1)	50 (1)
Other	***World***	***1 697 982***	Maldives (2003)	15 – 100 (3)	–
[8714.99]	*OECD Countries*	*1 041 812*	Morocco (2003)	50 (12)	40 (1)
	– of which Korea	4 602	Vietnam (2004)	50 (5)	NA
	– of which Mexico	3 433	Tunisia (2004)	27 – 43 (5)	–
	– of which Turkey	10 229	Thailand (2003)	40 (2)	–
	China	231 330	Bahamas, The (2002)	35 (1)	NA
	Singapore	191 222	Pakistan (2004)	35 (1)	–
	Malaysia	117 131	Djibouti (2002)	33 (1)	40 (1)
	India	47 011	Algeria (2003)	30 (2)	NA
	Thailand	40 069	Bangladesh (2004)	30 (2)	–
	Romania	18 861	India (2004)	30 (3)	–
			Jordan (2003)	30 (1)	20 (1)
	LDCs	1 313	Malaysia (2003)	0 – 30 (15)	30 (13)
			Romania (2001)	30 (4)	35 (4)
			Syrian Arab Rep. (2002)	30 (1)	NA
			Kuwait (2002)	4 (1)	100 (1)
			Mozambique (2003)	7.5 (1)	100 (1)

Product [HS Code]	*Leading Exporters, 2003*	*Export Value (USD 000)*	*Importers with the highest level of duty (data year)*	*Applied tariff, in % (number of tariff lines)*	*Bound Rate, in % (number of tariff lines)*
			Rwanda (2003)	5 (1)	100 (1)
			Solomon Islands (1995)	10 (1)	80 (1)
			Barbados (2003)	5 (1)	70 (1)
			St. Kitts and Nevis (2003)	missing (1)	70 (1)
			Malawi (2001)	5 (1)	65 (1)
			Angola (2002)	5 (1)	60 (1)
			Egypt, Arab Rep. (2002)	20 – 30 (2)	30 – 60 (2)
			Lesotho (2001)	0 (1)	60 (1)
			Antigua and Barbuda (2003)	5 (1)	50 (1)
			Belize (2003)	5 (1)	50 (1)
			Central African Rep. (2002)	20 (1)	50 (1)
			Dominica (2003)	5 (1)	50 (1)
			Grenada (2003)	Missing (1)	50 (1)
			Guatemala (2004)	0 – 10 (3)	30 – 50 (3)
			Guyana (2003)	5 (1)	50 (1)
			Jamaica (2003)	0 (1)	50 (1)
			Niger (2004)	5 – 20 (2)	5 – 50 (2)
			St. Lucia (2003)	0 (1)	50 (1)
			St. Vincent and the Grenadines (2003)	5 (1)	50 (1)
			Trinidad and Tobago (2003)	5 (1)	50 (1)

Table A3.5. Total world trade in stoves and parts and highest tariffs applied

Product [HS code]	Leading exporters 2003	Export value (USD 000)	Importers with the highest level of duty (data year)	Applied tariff,in % (number of tariff lines)	Bound rate, in % (number of tariff lines)
Cooking appliances and plate warmers for gas or both gas and other fuels [7321.11]	***World***	***1 941 742***	Syrian Arab Rep. (2002)	100 (1)	NA
	OECD Countries	*1 479 157*	Zimbabwe (2002)	40 – 65 (2)	–
	– of which Korea	15 305	Iran, Islamic Rep. (2004)	50 (1)	NA
	– of which Mexico	290 194	Morocco (2003)	50 (9)	40 (9)
	– of which Turkey	107 976	Tunisia (2004)	43 (5)	–
	China	220 112	Burundi (2002)	40 (1)	–
	Brazil	69 534	Egypt, Arab Rep. (2002)	40 (1)	60 (1)
	Belarus	67 563	Nigeria (2002)	40 (1)	–
	Romania	23 489	Solomon Islands (1995)	35 (1)	80 (1)
	Costa Rica	12 644	Kenya (2004)	35(1)	–
	Slovenia	11 749	Grenada (2003)	20 – 35 (4)	50 (4)
	Ecuador	11 746	St. Vincent & Grenadines (2003)	20 – 35 (4)	50 (4)
	Malaysia	10 463	Djibouti (2004)	33 (1)	40 (1)
	LDCs	14	Kuwait (2002)	4 (1)	100 (1)
			Rwanda (2003)	15 (2)	100 (1)
			Mozambique (2003)	25 (1)	100 (1)
			Congo, Dem. Rep. (2003)	20 (1)	100 (1)
			Barbados (2003)	20 (4)	70 – 85 (4)
			Solomon Islands (1995)	35 (1)	80 (1)
			St. Kitts and Nevis (2003)	25 (4)	70 (4)
			Trinidad and Tobago (2003)	20 – 25 (4)	50 – 70 (6)
			Angola (2002)	5 (1)	60 (1)
			Egypt, Arab Rep. (2002)	40 (1)	60 (1)
			Lesotho (2001)	15 (1)	60 (1)
			Papua New Guinea (2004)	0 (1)	55 (1)
			Antigua and Barbuda (2003)	missing (1)	50 (4)
			Belize (2003)	0 – 20 (4)	50 (4)
			Central African Rep. (2002)	30 (1)	50 (1)
			Dominica (2003)	20 (4)	50 (4)
			Grenada (2003)	20 – 35 (4)	50 (4)
			Guyana (2003)	20 (4)	50 (4)
			Jamaica (2003)	20 (4)	50 (4)
			St. Lucia (2003)	20 – 30 (4)	50 (4)
			St. Vincent & Grenadines (2003)	20 – 35 (4)	50 (4)
			Guinea Bissau (2004)	20 (2)	50 (1)
			Niger (2004)	20 (2)	50 (1)
Cooking appliances and plate warmers for liquid fuel [7321.12]	***World***	***80 942***	Syrian Arab Rep. (2002)	100 (1)	NA
	China	43 477	Iran, Islamic Rep. (2004)	50 (1)	NA
	OECD Countries	*29 687*	Morocco (2003)	50 (3)	40 (1)
	– of which Korea	238	Tunisia (2004)	43 (3)	–
	– of which Mexico	5	Burundi (2002)	40 (1)	–
	– of which Turkey	14	Egypt, Arab Rep. (2002)	40 (1)	60 (1)
	Iran, Islamic Rep.	3 524	Nigeria (2002)	40 (1)	–
	Singapore	1 525	Zimbabwe (2002)	15 – 40 (2)	15 (1)
			Solomon Islands (1995)	35 (1)	80 (1)
	LDCs	21	Grenada (2003)	20 – 35 (4)	50 (4)
			St. Vincent & Grenadines (2003)	20 – 35 (4)	50 (4)
			Djibouti (2004)	33 (1)	40 (1)
			Kuwait (2002)	4 (1)	100 (1)
			Rwanda (2003)	15 (1)	100 (1)
			Mozambique (2003)	25 (1)	100 (1)
			Congo, Dem. Rep. (2003)	20 (1)	100 (1)
			Solomon Islands (1995)	35 (1)	80 (1)
			Barbados (2003)	20 (4)	70 (4)
			St. Kitts and Nevis (2003)	25 (4)	70 (4)
			Angola (2002)	5 (1)	60 (1)
			Egypt, Arab Rep. (2002)	40 (1)	60 (1)
			Lesotho (2001)	15 (1)	60 (1)
			Papua New Guinea (2004)	0 (1)	55 (1)
			Antigua and Barbuda (2003)	missing (1)	50 (4)
			Belize (2003)	0 – 20 (4)	50 (4)
			Central African Rep. (2002)	30 (1)	50 (1)
			Dominica (2003)	20 (4)	50 (4)
			Grenada (2003)	20 – 35 (4)	50 (4)
			Guyana (2003)	20 (4)	50 (4)

Product [HS code]	Leading exporters 2003	Export value (USD 000)	Importers with the highest level of duty (data year)	Applied tariff,in % (number of tariff lines)	Bound rate, in % (number of tariff lines)
			Jamaica (2003)	20 (4)	50 (4)
			St. Lucia (2003)	20 – 30 (4)	50 (4)
			Malawi (2001)	25 (1)	50 (1)
			Trinidad and Tobago (2003)	20 – 25 (4)	50 (4)
			St. Vincent & Grenadines (2003)	20 – 35 (4)	50 (4)
			Bangladesh (2004)	30 (1)	50 (1)
			Guinea Bissau (2004)	20 (2)	50 (1)
			Niger (2004)	20 (2)	50 (1)
Cooking	***World***	***231 211***	Syrian Arab Rep. (2002)	100 (1)	NA
appliances	China	128 166	Iran, Islamic Rep. (2004)	50 (1)	NA
and plate	*OECD Countries*	*93 718*	Morocco (2003)	50 (2)	40 (1)
warmers	– of which Korea	91	Burundi (2002)	40 (1)	–
for solid	– of which Mexico	16	Egypt, Arab Rep. (2002)	40 (1)	60 (1)
fuel	– of which Turkey	956	Nigeria (2002)	40 (1)	–
[7321.13]	Macedonia, FYR	2 298	Zimbabwe (2002)	15 – 40 (2)	–
	Croatia	1 629	Tunisia (2004)	36 (3)	–
	Brazil	1 235	Grenada (2003)	20 – 35 (4)	50 (4)
			Kenya (2004)	15 – 30 (2)	–
	LDCs	80	Solomon Islands (1995)	35 (1)	80 (1)
			St. Vincent & Grenadines (2003)	20 – 35 (4)	50 (4)
			Djibouti (2004)	33 (1)	40 (1)
			Kuwait (2002)	4 (1)	100 (1)
			Rwanda (2003)	15 (2)	100 (1)
			Mozambique (2003)	25 (1)	100 (1)
			Congo, Dem. Rep. (2003)	20 (1)	100 (1)
			Solomon Islands (1995)	35 (1)	80 (1)
			Barbados (2003)	20 (4)	70 (4)
			St. Kitts and Nevis (2003)	25 (4)	70 (4)
			Angola (2002)	5 (1)	60 (1)
			Egypt, Arab Rep. (2002)	40 (1)	60 (1)
			Lesotho (2001)	15 (1)	60 (1)
			Antigua and Barbuda (2003)	missing (1)	50 (4)
			Belize (2003)	0 – 20 (4)	50 (4)
			Central African Rep. (2002)	30 (1)	50 (1)
			Dominica (2003)	20 (4)	50 (4)
			Grenada (2003)	20 – 35 (4)	50 (4)
			Guyana (2003)	20 (4)	50 (4)
			Jamaica (2003)	20 (4)	50 (4)
			St. Lucia (2003)	20 – 30 (4)	50 (4)
			Trinidad and Tobago (2003)	20 – 25 (4)	50 (4)
			St. Vincent & Grenadines (2003)	20 – 35 (4)	50 (4)
			Guinea Bissau (2004)	20 (1)	50 (1)
			Niger (2004)	20 (1)	50 (1)
Parts	***World***	***630 237***	Syrian Arab Rep. (2002)	30 – 100 (2)	NA
[7321.90]	*OECD Countries*	*478 231*	Morocco (2003)	25 – 50 (4)	40 (4)
	– of which Korea	5 028	Tunisia (2004)	20 – 43 (4)	–
	– of which Mexico	22 003	Burundi (2002)	40 (1)	–
	– of which Turkey	6 430	Egypt, Arab Rep. (2002)	40 (1)	60 (1)
	China	116 870	Nigeria (2002)	40 (1)	–
	Brazil	11 325	Kenya (2004)	35 (1)	–
	Croatia	6 949	Solomon Islands (1995)	35 (1)	80 (1)
	Thailand	3 753	Djibouti (2004)	33 (1)	40 (1)
	Romania	1 771	Algeria (2003)	30 (1)	NA
	South Africa	1 439	India (2004)	30 (1)	–
	Slovenia	1 225	Jordan (2003)	0 – 30 (3)	10 – 30 (3)
			Malaysia (2003)	5 – 30 (4)	30 (3)
	LDCs	0	Mexico (2004)	13 – 30 (8)	35 (8)
			Vietnam (2004)	30 (1)	NA
			Kuwait (2002)	4 (1)	100 (1)
			Rwanda (2003)	15 (3)	100 (1)
			Mozambique (2003)	7.5 (1)	100 (1)
			Congo, Dem. Rep. (2003)	10 (1)	100 (1)
			Solomon Islands (1995)	35 (1)	80 (1)
			Barbados (2003)	5 (1)	70 (1)
			St. Kitts and Nevis (2003)	5 (1)	70 (1)
			Angola (2002)	2 (1)	60 (1)
			Egypt, Arab Rep. (2002)	40 (1)	60 (1)

Product [HS code]	Leading exporters 2003	Export value (USD 000)	Importers with the highest level of duty (data year)	Applied tariff,in % (number of tariff lines)	Bound rate, in % (number of tariff lines)
			Lesotho (2001)	15 (1)	60 (1)
			Antigua and Barbuda (2003)	missing (1)	50 (1)
			Belize (2003)	0 (1)	50 (1)
			Central African Rep. (2002)	20 (1)	50 (1)
			Dominica (2003)	5 (1)	50 (1)
			Grenada (2003)	5 (1)	50 (1)
			Guyana (2003)	5 (1)	50 (1)
			Jamaica (2003)	0 (1)	50 (1)
			St. Lucia (2003)	5 (1)	50 (1)
			Trinidad and Tobago (2003)	2.5 (1)	50 (1)
			St. Vincent & Grenadines (2003)	5 (1)	50 (1)
			Guinea Bissau (2004)	10 (1)	50 (1)
			Niger (2004)	10 (1)	50 (1)

REFERENCES AND ADDITIONAL READINGS

Bailis, Robert, Majid Ezzati and Daniel M. Kammen (2005), "Mortality and greenhouse gas impacts of biomass and petroleum energy futures in Africa", *Science*, Vol. 308, 1 April, pp. 98-103.

Ballard-Tremeer, Grant and Angela Mathee (2000), "Review of interventions to reduce the exposure of women and young children to indoor air pollution in developing countries", prepared for the WHO/USAID consulation on Indoor Air Pollution and Health, 3-4 May, Washington, DC. Available at www.hedon.info/docs/IAPinterventions.pdf.

Bamberger, M. and A. S. C. Davis (2001), "Women and rural transport in development", Rural Transport Knowledge Base, available at www.transport-links.org/rtkb/English/Module%205%5C5_2a%20Women%20and%20Rural%20Transport.pdf.

Bess, Mike and Ottavia Mazzoni (2001), "Poverty reduction aspects of successful improved household stoves programmes", *Boiling Point*, No. 47, Autumn, Available at www.itdg.org/docs/energy/docs47/BP47Mazzoni.pdf.

Brown, Lester R. (2001), *Eco-Economy: Building an Economy for the Earth*, W.W. Norton & Co., New York.

Brown, Lester R. and Janet Larsen (2002), "World turning to bicycle for mobility and exercise", Earth Policy Institute, Washington, DC.

Ebert, Jessica (2005), "Charcoal fuel gets green light", *Nature*, Published online 31 March. Available at: www.nature.com/news/2005/050328/pf/050328-7_pf.html.

ECMT: European Conference of Ministers of Transport (2004), *Implementing Sustainable Urban Travel Policies: Moving Ahead - National Policies to Promote Cycling*, OECD, Paris.

FAO: Food and Agriculture Organization of the United Nations (2000), "Alternative Applications for Sisal and Henequen", Technical Paper No. 14, CFC and FAO, Rome.

Hurter, Robert W. (2000), "Sisal Fibre: Market Opportunities in the Pulp & Paper Industry", presented at Alternative Applications for Sisal and Henequen, a joint FAO/CFC seminar, Rome, Italy, 13 December. Published in Technical Paper No. 14, Alternative Applications for Sisal and Henequen, by the Common Fund for Commodities (CFC) and the Food and Agriculture Organization (FAO) of the United Nations, 2001, pages 61 - 74. Also available at www.hurterconsult.com/sisal_pulp_markets.htm.

IEA: International Energy Agency (2004), *World Energy Outlook 2004*, OECD/IEA, Paris.

Institute for Transportation and Development Policy. Available at www.itdp.org/.

Kammen, D.M. (1995), "Cookstoves for the developing world", *Scientific American*, Vol. 273, pp. 72-75.

OECD (2001), *Environmental Goods and Services: The Benefits of Further Global Trade Liberalization*, OECD, Paris.

OECD (2005), "Liberalisation of Trade in Renewable Energy and Associated Technologies", internal working document, OECD, Paris.

OECD/Eurostat (1999), *The Environmental Goods and Services Industry: Manual on Data Collection and Analysis*, OECD, Paris.

Scottish Executive Central Research Unit (2002), "Monitoring the National Cycling Strategy in Scotland", A report by the Scottish Cycling Development Project, Edinburgh.

Smith, K. et al. (2005), "Indoor air pollution in developing countries and acute lower respiratory infections in children", *Thorax*, Vol.55, pp.518–532.

Tébar Less, Cristina and Steven McMillan (2005), "Achieving the successful transfer of environmentally sound technologies: trade-related aspects", OECD Trade and Environment Working Paper No. 2005-02, OECD, Paris.

UN DESA: United Nations Department of Economic and Social Affairs (2004), "Changing Unsustainable Patterns of Consumption and Production, Experiences in Human Settlement and Water", DESA/DSD/2004/11, New York.

UNCTAD: United Nations Conference on Trade and Development (1985), "Bicycles and Components: a Pilot Survey of Opportunities for Trade among Developing Countries", Geneva.

UNCTAD (1995), "Environmentally Preferable Products (EPPs) as a Trade Opportunity for Developing Countries", UNCTAD/COM/70, Geneva.

UNCTAD (2003), "Environmental Goods: Trade Statistics of Developing Countries", TD/B/COM.1/EM.21/CRP.1, Geneva.

UNCTAD (2004), "UNCTAD's Work on Environmental Goods and Services: Briefing Note", Document No. TN/TE/INF/7, WTO, Geneva.

UNDP: United Nations Development Programme (2000), "World Energy Assessment: Energy and the Challenge of Sustainability", available at www.undp.org/seed/eap/activities/wea/drafts-frame.html.

UNIDO: United Nations Industrial Development Organization (n.d.), "Creating Opportunities in the Sisal Industry". Available at www.unido.org/doc/8447.

Warwick, Hugh and Alison Doig (2004), *Smoke – the Killer in the Kitchen. Indoor Air Pollution in Developing Countries*, ITDG Publishing, London.

World Bank (2005), Transport Infrastructure Notes. Available at www.worldbank.org/transport/publicat/pub_tran.htm and www.worldbank.org/transport/publicat/tdinflst.htm

WCO [World Customs Organization] (2005), "Explanatory Notes and Commodity Data Base", on line. Available at www.wcoomd.org/hsxpl (subscription required)