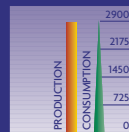


Thousand metric tons, situation in 2003.



Trade flows of natural rubber in quantity, 2002.



Trade flows under 80 000 metric tons are not shown. Exports from Thailand are from 2001.

**Production, consumption and trade of natural rubber.**

Natural rubber is produced only in certain developing countries with a tropical climate. It is derived from a liquid called latex, which is extracted mainly from the bark of rubber trees (*Hevea brasiliensis*) through a tapping process. (Certain other trees can be used, such as the *panama gum*, *balata gum* and *guayule trees*.) The most serious disease affecting rubber production is root rot, which destroys first the tree's roots and then the whole tree.

The United Nations SITC (revision 2) defines natural rubber as natural rubber latex; rubber and gums SITC code 232.



Tapping process on a rubber tree.

The invention of vulcanization in 1839 revolutionized the transport industry, making possible, for instance, the development of pneumatic rubber tyres. While the end markets for natural rubber are diverse, nearly half of output currently goes to tyre production (especially truck and aircraft tyres), and about 60% ends up in the automotive market as a whole (for items such as belts, hoses and seals). Rubber is also used in a range of other products such as gloves, roller coverings, mats, condoms, hot water bottles, protective clothing and sports equipment (for example, billiard table cushions).



Tyres are a leading use for natural rubber.

**World market**

Natural rubber is grown mostly in South-East Asia, which today accounts for about 92% of world production. The six leading producers – Thailand, Indonesia, Malaysia, India, China and Viet Nam – account for around 88% of both world production and total exports. Natural rubber provides a livelihood for a large proportion of these countries' population, including smallholders, estate workers and their families. For instance, around 70% of Indonesia's rubber and 86% of Malaysia's are produced by smallholders cultivating, on average, one to two hectares.

**Uses**

Through vulcanization (a chemical process involving combination with sulphur and heating), rubber acquires qualities such as strength, elasticity, impermeability and resistance to abrasion and solvents. Unvulcanized rubber is infrequently used, and mainly for rubber cement, crepe-rubber soles for footwear, and adhesive tape.

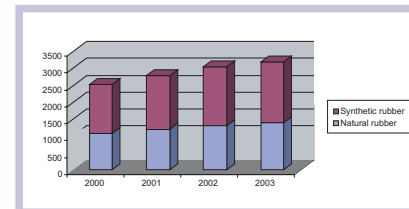
**Termination of the International Natural Rubber Agreement (INRA)**

After the withdrawal of Malaysia, Sri Lanka and Thailand from the third International Natural Rubber Agreement, the Council of the International Natural Rubber Organization decided to terminate the agreement in September 1999 and to liquidate the organization in December of the same year. The main goal of this agreement was to stabilize short-term natural rubber prices through the management of a buffer stock of a total capacity of 550,000 metric tons

**Natural versus synthetic rubbers**

Natural rubber co-exists with a range of synthetic rubbers that emerged during the Second World War. These have replaced natural rubber to a significant extent: world consumption of natural rubber as a percentage of consumption of all elastomers (natural plus synthetic rubbers) decreased from 80% in the 1950s to 40% in the early 2000s. However, specific qualities of natural rubber, particularly its combination of elastic and plastic characteristics and its environment-friendly nature (with the carbon sequestration effect of rubber trees) and biodegradable materials (compared to synthetic alternatives) are increasingly influencing the decision to use it. Other major factors are price differences between natural rubber and synthetic products and booming Chinese imports. The higher oil prices are, the more competitive natural rubber is.

**Rubber consumption in China**  
thousand metric tons

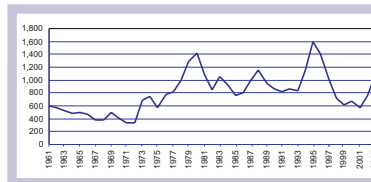


Source: International Rubber Study Group.

**The International Tripartite Rubber Organization (ITRO)**

In 2001, the Governments of Indonesia, Malaysia and Thailand joined the International Tripartite Rubber Organization and agreed to manage their production for the next few years in an effort to maintain orderly market growth and thus guarantee a minimum price to their domestic producers. To stabilize world natural rubber prices, in October 2003 they launched the International Rubber Company Ltd. (with initial capital of \$225 million) to pool the resources of the three countries. In the short run, this production reduction scheme appeared to be quite successful, although rising natural rubber prices were seen as an incentive to expand plantation areas. In addition, over the long run, if membership in the organization remains restricted, competition from non-member producing countries such as Viet Nam – which has recently made major investments in the natural rubber sector – may influence the price stabilization mechanism.

**Rubber price, No. 1 RSS, FOB Singapore in bales (US\$/metric ton)**



**How market prices are determined**

With the dismantling of the INRA, international rubber prices are no longer stabilized. In such an environment, price risk management instruments can be an option for dealing with volatility. While major international futures contracts for rubber are traded on the Singapore Commodity Exchange, entities such as the Kuala Lumpur Commodity Exchange, the Shanghai Futures Exchange, the Tokyo Commodity Exchange and the National Multi-Commodity Exchange of

India also offer contracts (with different quality specifications). These exchanges are now becoming increasingly liquid; for instance, volumes traded in Shanghai increased more than 400% during 2001–2. However, for smallholders, who still face many obstacles in accessing futures markets directly, there are few or no fixed-price forward contracting arrangements. Some rubber-producing countries have recently considered collectively managing production (as in the case of the ITRO), while India has created a domestic price stabilization fund to provide financial relief to small rubber growers when prices fall below a specified level.

**To learn more**

UNCTAD/INFCOMM, Market Information in the Commodities Area [www.unctad.org/infocomm](http://www.unctad.org/infocomm)

International Rubber Study Group [www.rubberstudy.com](http://www.rubberstudy.com)

Centre Français du Caoutchouc et des Polymères (French Rubber Manufacturer's Association) [www.lecaoutchouc.com](http://www.lecaoutchouc.com)

Centre de coopération internationale en recherche agronomique pour le développement (International centre of agricultural research for developing countries) CIRAD [www.cirad.fr](http://www.cirad.fr)