VEGETABLES OIL STUDY: Global overview of Biodiesel and feedstock in Asia
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Summary

- ✓ Objectives
- ✓ Market changes
- ✓ Global overview of vegetable oils
  - Palm, soybean, rapeseed
- ✓ Vegetables oil in Asia
  - Palm oil
  - Jatropha
- ✓ China, India, Indonesia, Malaysia, Thailand
- ✓ Biodiesel
- ✓ Environment & sustainability issues

Aims of the report

- ✓ i) to present a global overview of the main vegetable oils (palm, soybean, rapeseed, sunflower),
- ✓ ii) identify the main market trends;
- ✓ iii) identify the major players of the vegetable oil markets (exporters and importers),
- ✓ iv) assess the role of biodiesel in the vegetable oil markets;
- ✓ v) identify major policy developments and possible future trends.

Market changes

- ✓ The demand for vegetable oils has increased rapidly in the past decade, due a combination of factors, including:
- ✓ i) increasing demand sparked off by higher consumption for edible oils, particularly in emerging countries such China and India caused by, among other things, population growth, improving living standards and changing diets;

Market changes, cont…

- ✓ ii) the development of the biofuels industry (and more specifically biodiesel) around the world, particularly in the EU, USA, Brazil, Argentina, China and India,
- ✓ iii) price increases which have been due to varying factors e.g. increase in oil prices, low stock worldwide, droughts, and speculation
- ✓ iv) changing weather patterns which can have major geographical impacts and can be, potentially, quite large.

Market Changes

- ✓ There are two major markets for vegetable oils:
  - i) food which represents over 80%,
  - ii) industrial uses including biodiesel.
- ✓ The main driver for expansion is still the growing demand for edible oils for the food market, although an important part of this demand comes from the biodiesel sector.
- ✓ In recent years important new actors and trends in supply and demand have began to emerge e.g.

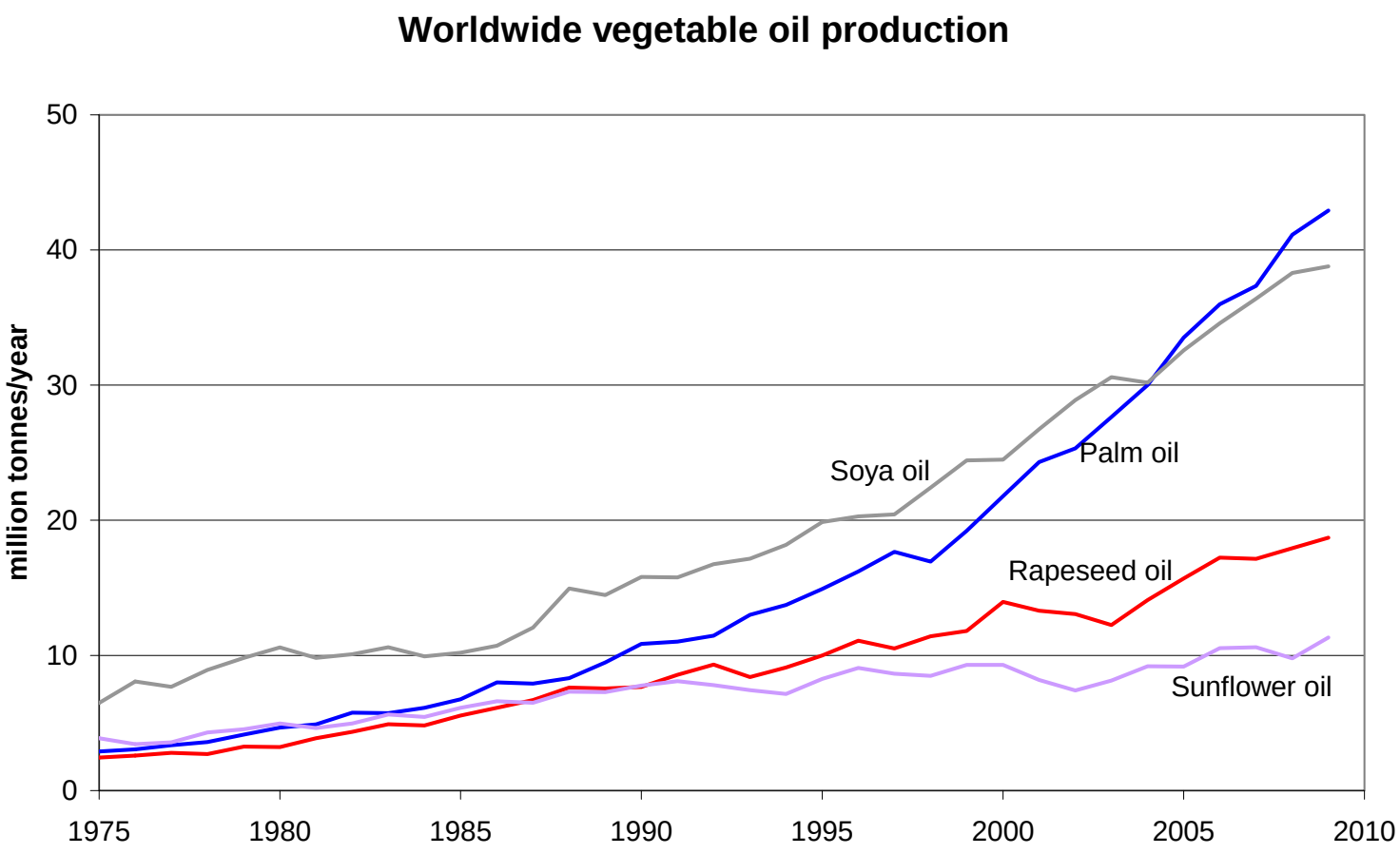
Market changes

- ✓ i) China is rapidly emerging as the world leading importer of vegetable oils,
- ✓ ii) Indonesia, Malaysia and Argentina dominate the exports market, representing approx. 75%,
- ✓ iii) Brazil is also becoming one the world's largest exporters of soybean next to the USA,
- ✓ iv) Argentina is rapidly becoming one of the world's top producer and exporter of soybean (meat and oil).

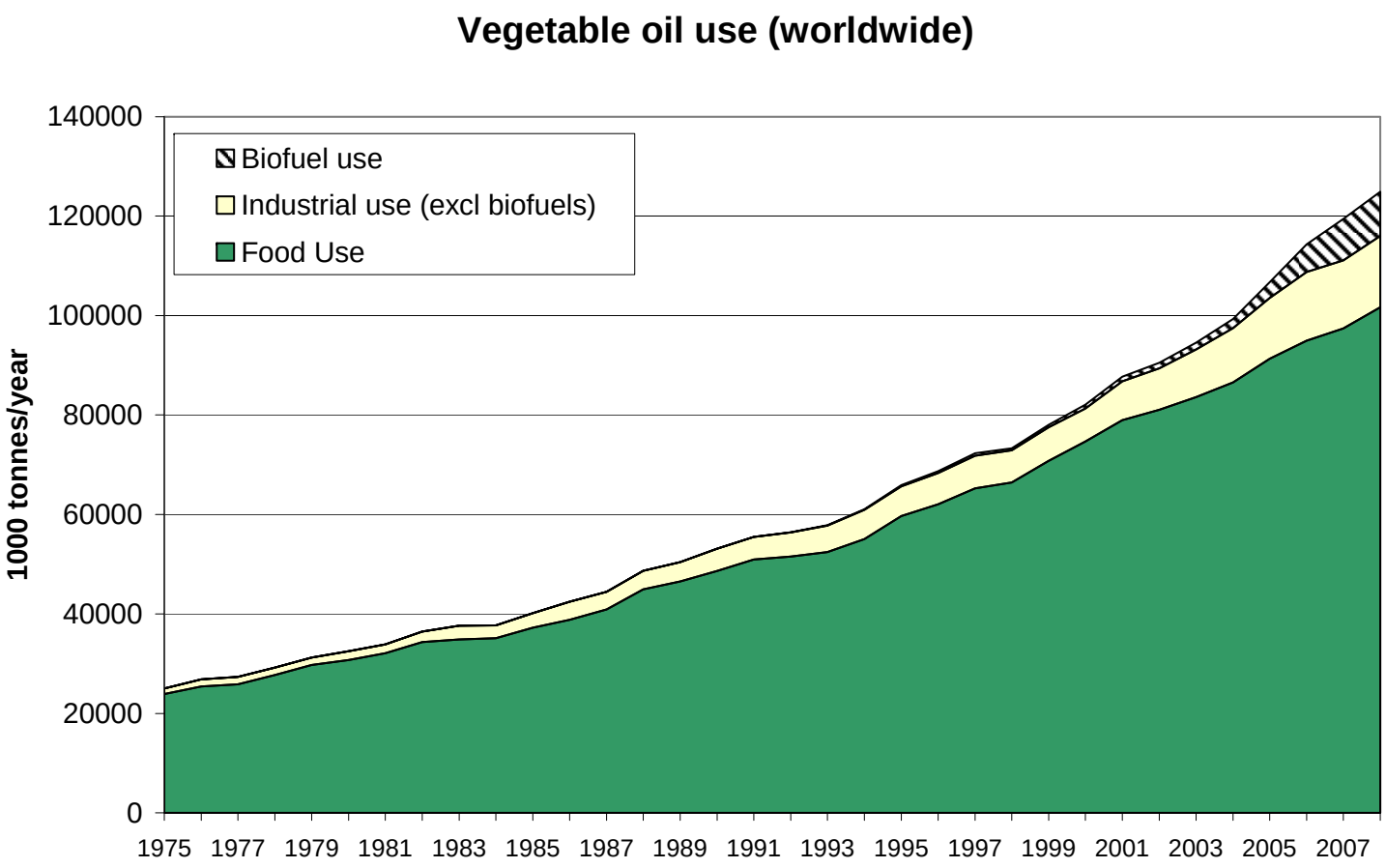
Some market characteristics

- ✓ Chinese market is characterised primarily by large imports
- ✓ India by a rapid increase in production and demand of the domestic market.
- ✓ Indonesia and Malaysia, export-oriented, have major expansion plans. Increasing competition from other countries, such as Thailand and possibly from Colombia.
- ✓ Traditional producers of soybean like the USA and Canada, face even greater competition from countries such as Argentina and Brazil.

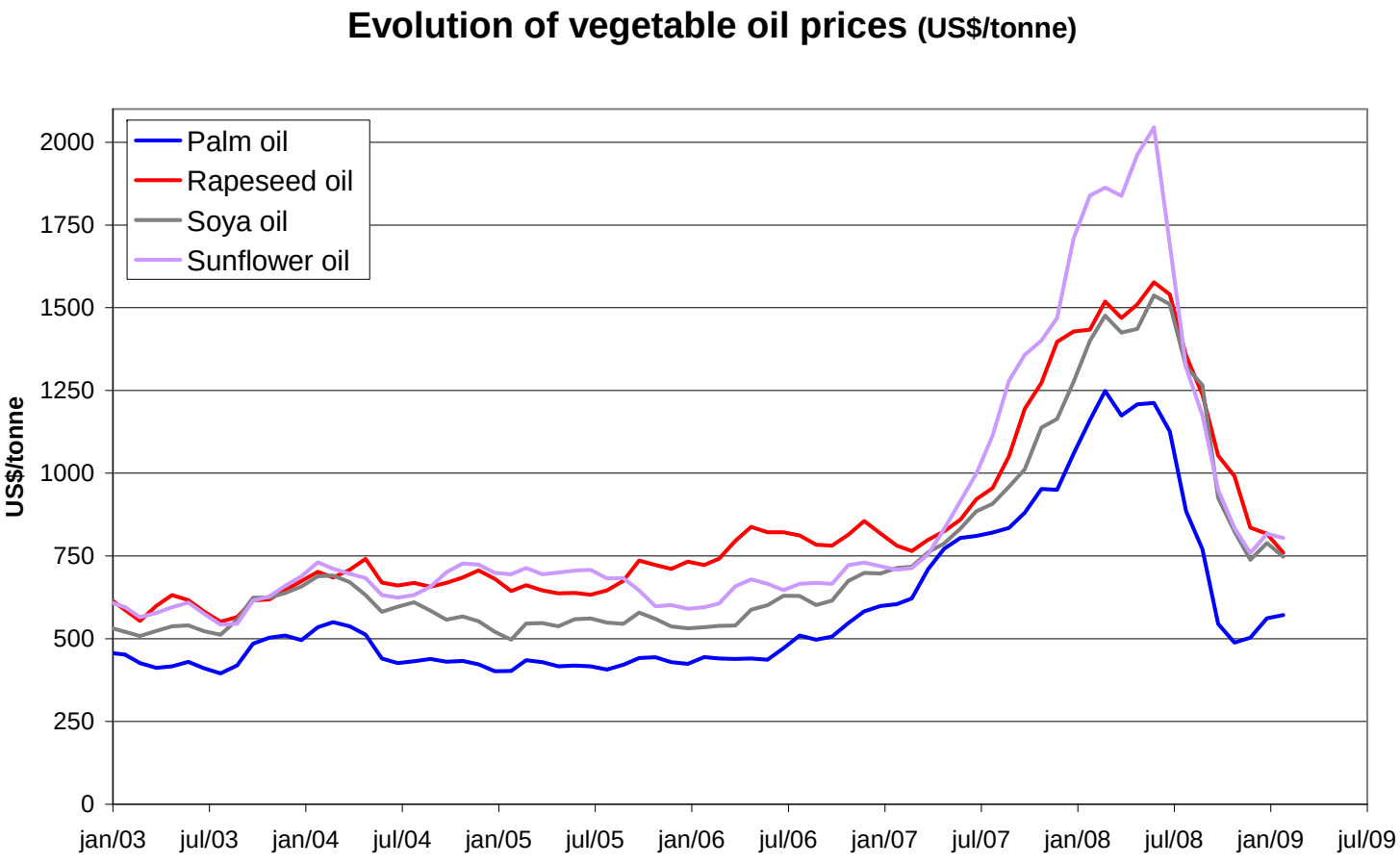
Global vegetable oil production



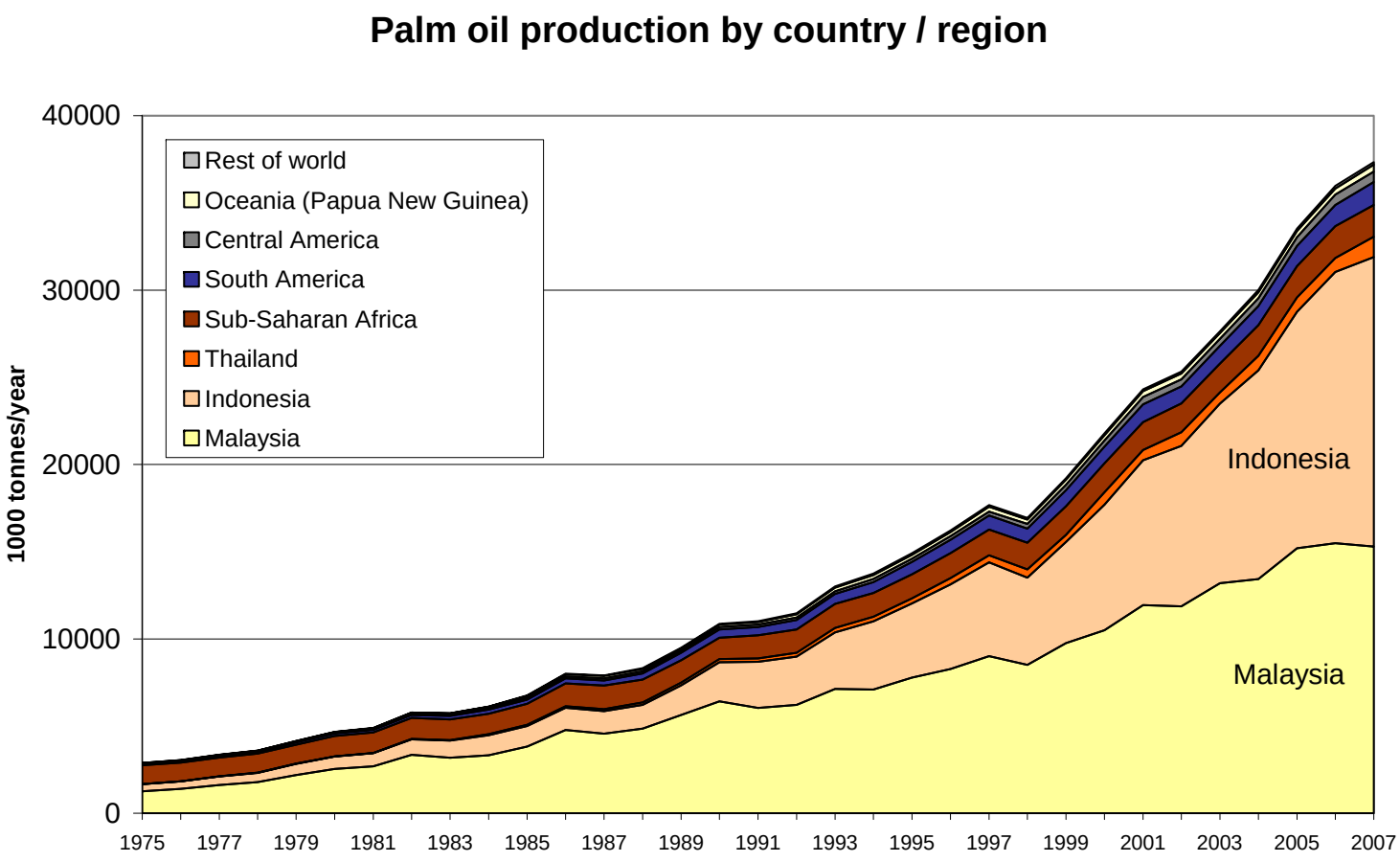
Global consumption



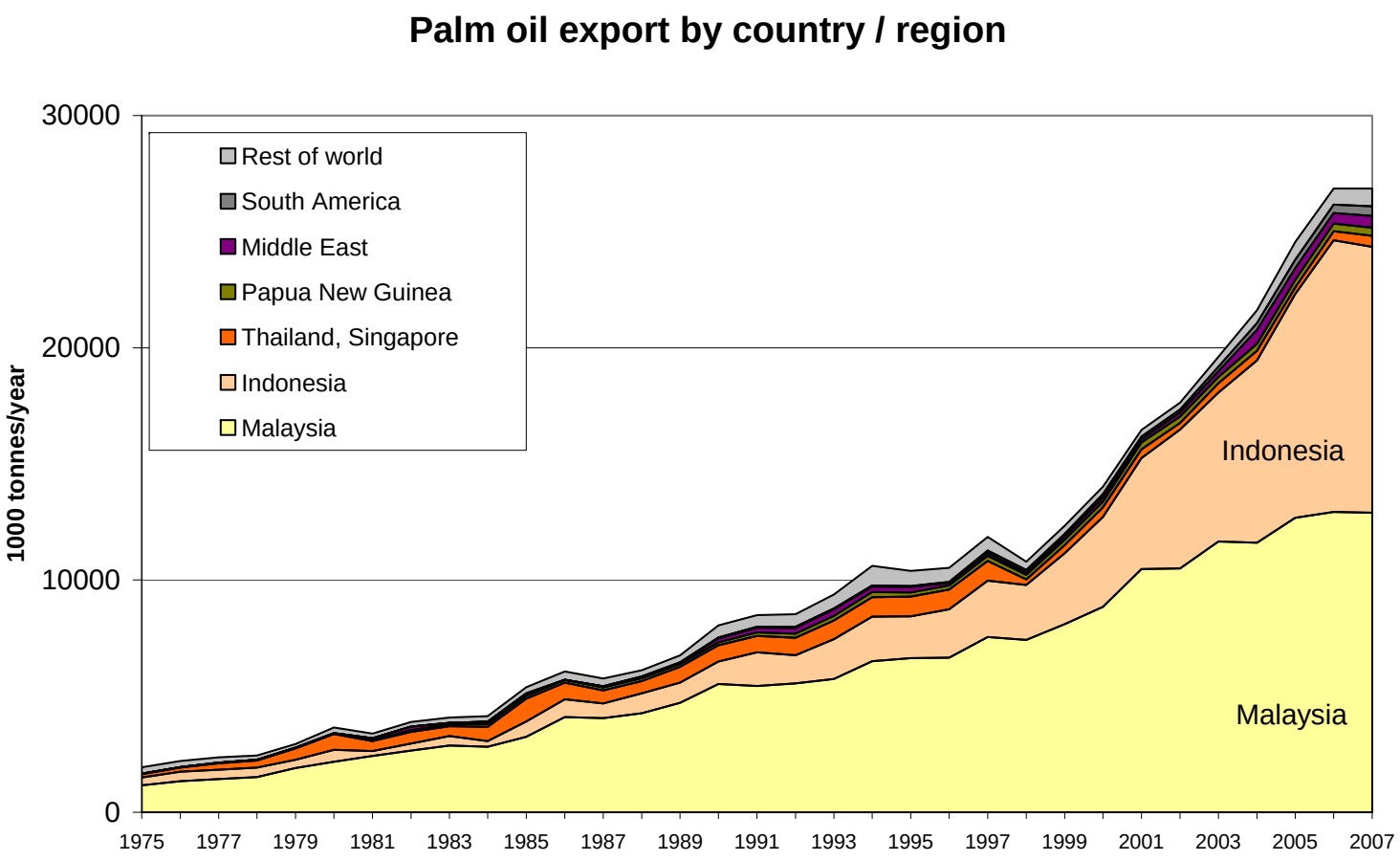
Prices of veg. oils



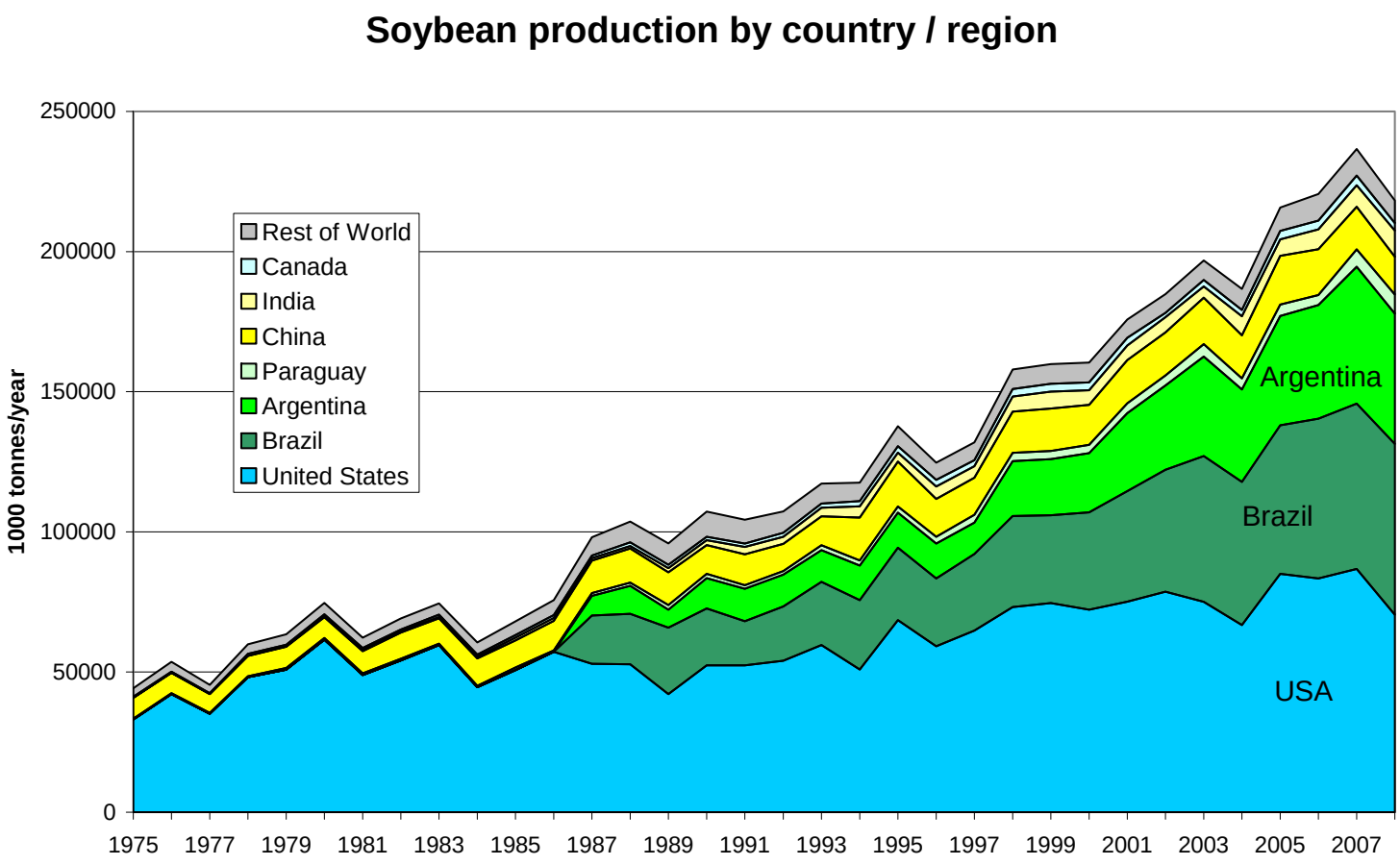
Main players of palm oil production



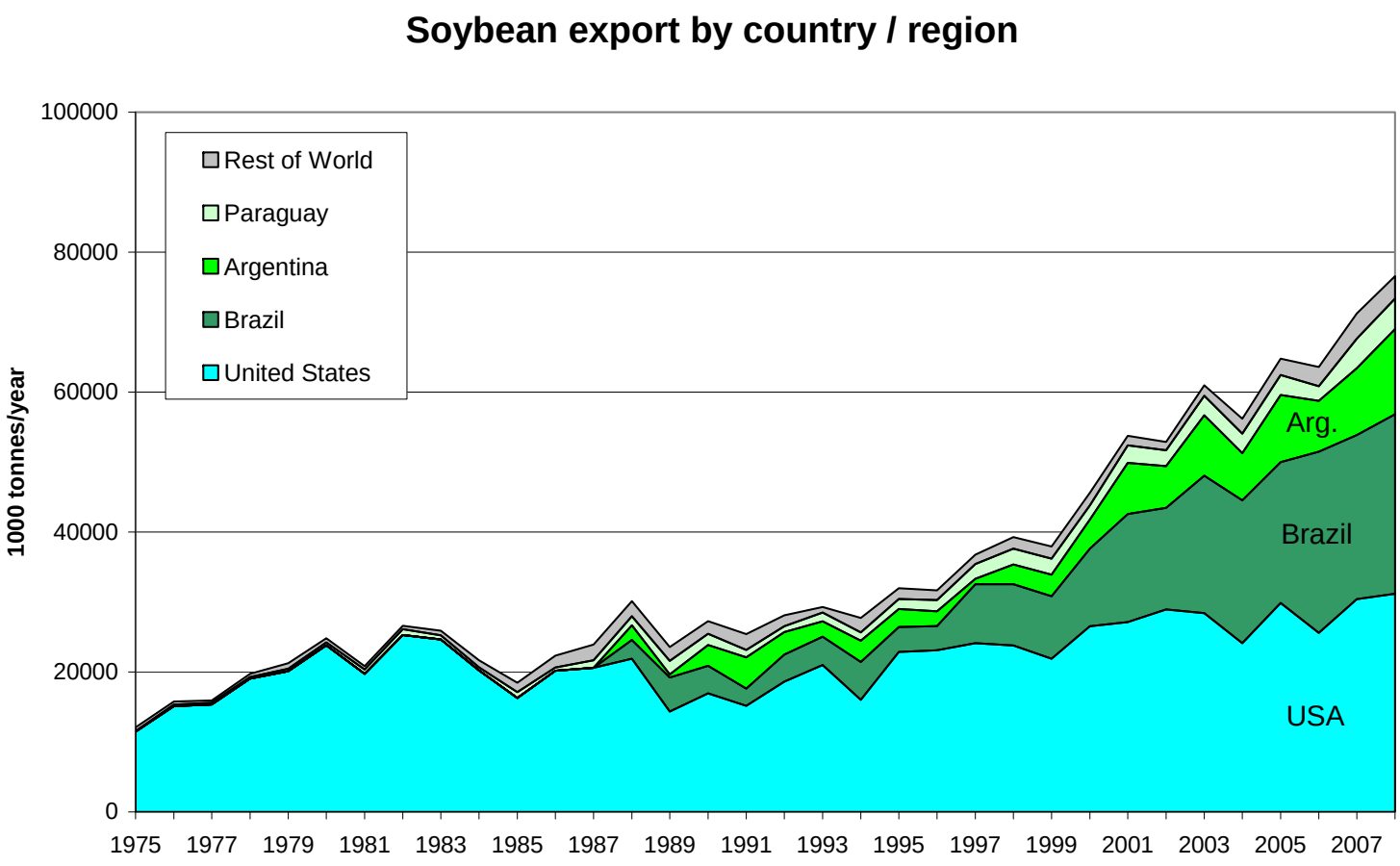
Main exporters of palm oil



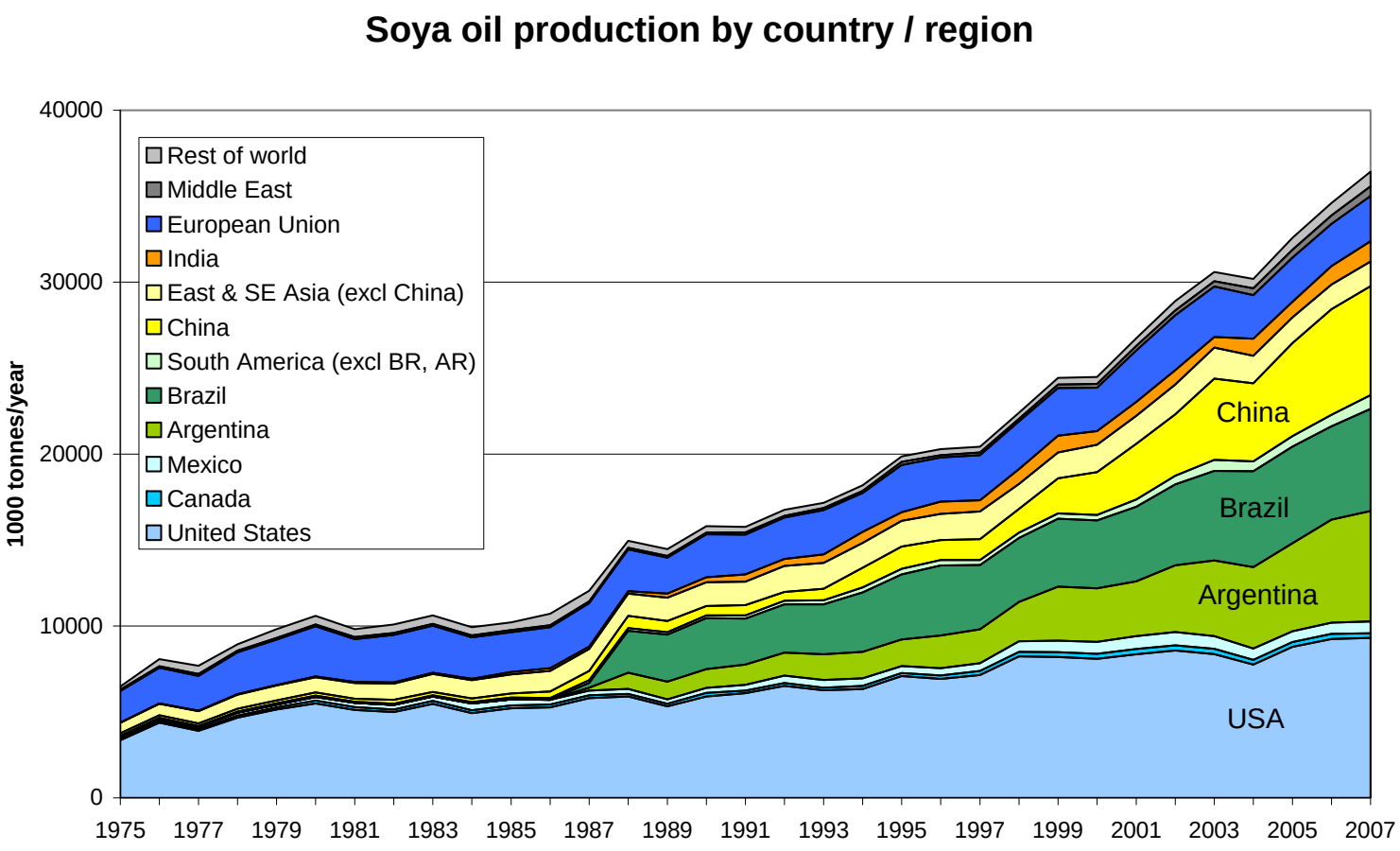
Main producers of soybean



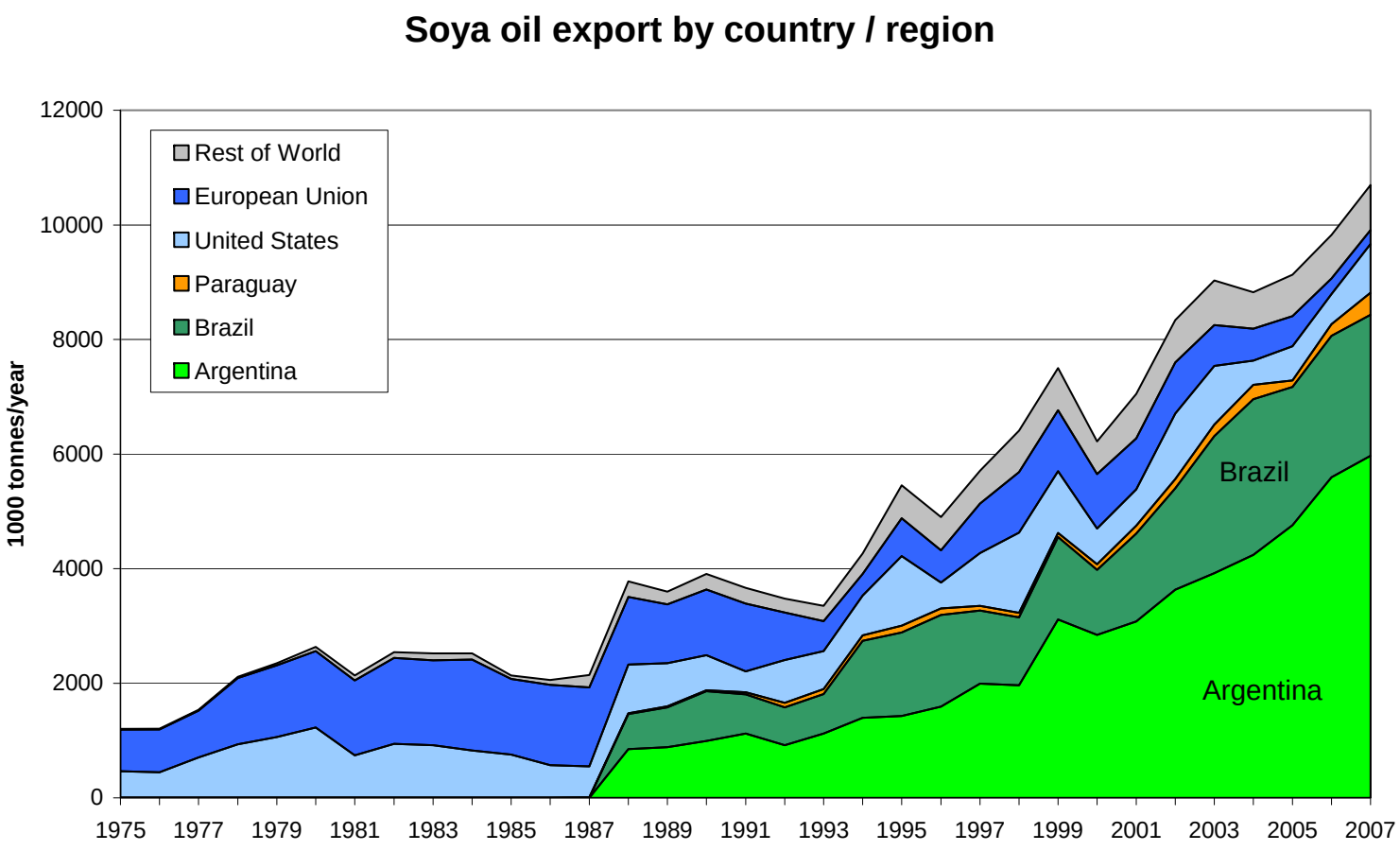
Major exporters of soy bean



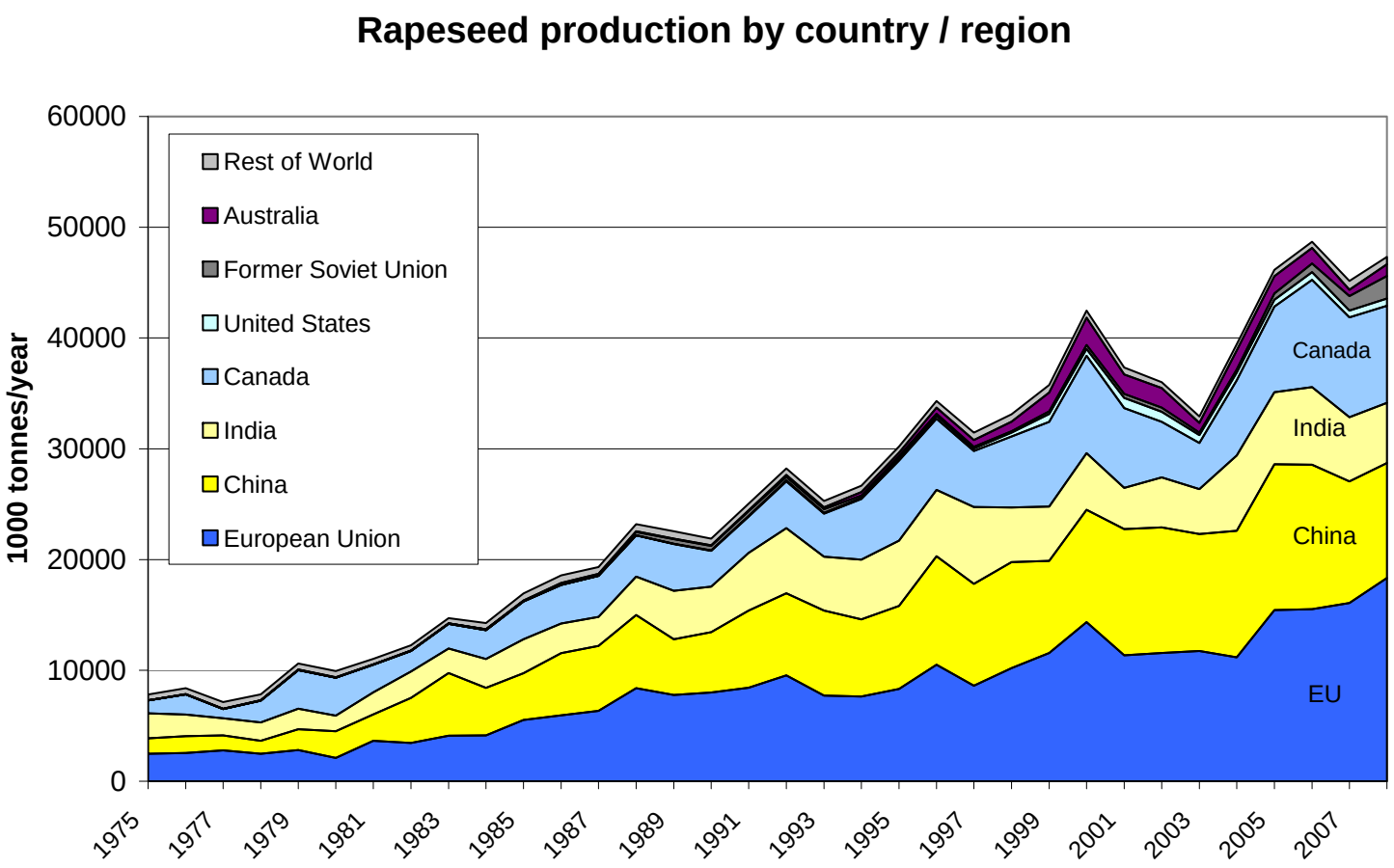
Major producers of soybean oil



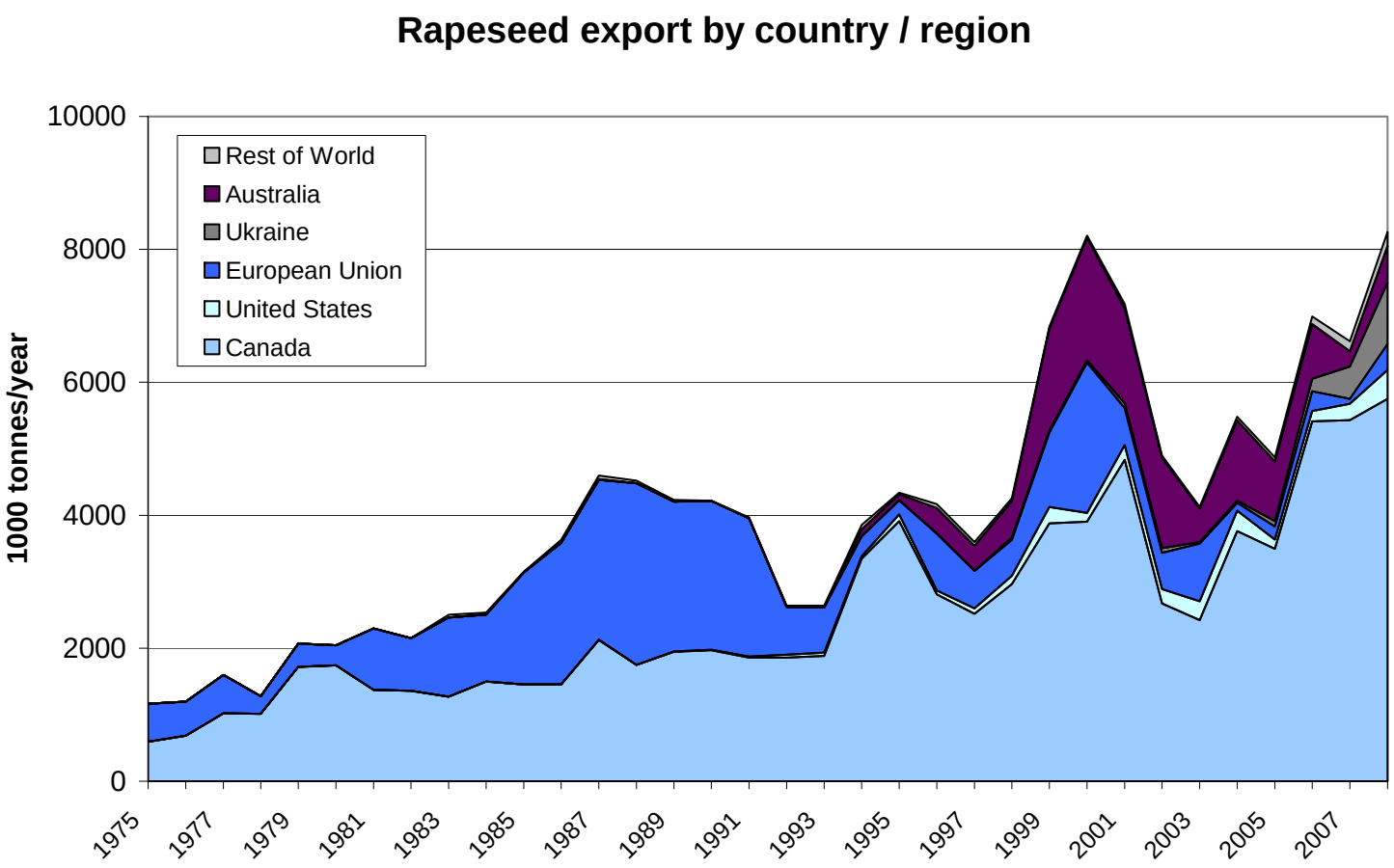
Major exporters of soybean oil



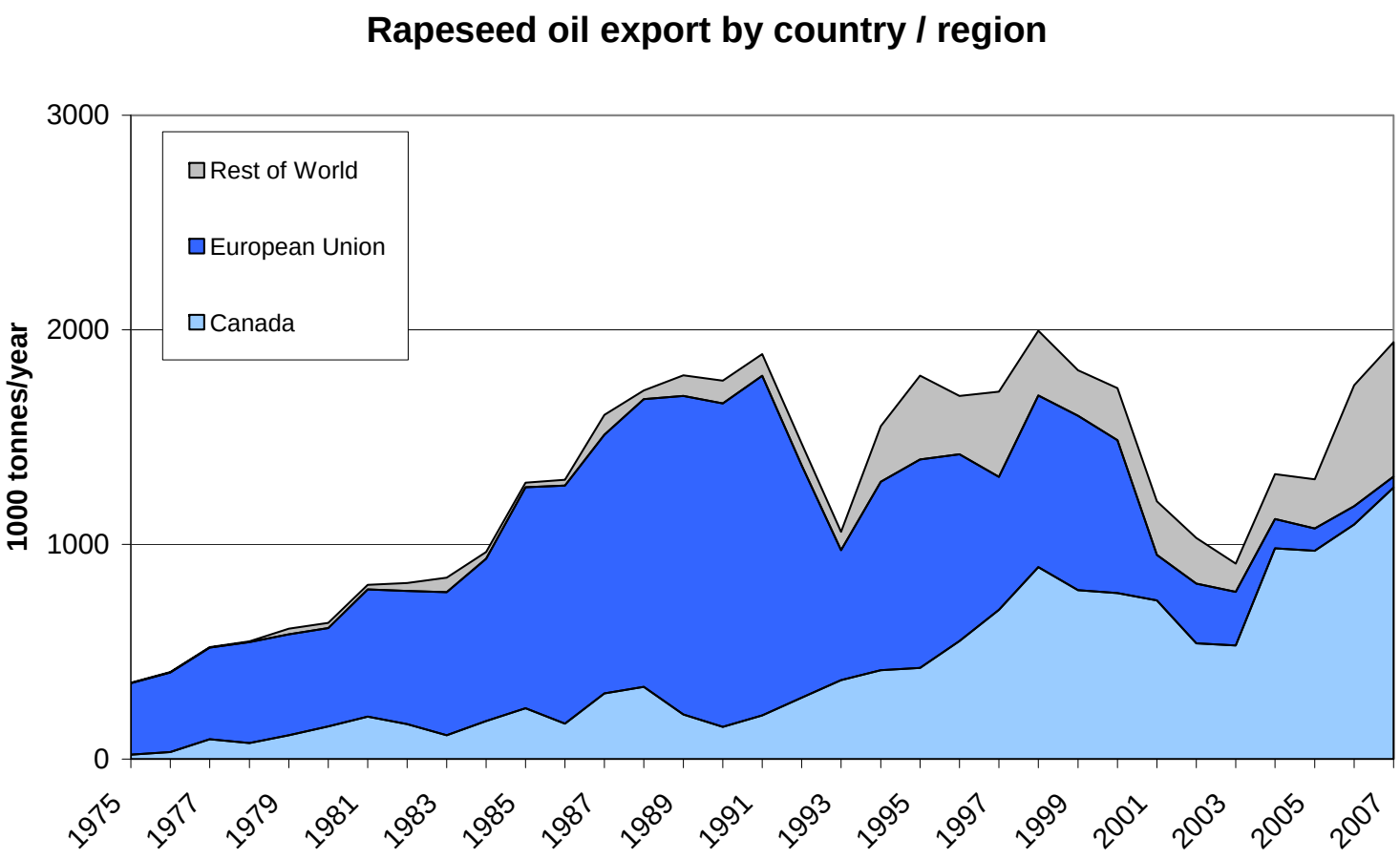
Rapeseed producers



Main Rapeseed exporters



Main rapeseed oil exporters



ASIA

- ✓ There are two main feedstocks
- ✓ Palm oil (traditional)
  - Largest producer
  - Edible oil, not biodiesel
  - By-product, potential for biodiesel
- ✓ Jatropha (emerging)
  - mainly India but also, China and Thailand

China

- ✓ China is on the way to become the world's largest importer of edible oils.
- ✓ Biofuels are being used as a mechanism to decrease oil imports, foster agricultural, social (..) development
- ✓ Biodiesel is not as well developed as bioethanol since this is more recent policy development.
- ✓ The 11th Plan, the objective is to have a production capacity of 2Mt/year. Various schemes to produce 1.1 Mt/year of biodiesel from *Jatropha curcas* and rapeseed oil.
- ✓ There are plans to build 18 new plants with capacity of 0.74 Mt (Chavez, 2008)

China, cont…

- ✓ Jatropha seems the most attractive and receive the most attention form from government and private stakeholders
- ✓ Guizho, Sichuan and Yunnan provinces largest with 71,000+ ha of plantation in marginal lands.
- ✓ The target for these provinces-increase cultivated area to 1.03 Mha.
- ✓ If these targets were met, it is estimated that between 0.3 to 2 Mt of biodiesel could be produced, representing 0.3 to 1,8% of Chinese diesel consumption in 2005

India

- ✓ India's increasing oil dependency has led to specific policies aiming at lessening import of crude oil.
- ✓ India was one of the first countries to create a Ministry of Renewable Energy (MNRE).
- ✓ The Indian government has set up a National Mission on Biodiesel (NMD) whose aim is to meet 20% of the country diesel requirement by 2011-2012 from Jatropha. This mission was conceived in two phases:

India, Cont..

- ✓ Phase I, 2003-2007, under the Ministries of Agriculture and Rural Development, started demonstration Jatropha projects, targeting some 0.4Mha, in forest, non-forest, marginal lands, edges, alongside roads, etc.
- ✓ Phase 2, 2007-1212, aiming at 11Mha of Jatropha plantations in marginal lands
- ✓ India has plans for the world largest scale Jatropha plantations, despite many unanswered questions

India, Cont…

- ✓ About 55 Mha are classified as wastelands; over 32 Mha could be suitable for jatropha cultivation. Most of the wastelands in India are Common Property Resources (CPRs), comprising mostly community forests, pastures (…)
- ✓ India has been able to stabilise the cultivated area due to growth in crop yields which have kept up with population growth and income

Indonesia

- ✓ Indonesia, world leader in the production of edible palm oil.
- ✓ It is only recently when the government has made a firm political commitment to biofuels. National Team on Biofuel Development (TinNas BBN),main targets for 2010 are:
- ✓ To create 3,5 million jobs
- ✓ To develop biofuel plantations on 5.25 Mha of unused land
- ✓ Create 1000 energy-self-sufficient villages +12 biofuel zones
- ✓ To improve biofuel local demand and exports
- ✓ Biofuels = 2% national energy mix by 2010 (c.3.5 Bl)
- ✓ 3% biofuels by 2015 (9.8 Bl)
- ✓ 5% biofuels by 2025 (c.33.3 Bl)

Indonesia, cont… Major plantations, Mha

- ✓ **Indonesia 19.84 Mha (Grand total)**
- ✓ *Sumatra* – (3.74 Mha)
  - Sumatera Utara, 1.09Mha
  - Sumatera Barat, 0.49
  - Riau, 1.48
  - Jambi, 0.35
  - Sumatera Selatan, 0.41
- ✓ *Kalimantan (1.23 Mha)*
  - Kalimantan Barat, 0.35
  - Kalimantan Tengah, 0.58
  - Kalimantan Timur, 0.30

Indonesia, cont… (Provincial govern. Planned plantations, Mha

- ✓ **Indonesia 19.84 Mha (grand total)**
- ✓ ***Sumatra (7.84Mha)***
  - Sumatra Selatan, 1Mha
  - Jambi, 1Mha
  - Sumatra Utara, 1Mha
  - Riau, 3Mha
- ✓ ***Kalimantan (7.5Mha)***
  - Kalimantan Barat, 5Mha
  - Kalimantan Tengah, 1Mha
  - Kalimantan Timur, 1Mha
- ✓ ***Sulawesi (1.5 Mha***
- ✓ ***Papua (3Mha)***

Malaysia

- ✓ Malaysia is the world's largest producer of palm oil + largest exporters, primarily edible oil.
- ✓ Production of palm oil also generates several by-products, often considered as waste in the past, which offer a significant potential for biodiesel production.
- ✓ Edible oil is the main priority for two fundamental reasons:
  - it fetches a higher price as demand continuous to grow
  - there is not a direct competition with food while at the same time taking advantage of better utilization of by-products.

Malaysia, cont…

- ✓ The National Biofuel Policy (NBP) was the set up the Malaysian government in August 2005, whose main aims include:
  - Greater utilization of local resources and technologies for biofuels
  - Support the export of biofuels
  - Help the palm oil industry by creating better price and stable prices
  - Blend 5% biodiesel with diesel

Malaysia, cont…

- ✓ Malaysia has expanded palm oil plantations considerably in the past decade converting large tracks of tropical rein forest, particularly in Borneo
- ✓ A further 0.6Mha of palm will be planted, taking the maximum palm oil production to 20 Mt/year
- ✓ In 2005 palm oil cultivation accounted for just over 4Mha (60% country agriculture land), producing close to 15 Mt cue oil.
- ✓ Further expansion is expected to come from existing agricultural land and increased in crop yield.

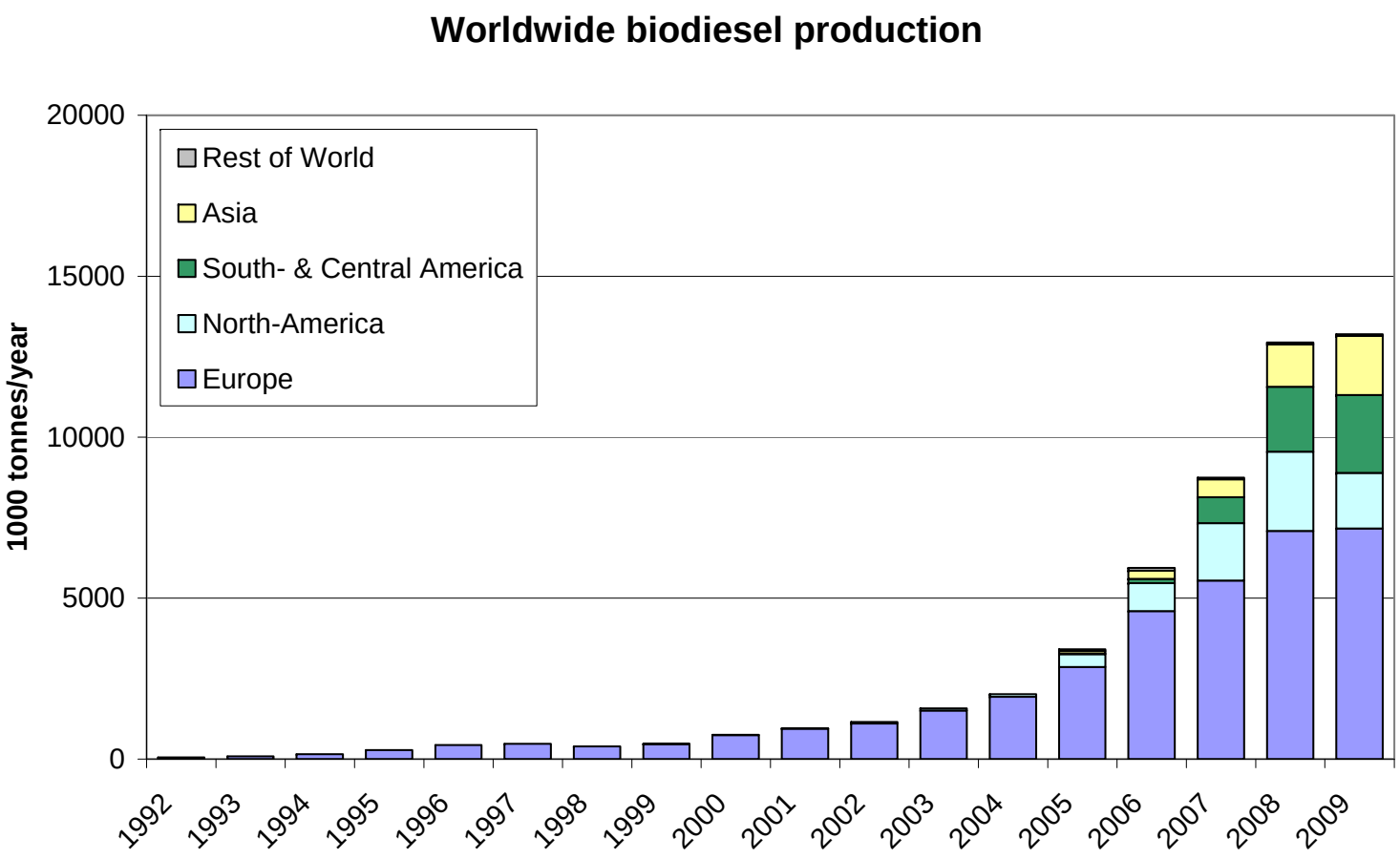
Thailand

- ✓ Thailand experience with biodiesel is quite recent. The Biodiesel Strategy Plan (NSP) is still in a development stage. The main objectives are:
  - Replace 10% diesel consumption by 2012 which based on current diesel this will amount to about 8.5 M//day or 3.1 Bl in 2012.
  - The main crops will be palm oil and Jatropha. By 2009 there will an estimated 0.8 Mha of palm oil plantations.

Thailand, cont.. (palm oil planted area, 1008 – 2006, Mha)

- ✓ 1998 1.45 Mha
- ✓ 1999 1.57
- ✓ 2000 1.60
- ✓ 2001 1.82
- ✓ 2002 1.96
- ✓ 2003 2.05
- ✓ 2004 2.40
- ✓ 2005 2.75
- ✓ 2006 2.95

Global biodiesel production

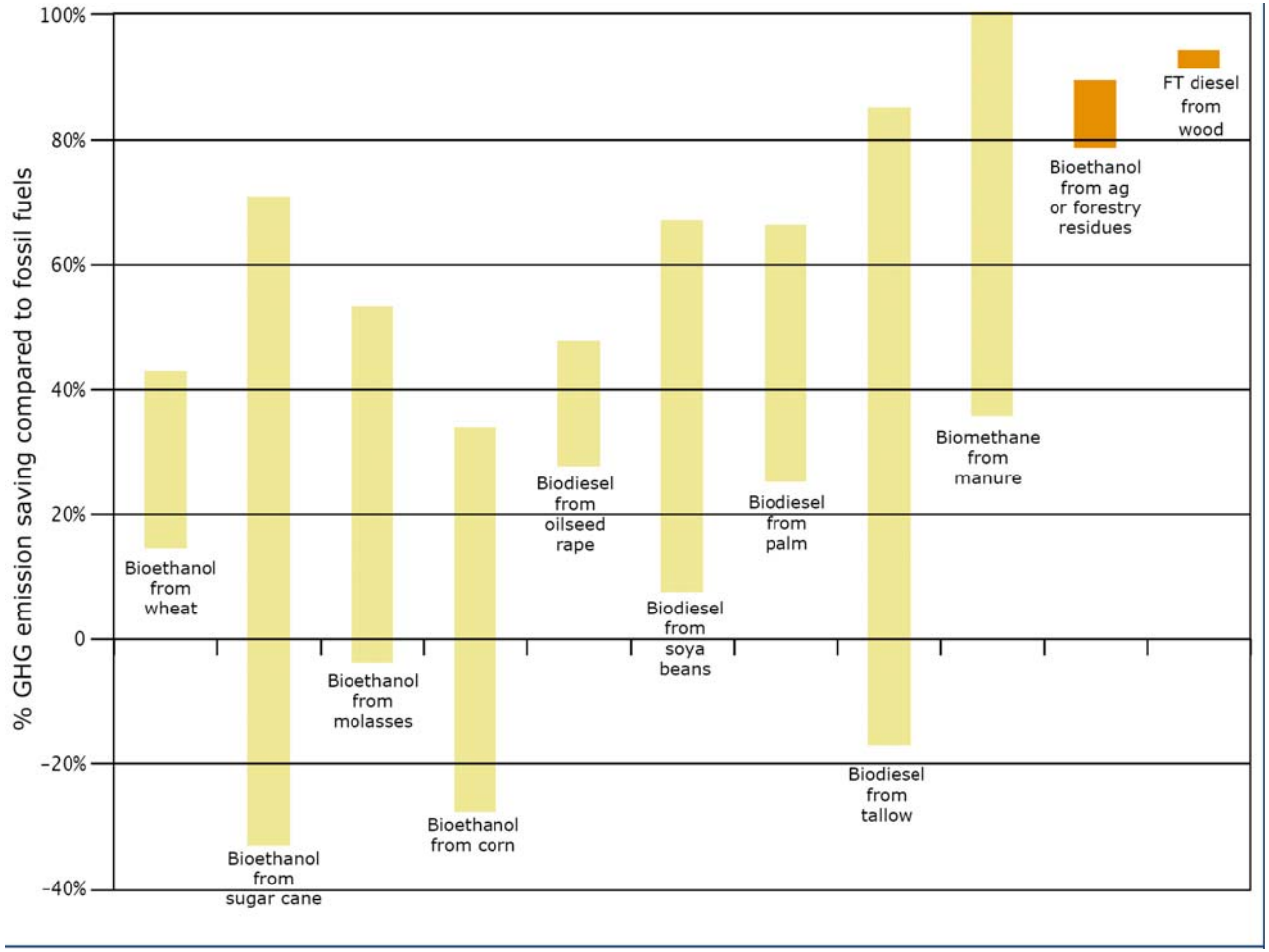


Jatropha Curcas

- ✓ Has been used in many small applications
- ✓ Low productivity
- ✓ Increasing attention in many countries around the world for biodiesel
- ✓ Asia
  - India
- ✓ Africa
  - Tanzania
- ✓ America
  - Colombia
  - Peru

Frutos en proceso de crecimiento y maduración; diez han alcanzado el tamaño normal, dos más se hallan en crecimiento.

Environment



Sustainability, accreditation…

- ✓ Too many schemes
- ✓ Concern trade barriers
- ✓ Palm oil offers many advantages e.g. high productivity and lower costs
- ✓ Biodiesel from palm oil sources faces barriers
- ✓ EU is “the facto” imposing a trade barrier on feedstock from palm
- ✓ Technical specifications can become a “trade barrier”
- ✓ Developing countries do not have the resources/ tech to produce biofuels at the same standards

Main reference

'A global overview of vegetable oil markets and trade, with reference to biodiesel'

Prepared by: Frank Rosillo-Calle, CEP/Imperial College London, UK, Luc Pelkmans, VITO, Belgium, Arnaldo Walter, FEM, University of Campinas, Brazil

(www.bioenergytrade.org)

END!!

- ✓ MANY THANKS FOR LISTENING!!!
- ✓ FRANK