



Future of resin harvesting in Europe

A new market for planted forests

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IEFC annual general assembly 2022



The activity was first European

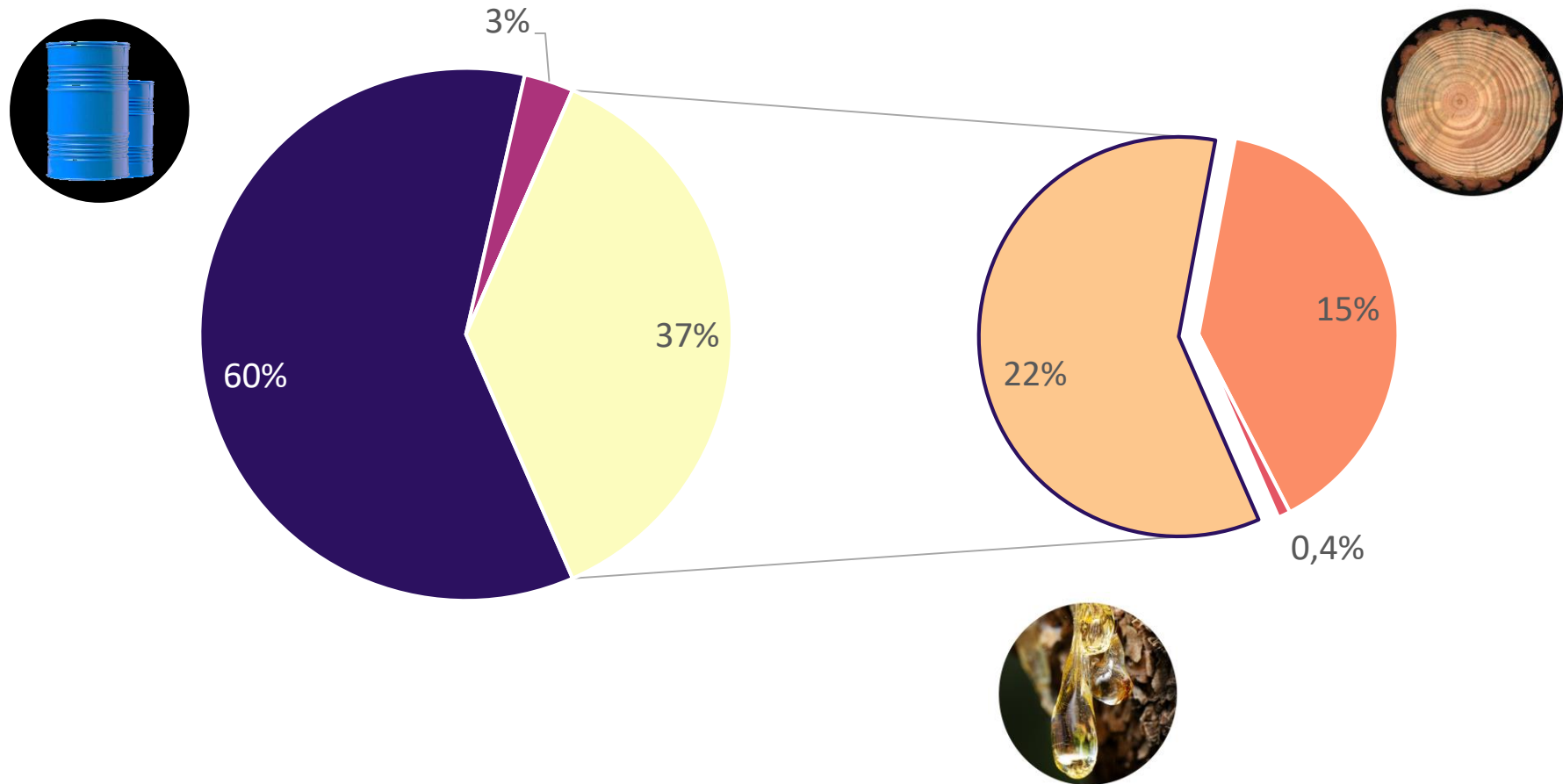
Main global exporter	Year of peak production
France	1936
Spain and Greec	1962
United States	1963
Portugal and Mexico	1973
Russia and India	1975
Poland	1976
China	2007
Brazil	2019



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Global production of rosin

Global production in 2021



■ Hydrocarbon resins ■ Terpene resins ■ Gum rosin ■ Tall oil rosin ■ Wood rosin

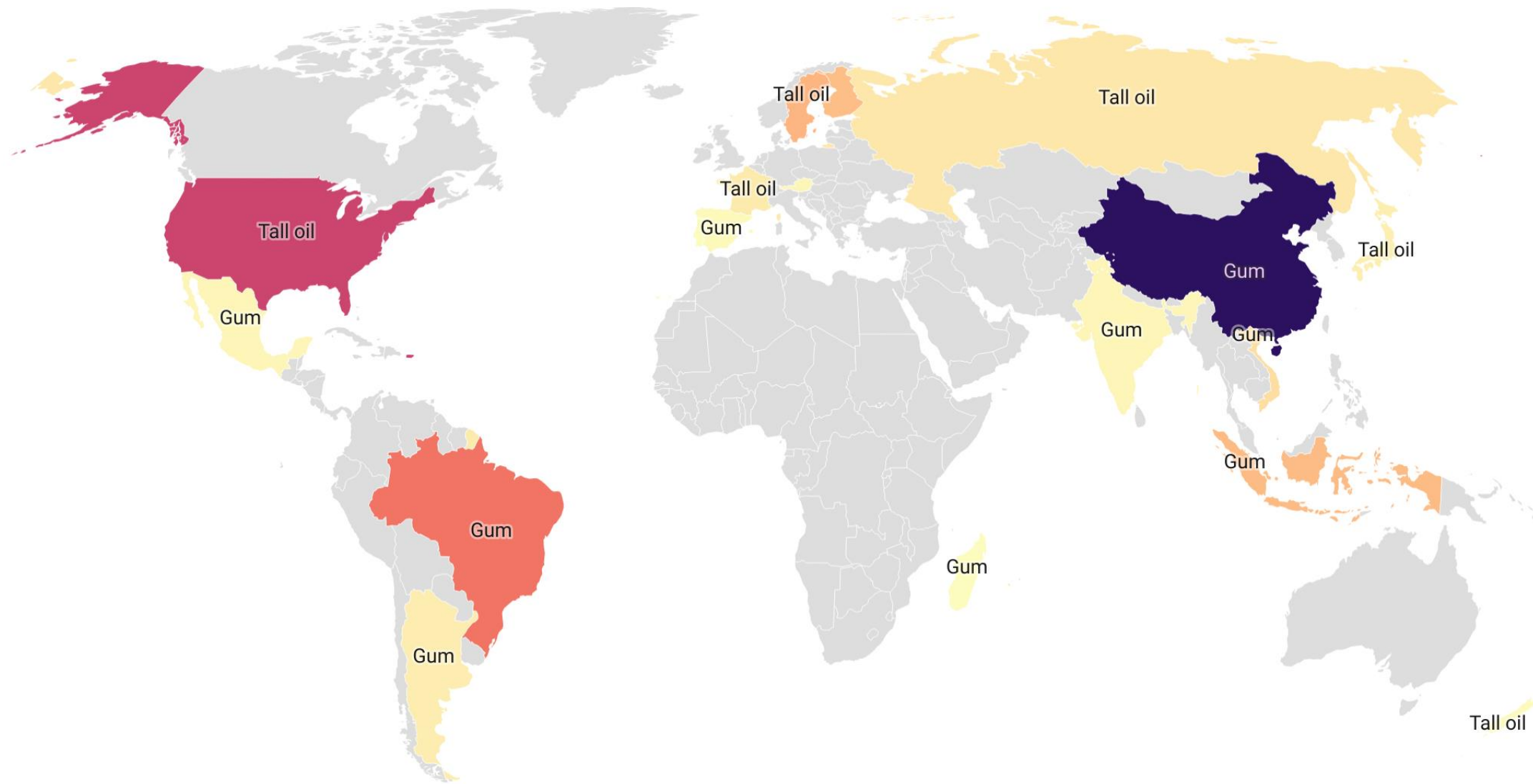
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Global production of rosin

Global production by origin in 2021



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Production of oleoresin in the world

Production methods

- Diverse production techniques
- Sustainability ?
 - Damages to trees, planted forest/natural regeneration
 - Working conditions, wages

Chinese



American



Hugues

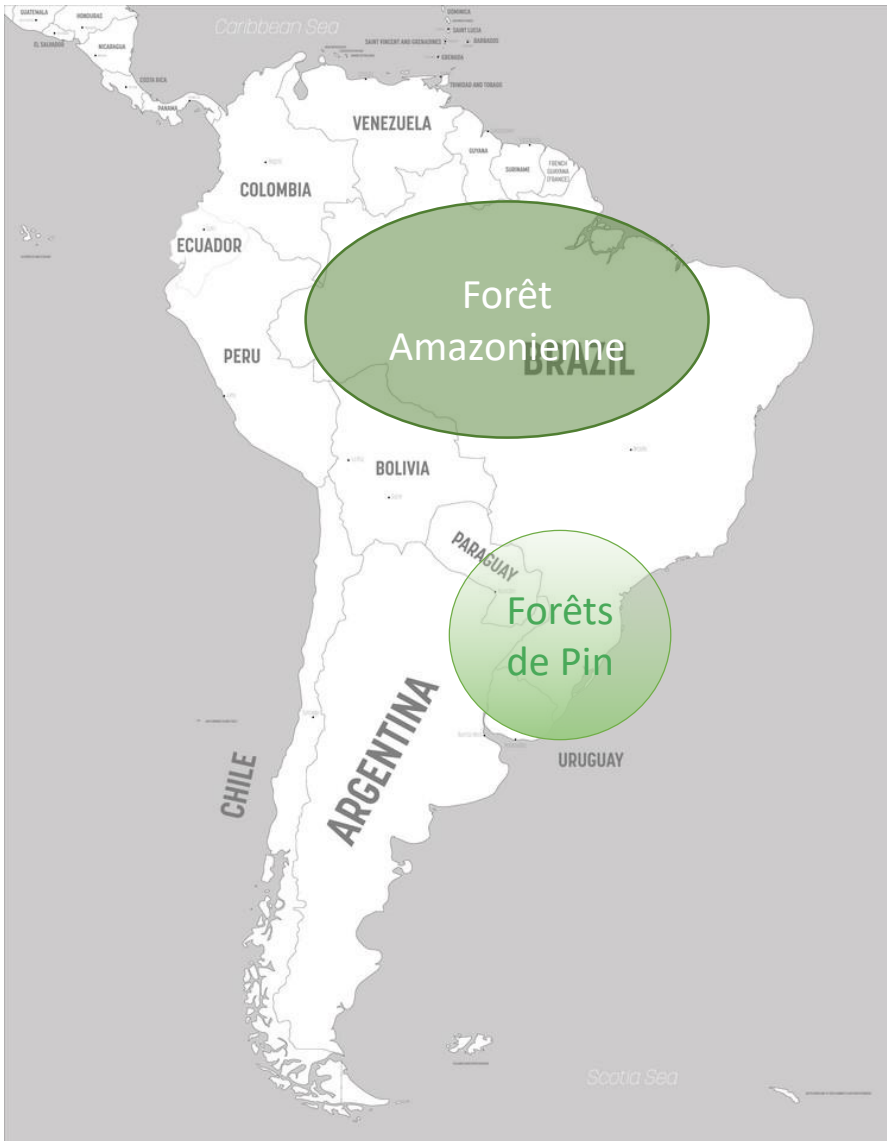


Mazek



Pine tapping in Brazil

Production context



- **1970** – Brazil imports 30 000 T of rosin per year
- **1980** – Oleoresin production begins in Brazil
- **1990** – Brazil becomes an exporter
- **2000** – Brazil becomes the 2nd largest producer in the world
- **2014 – 2020** – Brazil doubles its oleoresin production
- **2020** – Brazil is the largest exporter of oleoresin, gum rosin and gum turpentine

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Pine tapping in Brazil

Production context



- Planted forests (improved genetic material)
- High trees density
- Tapping from 8 to 20 years old
- 6,5 kg/tree/year (over 12 months)
- > 4000 kg/ha/year

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Pine tapping in Brazil

Tapping tools (used at low height)





Pine tapping in Brazil

Tapping tools (used at height)



Pine tapping in Brazil

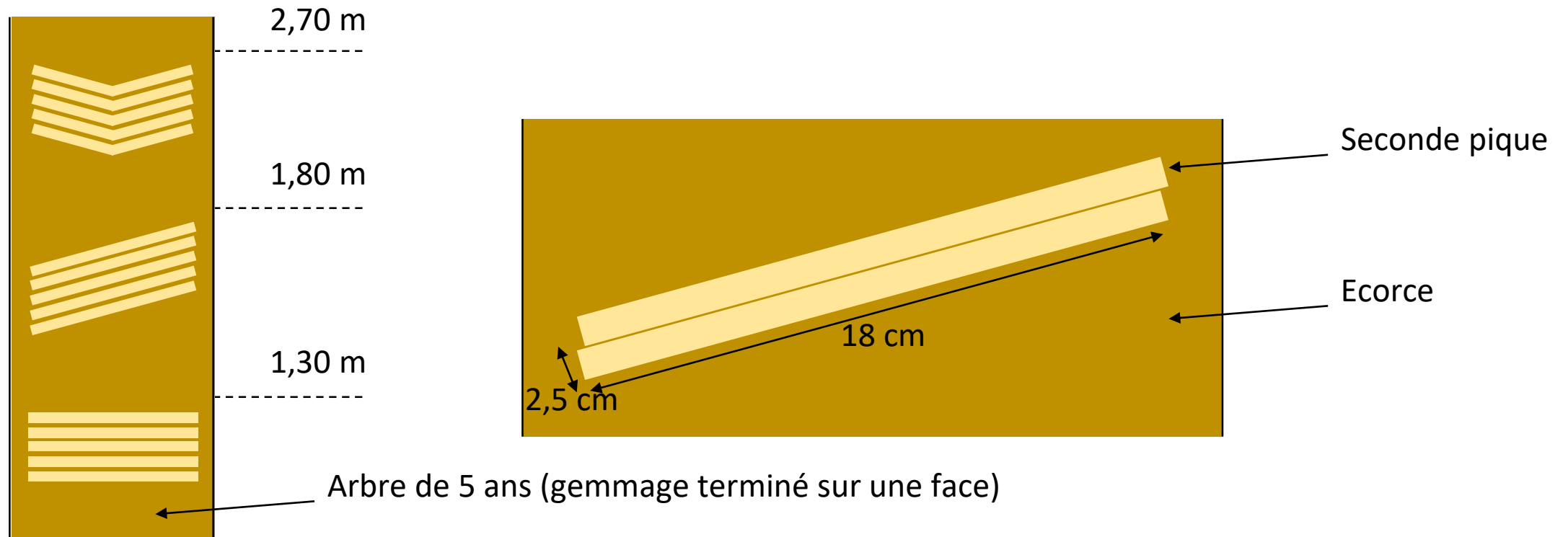
Harvesting equipment



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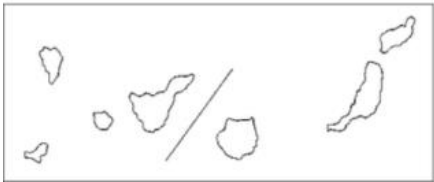
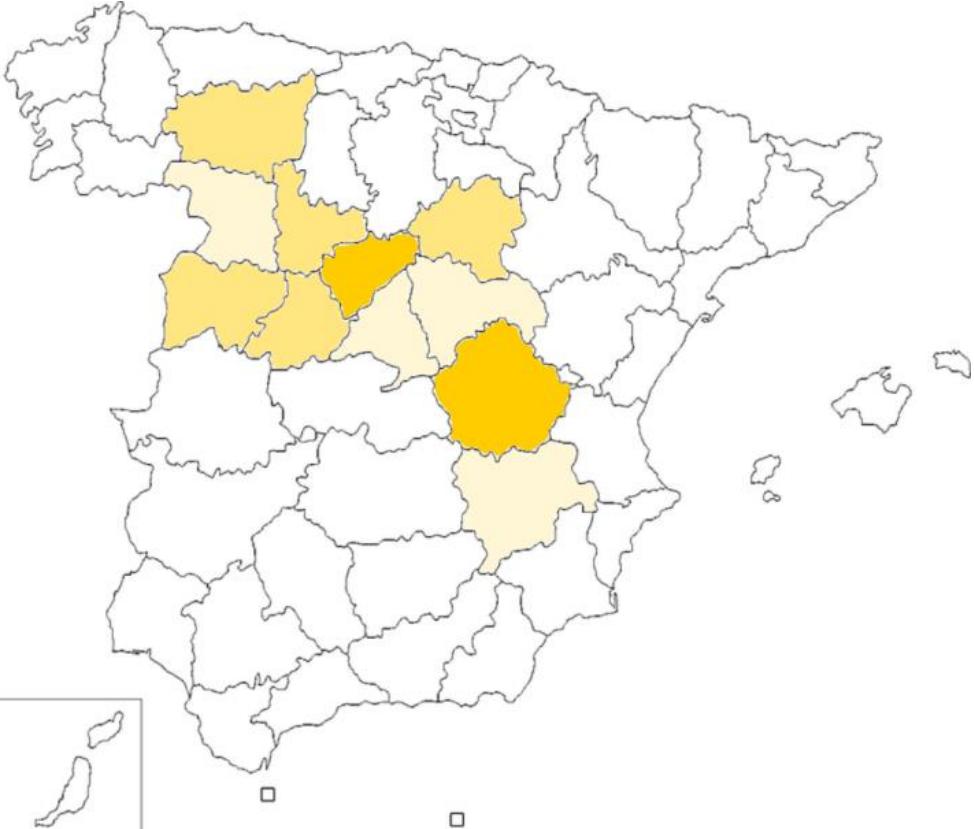
Pine tapping in Brazil

Schematic of the tapping technique





Global oleoresin production In Spain



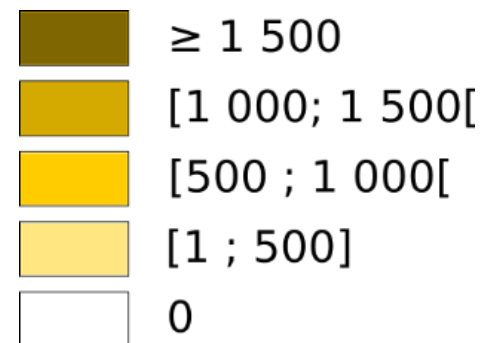
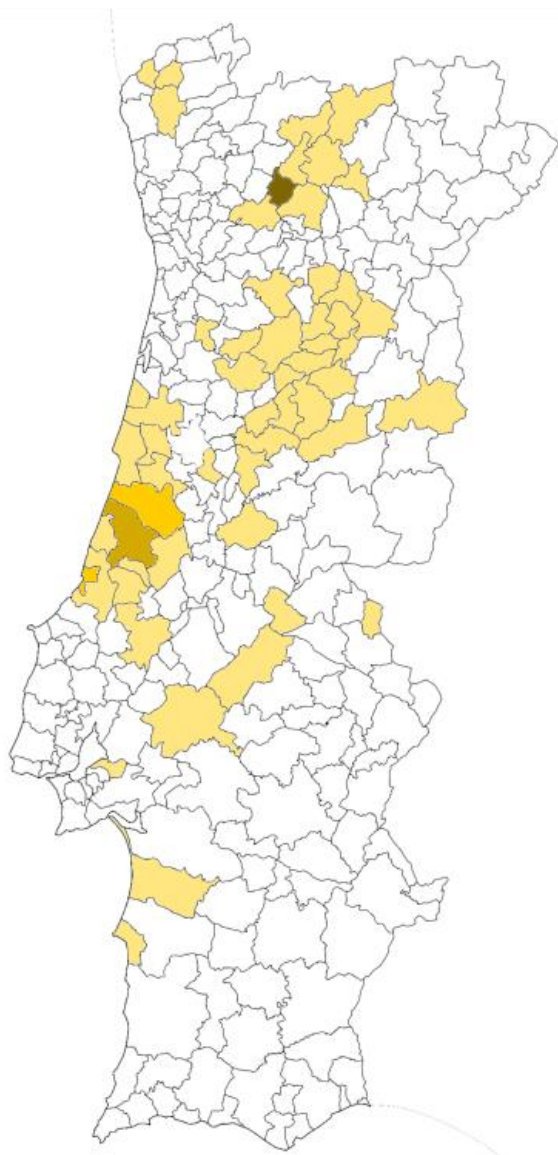
- [1 000; 7 000[
- [100 ; 1 000[
- < 100
- 0

Resin production in Spain in 2013 (kg/year)

(Source : Dirección General de Desarrollo Rural y Política Forestal)

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Global oleoresin production In Portugal



Resin production in Portugal in 2017 (kg/year)

(Divisão de Apoio à Produção Florestal e Valorização de Recursos Silvestres , 2018)



Tapping in the Iberian Peninsula

Characteristics of the Pica de Corteza method



- Arbres gemmés
 - Gemmage à mort à partir de 30 ans et à vie après 50 ans
 - Tapping during 25 years
- Technique de gemmage
 - Besoin d'enlever l'écorce (desroñar)
 - 36 cm² ouverts à chaque pique
 - N'entame pas le bois
- Activation
 - Acide sulfurique
- Collecte de la résine
 - Collecte en environnement ouvert, dans des pots
- Outil de gemmage
 - Gemmage manuel
- Saison de gemmage
 - Gemmage pendant 8 mois (adatable selon le climat)
- Productivité
 - 2,8 kg/arbre/an en Castilla-y-León
 - 13 kg/h en Castilla-y-León

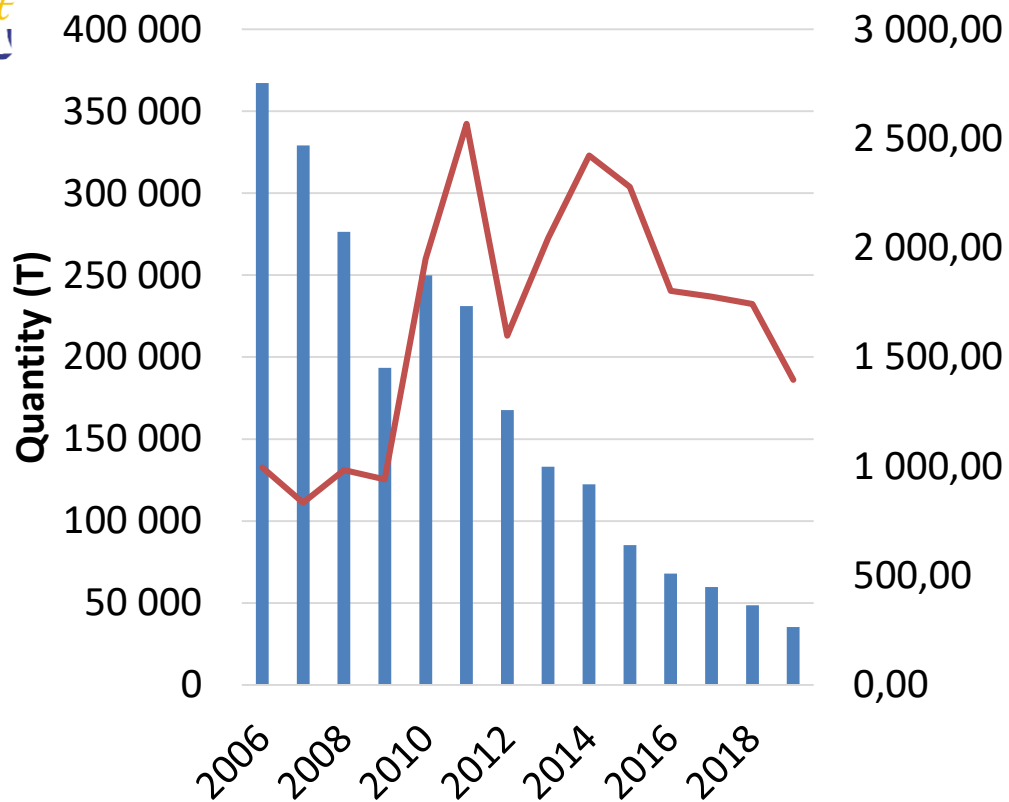


Global market – 20 last years

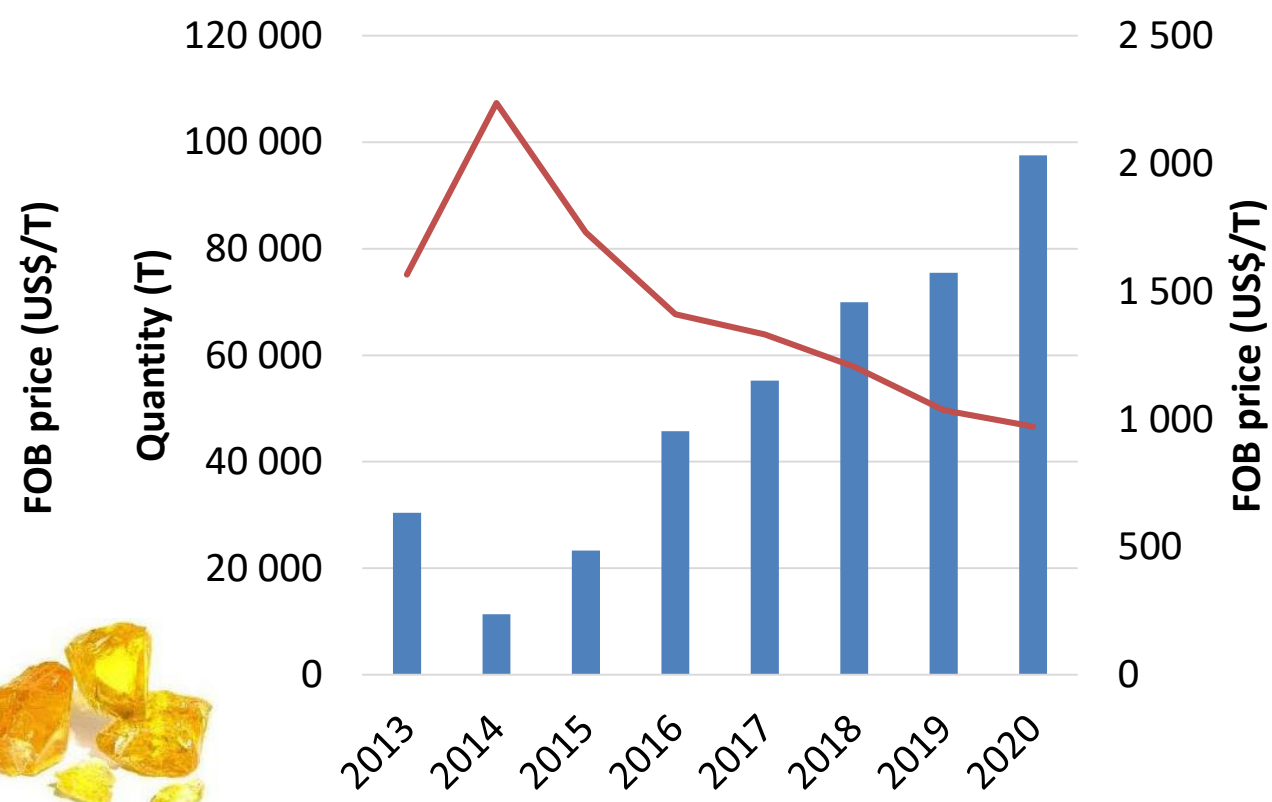
Exports and imports of rosin from China



Exports



Imports



■ Quantité de colophane de gemme (T)
 — Prix FOB de la colophane de gemme (US\$/T)

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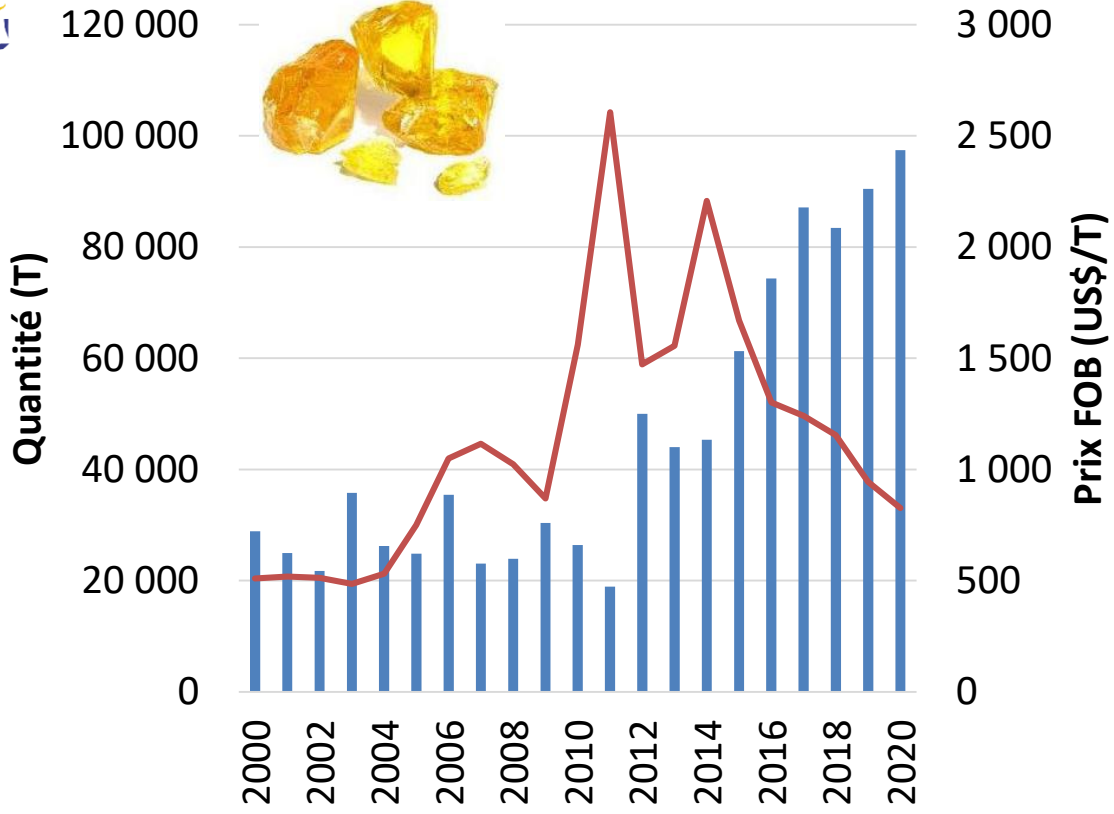
Global market – 20 last years

Exports of rosin and turpentine from Brazil



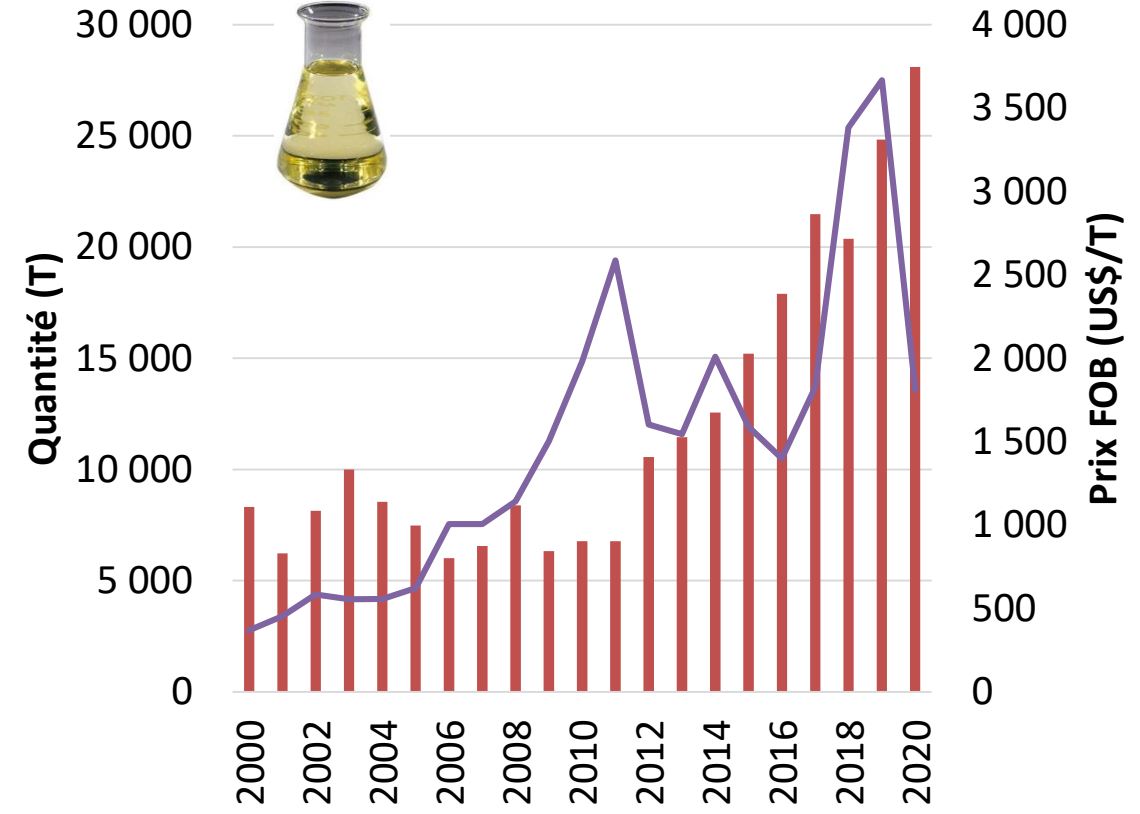
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Rosin



■ Quantité de colophane de gemme (T)
— Prix FOB de la colophane de gemme (US\$/T)

Turpentine

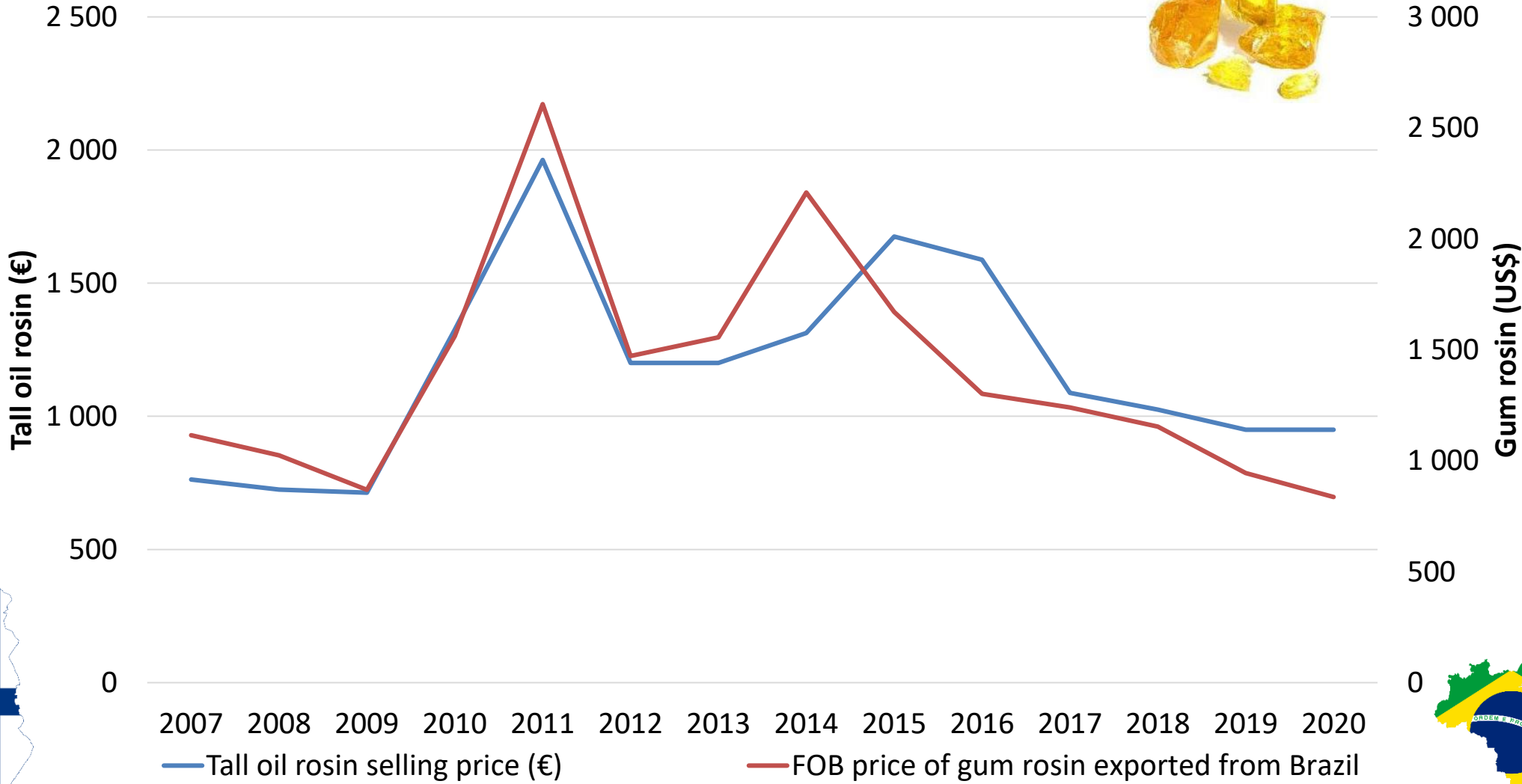


■ Quantité de térébenthine de gemme (T)
— Prix FOB de l'essence de térébenthine (US\$/T)



Global market – 20 last years

Gum and Tall oil rosin prices



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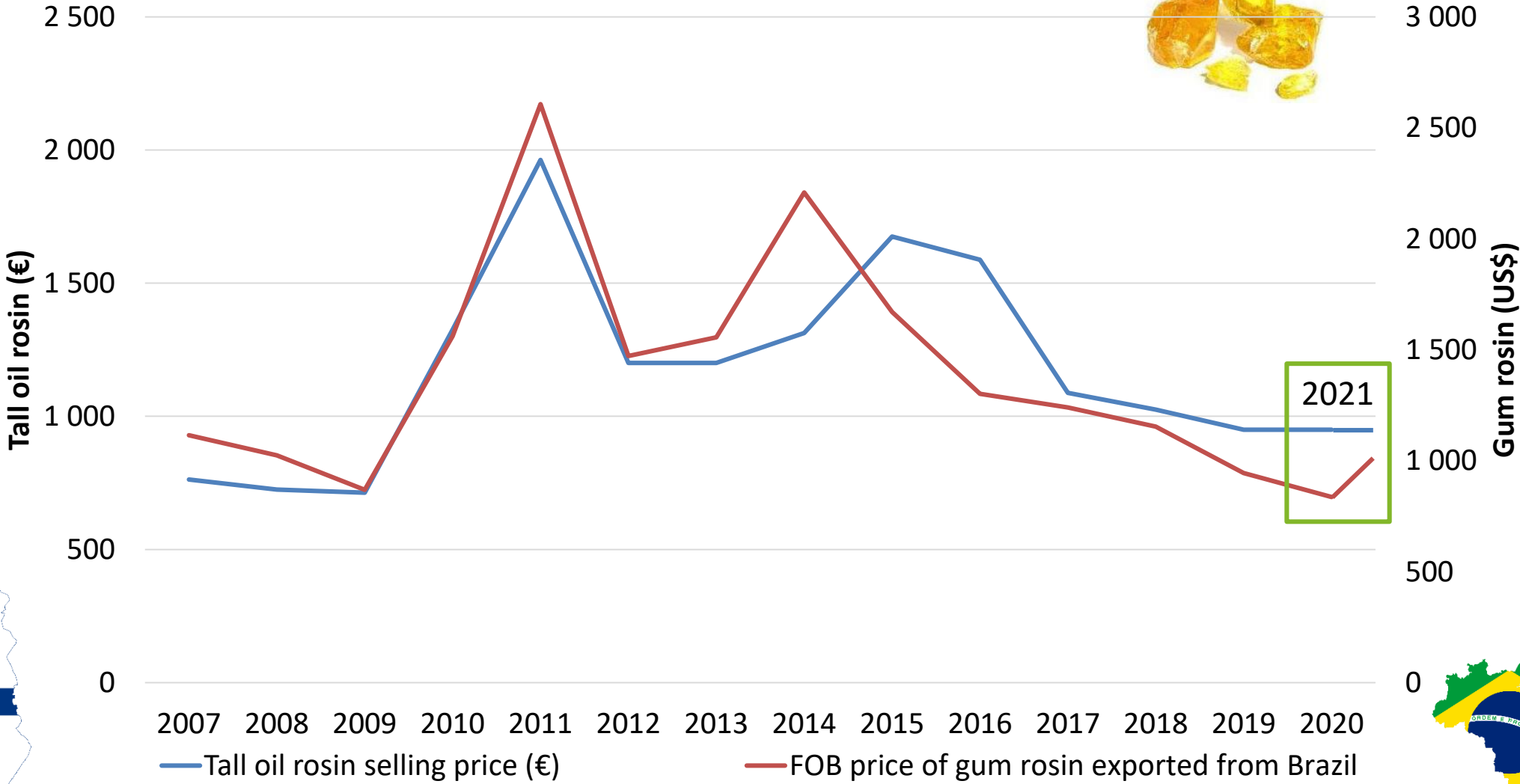
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Global market – 20 last years

Gum and Tall oil rosin prices



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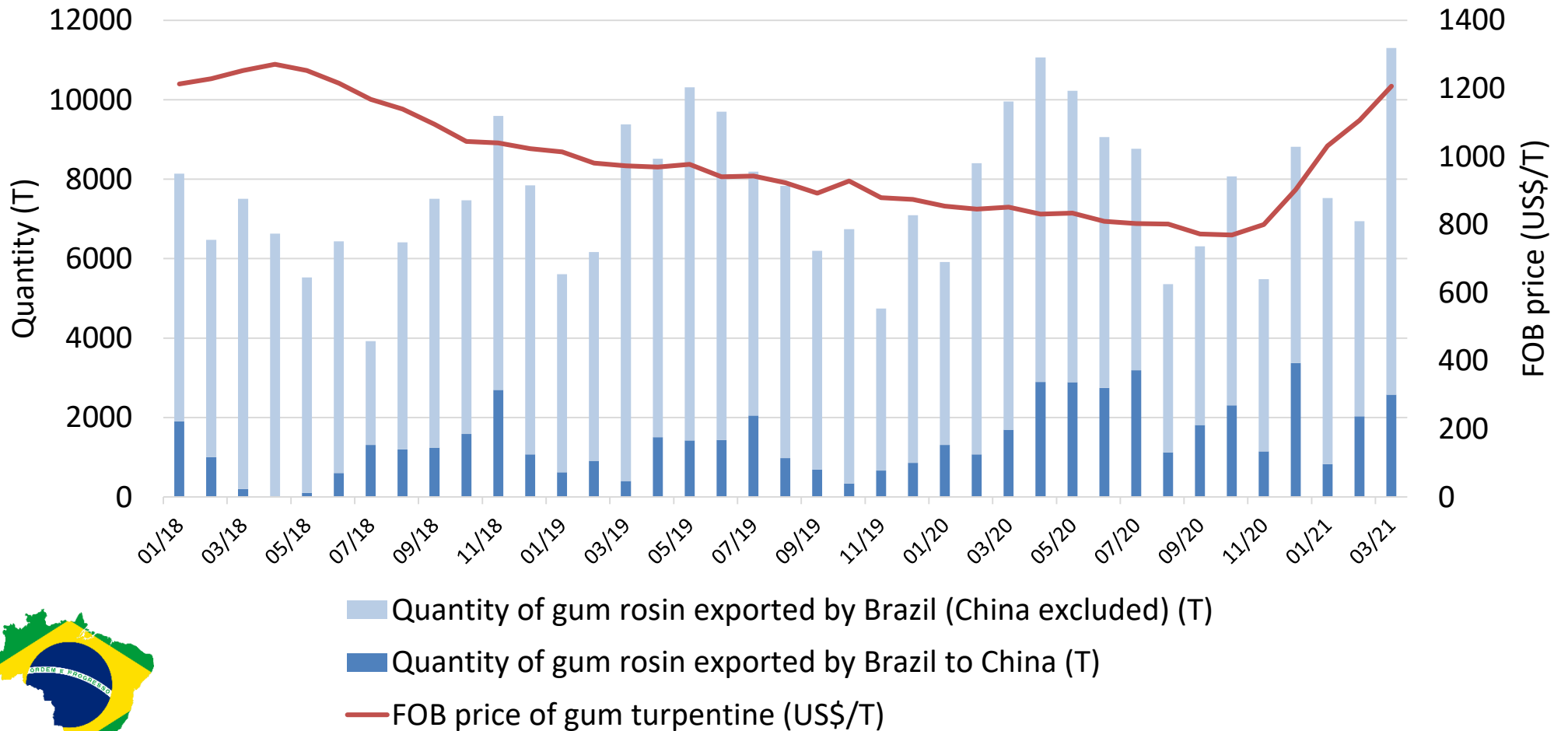
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Global market – 20 last years

Gum rosin exported by Brazil



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Global market – 20 last years

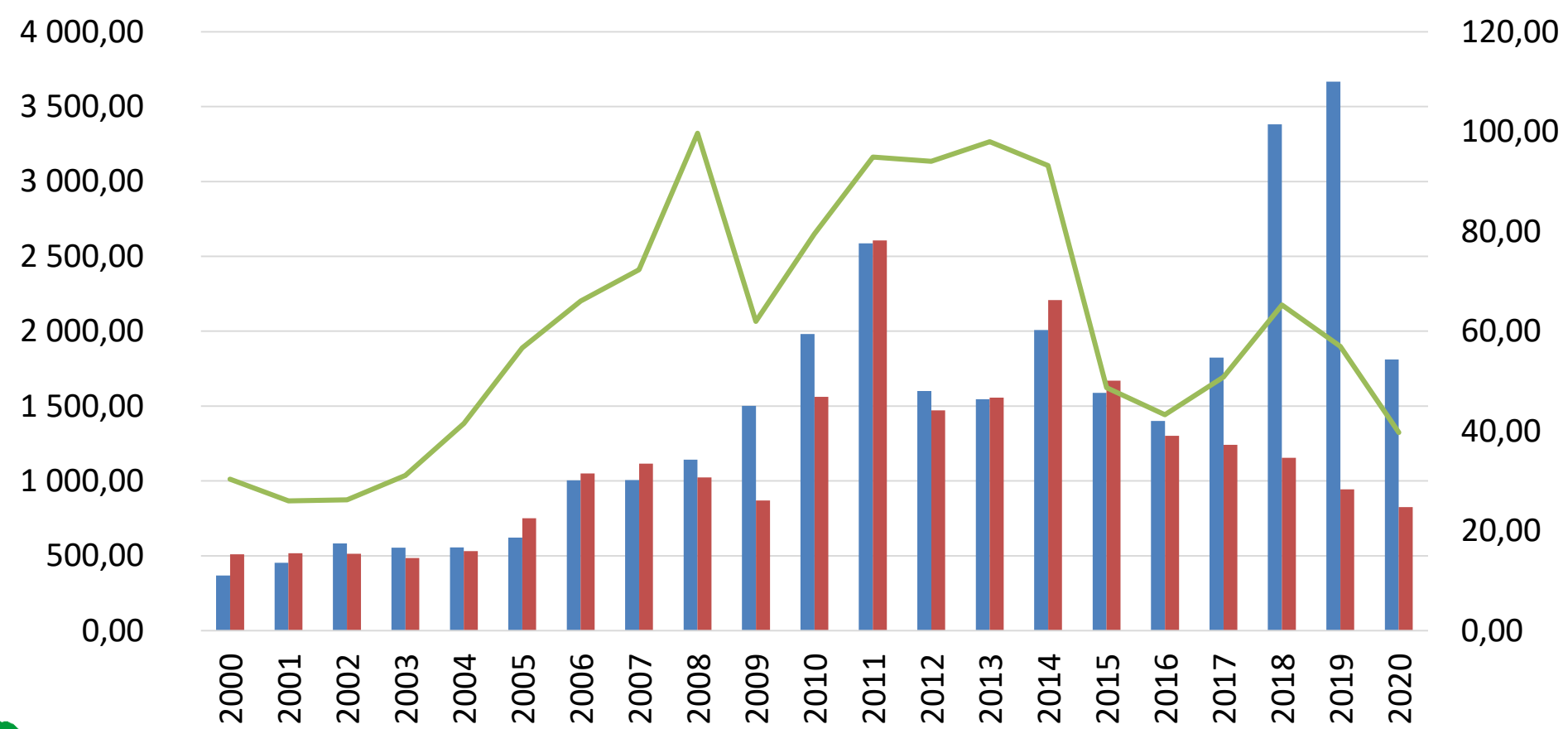
Gum rosin exported by Brazil and oil

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Prices of gum rosin and turpentine (US\$/T)



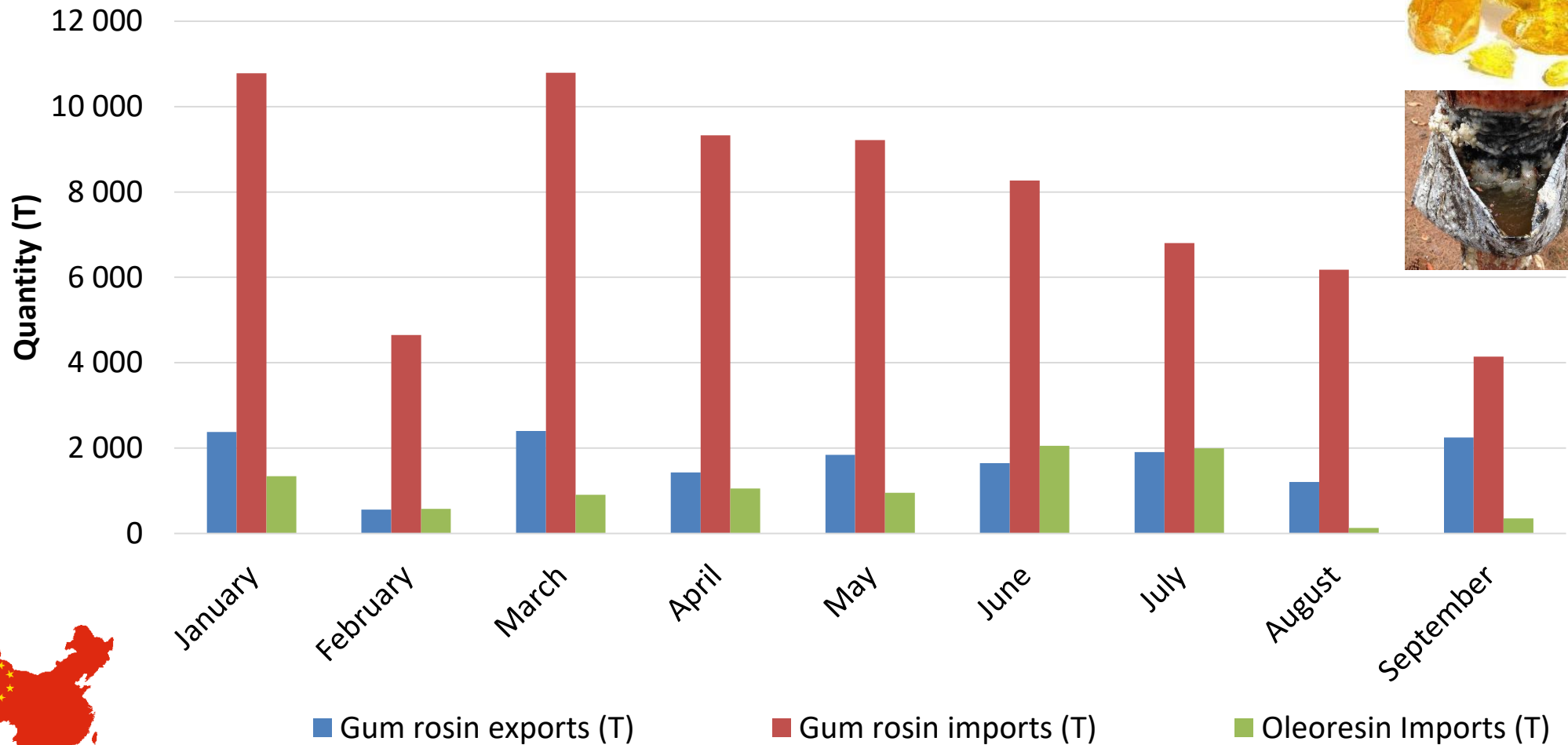
Price of gum turpentine

Price of gum rosin

Price of oil per barrel (US\$)

Global market – 2021

Chinese bio-based resin trade in 2021

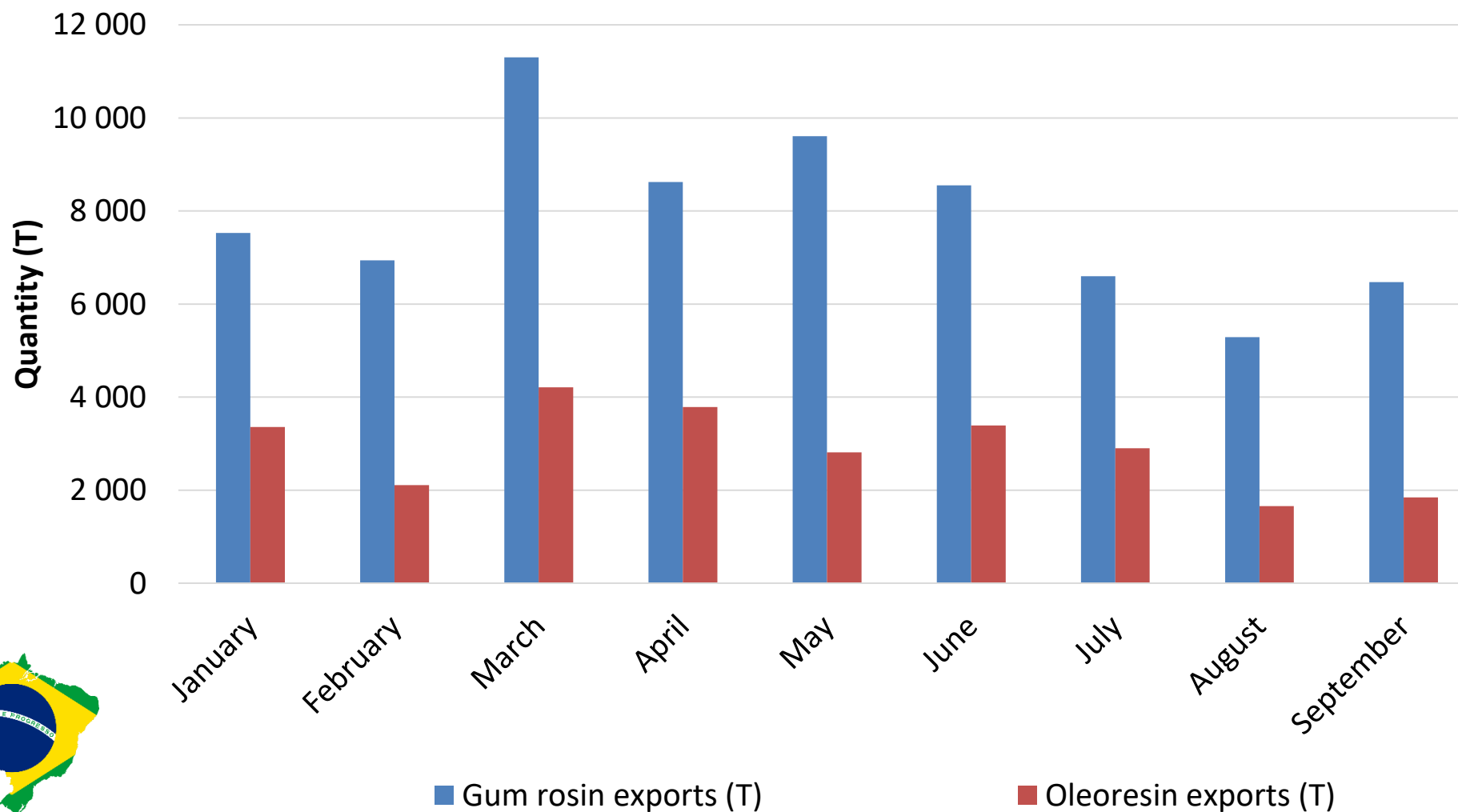


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Global market – 2021

Brazilian bio-based resin trade in 2021

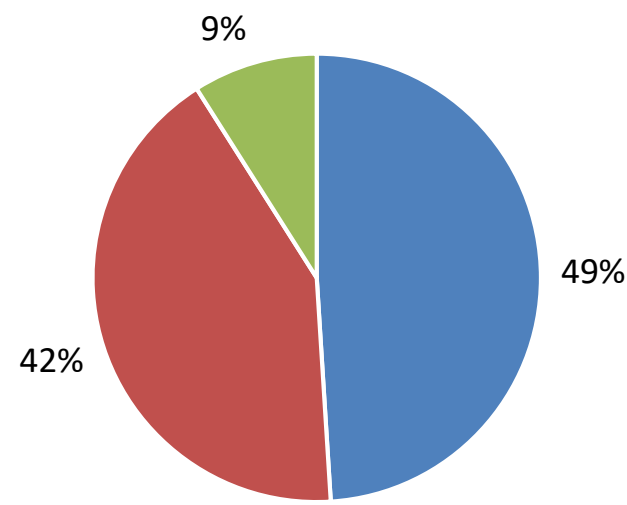
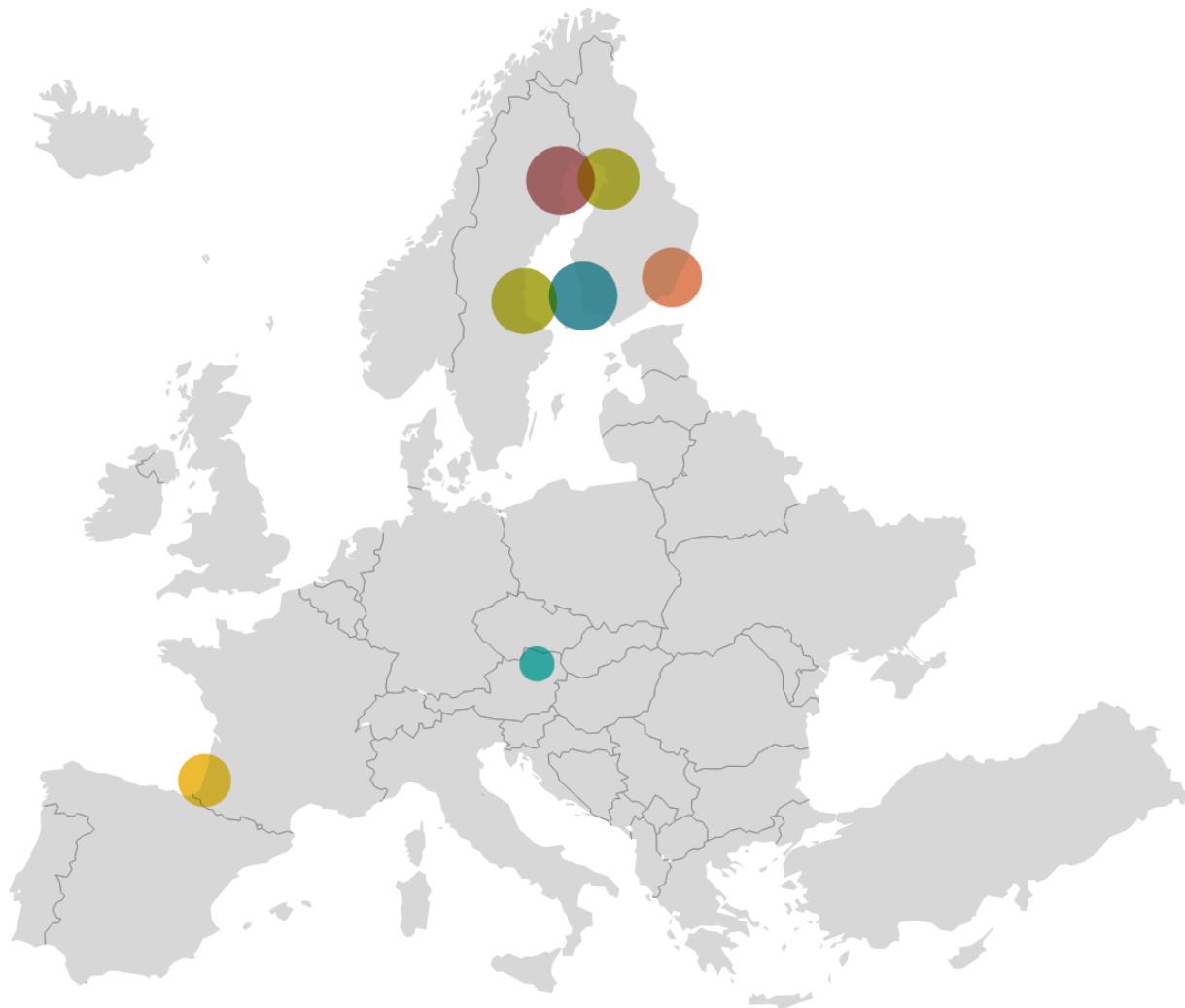


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Global market – 2021

Europe's position – Tall oil

DRT Forchem Kerima Kraton SunPine UPM



North America
Europe & Russia
Other countries

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Global market Perspectives

- Growing demand for resin
 - From China (200 000 T/year imported in the future)
 - En produits renouvelables des pays développés
- Significant growth in oleoresin prices
- Oil price still high

Access to the conjecture note:

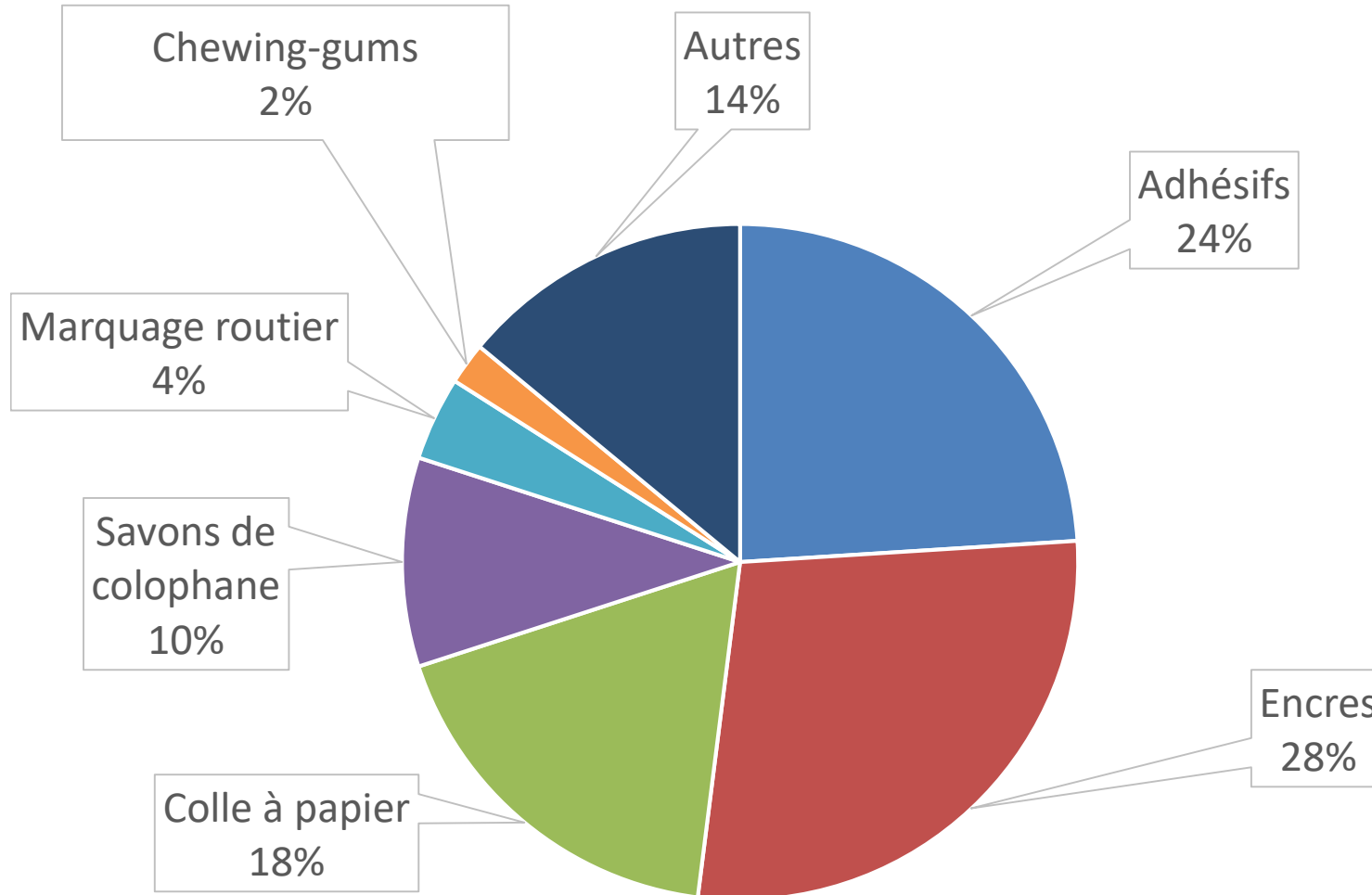
<http://www.iefc.net/marche-de-la-gemme-de-pin-en-contexte-de-crise-sanitaire/>



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Multiple uses of pine resin

Main products derived from rosin



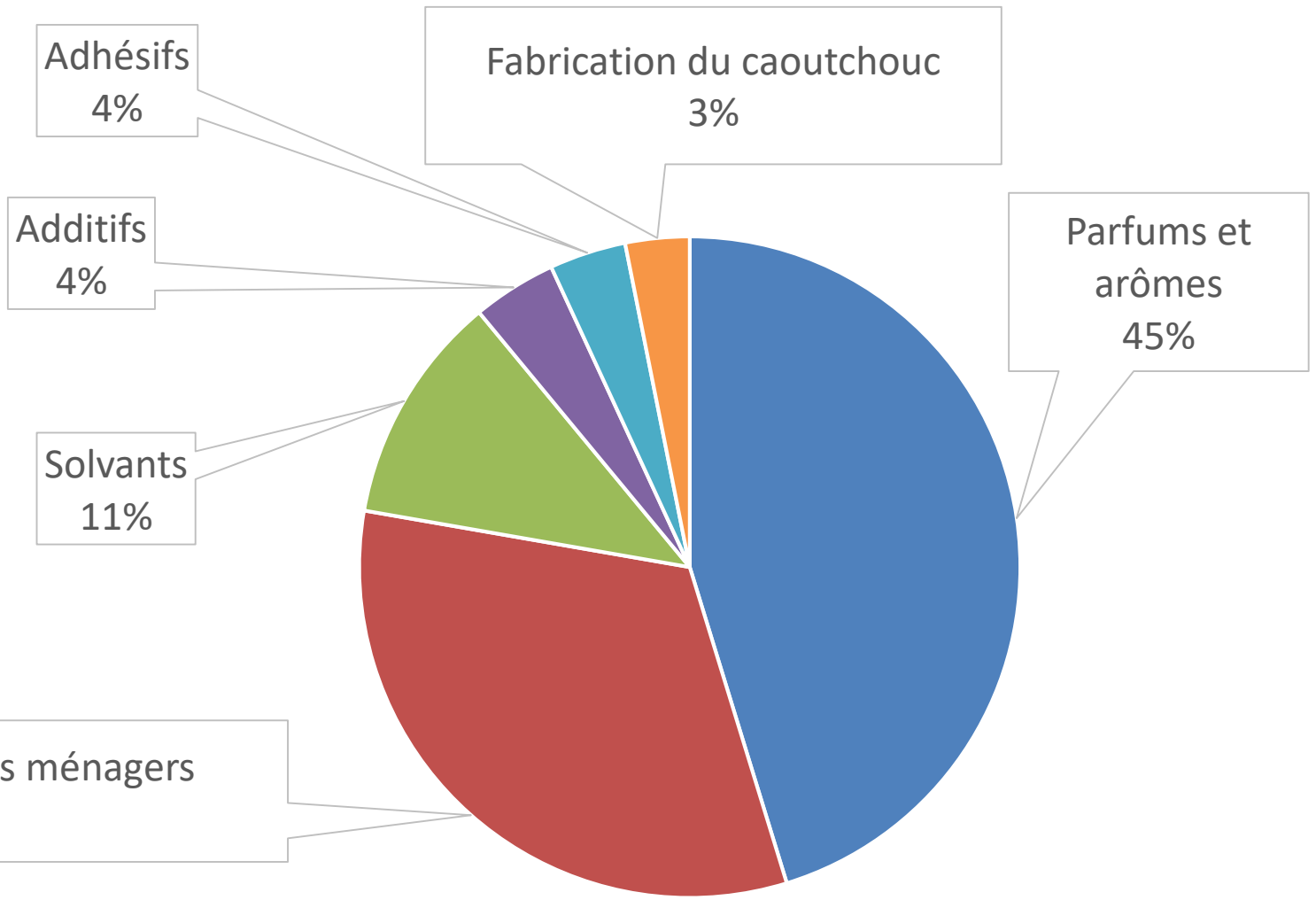
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Multiple uses of pine resin

Main products derived from turpentine



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Perspectives

- The resin market is not fixed in time
- European oleoresin has a place in the resin market
- The oleoresin collected in a closed container deserves a good valorisation



Catégorie de produits	Quantité
Adhésifs	500 000 – 550 000 T/an
Encres	375 000 – 400 000 T/an
Additifs pour aliments et boissons	60 000 – 80 000 T/an
Marquage routier	20 000 – 25 000 T/an
Cosmétiques	10 000 – 15 000 T/an



Perspectives for the development of tapping

Factors affecting productivity



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Perspectives for the development of tapping

Micro-economic study

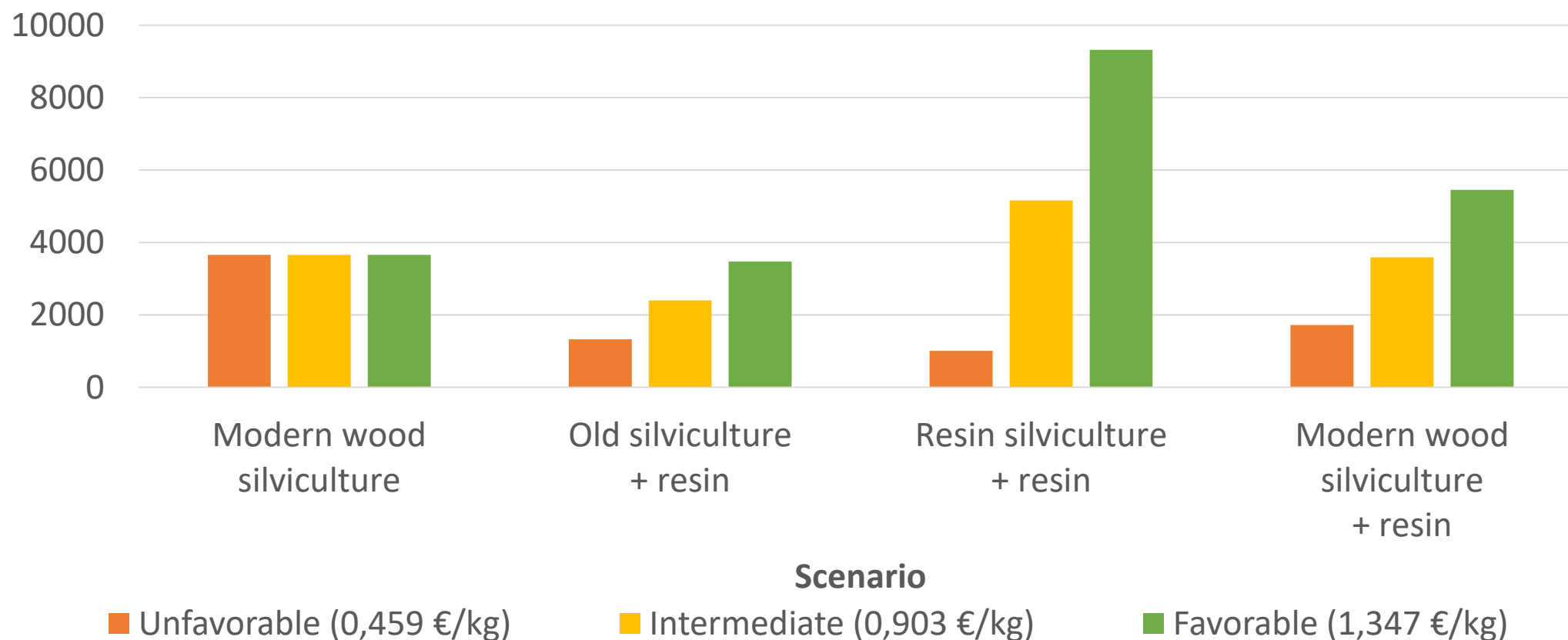
Country	Resin yield per tree (kg/tree/year)	Hourly productivity (kg/person/hour)	Proportion of labor cost per month in relation to Brazil (%)	Proportion of labor cost per T in relation to Brazil (%)	Production in 2017 (kT)
Indonesia	2.2	1.4	5 %	79 %	70
Brasil	3.8	18.4	100 %	100 %	175
Argentina	3.6	10.2	74 %	166 %	28
Portugal	2.2	10.7	126 %	308 %	8
Spain (Castilla-y-León)	2.8	13.1	229 %	377 %	12
France	3.2	20.5	285 %	639 %	< 0,1
China	2.0	3.3	82 %	756 %	430



Perspectives for the development of tapping

Micro-economic study

- Calculation of the discounted infinite sequence income (DSI) (€/ha)





Perspectives for the development of tapping International collaborations

- ResinLab operational group – Castilla-y-León, Extremadura (CESEFOR)
- Foresin operational group – Galicia (ACREMA)
- Resinex operational group – Extremadura

European Network of Resin Territories
Created in SustForest+

<https://www.sust-forest.eu/fr/node/711>



Perspectives for the development of tapping Project in France

3 lines of research:

- Axis 1 : Development of a tapping method widely applicable in Nouvelle-Aquitaine
- Axis 2 : Characterization of the forest resource for the oleoresin production
- Axis 3 : Demonstration of the economic feasibility of tapping in Nouvelle-Aquitaine



Thanks for your attention

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