SUST FOREST

Multifuncionalidad, conservación y empleo rural en el territorio del sur de Europa a través de la extracción de la resina

Multifonctionnalité, conservation et emploi rural dans le territoire du Sud de l'Europe au moyen de l'extraction de la résine

Multifuncionalidade, conservação e emprego rural no território do sul da Europa através da extracção da resina

G.T. 5.- TALLER DE DIAGNÓSTICO DE LA INDUSTRIA DE RESINOSOS

COCA, DICIEMBRE DE 2011

COFINANCIA:

SUDOE Interreg IV B

UE/EU - FEDER/ERDF

Junta de Castilla y León

SOCIOS:

ceseFOR

INIA

OUREM VIVA

IPB INSTITUT POLYTECHNIQUE BORDEAUX

ASOCIADOS:

la unión resinera española, s.a.

Rincón de la Vega, S.A.L.

AFLODOURONORTE

RESCOLL

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CHEMICAL DIVISION

Taller de Resinosos

GT5

Coca, diciembre 2011

SUST FOREST

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“SITUACIÓN Y PERSPECTIVAS DE LA INDUSTRIA DE TRANSFORMACIÓN DE LA COLOFONIA”

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Rosin Sources

- **GUM:**

Tapping the Oleoresin of Living Pine Trees

- **Tall Oil Rosin (TOR):**

By-product of Kraft Pulping Process

- **Stumpwood:**

Extraction/Special Processing of Oleoresin from Stumps

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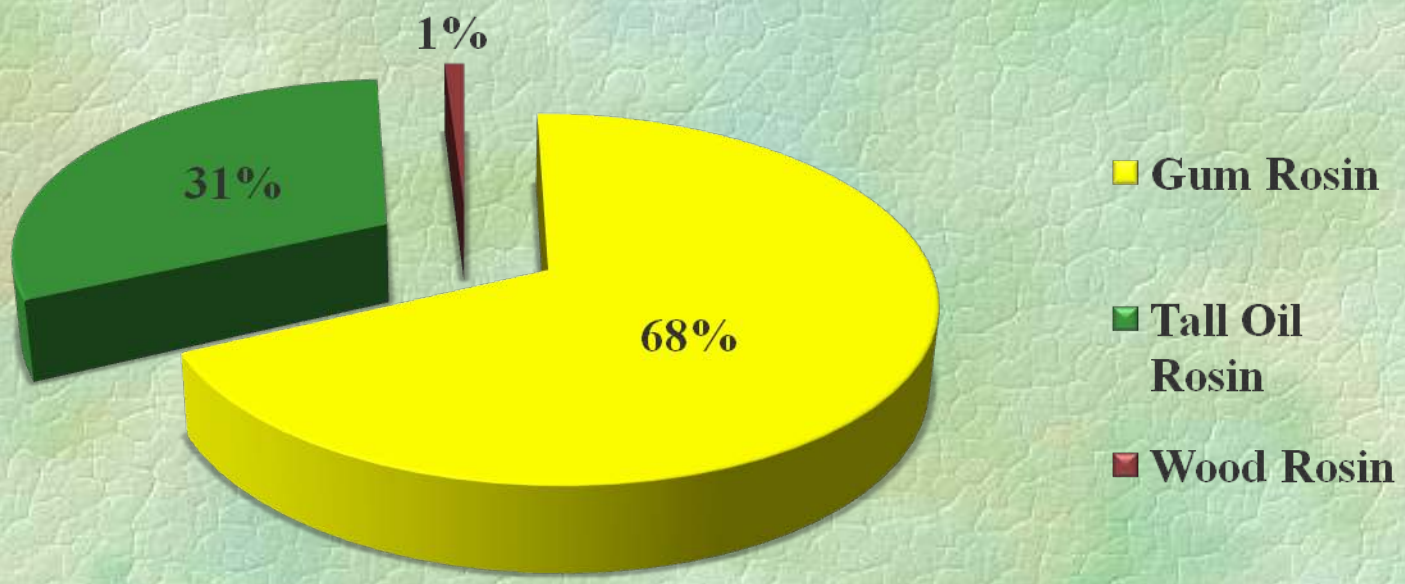
World Rosin Production (Forecast 2011)

Total Rosin Production = 1.270.000 MT.



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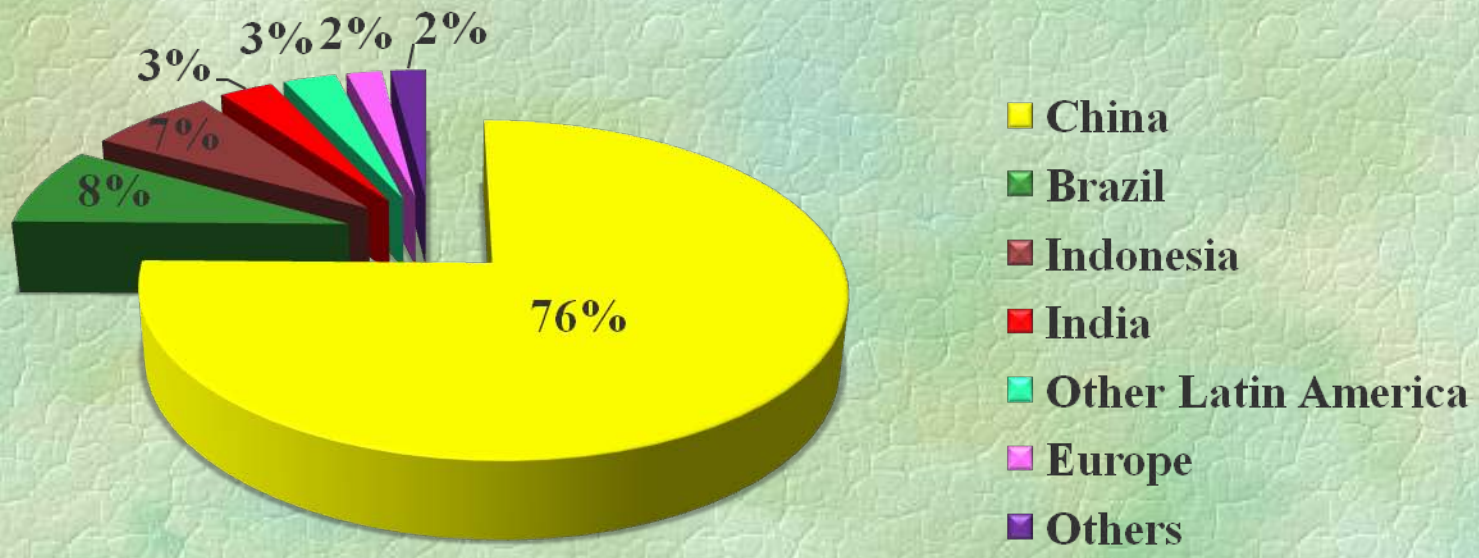
World Gum Rosin Production (Forecast 2011)

Global Gum Rosin Production= 870.000 MT.
European Gum Rosin Production = 17.400 MT. (2%)



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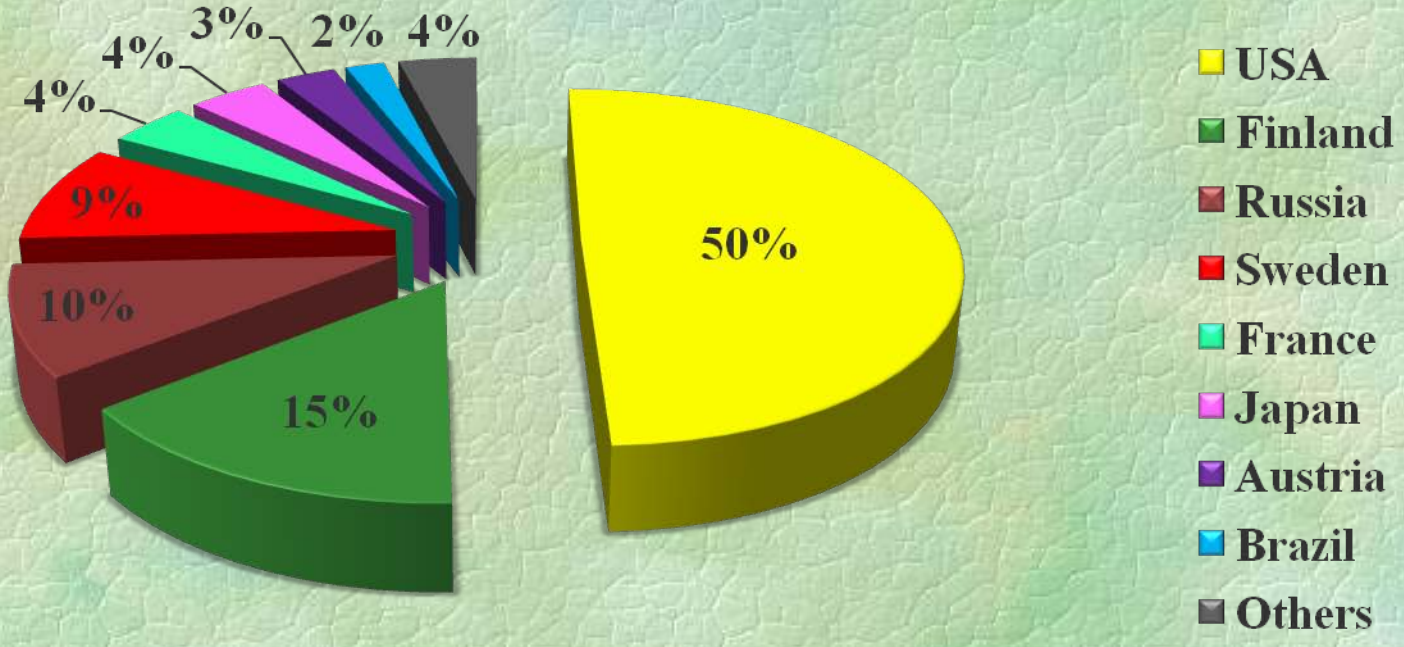
World TOR Production (Forecast 2011)

Global TOR Production = 390.000 MT.
European TOR production = 122.000 MT. (31,3%)



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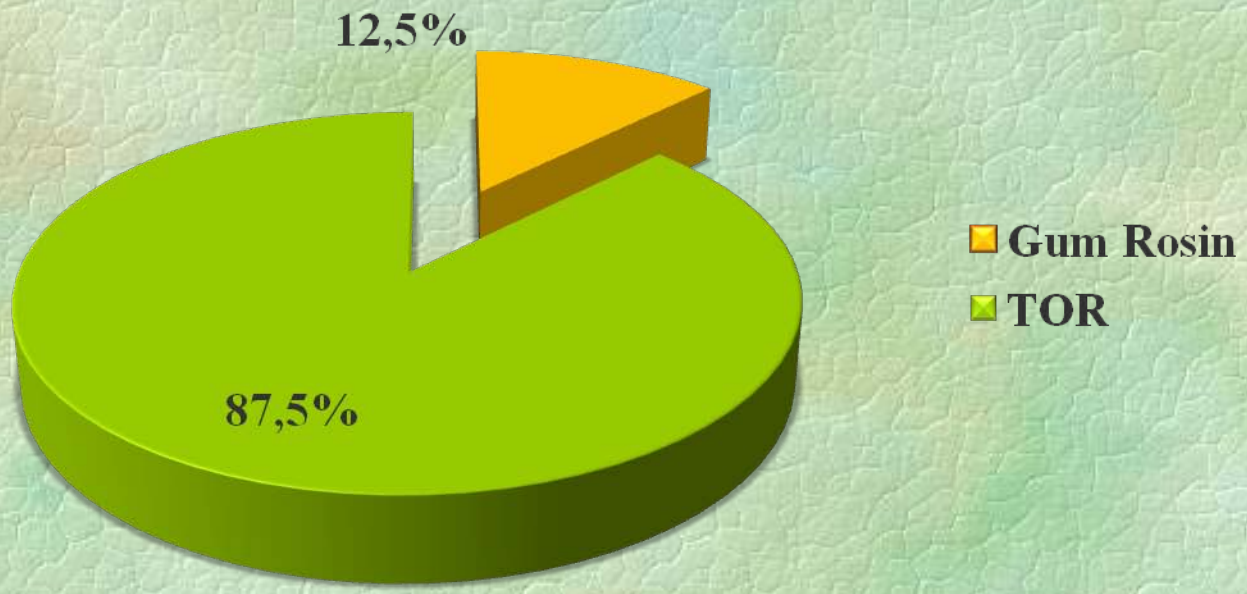
European Rosin Production (Forecast 2011)

Gum Rosin + Tall-Oil Rosin = 139.400 MT

European Gum Rosin Production = 17.400 MT.(12,5%)
European TOR production = 122.000 MT. (87,5%)



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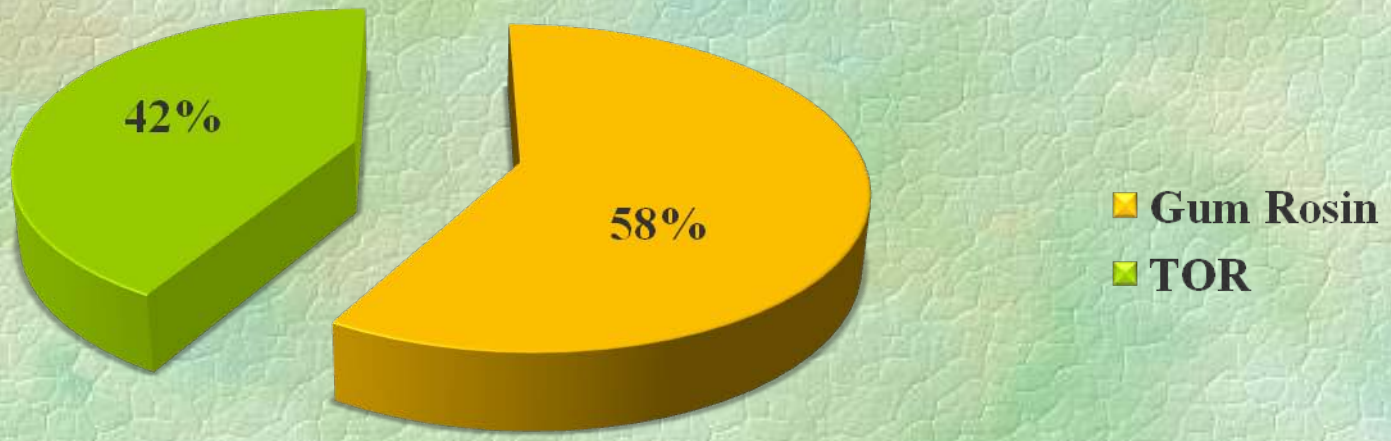
European Rosin demand (Forecast 2011)
Gum Rosin + Tall-Oil Rosin = 308.000 MT

European Gum Rosin market= 180.000 MT.(58,4%)
European TOR market =128.000 MT. (41,6%)



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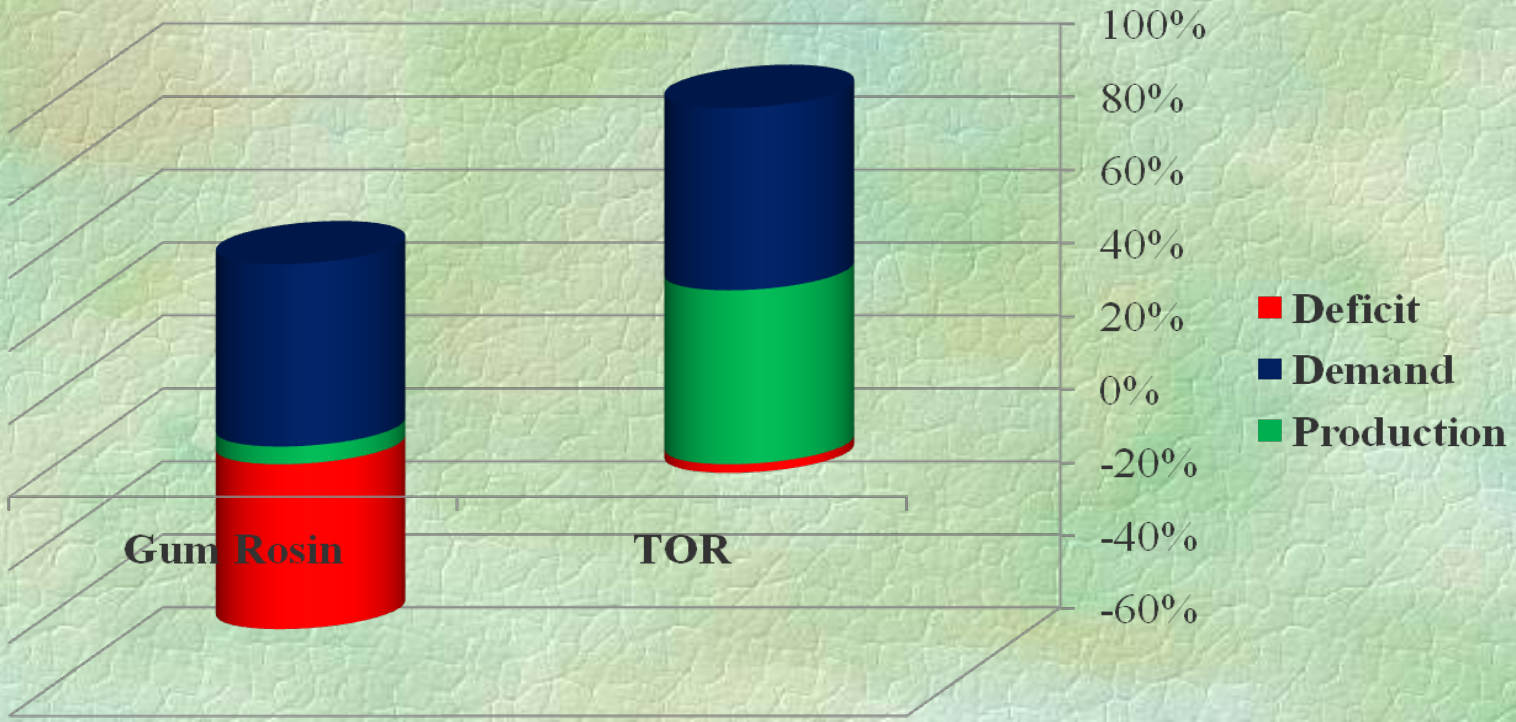
European Rosin Balance (Production/Demand)

Deficit = - 168.600 MT

Deficit European Gum Rosin = - 162.600 MT.

Deficit European TOR = - 5.400 MT.



Why Rosin Derivatives?

Not suitable rosin properties:

- Low softening point (70 - 80ºC)
- Oxidation trend
- High acidity (I_a= 155 – 170)
- Crystallization trend
- Low viscosity
- High solvent retention

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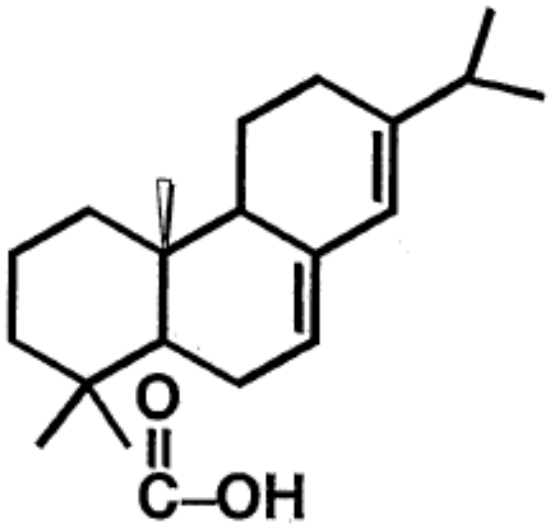
Rosin Chemistry



Abietic Acid

- O ‖ C–OH Carboxylic Acid
- = Unsaturation
- Ring Size & Structure

Rosin Reactivity

- **Reaction of Double Bonds:**
  - Adduction
  - Hydrogenation
  - Disproportionation
  - Polymerization
  - Etc.
- **Reaction of Carboxylic Acid:**
  - Esterification
  - Salt Formation (Soaps, Resinates)
  - Phenolic modified rosins
  - Etc.

Rosin Resins Uses

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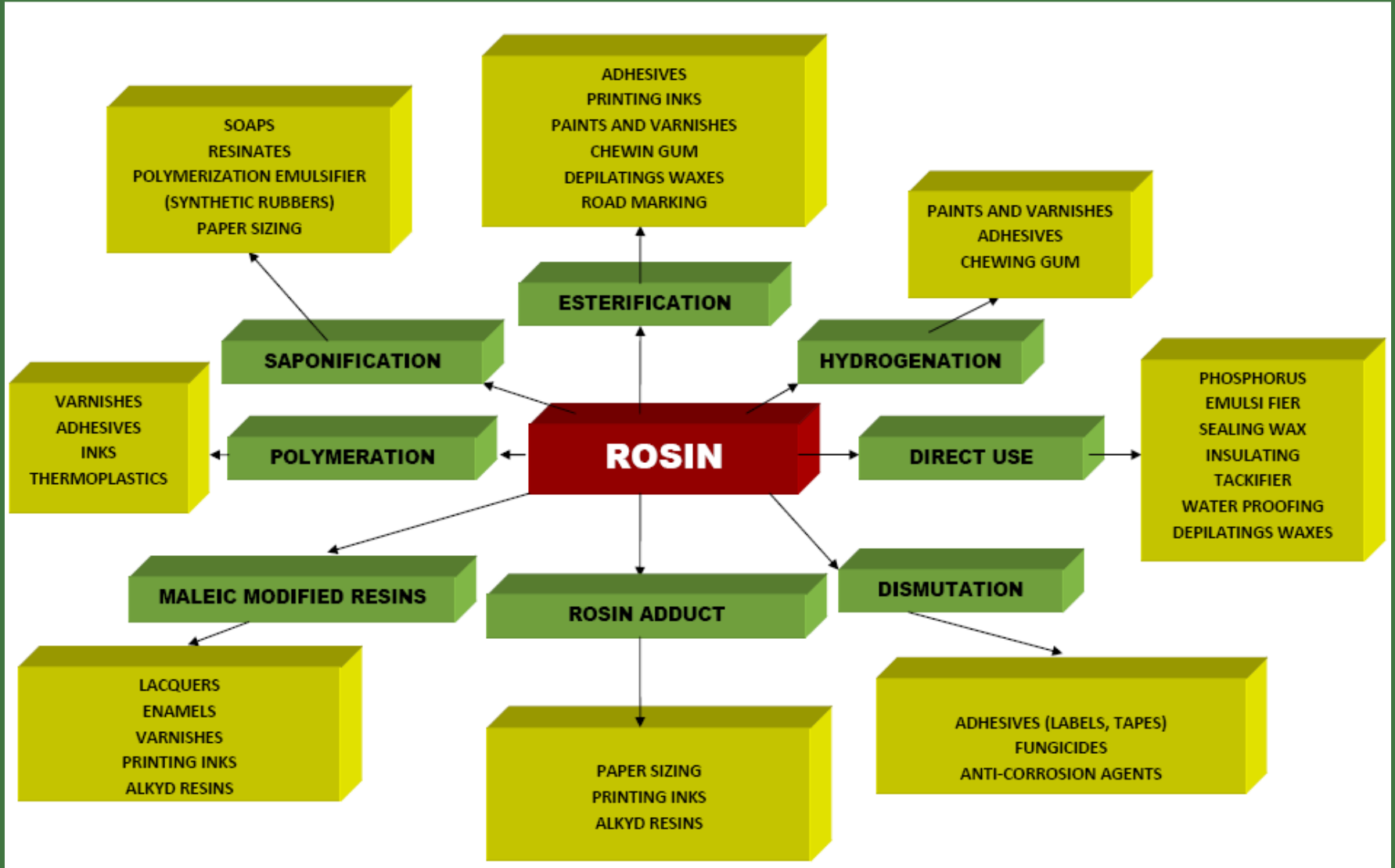

Rosin Resins Uses

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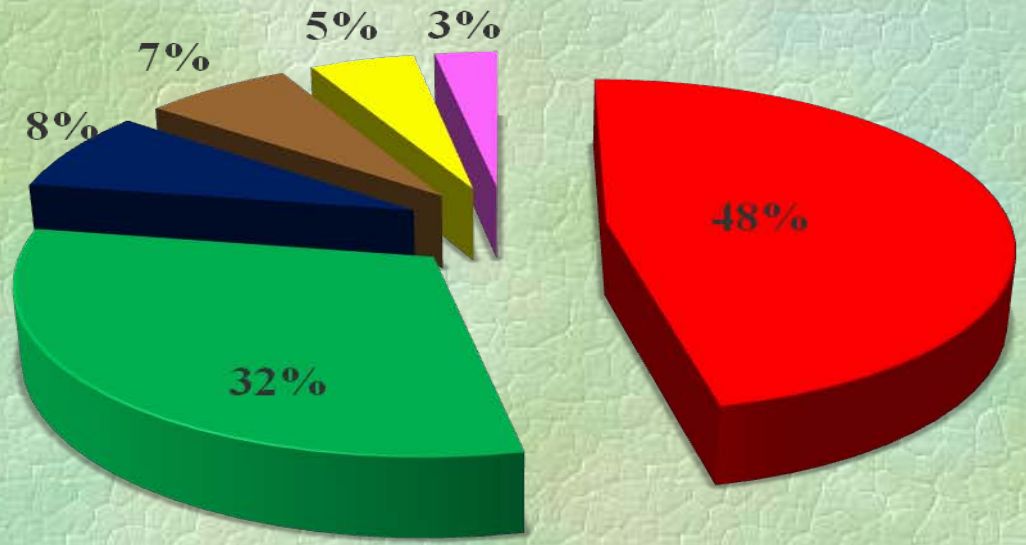
European Rosin market by applications
Gum Rosin + Tall-Oil Rosin = 308.000 MT



- Adhesives, Road marking, Coatings
- Inks
- Paper sizing
- Rubber
- Rosin soaps
- Others

Resin Sources

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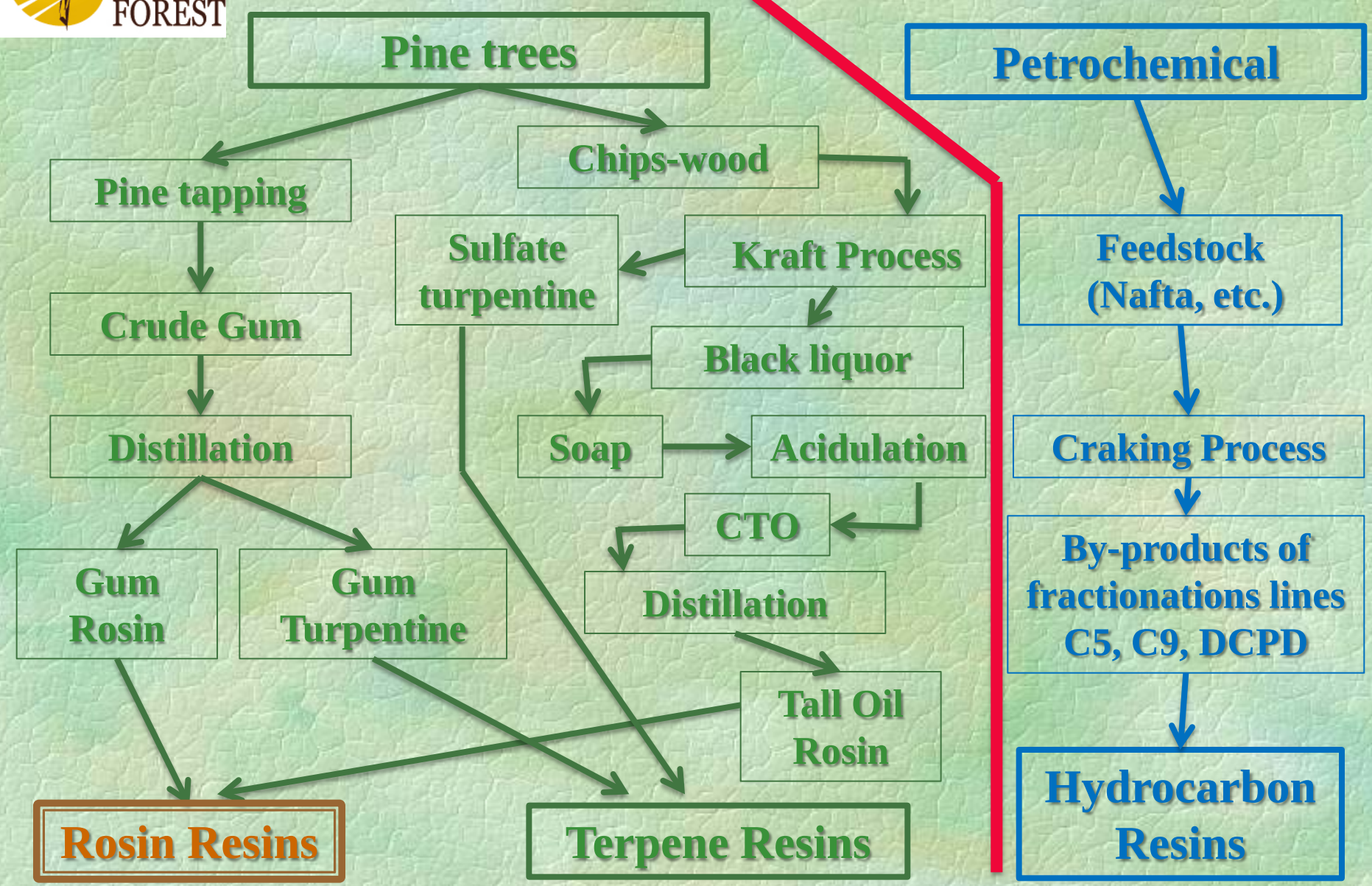

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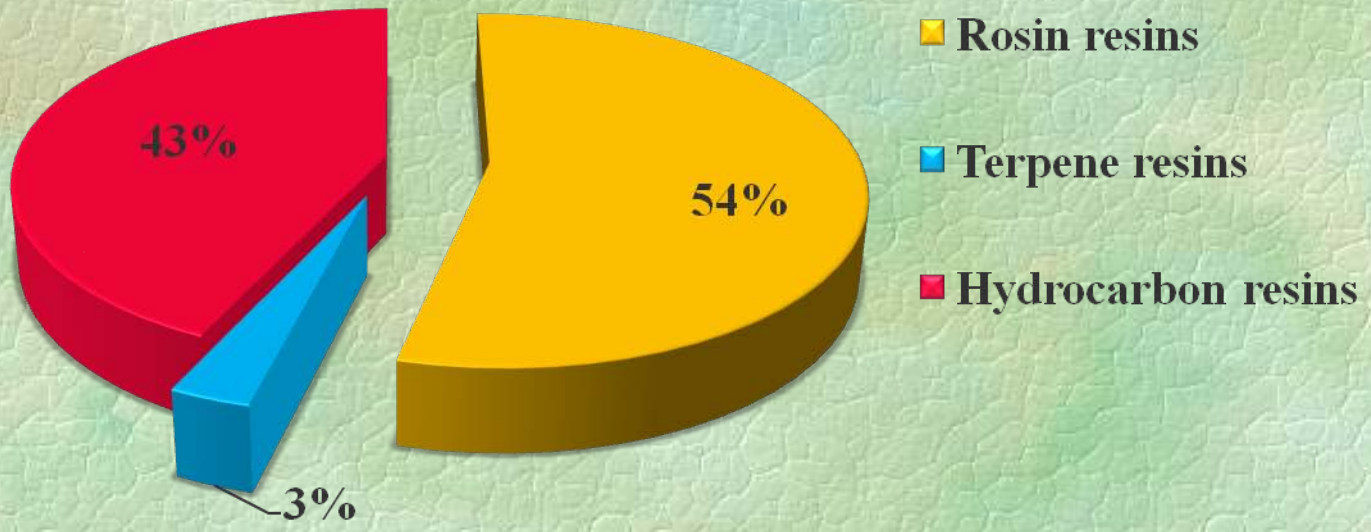
Global Resin Production (Forecast 2011)

Total world resin production = 2.340.000 MT

- **Rosin resins = 1.270.000 MT.**
- **Hydrocarbon resins = 1.000.000 MT.**
- **Terpene resins = 70.000 MT.**



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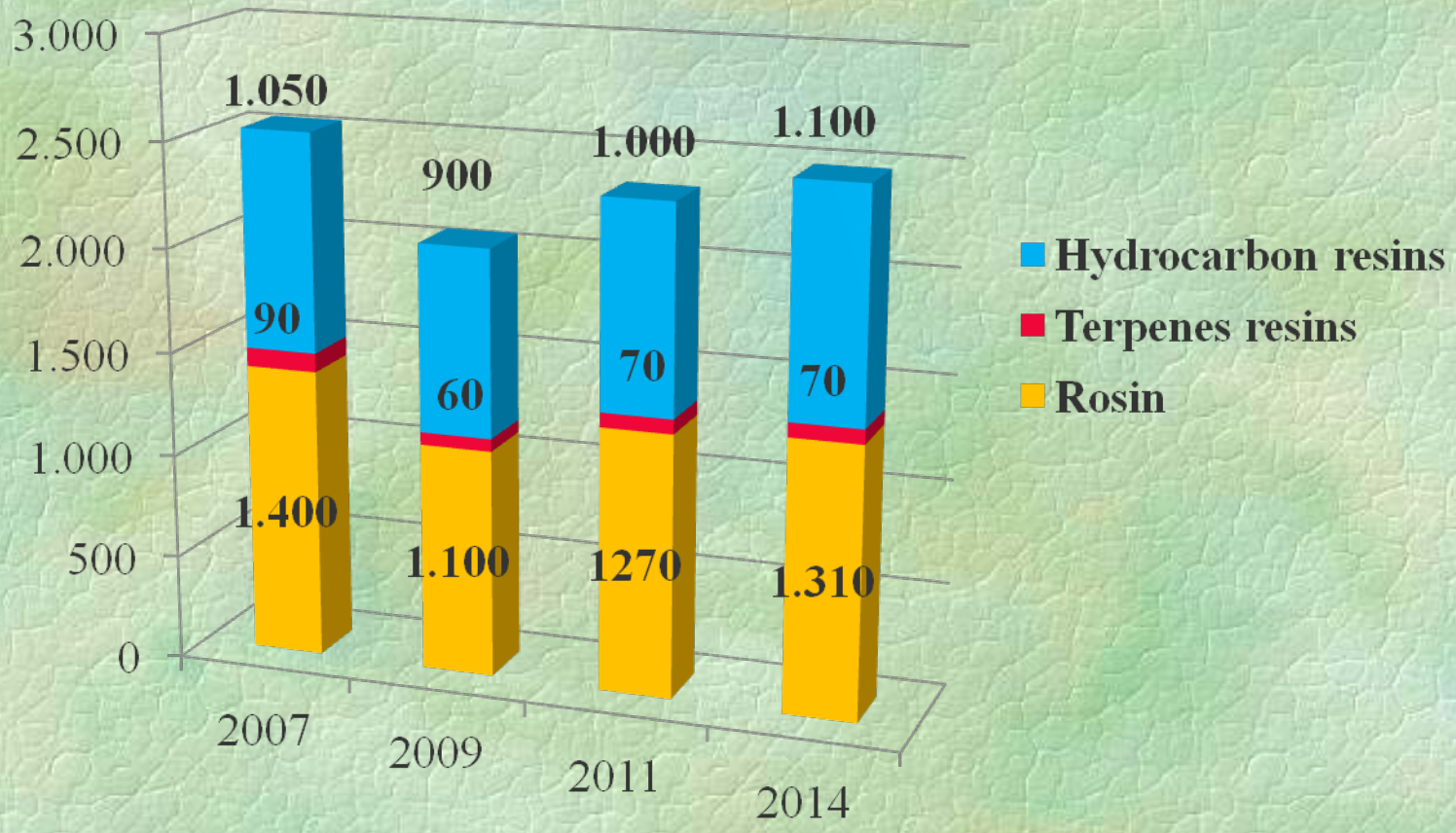
Global Resin Trend

Moderate growth of Hydrocarbon resin production ▲

Stable production of Terpenes resins ►

Moderate growth of Rosin resin production ▲



Rosin Resins Trend

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- **Gum Rosin**- Limited availability of pine forests and resin. Moderate growth of gum rosin production in the forthcoming year (3%) but high risk of decline and shortage in longer term. Continuous increases in labor costs. However high current rosin price encouraging the development of new regions for tapping (South Europe?).

- **Tall Oil Rosin (TOR)**-Limited availability. Linked to energy price. Competition of biodiesel producers. Pulp mills closures in North America and Europe. New softwood kraft production from Asia will also decline in a medium term (Pinus versus Eucaliptus).

- **Wood Rosin**- Sharp decline of wood rosin production in USA. Small and irrelevant proportion of total rosin production.

World Rosin Resin Trend = Production / Demand

- Moderate growth of Gum Rosin production in the coming years around 3% per year. Longer term high risk of decline?

+

- TOR production expectied to remain flat as production of softwood kraft pulp will be flat.

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- Market demand for Rosin Resins recovering since 2010 and planned growth 3 to 5 % per year driven by emerging countries (China, India, Brazil, etc.)

=

- Longer term Trend: demand for Rosin Resins will exceed the offer (even with“cyclic” financial crisis), resulting in **higher prices and limited availability.**

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Rosin resins advantages

- Rosin market demands the more and more for ecological, biological and green products.

- Current economy requires development of products from renewable resources for sustainable industrial activities.

- Development of friendly environmental products (pine chemicals industry helps to preserve pine forests and reduce carbon footprint).

Clear advantage of Rosin resins face Hydrocarbon resins.

Conclusions

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- Pine chemical industry in EU have a growing raw material demand, limited only by supply difficulties. This limited availability of rosin and turpentine will probably increase in near future.

- The geographic pine forest area of SUST-FOREST (Portugal, Spain and France), have enough resources to meet its industrial needs.

- Pine chemical industry is sustainable and environmentally friendly.

- Pine chemical industry generates economic, social and environmental benefits.

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