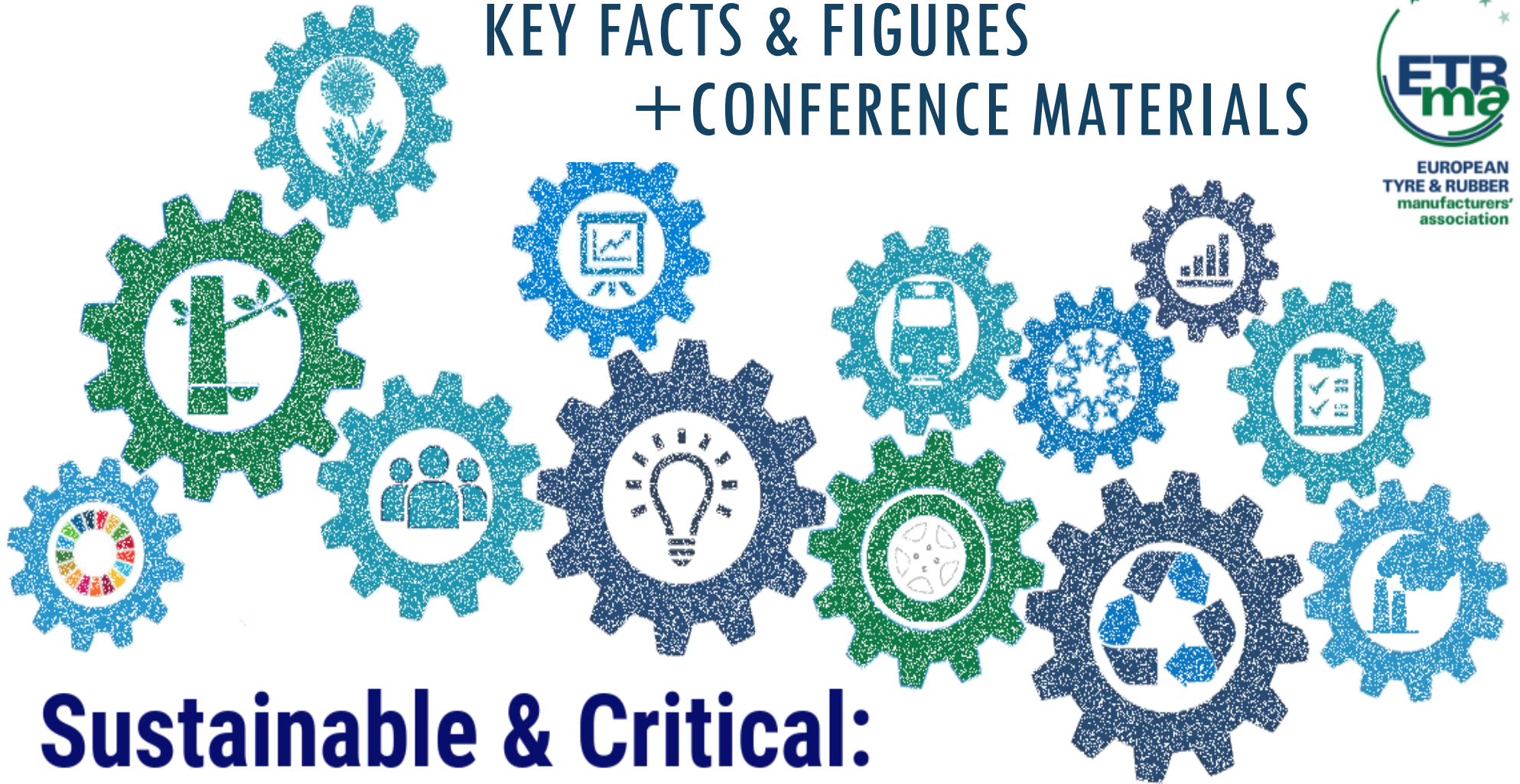


# KEY FACTS & FIGURES + CONFERENCE MATERIALS



## Sustainable & Critical: Natural Rubber and its future

# PROGRAMME

15h00 – 15h30 Registration and Welcome Coffee

15h30 – Keynote speech

**Mrs Malwina Nowakowska, EC DG GROW** – Resource Efficiency and Raw Materials Unit

*How can responsible and sustainable sourcing of natural rubber support the implementation of the UN Sustainable Development Goals?*

15h45 – Setting the Scene on Supply Chains

**Ms. Shivani Kannabhiran, Responsible Supply Chains, OECD**

*OECD's approach to supply chain management in South East Asia*

15h55 – 16h40: First Panel: Criticality of Natural Rubber and Sustainability of its Value Chain

*The panel is about outlining the challenge regarding security of supply and the balance of supply and demand, including the sustainability of the value chain.*

Speakers:

**Mrs Fazilet Cinaralp, European Tyre and Rubber Manufacturers' Association**

*Economic and supply challenges of Natural Rubber: a raw material with high economic importance to the EU combined with risk(s) associated to its supply.*

**Mr Salvatore Pinizzotto, International Rubber Study Group**

*Transparency on the Natural Rubber Market: IRSG will review the challenges to sustainability and effective policy making brought by the unreliability of the data.*

**Mr Hervé Deguine, Global Platform for Sustainable Natural Rubber**

*First industry Initiative to answer to the challenge of traceability and sustainability in the natural rubber value chain.*

16h40 – 17h00: Questions & Answers

17h00 – 17h30: Second Panel: Natural Rubber supply diversity and emerging solutions

*Rubber coming from tropical regions from hevea trees, from arid regions from guayule, and from temperate climates like Russian dandelion - Could this become a sustainable reality?*

Speakers:

**Mr Anker Sorensen, KeyGene**

*Dandelion Rubber and Inulin Valorization and Exploitation for Europe – (DRIVE4EU) EU funded project: main learnings*

**Mr Michel Dorget, Centre de Transfert de Technologies du Mans and Centre de coopération internationale en recherche agronomique pour le développement (CIRAD)**

*The case of Guayule.*

17h30 - 17h50 – Questions & Answers Session

17h50 – 18h00 – Closing Remarks from the Moderator

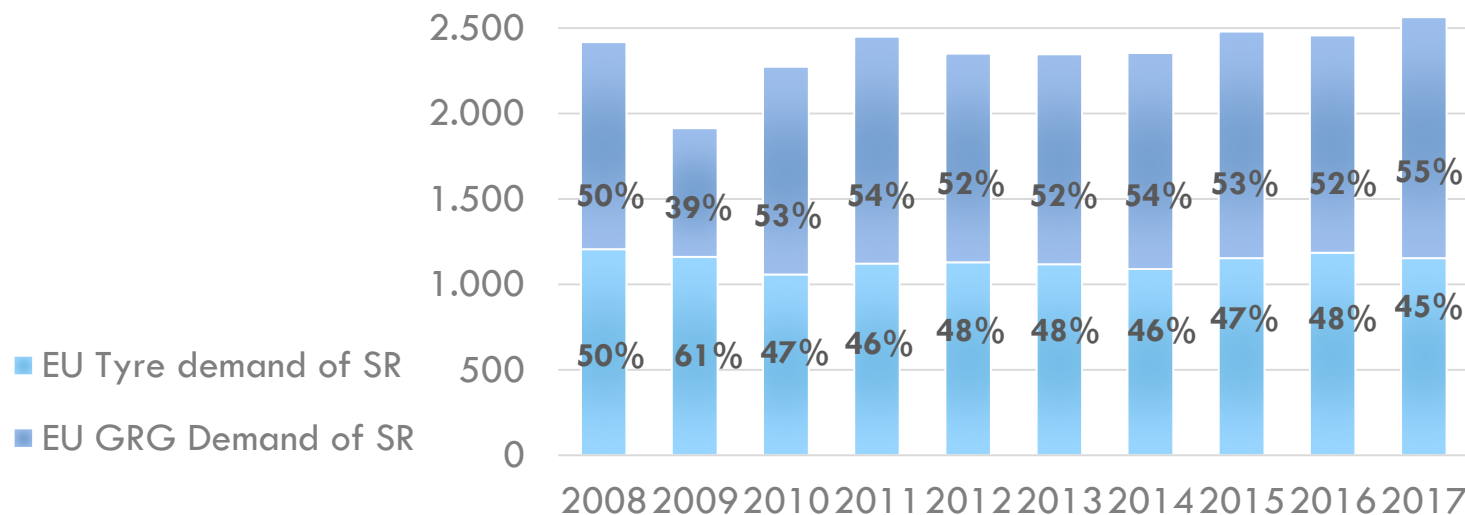
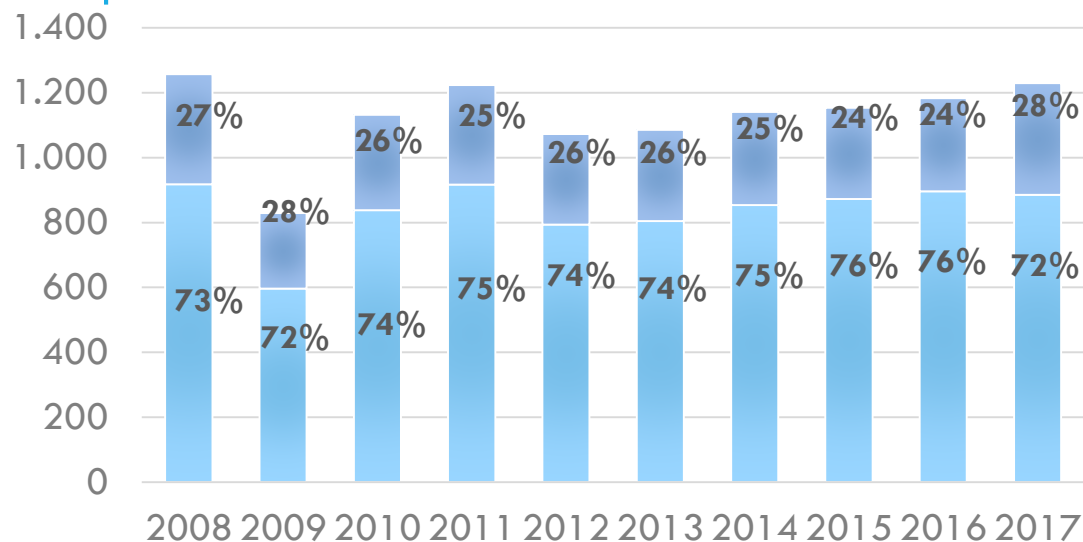
# NATURAL RUBBER FACTS & FIGURES

Introduction



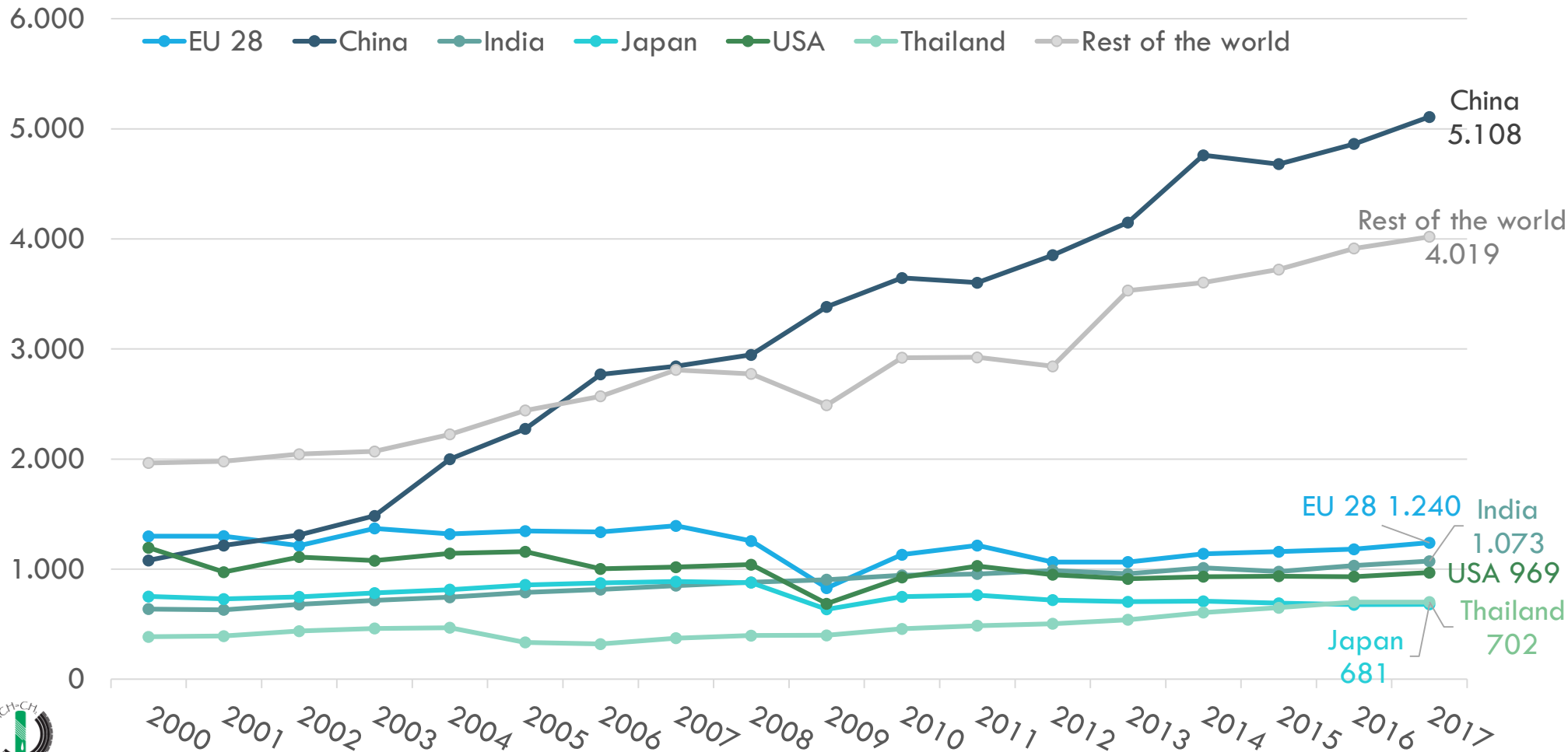
# EU TOTAL AND BREAKDOWN OF CONSUMPTION OF RUBBER

Source: IRSG /000 tonnes



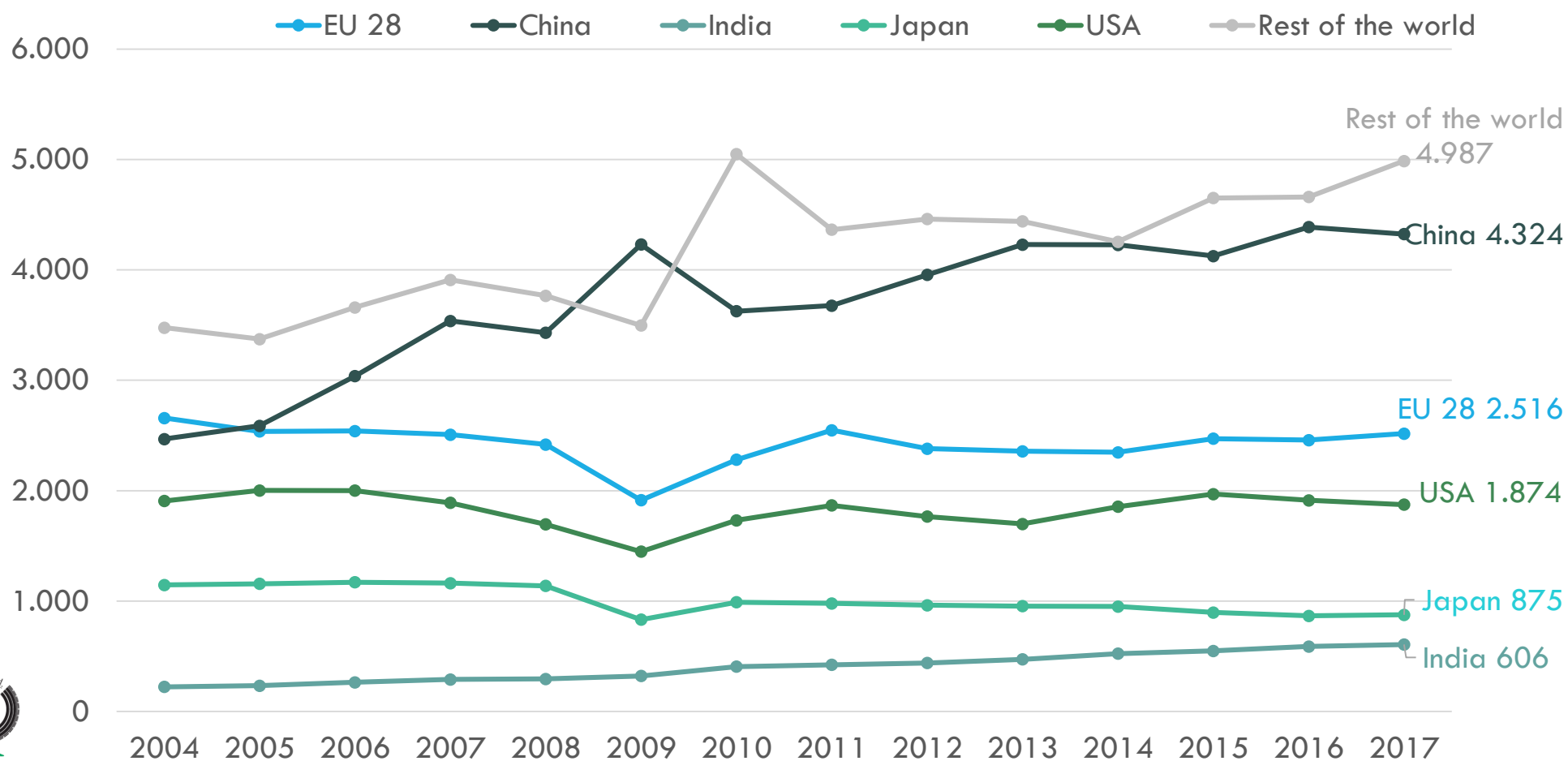
# NATURAL RUBBER CONSUMPTION IN KEY COUNTRIES

Source: IRSG/000 tonnes



# SYNTHETIC RUBBER CONSUMPTION IN KEY COUNTRIES

Source: IISRP - IRSG/000 tonnes



# **MODERATOR: MR SHAW, TYRE INDUSTRY RESEARCH**

David Shaw is the owner and Chief Executive at a small company called Tire Industry Research (TIRes). He has 30 years' experience of the global tyre industry.

TIRes publishes a weekly newsletter on the tyre industry in China as well as monthly reports on the global tyre industry. His company recently published a market research report titled 'Sustainability in the Tire Industry 2016' and before that the company published China Tire Industry 2015-2018.

He also manages the Tire Technology conference taking place in Germany every February and advises CEOs and corporate strategists on the future development of the global tyre industry.

# KEYNOTE SPEAKER: MRS NOWAKOWSKA, EC DG GROW

Mrs Nowakowska is Deputy Head of Unit at the European Commission, DG GROW.

Trade economist, she holds an M.A. from Warsaw School of Economics and CEMS Masters in Business Administration from University of St. Gallen, Switzerland. Born in Wroclaw, Poland.

She lived in Switzerland and moved to Brussels in the beginning of 2011.

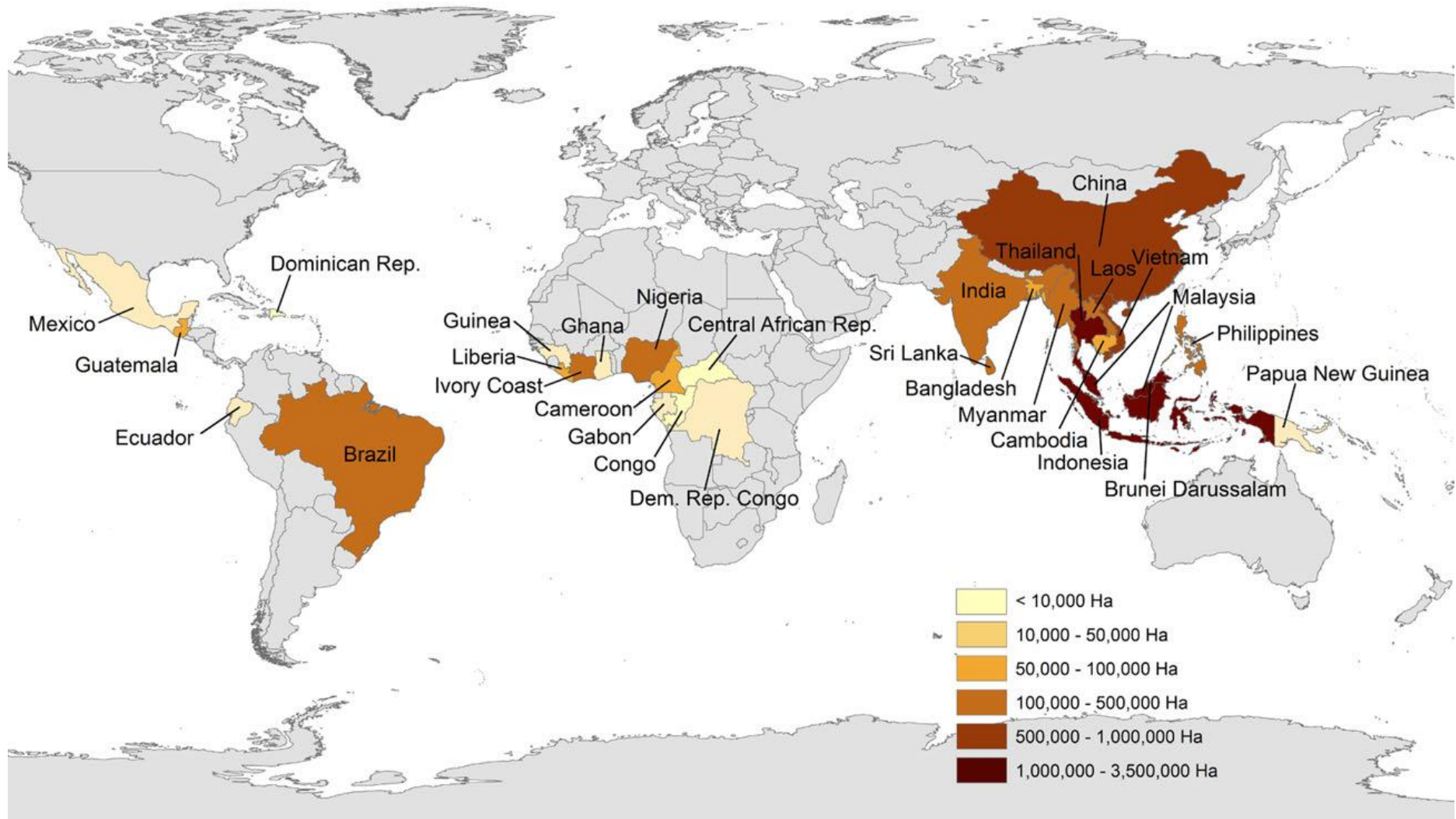
# **EU How responsible and sustainable sourcing of natural rubber can support the implementation of the UN Sustainable Development Goals**



***Raw Materials Week 2018 – ETRMA-IRSG event on Sustainable & Critical Natural Rubber and its Future, Brussels, 12 - 16 November 2018***

***Malwina Nowakovska-Ketterle  
Deputy Head of Unit  
Resource Efficiency and Raw Materials  
DG GROW, European Commission***





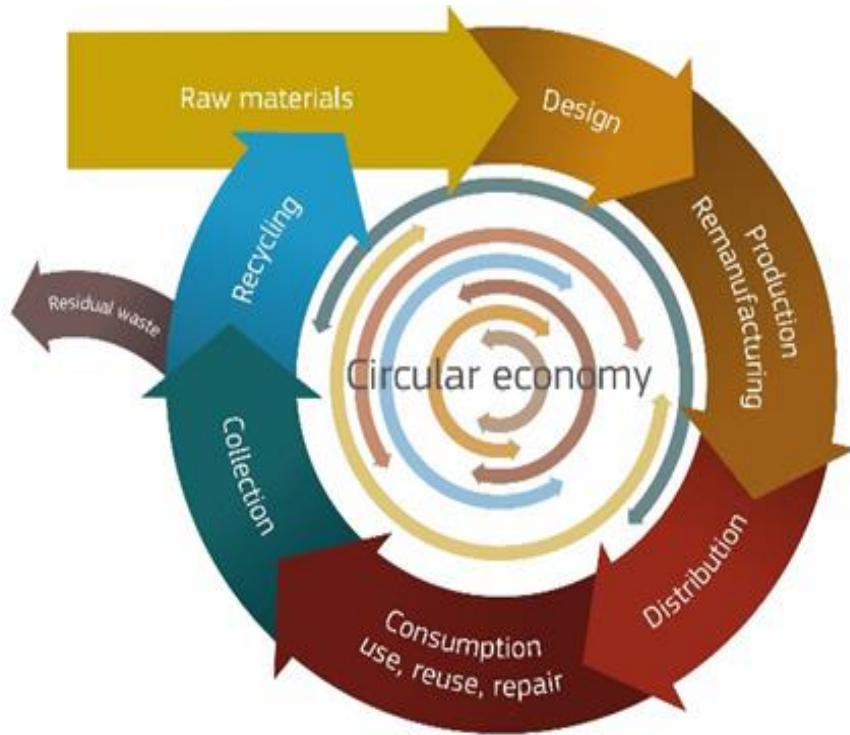
# SDG Agenda 2030



## SUSTAINABLE DEVELOPMENT GOALS



1. EU Raw Materials Initiative, EIP-Raw Materials and Strategic Innovation Projects (2008)  
*The EU List of Critical Raw Materials 2017: Natural Rubber*
2. UN 2030 Agenda for Sustainable Development, 2015
3. EU Circular Economy Action Plan, 2015
4. Paris Agreement on climate change mitigation, 2015
5. EU Renewed Industrial Policy Strategy, 2017



*Source: Cornish 2017*

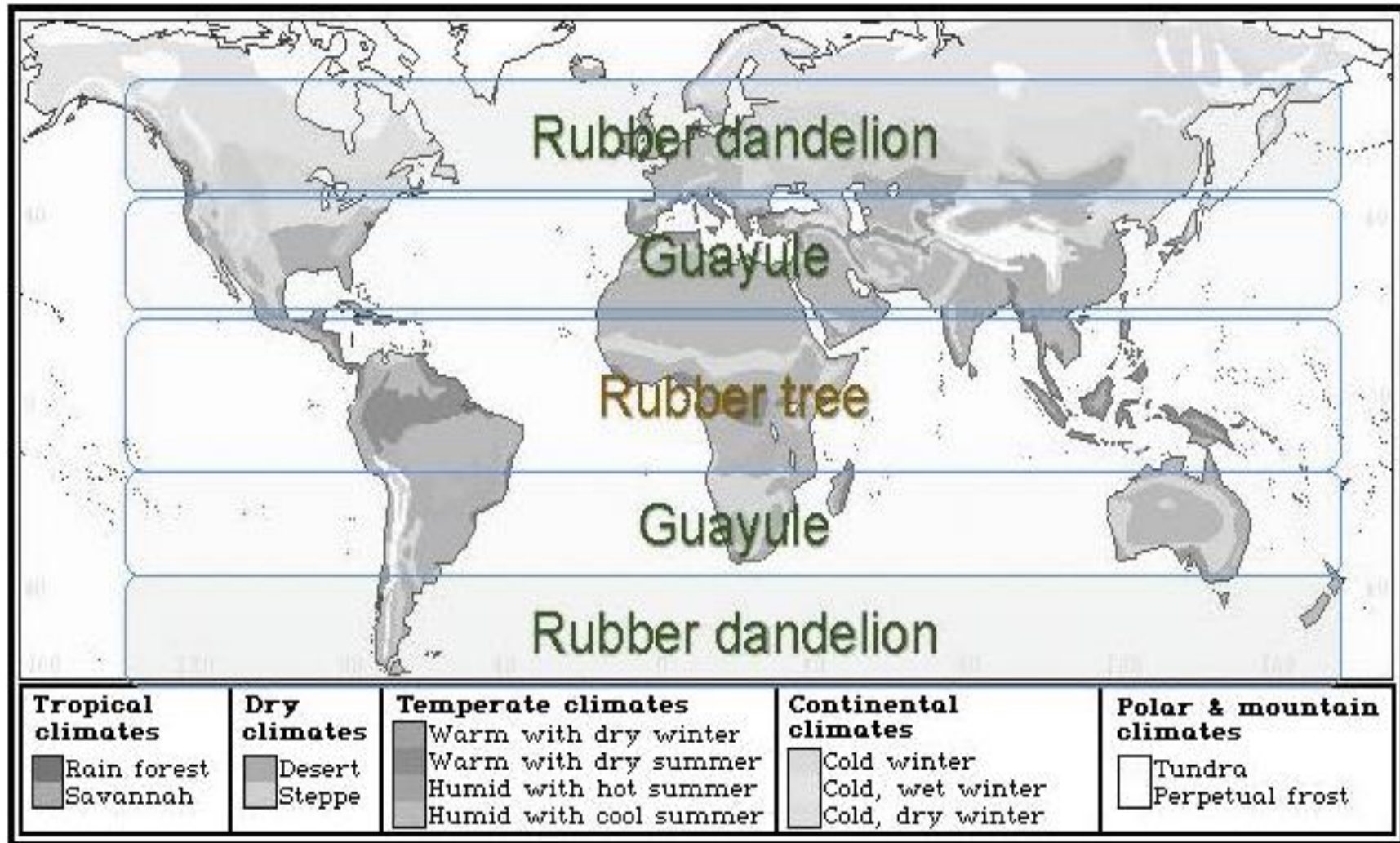
- ❖ **OECD Council Recommendation 2011 on**  
*Guidelines for Multinational Enterprises for risk-based due diligence to avoid and address such adverse impacts associated with their operations, their supply chains and other business relationships (OECD Due Diligence Guidance for Responsible Business Conduct in 2018)*
- ❖ **G20 - Resource Efficiency Dialogue**
- ❖ **International Rubber Study Group - Sustainable Natural Rubber initiative**
- ❖ **Global Platform for Sustainable Natural Rubber of the Tire Industry Project of the World Business Council for Sustainable Development**



## High Level Steering Group on EIP-RM

- Direction given by the **Industrial policy strategy**
- Keep the EU industry competitive on the way to a **low-carbon and circular economy**;
- Help the EU industry to master main challenges: **digitalisation, sustainability and innovation**;
- **Strengthen domestic production and EU industrial value chains**, all starting with raw materials, particularly critical raw materials, incl. natural rubber;
- Strengthen partnerships between the **EU, Member States and regions**;
- Attract young, develop **skills**, build **knowledge** and engage **society**





Source: Cornish 2017

## GROW C2

# **PRESENTER: MRS KANNABHIRAN, OECD - POLICY ADVISOR RESPONSIBLE BUSINESS CONDUCT**

Mrs Kannabhiran is responsible for the implementation OECD-FAO pilot project on responsible agricultural supply chains at the OECD's Responsible Business Conduct Unit.

The pilot brings together 30+ agri/food companies, investors and industry associations, under a multi-stakeholder governance structure (governments, business and civil society).

She is a specialist in corporate social responsibility and supply chain operations, and works closely with a wide range of stakeholders from all over the world to promote responsible business strategies and solve implementation challenges.



# OECD Responsible Business Conduct

Sustainable and Critical natural rubber and its future

15 November 2018





# OVERVIEW

- RESPONSIBLE BUSINESS CONDUCT AT THE OECD
  - Principles and standards
  - OECD practical guidances for business
- DEEPENING CO-OPERATION
  - Working in Asia
  - Responsible Supply Chains in Asia

# THE PUSH

- Mandatory legislative requirements for disclosure (climate change, human rights, slavery)
- Investor and shareholder requirements to adopt and report on responsible business conduct.
- Lawsuits
- Consumer demands
- Press and social media
- Scrutiny from governments on supply chain activities

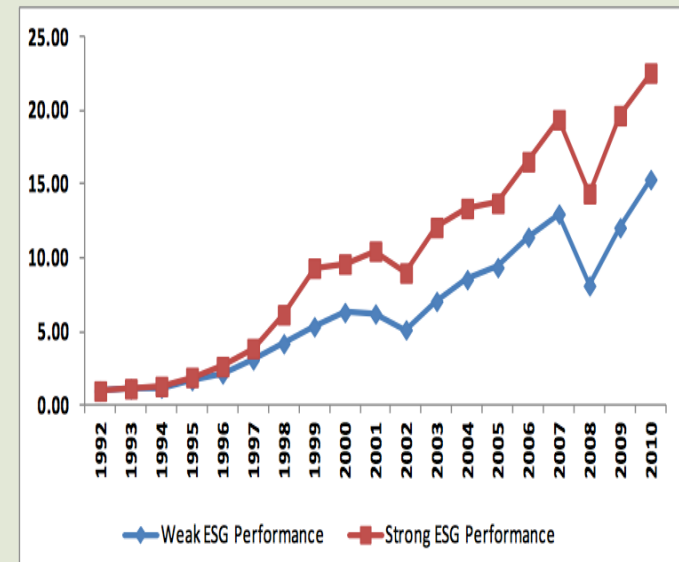




# THE PULL

- ✓ Reduce risks and manage reputation
- ✓ Obtain and retain the social license to operate
- ✓ Protect existing value and create new value
- ✓ Facilitate participation in global value chains
- ✓ Attract and retain talent
- ✓ Distinguish from competitors and access new markets

FINANCIAL PERFORMANCE OF COMPANIES WITH WEAK VS. STRONG ESG PERFORMANCE



Source: Eccles G.R., Ioannou I. Serafeim G. "The Impact of a Corporate Culture of Sustainability on Corporate Behavior and Performance," Harvard Business School, November, 2011.

# OECD GUIDELINES FOR MNEs



- Aligned with leading international standards – UNGPs, SDGs, ILO
- Government commitment to promote the Guidelines and monitor application
- Expectation of supply chain due diligence

Disclosure	Human Rights	Employment & Industrial Relations
Environment	Consumer interests	Science & Technology
Combating Bribery, Bribe Solicitation and Extortion	Taxation	Competition

# OECD WORKING WITH BUSINESS



OECD Due Diligence Guidance for Responsible **Minerals** Supply Chains (2011)

OECD Due Diligence Guidance for Meaningful Stakeholder Engagement in the **Extractive** Sector (2016)

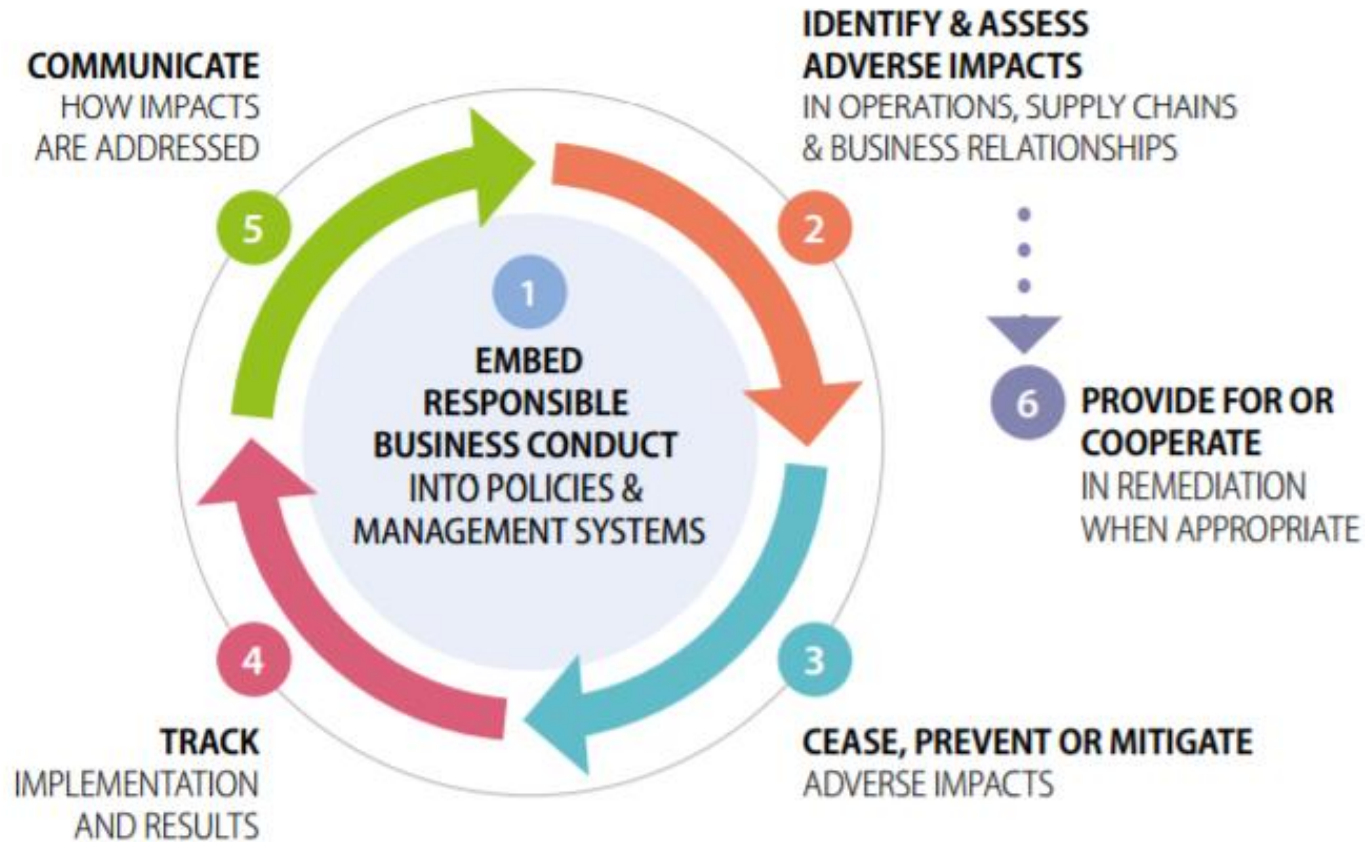
OECD-FAO Guidance for Responsible **Agricultural** Supply Chains (2016)

OECD Due Diligence Guidance for Responsible Supply Chains in the **Garment & Footwear** Sector (2017)

Responsible Business Conduct in the **Financial** Sector (2017)

Due Diligence Guidance for **Responsible Business Conduct** (2018)

# DUE DILIGENCE FRAMEWORK



# PARTNERSHIPS IN ASIA

- OECD regional SEA program, Tokyo Office
- OECD co-operation with key partners: China, Indonesia, India
- Engagement with:
  - ASEAN
  - APEC
  - UNDP (National Action Plans)
  - UN ESCAP
- Investment Policy Reviews of Laos, Myanmar, Thailand, Viet Nam



# FUTURE WORK

- Responsible Supply Chains in Asia
- EU funded programme
- Implementing partners: OECD and ILO
  - 3 year programme
  - OECD expertise on trade/investment and risk-based due diligence
  - 6 countries: China, Japan, Myanmar, Philippines, Thailand, Vietnam
  - Policy makers and business
  - Country specific target sectors including vehicle parts (Japan and Thailand) and agriculture (Southeast Asia)



# PROGRAMME COMPONENTS

## PROVIDING INSIGHT AND ANALYSIS

- Research and analysis on RBC policy landscape
- Analysis of existing RBC practices by companies in target sectors
- Research on supply chains

## SUPPORTING POLICY ACTION

- Dialogues to encourage experience sharing and peer learning
- Development of practical resource materials on key RBC topics
- Thematic analysis of how RBC policies are integrated in other policies

## BOOSTING INDUSTRY CAPACITY

- Translations and adaptation of due diligence tools
- Workshops
- Cross-sectoral and cross-country experience sharing
- Pilot projects in agriculture and garment and footwear sector

## RAISING AWARENESS

- Promotional conferences
- Translation of key materials in local languages
- Targeted seminars for business



THANK YOU

QUESTIONS AND DISCUSSION

[Shivani.kannabhiran@oecd.org](mailto:Shivani.kannabhiran@oecd.org)

[mneguidelines.oecd.org](http://mneguidelines.oecd.org)

# **PRESENTER: MRS CINARALP, ETRMA**

Mrs Cinaralp joined the Rubber Industry in 1991 where she exercised several functions towards the European Institutions.

Since 2006, Mrs. Cinaralp is leading the ETRMA (European Tyre & Rubber Manufacturers' Association).

Fazilet Cinaralp has an extensive experience in environmental and sustainability issues.

She is also member of several Advisory/Expert Groups of the European Commission (EIP on Raw Materials High Level Group; Raw Materials Supply Group; Expert Group Label Alignment, Roadworthiness Committee).

# Natural Rubber

## A strategic material for Europe Situation and Market Perspectives

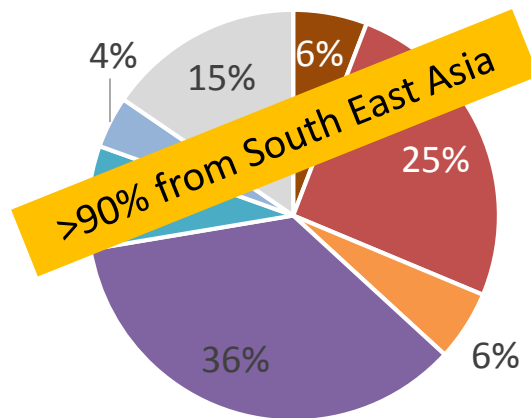
Fazilet Cinaralp  
Secretary General



*European Commission Raw Materials Week 2018  
Natural Rubber session 15 November 2018 – Hotel Le Plaza, Brussels*

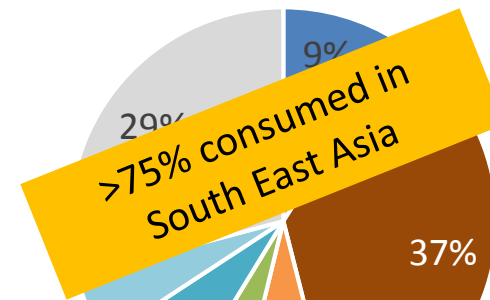
# Natural rubber production / consumption / export to EU - key countries

Source: Eurostat & IRSG/000 tonnes



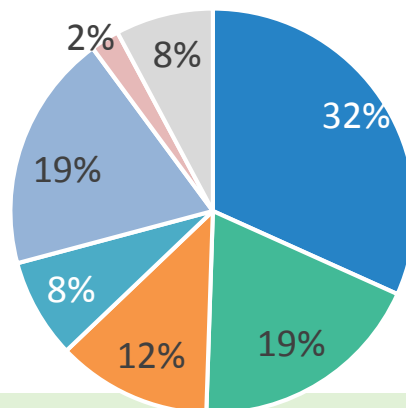
**Production  
Natural Rubber**

■ China  
■ Indonesia  
■ Malaysia



**Consumption  
Natural Rubber**

■ EU 28  
■ China  
■ India  
■ Japan  
■ USA



**EU Imports  
of Natural Rubber**

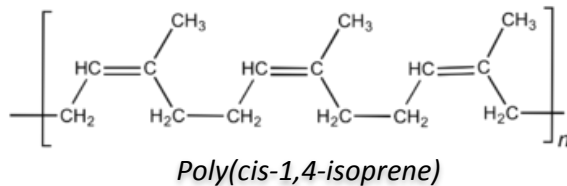
■ Indonesia  
■ Thailand  
■ Malaysia



# ***NATURAL RUBBER***

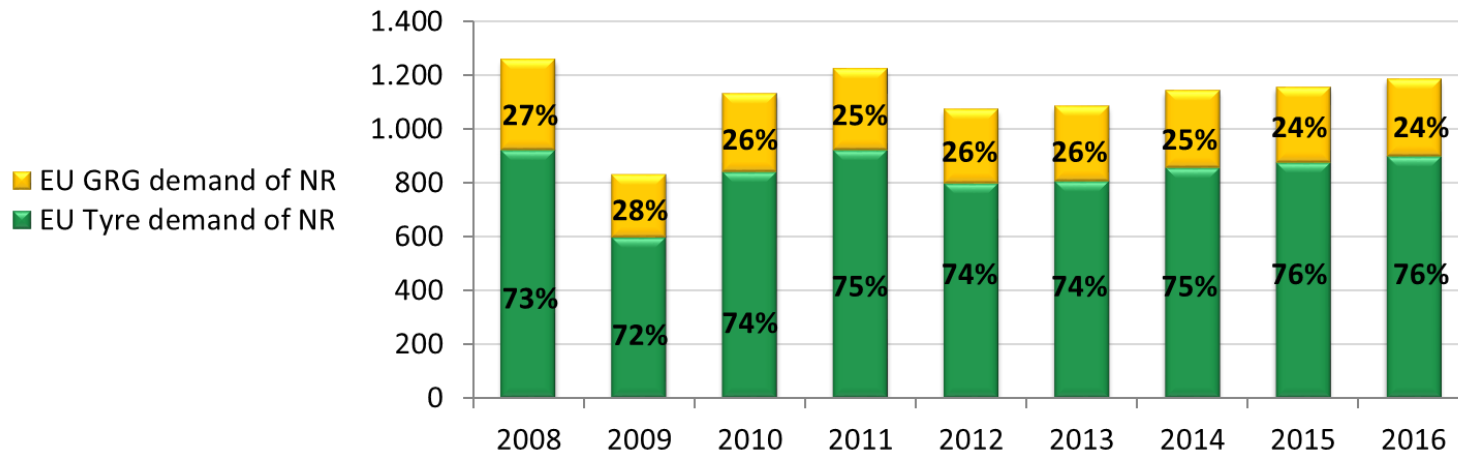
## ***STRATEGIC for Automotive Industry***

- **Unique performance characteristics** have made NR the source of choice in many specialized applications – in the tyre industry in particular



### Unique properties of NR

- 1 • Resilience
- 2 • tensile strength
- 3 • abrasion resistance
- 4 • low internal heating





# IN EUROPE TYRES...WHERE ARE WE?

Source: ETRMA statistics booklet 2017- Situation at Jan. 2017

The European Tyre Industry:

86 Plants across Europe;

200,000 people directly employed;  
up to 800,000 jobs provided indirectly

Tyres produced in the European  
plants ~20% of world supply!

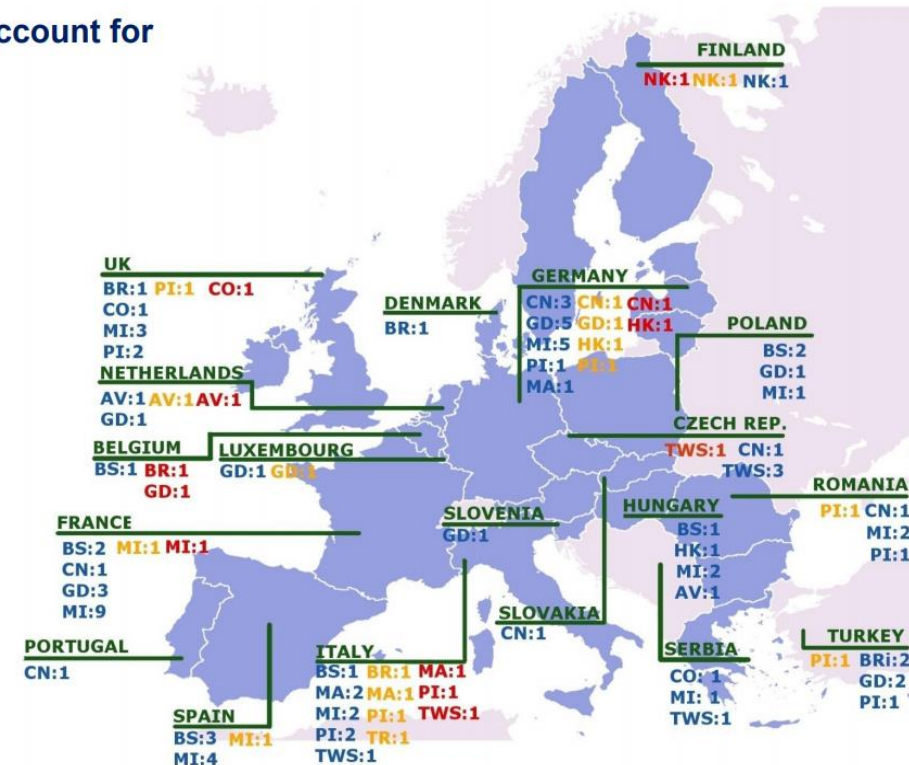
New tyre plants investments include:

- Sumitomo (Jp)
- Nexen (Ko)
- Linglong (Chi)

ETRMA members account for

- 86 tyre plants
- 16 R&D centres
- 11 HQs

AV=Apollo Vredestein  
BS=Bridgestone  
BRi=Brisa  
CN=Continental  
CO=Cooper  
GD=Goodyear Dunlop  
HK=Hankook  
MA=Marangoni  
MI=Michelin  
NK=Nokian  
PI=Pirelli  
TWS= Trelleborg Wheel Systems



# Challenging replaceability

NR is a renewable resource; untapped potential for carbon storage

NR ↔ SR **interchangeability limited** by technical performance

- superior resistance to chunking, excellent tear properties
- low heat generation during use
- excellent mechanical properties

Natural Rubber  
advantage

Interchangeability of Natural and Synthetic Rubbers did not vary significantly over the last twenty years due to technical constraints

The scope for NR/SR substitution in the tyre industry is **less than 10%**.

# Unmatched dependency Sourcing inflexibility

Natural Rubber comes only from hevea brasiliensis

i.e. South-East Asia (91%), where the three major producing countries (Indonesia, Malaysia, Thailand) operate in oligopolistic structure (IrCo)

Weak equilibrium between offer and demand and high price volatility, hence risk of supply deficits

Diagram 7.1: Supply surplus/deficit base case, 2010-2030

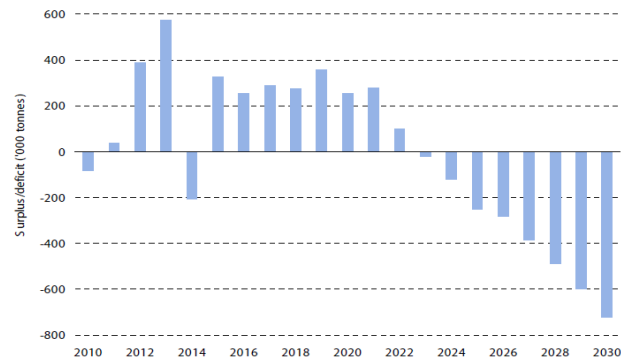
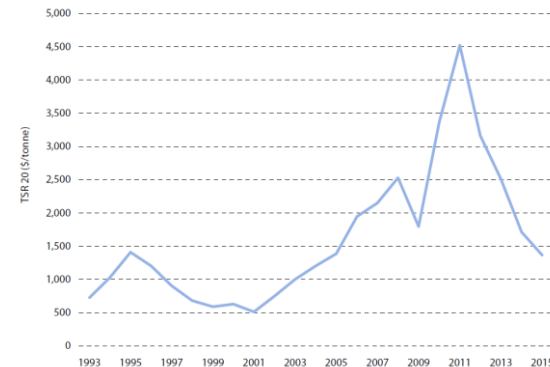


Diagram 5.2: Natural rubber prices, 1993-2015

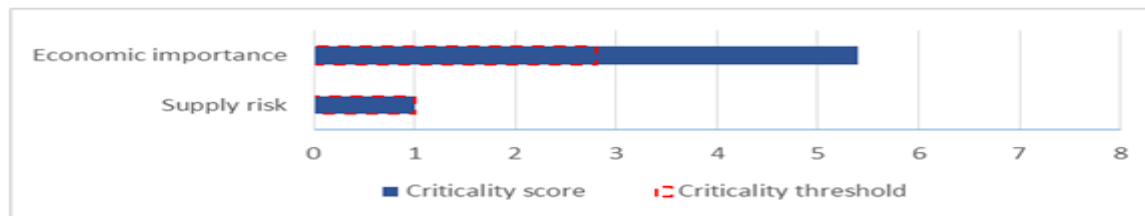


# NATURAL RUBBER

## *critical* for the EU

### Key facts and figures

<b>Material name</b>	Natural Rubber	<b>World/EU production (tonnes)<sup>1</sup></b>	11,965,000/0
<b>Parent group (where applicable)</b>	N/A	<b>EU import reliance (%)<sup>1</sup></b>	100%
<b>Life cycle stage assessed</b>	Extraction	<b>Substitution index for supply risk [SI (SR)]<sup>1</sup></b>	0.92
<b>Economic importance (EI) (2017)</b>	5.4	<b>Substitution Index for economic importance [SI(EI)]<sup>1</sup></b>	0.92
<b>Supply risk (SR) (2017)</b>	1.0	<b>End of life recycling input rate (EOL-RIR)</b>	1%
<b>Abiotic or biotic</b>	Biotic	<b>Major end uses in the EU<sup>1</sup></b>	Automotive (75%), furniture (12%), sportswear/shoes (5%), Machinery (4%)
<b>Main product, co-product or by-product</b>	Main product	<b>Major world producers<sup>1</sup></b>	Thailand (32%), Indonesia (26%), Vietnam (8%), India (8%)



**2017**  
Critical



# **PRESENTER: MR PINIZZOTTO, INTERNATIONAL RUBBER STUDY GROUP**

Mr Pinizzotto is the Secretary General of the International Rubber Study Group (IRSG), an intergovernmental organisation with the main objectives of improving the transparency in the world rubber market and strengthening the international cooperation on rubber issues.

Salvatore Pinizzotto has vast experience in the commodities market with expertise in market research and analysis of environmental and economic trends on a regional and global basis.



# TRANSPARENCY ON THE NATURAL RUBBER MARKET

Mr Salvatore Pinizzotto  
International Rubber Study Group (IRSG)

**EU Raw Materials Week – Natural Rubber Session**  
**Sustainable & Critical: Natural Rubber and its future**  
**15<sup>th</sup> November 2018, Brussels**



# ABOUT INTERNATIONAL RUBBER STUDY GROUP

- **Who are we?**
- Established in 1944 as an **inter-governmental** organisation, headquartered in London, UK
- As of July 2008, the Group has been based in **Singapore**.
- IRSG is the **forum for discussion** of matters affecting the supply and demand for natural as well as synthetic rubber.
- Authoritative source of statistical **data and analysis** for all aspects of the rubber industry.
- IRSG has 36 **member countries**.




IRSG has a network of **more than 100 Industry Members**

# IRSG IS THE GLOBAL PLATFORM FOR THE RUBBER SECTOR

42



## SNR-I: VOLUNTARY AND COLLABORATIVE INDUSTRY PROJECT DEVELOPED UNDER THE FRAMEWORK OF IRSG

The mission of the  is to establish the sustainability of the natural rubber value chain

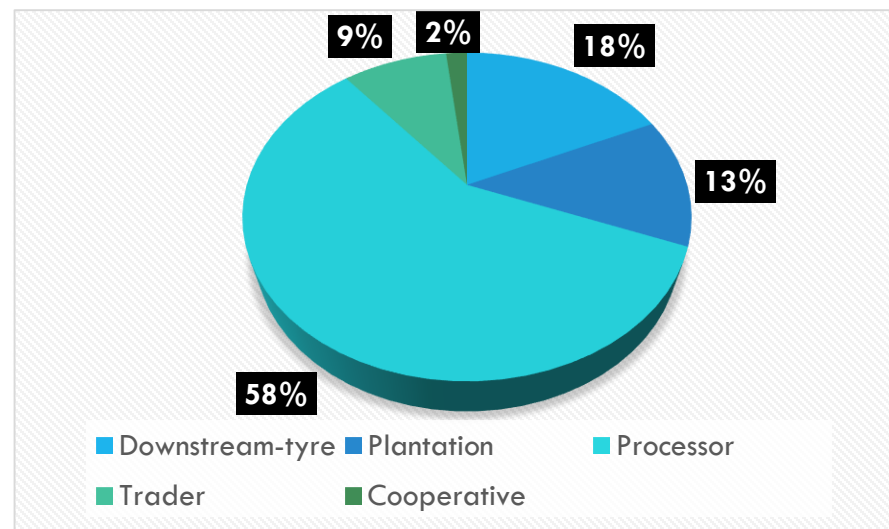
## Self-declaration Status

### ► Geographical coverage of self-declared registrants:

**Brazil, Cameroon, China, Colombia, Côte d'Ivoire, EU, Gabon, Ghana, Guatemala, India, Indonesia, Japan, Korea, Malaysia, Nigeria, Panama, Taiwan, Thailand**

### ► 55 Self-declarations

- **Downstream-tyre: 10**
- **Plantation: 7**
- **Processor: 32**
- **Trader: 5**
- **Cooperative: 1**

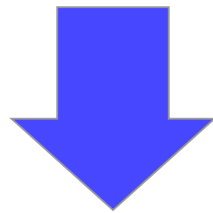


# IRSG is working on a wider Sustainability Agenda



# Increase Market Transparency is the main mandate for IRSG

**Market  
Transparency**



**Availability of Relevant Market Information to  
Market Participants**



# Why Market Transparency ?

- ❖ **Increases the efficiency of markets**
- ❖ **Reduces information asymmetries**
- ❖ **Supports evidence-based policy-making**
- ❖ **Helps market participants reduce uncertainty**
- ❖ **Allows better adoption of their production to market signals.**
- ❖ **Improve access to finance: robust business plans and better appreciation of market risks by financial institutions.**



# Main requirements for Market Data

## ❖ *Accessibility*

The information has to be accessible to all users along the rubber value chain. The increased availability of information technologies make it easier to disseminate information however there are language barriers and different forms and types of information provided.

## ❖ *Accuracy*

The information has to be accurate and reliable. This require clear definitions and the methodology should be consistent in time. Quality control is an important issue.

## ❖ *Timeliness*

The information has to be available in a reasonable time for the operator to respond to it. The time between the collection of data and its dissemination should be as short as possible. For policy making: harmonisation and comparability of data is more important.



# The Use of Data by Farmers

Above **12 million ha** area (estimated)

Production is predominantly from **South-East Asia**

Around 90% of holding units and **85%** production are from **smallholdings**

Average size of holdings varies from 0.5 ha- 10 ha (depending on country definition)

Wide variation in smallholders' productivity across countries

- ▶ Presence of **multiple intermediaries** between producers and processors



# The Use of Data by Farmers (1)

- ▷ While some farmers are well equipped to understand and interpret the data others may not find it easy.
- ▷ There is a role for policy to improve the use of market information:
  - **Development of infrastructures**  
(i.e. broadband in rural areas)
  - **Provision of training for farmers**



# New Technologies for Increased Transparency

Satellite and in-situ observations (**Copernicus** for rubber)  
**More accurate information on rubber plantations extensions**  
**Assessment of the impact of climate change on rubber**

**Use of drones**

**Blockchain**

**Increase the ease of transactions in the supply chain**  
**Used as a record of natural rubber possession**



# Conclusions

- There is a need today of more market transparency along the all rubber value chain
- High consideration should be given at : **Standardisation, Representativeness, Quality of Data, Confidentiality, Timeliness**
- **New technologies** could play a strategic role to achieve a higher level of transparency
- **IRSG** is the only organisation in the rubber economy that could provide high quality solutions for a more transparent and efficient rubber market.





# WOMEN FOR RUBBER

## Photo Competition

Organised by



Supported by



Sponsored by



[www.rubberstudy.com](http://www.rubberstudy.com)

[blog.rubberstudy.com](http://blog.rubberstudy.com)

*Submission Closing Date*  
31 January 2019, 11:59 pm (GMT+8)





[wrs2019.rubberstudy.com](http://wrs2019.rubberstudy.com)

Organised by



Strategic Partner



# Thanks for your attention

Mr Salvatore Pinizzotto  
International Rubber Study Group  
E-mail: [salvatore@rubberstudy.com](mailto:salvatore@rubberstudy.com)



# **PRESENTER: MR DEGUINE, GLOBAL PLATFORM FOR SUSTAINABLE NATURAL RUBBER**

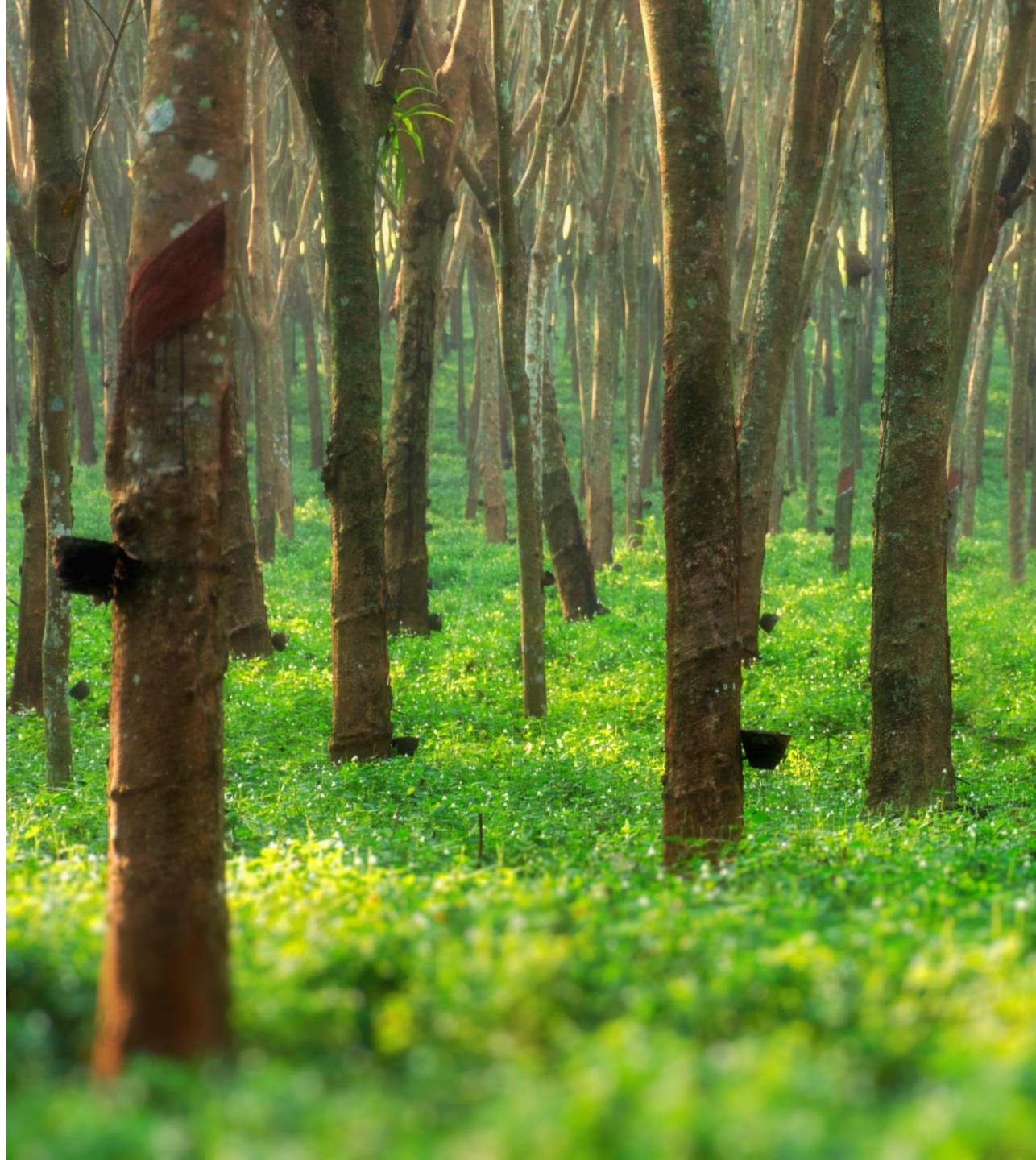
Hervé Deguine is in charge of relations with NGOs and civil society organisations with Michelin's Public Affairs Department.

Historian by training, he has a diploma from the Institut d'études politiques de Paris and an MBA from INSEAD.

In the past he has been a history teacher, a journalist and a publisher. He now specialises in societal issues and human rights management.



# The Global Platform for Sustainable Natural Rubber





# Leading the way

## Vision

*To lead improvements in the socio-economic and environmental performance of the natural rubber value chain*

## Mission

*A fair, equitable and environmentally sound natural rubber value chain*





# Sustainable Natural Rubber Principles

1. Forest sustainability
2. Water management
3. Land rights (FPIC)
4. Labor rights
5. Human rights
6. Equity
7. Traceability
8. Transparent reporting
9. Anti-corruption
10. Grievance mechanism
11. Auditing protocols
12. Training & Education



# An operational base

- Based in Singapore – a key economic center of the industry
- Funding for the first two years of operation
- Membership opened since Oct 25<sup>th</sup>, 2018.
- Hard launch in Singapore on March 2019.



# **PRESENTER: MR SORENSEN, KEYGENE**

Mr Sorensen is Vice-President New business of KeyGene N.V. He is responsible for the development of novel products and novel business opportunities for KeyGene.

Translating market demands into research opportunities and innovative solutions, as well as translating innovative research results into valuable business opportunities is the main focus of this position.

He has a Master of Science at the Agricultural University of Copenhagen; Denmark and finished the Young Management Programme of the Universiteit Nyenrode and the New Business Development programme of the University of Rotterdam.

# Dandelion Rubber

## A novel source of Natural Rubber for Europe



 **DRIVE4EU**

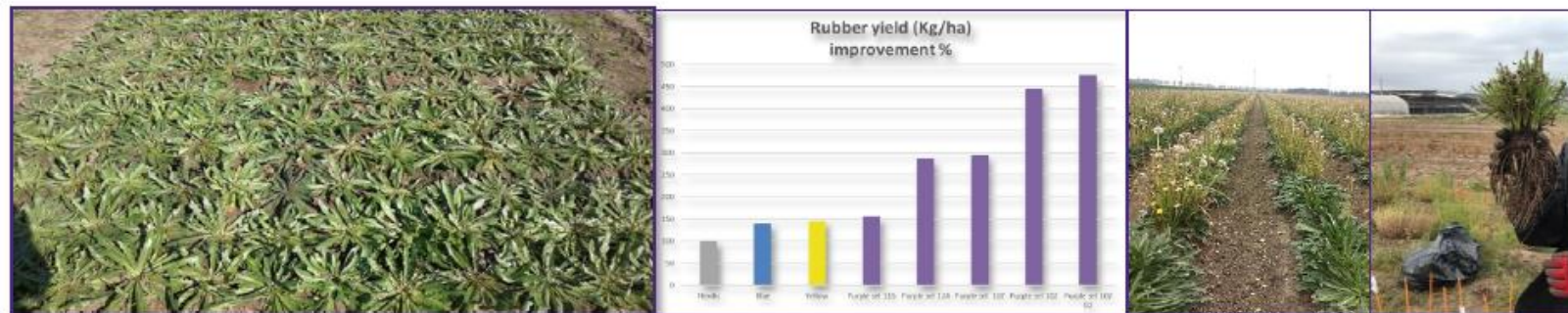
 **KeyGene**



# Current Status Rubber Dandelion

## Rubber dandelion *varieties* & *seeds*

Stable novel varieties have been developed, currently yielding ~3500 Kg DM root per ha/year. Novel varieties have been developed with ~10% rubber content (DM) in the roots. Continued variety development at KeyGene with a target yield of 750 Kg rubber per ha.



Seed production, cleaning, pelleting processes established.





# Current Status Rubber Dandelion

## Rubber dandelion **root** production

Methods for drilling seeds, weed control, fertilizer and harvesting of roots have been established. Improvements expected by higher density of planting and improved varieties. Currently ca 10 ha are grown scaling to 1000 ha is feasible immediately.



# Current Status Rubber Dandelion

## Rubber and inulin **extraction**

Method for extracting natural rubber (and inulin) from dandelion roots has been established (and improved). Cost efficient, water extraction based and scalable process with low energy requirement is available. Purity of the extracted rubber with this method is around 85%. Extraction efficiency is around 90%.





# Current Status Rubber Dandelion

## Rubber *application* testing

Car and bicycle tires have been produced tested and performance is very good. For more specialized applications the purity of the rubber needs to be a higher then the current 85%. Pure natural rubber from dandelions has excellent quality properties. Equal tensile strength and elongation as for Hevea rubber, high hardness, equal rolling resistance, better grip.





# Rubber dandelion crop in Europe

## Forward looking and acknowledgements

The process steps for a dandelion rubber production chain have been demonstrated. Prospects are promising for Incremental increase of efficiencies over the next years. This will only be realized if financial resources will be made available for upscaling and necessary improvements.



Thanks to  
DRIVE4EU  
partners



# Rubber dandelion crop in Europe

## Forward looking

A number of similar activities across the planet are moving forward as well, confirming the potential of the rubber dandelion as a high potential second source of natural rubber.



1940's Soviet Union,  
USA, Germany, UK,  
Spain, a.s.o.



2018



# **PRESENTER: MR DORGET, CTTM**

Mr Dorget is an engineer with a PhD in Mechanics. Since 2003, he works for the CTTM and is Responsible for the Materials Department. He manages the Department and defines the strategic direction of the department.

He works in particular on natural latex from Hevea, Guayule and Dandelion. On these issues, he also co-operates with CIRAD on agronomic research.



[www.cttm-lemans.com](http://www.cttm-lemans.com)

20, rue Thalès de Milet - Technopole université - 72000 Le Mans - France - Tél. 33 (0)2 43 39 46 46 - Fax. 33 (0)2 43 39 46 47





	HEVEA	GUAYULE	KZ DANDELION / TKS
Climate	Tropical	Semi arid Mediterranean	Continental
Localisation	S. E. Asia (93%)	USA, Europe S.Africa, Australia	Kazakhstan, USA, Canada, Europe
Crop competition	Oil Palm	None	Corn, cereals
Level production	11 Millions T / Y	< 1000T / Y	<2 T/Y
Harvest	Manual, labour intensive	Mechanical	Mechanical
Yield	800-2000 kg/ha/Y	Rubber 500-1000 kg/ha/Y Resins 1000- 1200kg/ha/Y.	350-1500 kg/ha/Y
Cycle	Tapping after 6-8 Y. for 30-40 Y.	Harvest after 1-2 Y. Each year for 10-12 Y.	Harvest after 1 Y. Each year



**YULEX**  
**PANARIDUS / COOPER**  
**BRIDGESTONE**  
**ENERGYENE USA**



**CTTM / CIRAD**

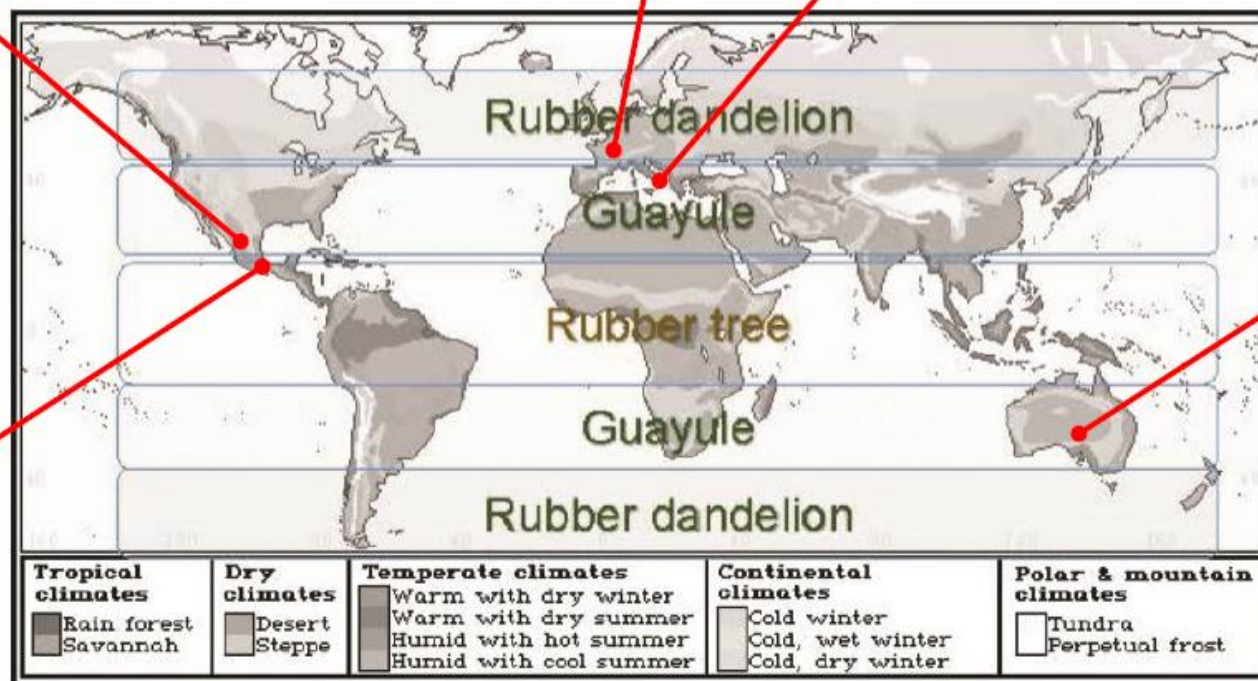
**VERSALIS / PIRELLI**



**BRIDGESTONE**



**GUAYSS**



**ENERGYENE AU**



Figure 2. Global climate map, which indicates approximate geographical ranges of the Hevea rubber tree, guayule and rubber dandelion.

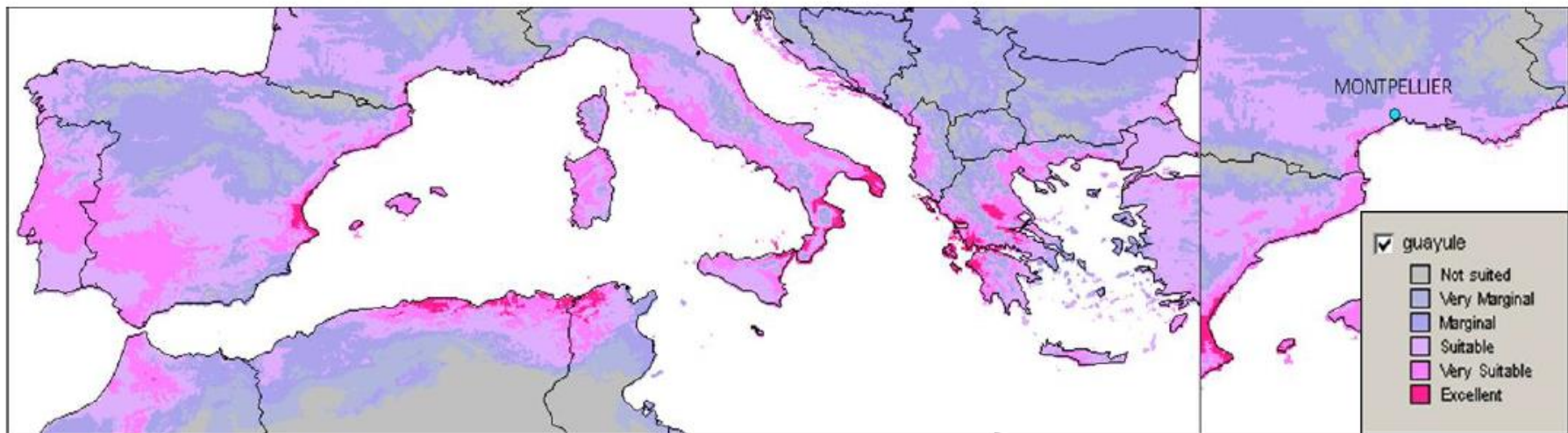


➤ **Dandelion : North & Continental Europe**

previous EU-PEARLS project... DRIVE4EU & TARAXAGUM ongoing projects

➤ **Guayule : South Europe and Mediterranean Shores**

previous EU-PEARLS project... FEADER & ADEME ongoing projects

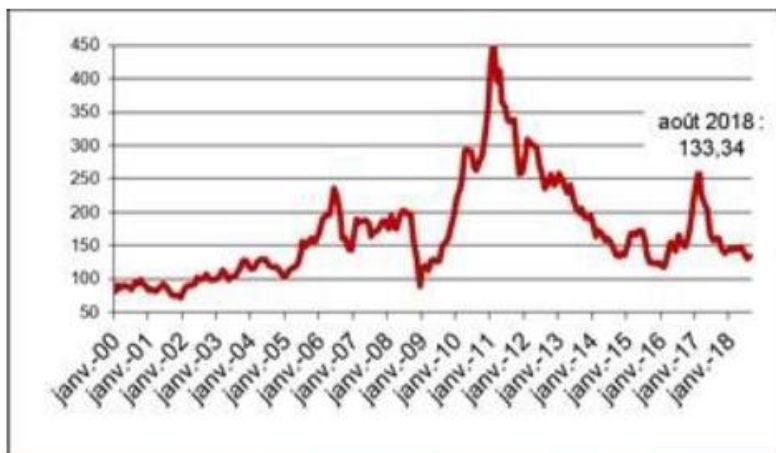
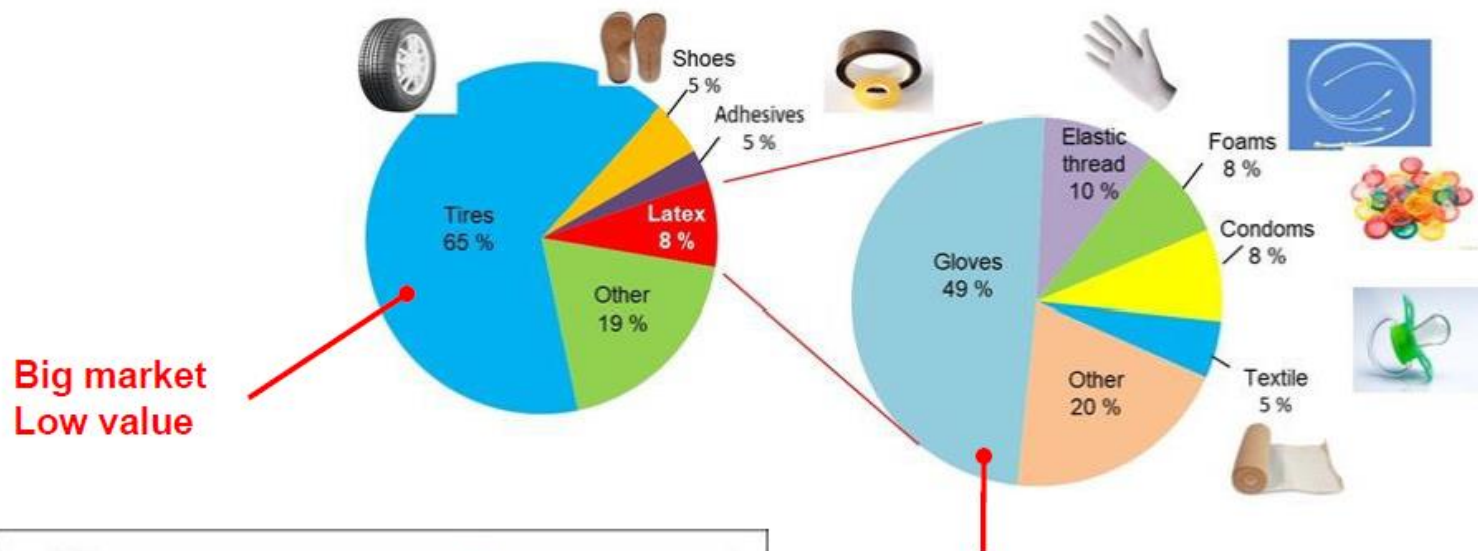




- To increase agronomical & extraction yields  
3D farming, hydroponics, under LED for dandelion.....
- To find niche market with highest market value  
selling guayule latex rather than rubber.....
- To progress in the value chain  
selling tires / gloves rather than rubber / latex.....
- A bio-refinery strategy : co products valorization  
latex / rubber / resin / bagasse...rubber / inulin ...

**In order to reach profitability and sustainability !**

# Guayule Business model



In order to reach  
a **sustainable** and **profitable**  
business

## Be focused on latex valorization:

1. Because of the hypoallergenic<sup>1</sup> property of guayule versus hevea
2. Because of the stretching property<sup>2</sup> of guayule versus hevea

## Two steep strategy :

1. An European agronomical production : cf. FEADER project  
→ few hectares
1. To build a latex extraction pilot : cf. ADEME project  
→ around 100 Kg / batch

<sup>1</sup> R.G.Hamilton & K.Cornish, "Immunogenicity studies of guayule and guayule latex in occupationally exposed workers", *Industrial Crops and products*, 31, **2010**, 197-201

<sup>2</sup> IKEDA & al., « Strain-Induced Crystallization Behaviours of Natural Rubbers from Guayule and Rubber Dandelion Revealed by Simultaneous Time-Resolved WAXD/Tensile Measurements: Indispensable Function for Sustainable Resources", *RSC Adv.*, **2016**



## FEADER project In Languedoc Roussillon region







3600 plants from 5 varieties

→ few hectares





## FIGUALEX : Filière Guayule Française de Latex

- IMECA, CIRAD, CTTM, MAPA, REGELTEX
- 3 years, 2017-2020
- 560 K€ budget / 383 K€ subsidies



**ADEME**

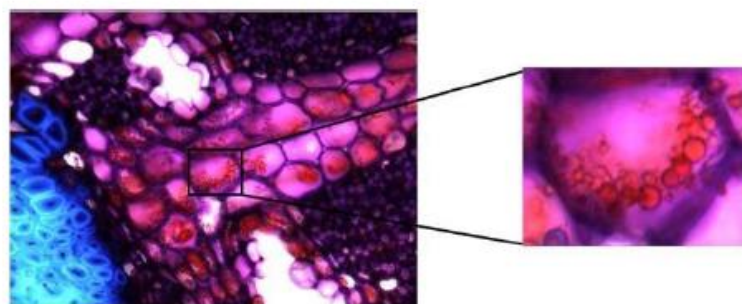


Agence de l'Environnement  
et de la Maîtrise de l'Energie

➔ Building an 100 Kg / batch  
guayule latex extraction pilot



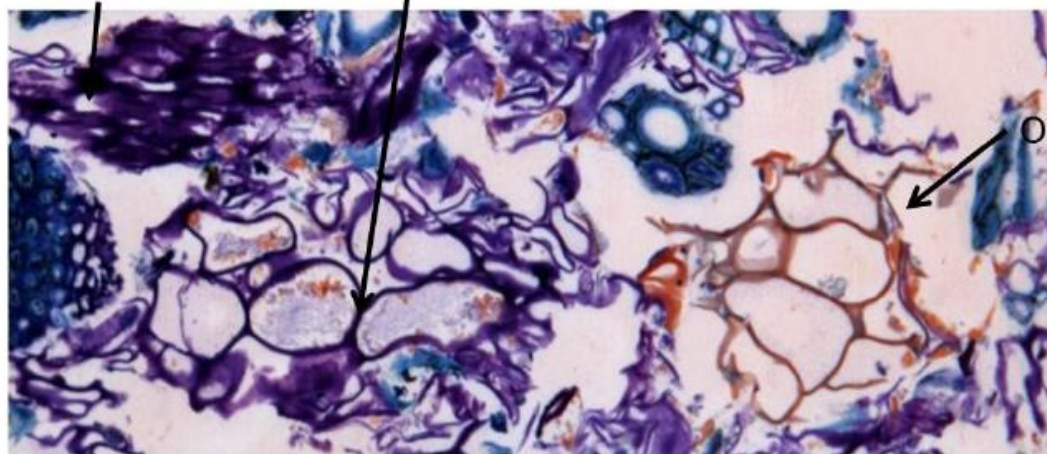
# Extracted with our specific process



PI particles  
(red balls, points)

Cellular debris

Intact cell



Open cell

- A Water based, **patented** and mobile process
- That gives a high molecular weight polyisoprene

# A new glove technology is coming !?

More **comfortable** because thinner !

**Safer** because hypoallergenic !

More **sustainable** !

## It is made of **guayule latex**



A crops which gives a  
**Natural European  
Hypoallergenic  
Flexible Latex**



2018: Innovation Bio Camp  
NNFCC contribution



2019: technical demo scale and economical validation  
business model and business plan  
financial strategy

2020: large scale plantation & flagship development

2021: hectare multiplication & flagship construction

2022: first industrial **production & commercialisation**







# CONTACTS ORGANISERS:



European Tyre & Rubber  
Manufacturers' Association

Mrs Fazilet Cinaralp  
Secretary General  
Avenue des Arts 2  
1120 Brussels  
Belgium

[info@etrma.org](mailto:info@etrma.org)

[www.etrma.org](http://www.etrma.org)

International Rubber  
Study Group



Mr Salvatore Pinizzotto  
Secretary General  
51 Changi Business Park Central 2  
Unit #06 – 04/05 The Signature  
Singapore 486066

[secgen@rubberstudy.com](mailto:secgen@rubberstudy.com)

<http://www.rubberstudy.com>