

# INFLUENCE OF BIO-ECONOMY ON THE DEVELOPMENT OF WOOD AND WOOD PRODUCTS CONSUMPTION

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# INTRODUCTION

**Wood** is used as a raw material to produce a wide range of products:

- in the primary woodworking industry:
  - mechanical processing
  - chemical processing
- in the secondary wood processing industry
- wood, wood products and by-products are used for energy purposes as fuels

# INTRODUCTION

This paper deals with the analysis of the wood consumption from point of view wood production, export and import wood, the market development of this commodities and influence of bio-economy.

The emphasis in industries using wood-based biomass as raw material is moving toward the **green economy**.

# INTRODUCTION

- The **bio-economy** generates new economic growth and wellbeing as well as responds to major global phenomena such as the challenges presented by climate change.
- For **companies**, the bio-economy brings new business and opportunity to produce higher value added products.
- For **consumers**, the bio-economy means an opportunity to choose a more sustainable lifestyle.

**Bio-economy** implies a shift from fossil resources (mainly oil) to renewable resources (biomass).

- ❖ This means that development and production of new products from biomass must happen in a sustainable manner.
- ❖ Compared to earlier use of biological resources, today's bio-resources from farming, forestry and fishery will be used in technologically advanced productions.
- ❖ This will provide a wider range of products and create new jobs.

# BIO-ECONOMY

The **EU defines** bio-economy as “sustainable production and processing of biomass for food, health products, fibre products, industry, and energy”.

The **U.S. definition** encompasses health, agriculture, bioenergy, and food within the bio-economy, while the EU definition encompasses food, agriculture, forestry, and marine resources.

There is a shift in the EU from researching the content of biological resources to the optimization of industrialized processes.

# BIO-ECONOMY

"**Bio-economy**" is possible define as "the knowledge" based production and use of renewable resources to provide products, processes and services to all sectors of future sustainable economy".

- A sustainable bio-economy needs the close cooperation between economical areas which usually do not work together (agriculture and forestry, food industry, chemical industry, plastics and plastic processing industry, wood processing industry, construction industry, energy industry and machinery and plant engineering).

# BIO-ECONOMY

Current research is looking at sustainable utilisation of natural resources. All products are part of a biological, chemical and physical cycle, and reused time after time.

- This is how a **circular** economy works, as opposed to our current economy, which is **linear**.
- **Circular** economy focuses on extensive use of renewable materials, renewable energy, and to avoid wasting resources by exploiting them in the best possible manner.



# BIO-ECONOMY

The bio-economy utilizes new knowledge of life sciences to produce a wide range of products from the living organisms and the waste they generate, and is a major component of sustainable development.

In pursuing these objectives and developing a strong bio-economy, agriculture, forestry, wood processing industries and resource economics research is essential to the development of policies that will guide the evolution of the bio-economy.

# METHODS

The analytic and synthetic methods were used to assess the market situation. Analysis of foreign market development was done based on the data from EUROSTAT, FAOSTAT, statistical offices and institutes of the international organizations selected countries regarding productions, exports, imports, consumptions and the most significant countries with which renewable resources, mainly wood solid biomass are traded. Secondary sources of the data from reports of international organizations and associations referring to wood biomass were also used in this paper.

# RESULTS AND DISCUSSION

The forestry and wood industry has been operating according to the principles of the circular economy for a long time already. Wood is a renewable resource and products made from it are recyclable. Wood processing side streams are further processed via industrial symbioses into high-grade products.

Wood is surrounding us in our daily life. However, do we actually notice it? Have you ever considered how much wood we actually use?

# RESULTS AND DISCUSSION

Over 60 per cent of the world's forests – 2.4 billion hectares – are primarily or partially used for the production of wood and non-wood forest products.

Wood fuel, including charcoal, accounts for about half of total global roundwood production, and industrial roundwood for the other half. Most wood fuel is used in its country of production, mainly in rural areas and in developing countries, for heating and cooking.

Forests fulfil far more functions than simply the production of wood and non-wood products. Indeed, they are vital to achieving global sustainable development.

# RESULTS AND DISCUSSION

Policy harmonization still needs to allow room for each country situation in terms of wood availability and utilization. The emphasis in industries using wood-based biomass as raw material is moving toward the green economy. New opportunities are arising to versatile use of wood biomass and side streams. Renewal of the wood products is based on knowledge that is created by research, development and innovation processes. The bio-economy generates new economic growth and wellbeing as well as responds to major global phenomena such as the challenges presented by climate change.

Fig. 1 Global production of wood fuel, in billion cub. m, 2000–16

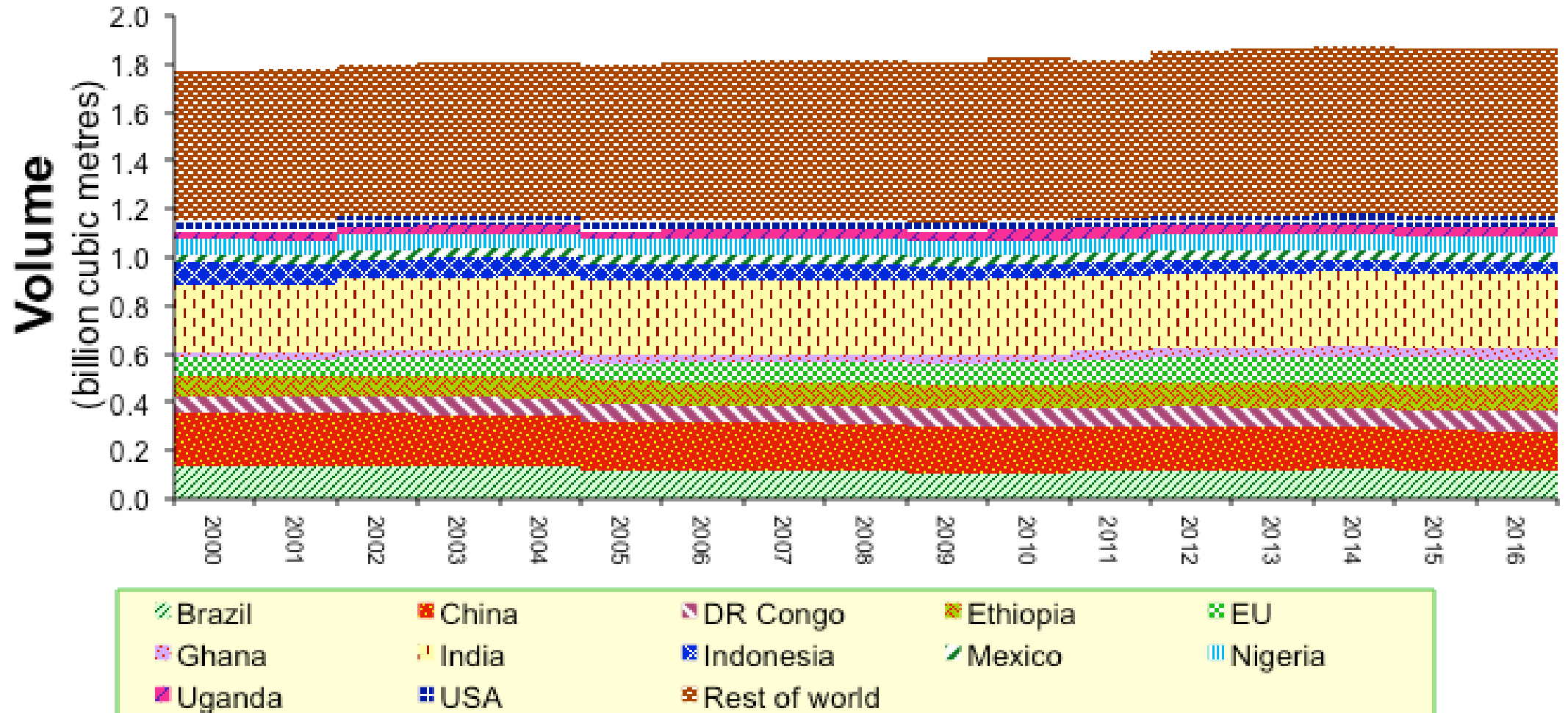


Fig. 2 Global production of wood products (excluding paper and paper raw materials), in billion cub. m, 2000–16

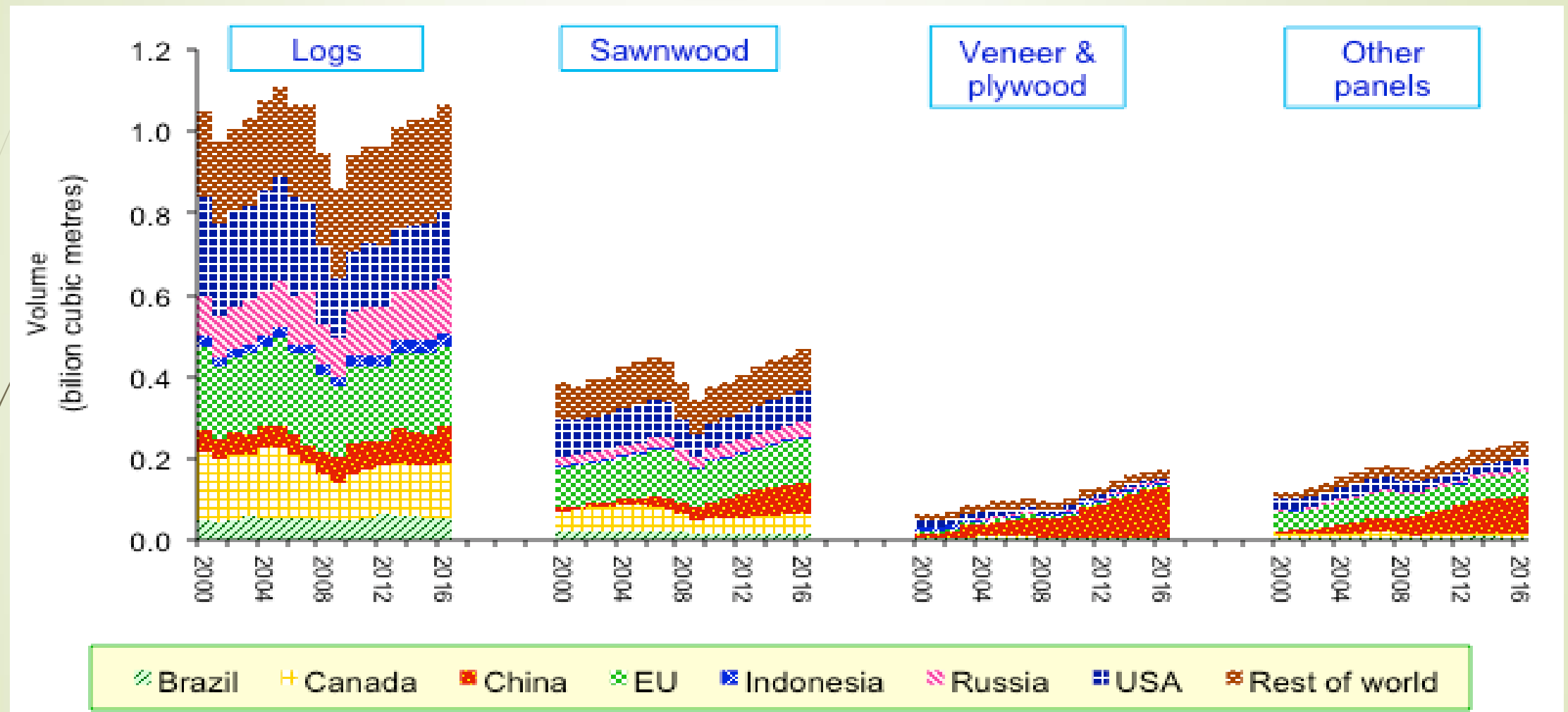
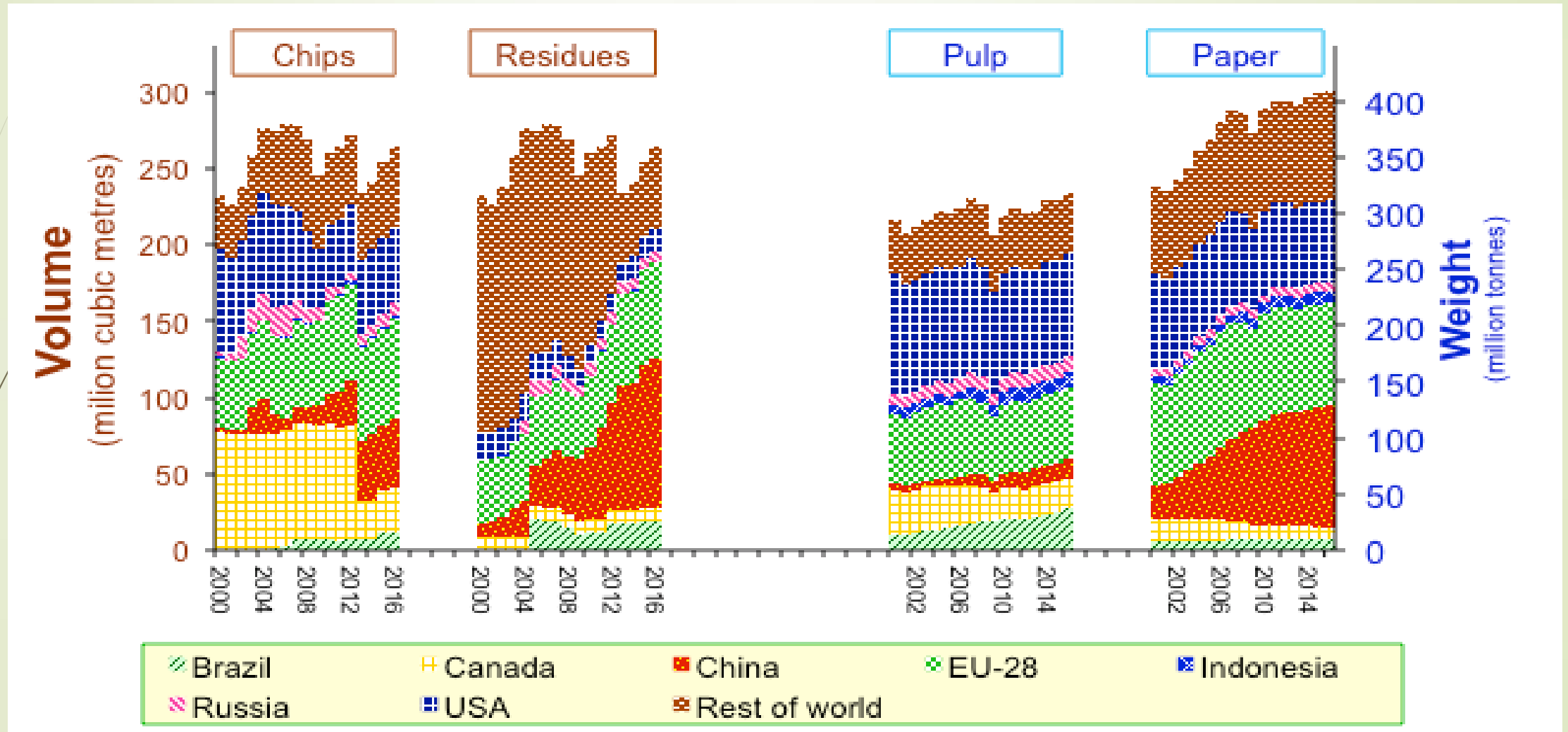


Fig. 3 Global production of paper and paper raw materials, in million cub. m, 2000–16





Tab. 1 Global production and exports of forest products in 2016

Product	Unit	Production				Exports			
		2016	Change (%) compared to:			2016	Change (%) compared to:		
			2015	2000	1980		2015	2000	1980
<b>Roundwood</b>	million m <sup>3</sup>	<b>3 737</b>	<b>1%</b>	<b>8%</b>	<b>19%</b>	<b>132</b>	<b>2%</b>	<b>11%</b>	<b>40%</b>
Wood fuel	million m <sup>3</sup>	1 863	0%	5%	11%	9	-4%	153%	
Industrial roundwood	million m <sup>3</sup>	1 874	3%	11%	30%	122	3%	7%	31%
<b>Wood pellets</b>	million tonnes	<b>29</b>	<b>6%</b>			<b>17</b>	<b>8%</b>		
<b>Sawnwood</b>	million m <sup>3</sup>	<b>468</b>	<b>3%</b>	<b>21%</b>	<b>11%</b>	<b>147</b>	<b>7%</b>	<b>28%</b>	<b>109%</b>
<b>Wood-based panels</b>	million m <sup>3</sup>	<b>416</b>	<b>4%</b>	<b>123%</b>	<b>310%</b>	<b>91</b>	<b>7%</b>	<b>60%</b>	<b>457%</b>
Veneer and plywood	million m <sup>3</sup>	174	3%	161%	296%	34	5%	56%	326%
Particleboard, OSB and fibreboard	million m <sup>3</sup>	242	5%	102%	321%	57	8%	62%	585%
<b>Wood pulp</b>	million tonnes	<b>180</b>	<b>2%</b>	<b>5%</b>	<b>43%</b>	<b>64</b>	<b>6%</b>	<b>66%</b>	<b>201%</b>
<b>Other fibre pulp</b>	million tonnes	<b>12</b>	<b>-7%</b>	<b>-19%</b>	<b>70%</b>	<b>0.4</b>	<b>-7%</b>	<b>20%</b>	<b>88%</b>
<b>Recovered paper</b>	million tonnes	<b>230</b>	<b>1%</b>	<b>60%</b>	<b>354%</b>	<b>58</b>	<b>2%</b>	<b>135%</b>	<b>953%</b>
<b>Paper and paperboard</b>	million tonnes	<b>409</b>	<b>0%</b>	<b>26%</b>	<b>142%</b>	<b>111</b>	<b>0%</b>	<b>13%</b>	<b>218%</b>
<b>Forest products value</b>	<b>US\$ billion</b>					<b>227</b>	<b>-1%</b>	<b>57%</b>	<b>301%</b>

Fig. 4 Value of global forest products exports in billion USD, 1980–2016

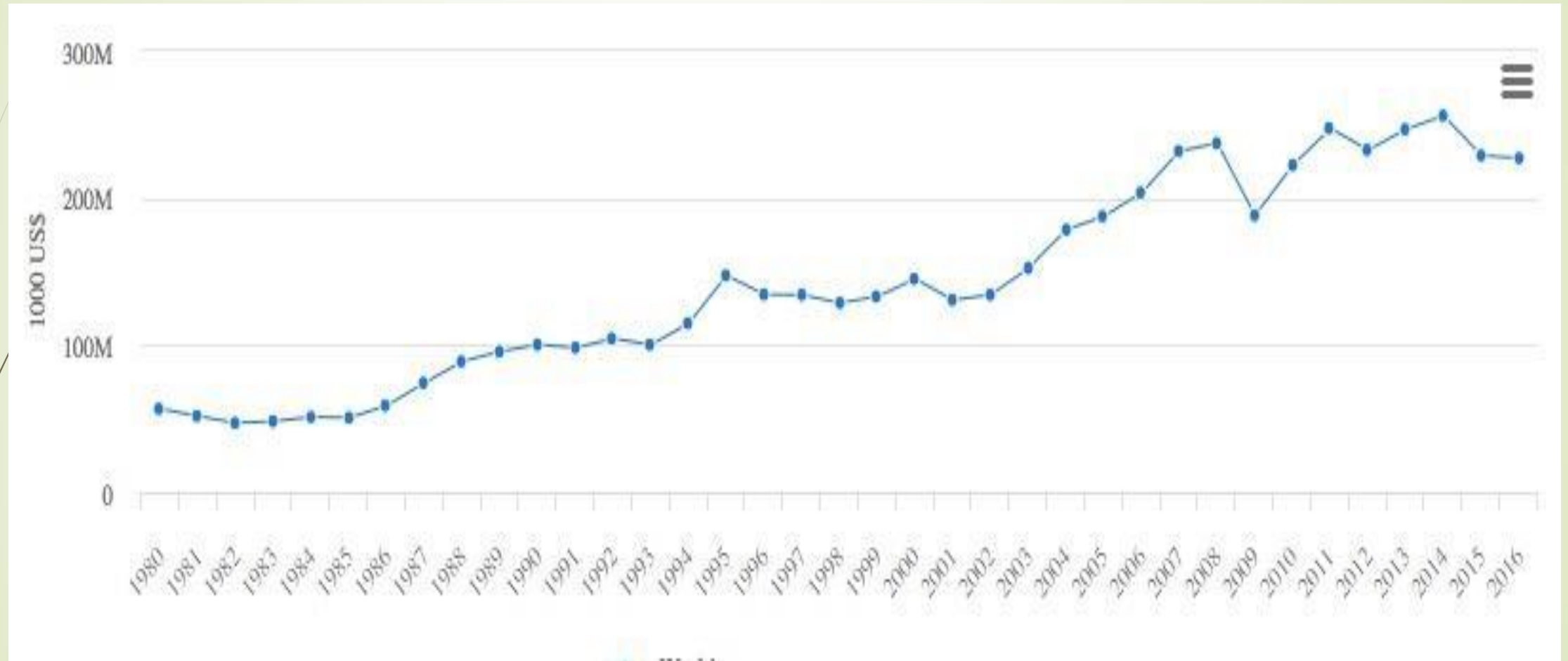


Fig. 5 Trade in timber products (excluding paper and paper raw materials), by volume in million cub m, 2000–16

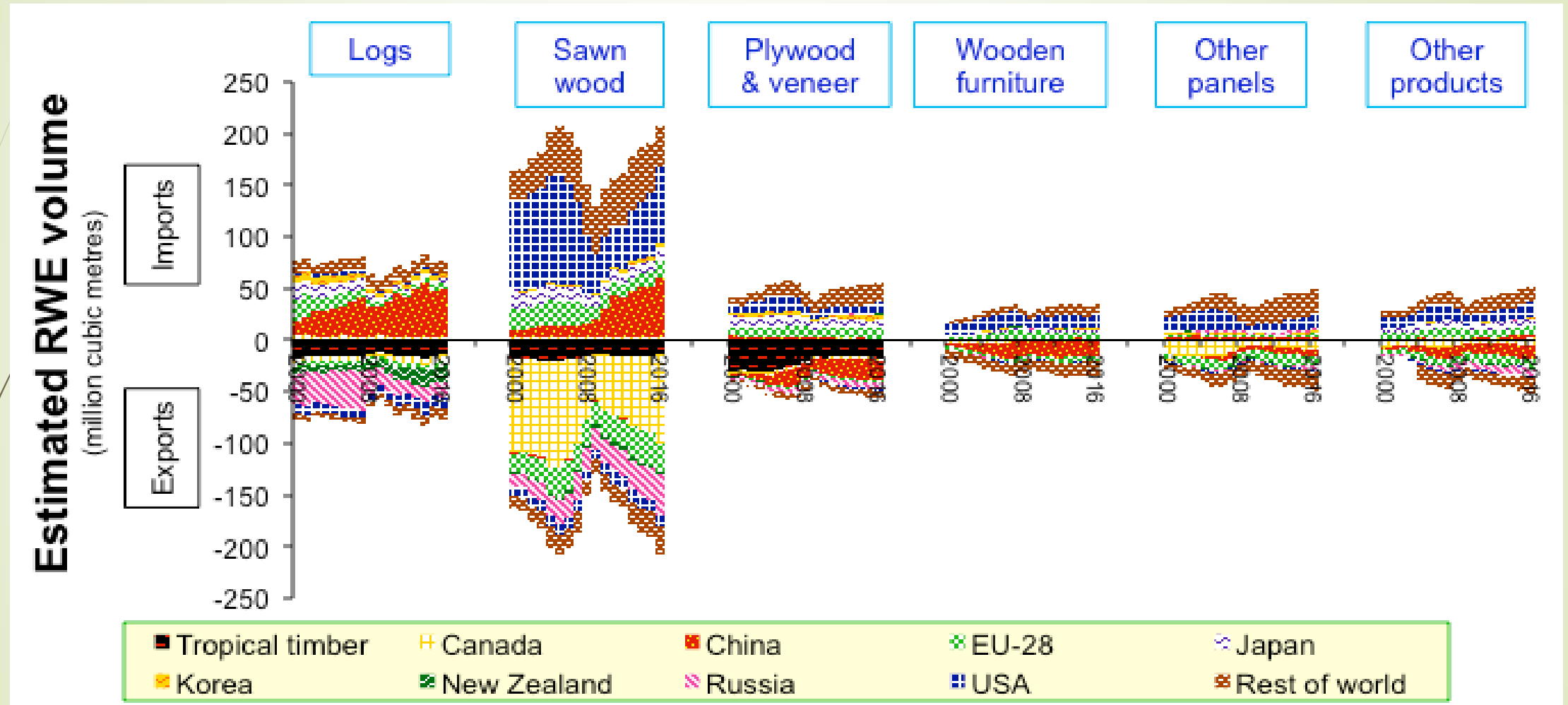


Fig. 6 Trade in timber products (excluding paper and paper raw materials), by value in billion USD, 2000–16

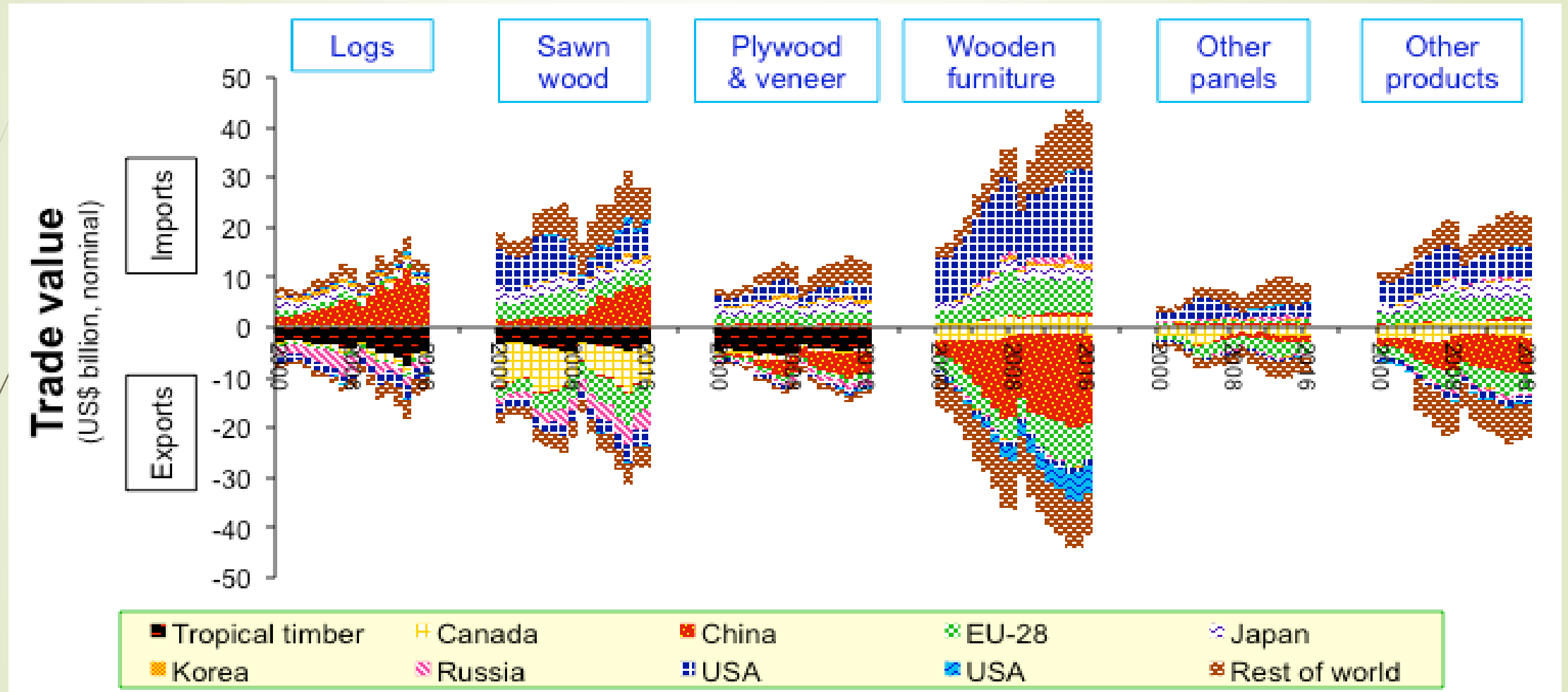


Fig. 7 Trade in paper and raw materials by volume in million cub. m, 2000–16

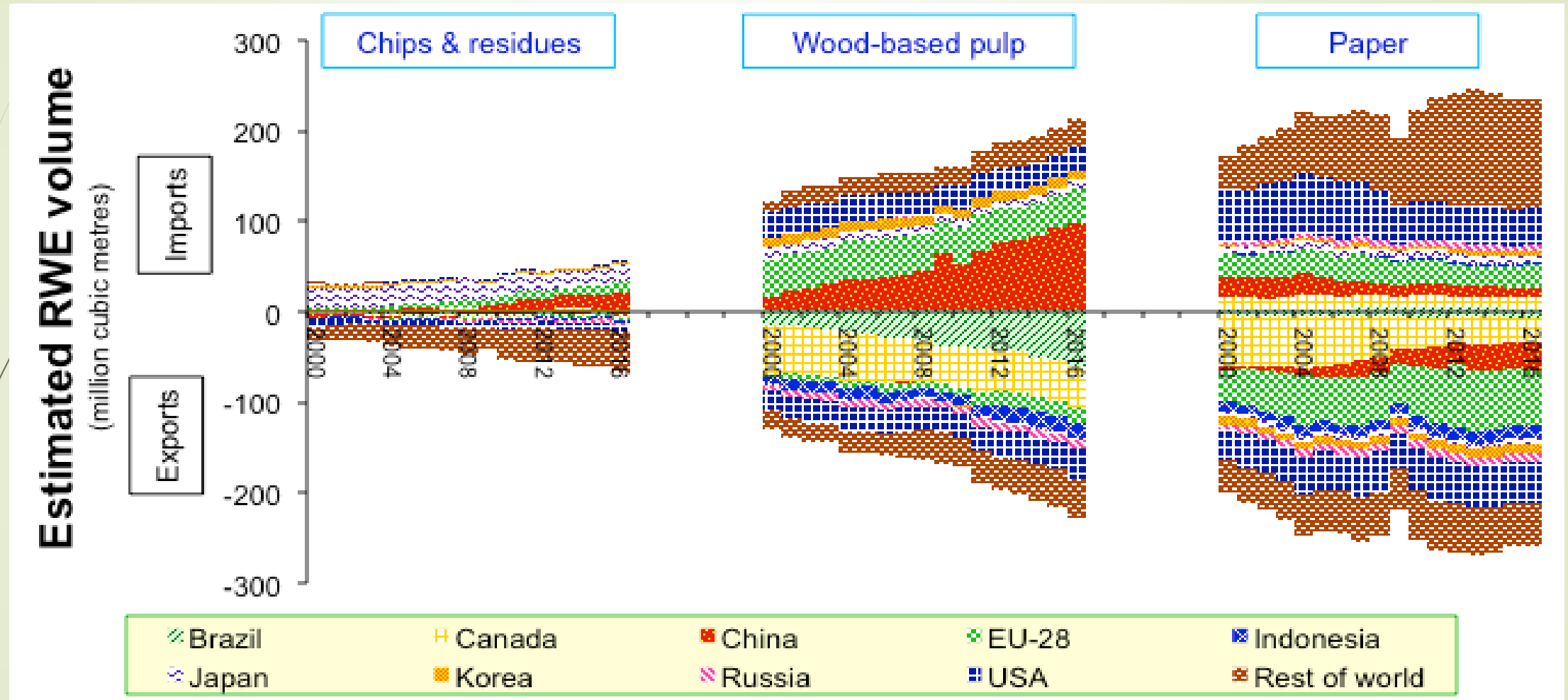


Fig. 8 Trade in paper and raw materials by value in billion USD, 2000–16

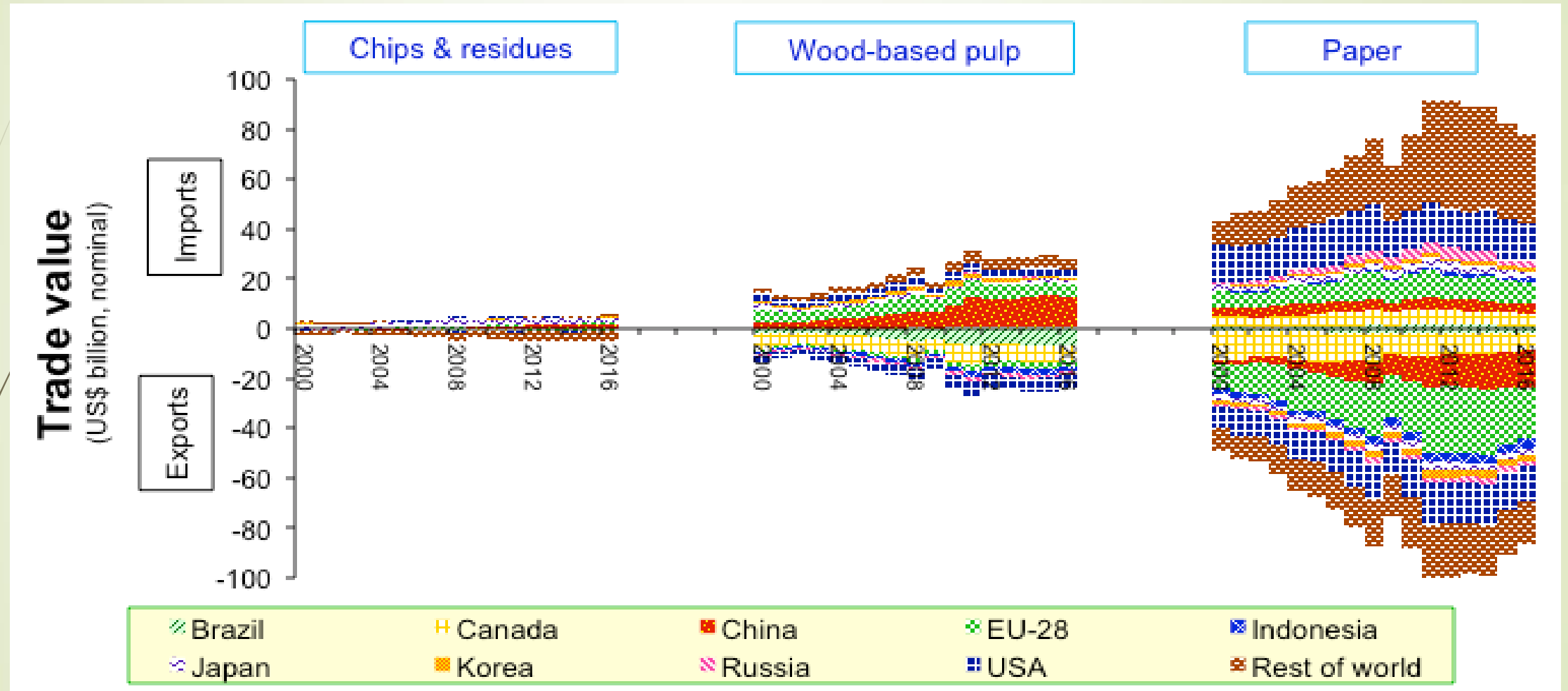


Fig. 9 Trade flows in timber sector products, 2016

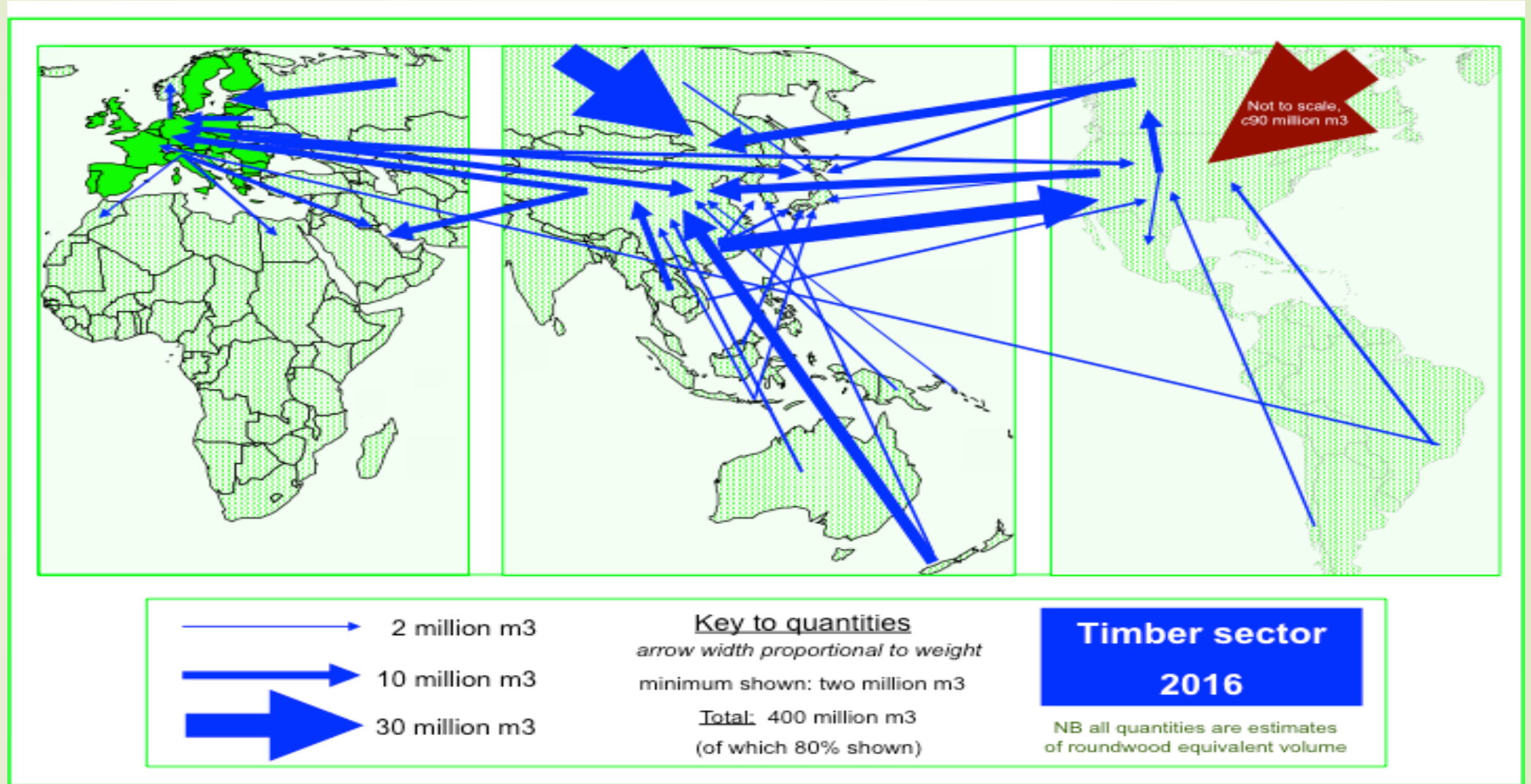


Fig. 10 Trade flows in paper sector products, 2016





Tab. 2 Major consumers of forest products, 2016 (% of global consumption)

Country	Industrial roundwood	Wood pellets	Sawnwood	Panels	Pulp for paper	Recovered paper	Paper & paperboard
Belgium		4					
Brazil	8		3		3		
Canada	8		4		4		
China	11		24	49	19	36	27
Denmark		7					
Finland	3				4		
France		4					
Germany	3	7	4	3	3	7	5
India	3				4	3	4
Indonesia	4					3	
Italy		7					3
Japan			3		5	8	6
Korea		6				4	
Russia	9			3	3		
Sweden	4	6			5		
UK		26					
US	18	7	22	11	26	13	17
Others	29	26	40	34	24	26	38

# CONCLUSION

It is possible to conclude from the analysis that the wood-based bio-economy certainly has the potential to make a substantial contribution to the transition from a fossil-based economy to a sustainable bio-based circular economy, providing certain conditions are met:

# CONCLUSION

- ❖ **The state** has to create stable, long-term framework conditions for the development of the wood-based bio-economy.
- These comprise the direct promotion of innovative applications and technologies as well as steadily increasing costs for the fossil-based competitors.
- For this, coordination with global economic developments is just as essential as ensuring long-term political approval of the transformation towards sustainability.

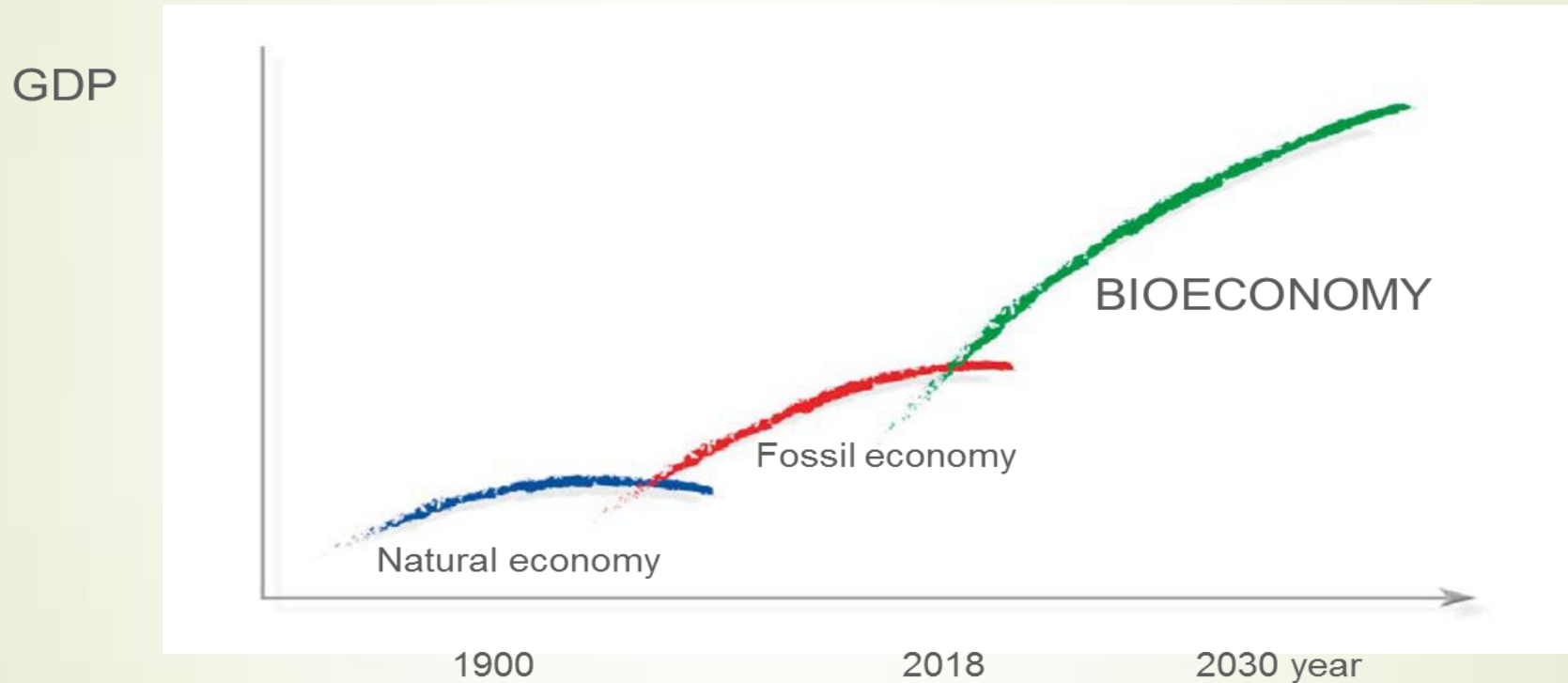
# CONCLUSION

- ❖ To pursue learning in bio-economy policy which considers the uncertainties associated with a higher demand for biomass for energy-related and material uses, and to attach great importance to the sustainability assurance of bio-based economic activity.
- ❖ Consumers have to recognise added social value in sustainable bio-based products, articulate a higher willingness to pay for those products, and are open to innovation. A consistent sustainability-oriented pricing policy, but also communication and information on the part of policy makers and businesses operating in the bio-economy.

# CONCLUSION

- ❖ Businesses have to look for long-term development opportunities, focus on innovation and quality, and form political alliances which confront the supporters of maintaining “fossil development paths” in the political sphere, too (not just on markets).
- ❖ To sketch the true field of bio-economy policy, and to create corresponding field of bio-economy law is forming.

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Thank you very much for your attention