

**INTERNATIONAL CONFERENCE ON FUTURE OF  
WOOD SCIENCE & TECHNOLOGY EDUCATION 2021  
(FWSTE2021)**

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Jointly organized by:



**The Future of Wood Science and  
Technology Education in Indonesia**

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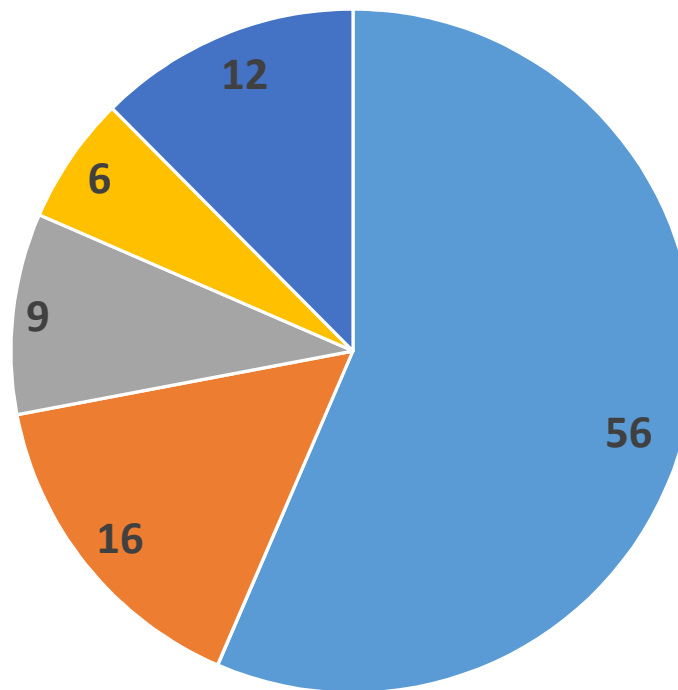
# INTRODUCTION

- IPB University established in 1963, before belonged to Indonesia University.
- Before 2000, 90% logs was supplied from natural forest.
- 2019 log supply 57.9 million m<sup>3</sup>; 85% from plantation forest (BPS 2020).
- IPB Curriculum: Forestry Faculty; Specialization: Forest Products.
- WST education considers wood characteristics: Fast growing species, young age cut (less than 10 y), SDL, much sap-wood, high juvenile wood content, inferior characteristics in physical-mechanical properties, and susceptible attacked by bio-organisms.
- Other aspects: NTFP, environment, communication, data analysis, and field practice.
- Forestry science: Forest management, silviculture, forest conservation & ecotourism.
- Extra curricula: Sport, student association, development of science, etc.
- Talk: Trend of changes & future of WST education in Indonesia.



# PRODUCTION OF FOREST PRODUCTS

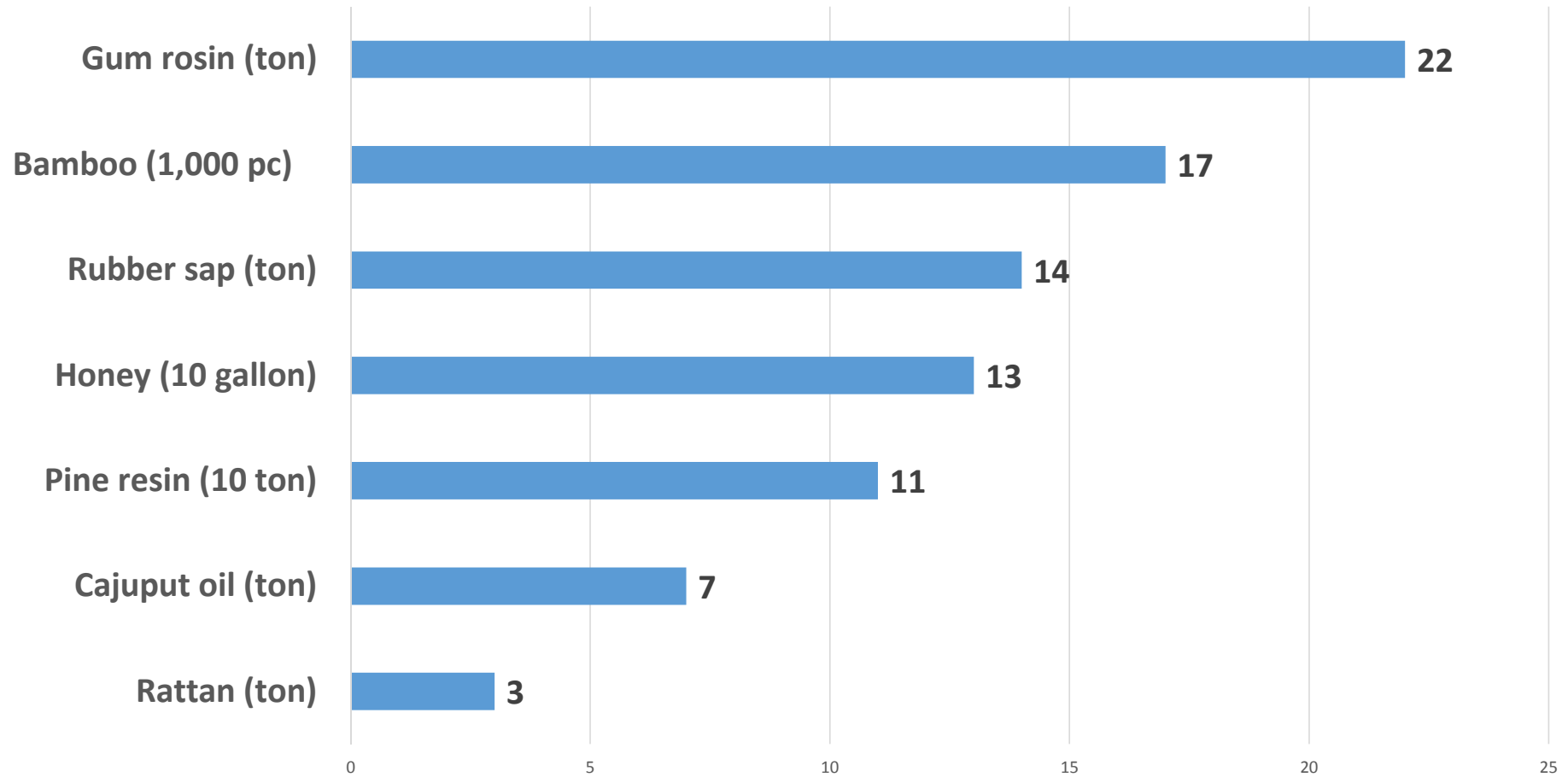
IDN Log Production in 2019: 57.9 million m<sup>3</sup> (Graphic, %)



■ Mangium ■ Eucalypt ■ Sengon ■ Meranti ■ Mix



# NTFP (x1,000)





# TREND OF CHANGE

## 1. Unbalanced Demand and Supply of Wood

2015-2019 logs supply increased 5% p.a. (MoEF 2020); Wood demand increased more.  
Restricted forest area; Natural forest support logs demand < 15%.

## 2. Non-Wood Forest Products Demand

NTFP demand increased: Turpentine 4.8% p.a. (for natural fragrances, flavors, & polystyrene).  
Rosin increased 2.8% p.a. (Baumassy 2019) (for soap, varnishes, printing inks, sealing wax, paper sizes, dryers, gloss paint oil, solder flux, adhesives, & synthetic rubber industries).  
Bamboo & rattan: International trade increased 45% p.a. 2017-2019 (INBAR 2021).  
Other: Essential oils, eucalyptol, agarwood oil (Intrado 2021).

## 3. Limited Job Opportunity

Large companies: Merged, downsized, moved, restructured, or closed.  
Increased demand in forestry: Place for relax & recreation.



# Trend of Change

## 4. Information Technology Development

Remarkable application of industry 4.0 in the forest products industry (Fadillah et al. 2019).

## 5. Global Wave Effect

World globalization: Impact on free trade area (FTA) of products and labor.

Forest products: Highly competitive in domestic and global trade.

Global issues: Raw materials (SFM); Eco-friendly products (low formaldehyde emission).

## 6. Limited of Sources at University

Limited: Equipment & Human resources.

MoEC: Independent campus (**Kampus Merdeka**) was proclaimed.

Student: Free takes credits outside their study program (DIKTI 2020).



# FUTURE EDUCATION OF WST

- Undergraduate: Apply theory and improvement in Forestry and WST.
- Graduate: Why something happened, explained with scientific approached.

**Future education should match to the trend of change:**

## **1. Innovative Products**

Increasing demand & limited log supply: Utilized wood wisely.

Innovative products: Utilize wood from SFM, friendly environment, green products, using optimal technology for complete resource utilization & products could be accepted in wide market.

## **2. NTFP Challenges**

NTFP demand increases & has high economic value; wide variation & could be cultivated.

NTFP commodities should be exported in processed products to get added economical value.

National Forestry Plan: NTFP development in the forest is very essential.

# Future Education of WST

## 3. Entrepreneurship; Create Job

WST program: Interdisciplinary in basic science, technology & business (Smith & Valverde 2019).

Student capacity building: Could work in the field & entrepreneurship capacity.

Activities: Career training, youth farmer development, job fairs & in campus recruitment.

Entrepreneurship: Generating students interest & ideas, capacity building, business mentoring, and institutional development by empowering students association (Himasiltan).

## 4. Information Technology Application

IT could support the system: IPB Edu, IPB Excel-Research, IPB Share, IPB Care, IPB Green, IPB Smart-Org, IPB Smart-HC, IPB Smart-Fin, IPB Lead, IPB Biz, IPB Net.

Education program: OL courses, OL distance learning, life-based learning and virtual/e-learning.

IPB mobile: IPB Mobile for Student, IPB Mobile for Lecturer, IPB Mobile for Parents, IPB Mobile for Staff, IPB Mobile for Alumni, IPB Help Center, & IPB Digitani



# Future Education of WST

## 5. High Performance Graduation

IPB set a future-ready mindset for tomorrow people through educational policies to obtain a powerful agile learner (IPB 2019).

WST: Curriculum reorientation, OL learning, learning process innovation, collaboration with stakeholders, development of student entrepreneurship.

WST: Develops a multi-activity and multi-channel learning system.

## 6. Networking and Collaboration

Global connectivity and collaboration could increase the recognition and reputation.

Accreditation by national (MoEC) & international agencies (SWST) for networking & collaboration.

Student & faculty staff mobility with reputable partners.

Academic collaboration in the country & international should be strengthened (education, research).

The activities such credit earning, joint research & publication, visiting professor, joint seminar, joint or double degree program should be enhanced in the near future.

Collaboration among universities, research institute & industry is urgently to be improved soon.

# CLOSING REMARKS

- The future WST education should consider innovative products, NTFP challenges, entrepreneurship capacity, IT application, high performance graduation, also networking & collaboration.
- Collaboration programs on academic aspects should be strengthened, e.g. credit earning, joint research & publication, visiting professor, joint seminar, joint or double degree, and other programs which have beneficial for all parties (university, research institute, industry).

Thank You Very Much.  
Question ?



IPB University  
— Bogor Indonesia —



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