Asia-Pacific
Economic Cooperation

2018/CSAE/002
Agenda Item: 4

Mapping Innovation Across APEC

Purpose: Information
Submitted by: Indonesia

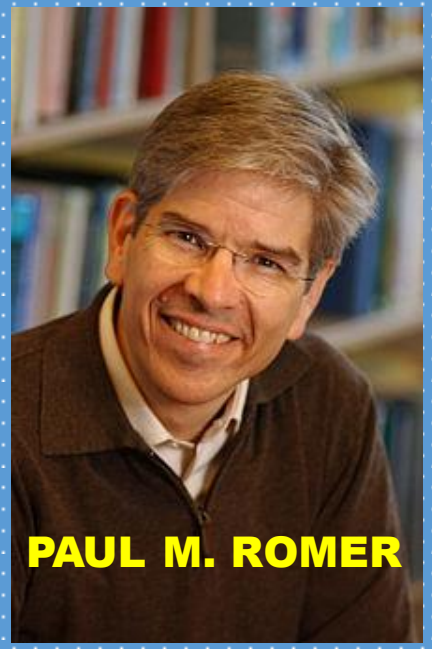
APEC 2018
PAPUA NEW
GUINEA

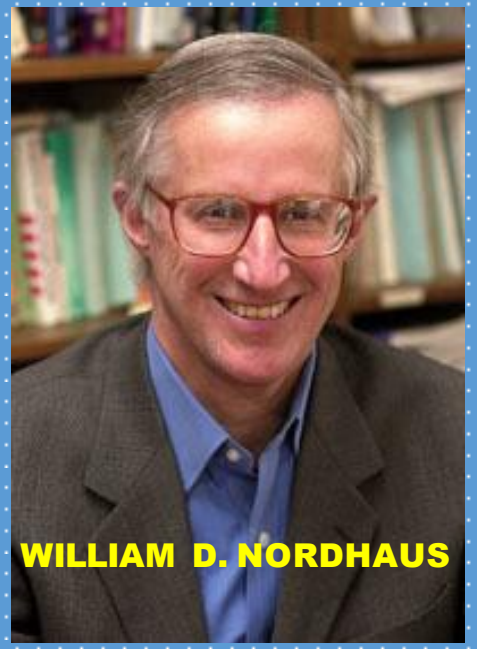
5th Chief Science Advisors and Equivalents Meeting
Brisbane, Australia
25-26 October 2018

MAPPING INNOVATION ACROSS APEC

INNOVATION APEC

BY :
INDONESIA


PAUL M. ROMER


WILLIAM D. NORDHAUS

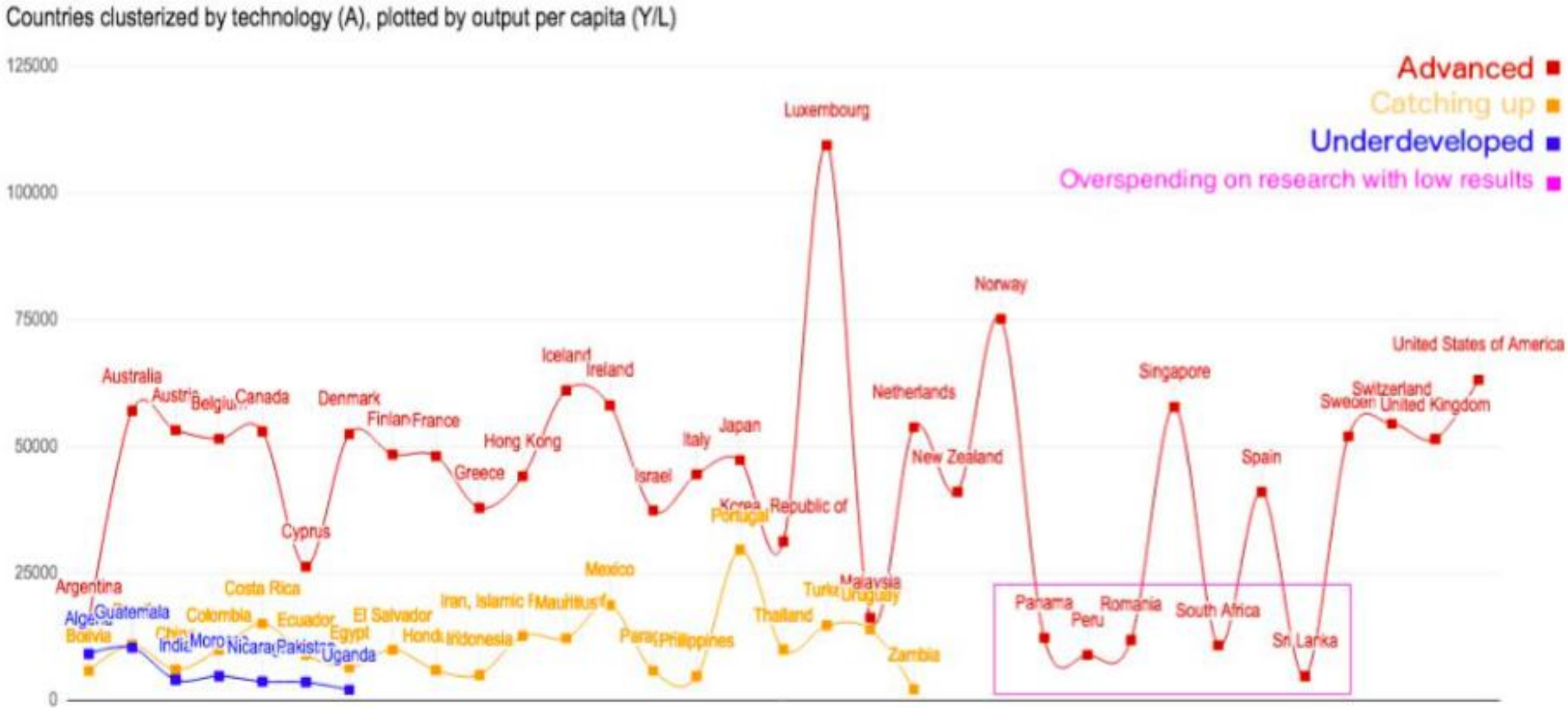
The contributions of Paul Romer and William Nordhaus are methodological, providing us with fundamental insights into the causes and consequences of technological innovation and climate change.

PAUL M.ROMER

1. Romer demonstrates how **knowledge** **can function as a** **driver of long-term economic growth.**

2. **innovation** as the **PRIMARY DRIVER** of economic growth,

3. **Paul Romer** **demonstrating how economic forces govern the willingness of firms to produce new ideas and INNOVATIONS.**



Graph 8: Clusterization of countries by technology (*A*), plotted by output per capita (*Y*).
Data source: Appendix 5

GLOBAL INNOVATION INDEX 2018

Release of the Global Innovation Index (GII) 2018

Energizing the World with Innovation

GLOBAL INNOVATION INDEX 2018
COUNTRY LAUNCH IN INDIA

EMBARGO: NOT FOR ANY KIND OF PUBLICATION
BEFORE 10 a.m. IN NEW YORK (GMT-4); 4 p.m. IN GENEVA (GMT +2) ON JULY 10, 2018

LEADERS IN INNOVATION

GLOBAL INNOVATION INDEX 2018 ranks the innovation performance of nearly 130 countries. Each country is scored according to 80 indicators.

Global Leaders

1. SWITZERLAND
2. NETHERLANDS
3. SWEDEN
4. UNITED KINGDOM
5. SINGAPORE

Regional Leaders

Northern America

1. UNITED STATES OF AMERICA
2. CANADA

Europe

1. SWITZERLAND
2. NETHERLANDS
3. SWEDEN

Central and Southern Asia

1. INDIA
2. IRAN, ISLAMIC REPUBLIC OF
3. KAZAKHSTAN

Latin America and the Caribbean

1. CHILE
2. COSTA RICA
3. MEXICO

Northern Africa and Western Asia

1. ISRAEL
2. CYPRUS
3. UNITED ARAB EMIRATES

South East Asia and Oceania

1. SINGAPORE
2. KOREA, REPUBLIC OF
3. JAPAN

Sub-Saharan Africa

Region group rankings (top 3)

GII 2018

RISTEKDIKTI

KBRI TOKYO

KOBE UNIVERSITY

DRN

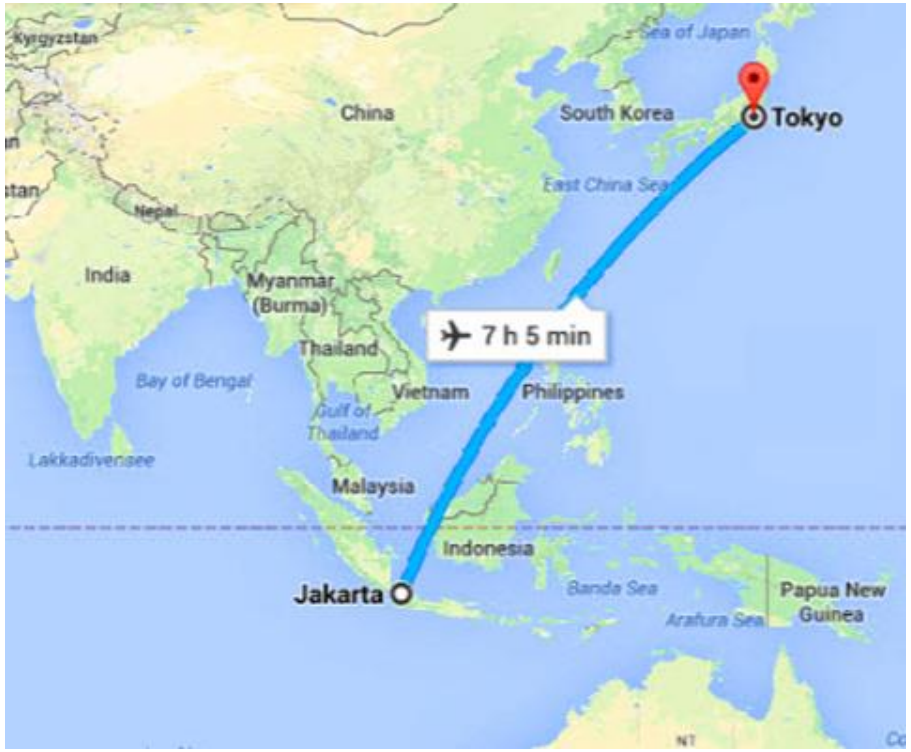
INDONESIA INNOVATION DAY 2018

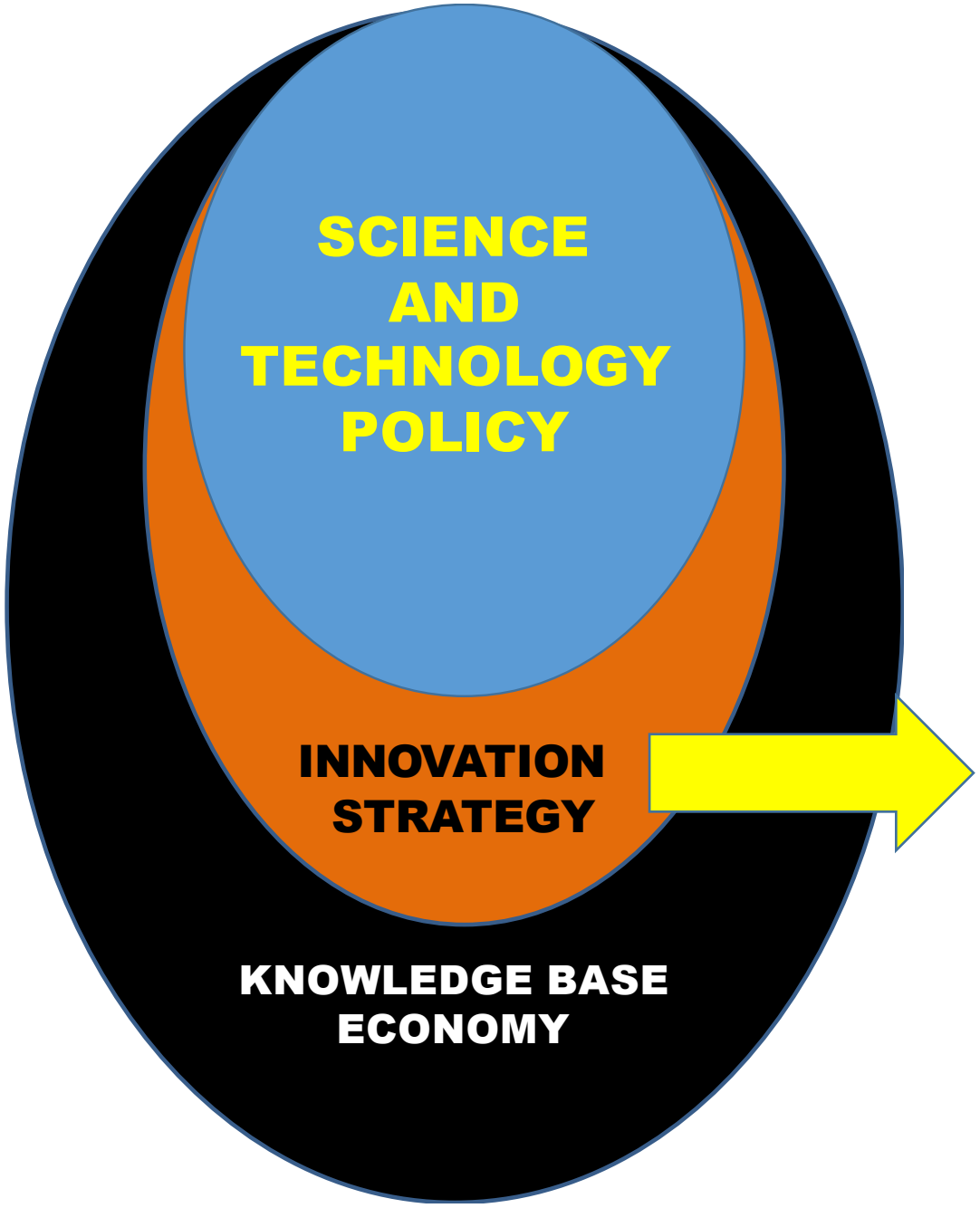
ENHANCING INNOVATION EXPANDING COLLABORATION

International Convention Center, Kobe University, Japan

October 16th, 2018

http://indonesiainnovationday.id





Innovation = Invention * Commercialization

EDWARD ROBERTS

David Sarnoff Professor of Management of Technology
Professor, Technological Innovation, Entrepreneurship, and Strategic Management
Founder and Chair, Martin Trust Center for MIT Entrepreneurship
Faculty Director, Martin Trust Center for MIT Entrepreneurship
Academic Area
Behavioral and Policy Sciences
Academic Groups
Technological Innovation, Entrepreneurship, and Strategic Management
Centers & Initiatives
Martin Trust Center for MIT Entrepreneurship

INNOVATION = INVENTION X COMMERCIALIZATION

41 PRODUCTS INDONESIA INNOVATION

No.	Product	Inovator
	Food Agriculture	
1	Organic Noni Juice	Ning Ima Arie Wardayanie, M. PharmSc
2	Formulated Cassava Flour	Dr. Ir. Endang Yuli Purwani, M.S
3	Corrugated Board	Ir. Heronimus Judi Tjahjono, M.T.
4	Food Packaging Technology of Traditional Food (Empal Gentong H. Apud - Traditional Food From Cirebon)	Ervika Rahayu N. H. , S.TP., M. Sc
5	Roselindo Tea	Prof. Dr. Nurindah
6	Seaweed Tea	Dr. Elya Sinurat
7	Epiphyte Mini Garden	Dr. [illegible]
8	BioMush	Dr. Atit Kanti, M. Sc
9	INOKA (Inoculum for Cocoa Beans Fermentations)	Dr. Fahrurrozi
10	Craft Chocolate Processing Machine and Formulation for Small Medium Enterprises (SME)	Hendi Firmanto, ST
11	Gamboeng Green Tea Powder	Dr. Dadan Rohdiana
12	Non Wheat Noodle	Enny Sholichah, S.Si., M.Si
13	"PK-1" Pineaple Variety	Dr. Awang Maharijaya, S.P, M.Si
14	Standard Pigments NATChrom	Katarina Purnomo Salim, S.Gz., M.P
15	Emiko	Rifin Nashirotun Nisya
16	Palm Oil Based Foaming Agent Concentrate	Dr. Mira Rivai

No.	Product	Inovator
	Energy	
17	Biocatalist for Monomer Sugar Production from Sellulose based Biomass	Nanik Rahmani, M. Si
18	Sugar Palm (Arenga pinnata Mer.)	Dr. Wening Sri Wulandari, S. Hut., M.Si
19	Methyl Ester Sulphonate (MES) Surfactant	Ari Imam Sutanto
	Healthcare	
20	MDP Kit (Methylene Disphosphonate)	Wening Lestari, M. Farm
21	Cosmeceuticals Product with Red Palm Olein as Active Ingredient to Improve Human Skin Health	Ahmad Gazali Sofwan S, M.Si., Apt
22	Parktis Lactobacillus Tropical Fruit [illegible]	Dr. Novik Nurhidayat
23	Herb for Poultry	Dr. drh. Andriani, M.Si
24	*In house* kit PolPfu DNA Polimerase master mix	Dr dr Irma H Suparto, Msi
25	Biokol	Dr. Irmanida Batubara
26	Anadaraman	Dr. Eddyman W. Ferial
27	PUJIMIN	Prof. Dr. dr. Nurpudji Astuti Daud, MPH, Sp.GK(K)
28	BIOVERMIZH	Dr. Zohra Hasyim, M.Si.
	Maritime	
29	STOMO (Acoustic Tomography for Ocean Monitoring System)	Dr. Eng. Yudi Adityawarman, BSEE.,MSc
30	COMBINE VACCINE: KHV-AeroVac	Dr. Drh. Angela Mariana Lusiastuti, MSi
31	Alteromonas SP. BY- 9 and Bacillus Cereus B Probiotic	Prof. Dr. Haryanti, MS
32	Plantarum Commercial Agar Bacto from Local Gelidium sp.	Dr. Subaryono
33	A-USV Geomarine 1.0	Danar Guruh Pratomo, ST, MT.,Ph.D
	Social Culture	
34	Wooden Batik	Irfa'ina Rohana Salma, S.ST, M. Sn

No.	Product	Inovator
35	Batik with Ringkel Background	Istihanah Nurul Eskani, ST., M.Ec. Dev
	Advanced Material	
36	Traumatic Implant Products Made of The Stainless Steel 316 L	Dr.Ir.I Nyoman Jujur, M.Eng
	ICT	
37	Regional Data Nodes (REDANO) for Monitoring The Earth in South East Asia	Ayom Widipaminto, ST., MT
38	AIKO	Dr. Ratih Damayanti
39	Xillarium Bogoriense 1915	Dr. Ratih Damayanti
[illegible]	[illegible]	Dr. Ing. Himas Widhi Handani, ST.,M.Sc
41	BioDiv Checker	Tatas H.P. Brotosudarmo, Dipl.Chem., Ph.D

INNOVATION = INVENTION X COMMERCIALIZATION

INDONESIA ID 2018 - LIST OF POTENTIAL COLLABORATION JAPAN AND INDONESIA

No.	COLLABORATION NAME	PRODUCT	LEVEL	ACTIVITY	MoU Signing	INSTITUTIONS
1	Joint Research Agreement on The Application of Ringkel Background Batik on Bemberg Fabric for Yukata Products and Its Accessories	Ringkel Background Batik	Level 3	1. Joint research on the application of ringkel background batik on bemberg fabric; 2. Quality testing of dye on bemberg fabric; 3. Market research on Yukata product and its accessories in Japan	Oct 16, 2018	1. Center for Handicraft and Batik - Ministry of Industry 2. Kuroda Sikkei Co., Ltd.
2	Letter of Agreement	Bio MUSH	Level 1-3	1. Research Capacity Building for Mushroom 2. Tecnology development for mushroom based product for food and vegetation. 3. Technology development for mushroom cultivation. 4. Mushroom industry development in Indonesia and Japan	Oct 16, 2018	1. Biology Research Center - Indonesian Institute of Sciences 2. Tottori University
3	Production and [illegible] Poselindo Tea	[illegible]	[illegible]	[illegible] roselle 2. Guidance for variable cultivar production	Oct [illegible], 2018	[illegible] Research Institute (Balittas) 2. Kurnia to Indonesia Mandiri

No.	COLLABORATION NAME	PRODUCT	LEVEL	ACTIVITY	MoU Signing	INSTITUTIONS
11	Research and Development of Pulp and Paper	Paper and carton	Level 3	Research and development on corrugated paper making from a mixture of oil palm empty fruit bunches with occ (old corrugated container) and recycle aseptic pulp for packaging	Oct 16, 2018	1. Center for Pulp and Paper - Ministry of Industry 2. The consortium RCCorp. and Takara Corp., 7F-Top of Toga Building 1-7-6 Higashiueno, Taotoku Tokyo
12	Market development and utilization of tropical useful plant	Gluten free flour derived from tropical plant	Level 2	developing standar., certification and market development	After Oct 16, 2018	1. Center for Agricultural Postharvest Research Development - Ministry of Agriculture 2. Dept.of Agric, Int Field Sti Course (Crop Sti & Tropical Useful Plant) 3. PT. CPI 2. Bogor Life Science Technopark (BLST)
13	Research and Development Collaboration	Seaweed Tea	Level 3	Product Development	After Oct 16, 2018	1. Research Center for Marine and Fisheries Product Processing and Biotechnology - Ministry of Fisheries 2. Tsukuba University
14	MOU Production of Paradise Papua	Paradise Papua (Chocolate from Papua)	Level 1	Proses produksi biji kakao menjadi coklatat bar untuk dipasarkan di Jepang dan papua	Before 16.2018	1. Indonesian Coffee and Cocoa Research Institute 2. Alter Trade Japan, Inc 3. CV Kakao Kita Papua
15	Business Collaboration	Epiphyte Mini Garden	Level 1-3	production, trade and attraction Display	After Oct 16, 2018	1. Bogor Botanical Garden - Indonesian Institute of Sciences 2. PT Inagro
16	Research and Development in Horticulture	"PN 1" Pineapple Variety	Level 3	Research and Development in Horticulture	After Oct 16, 2018	1. Center for Tropical Horticulture Studies 2. University of Tokyo 3. Japan Society of Horticulture
17	Business Collaboration	BioDivChecker	Level 1-2	(1) International standards; (2) Data optimation; (3) Increase of sale	After Oct 16, 2018	1. Ma Chung Research Center for Photosynthetic Pigments (MRCPP) 2. Nawama GmbH for BioDivChecker
18	Letter of Intent	COMBINE VACCINE : KHV-Aerovac	Level 3	Product Capacity Building	After Oct 16, 2018	1. Research Institute for Freshwater Aquaculture and Fisheries - Ministry of Fisheries 2. Kyoto Biken Laboratories Inc.

No.	COLLABORATION NAME	PRODUCT	LEVEL	ACTIVITY	MoU Signing	INSTITUTIONS
4	Technical Arrangement	Epiphyte Mini Garden	Level 1-3	Co-display; research and development	Oct 16, 2018	1. Bogor Botanical Garden - Indonesian Institute of Sciences 2. Tsukuba Botanical Garden
5	Joint Development of Regional Data Node in The Satellite Data Related Services	Regional Data Node (ReDaNo)	Level 2	ReDaNo development ; satellite data distribution and marketing using PASCO's international distribution scheme; satellite data analysis service and marketing; sharing it's experience on monitoring service of subsidence area and land slide;	Oct 16, 2018	1. Center for Remote Sensing Data and Technology - National Institute of Aeronautics and Space 2. SATELLITE BUSINESS DIVISION OF PASCO CORPORATION OF JAPAN
6	Developing collaborative research on technology of bioethanol production from [illegible]	SUGAR PALM (Arenga pinnata Merr.) Utilization Technology for [illegible]	Level 3	Collaborative research and publication on technology of bioethanol production from Apinnata Merr and applications of nanocellulose at steps of bioethanol [illegible]	Oct 16, 2018	1. Forest Product Research and Development Center, Research, Development and Innovation Agency - Ministry of Environment and Forestry Republic of Indonesia 2. Faculty of Agriculture - Kyushu University
7	Development of Production Technology for Titanium Bone [illegible]	Implan Degeneratif Titanium	Level 2	development product, review product, marketing	Oct 16, 2018	1. Material Technology Center - Agency for Assessment and Application Technology 2. Itoteh Co., Ltd
8	[illegible] Development, Education, Training and Chemical Analysis on Development of Indonesian Agricultural Products	[illegible]	[illegible]	[illegible]	Oct 16, 2018	1. Center for Agro Based Industry, Agency to Industrial Research and Development - Ministry of Industry 2. Sanyo-Onoda City University
9	Memorandum of Understanding Regarding Collaborative Research and Development (R&D) on Indonesian Derived Agricultural Products	Organic Noni Juice	Level 3	Collaborating research and development (renew contract)	Oct 16, 2018	1. Center for Agro Based Industry, Agency for Industrial Research and Development - Ministry of Industry 2. M&K Laboratories Inc.
10	Joint Development of Acoustic Tomography System	Coastal Acoustic Tomography System	Level 2	1. Software for visualization and processing system 2. Data transmission	Oct 16, 2018	1. Center of Regional Resources Development Technology - Agency for Assessment and Application Technology 2. Aqua Environmental Monitoring 3. LIP

INNOVATION = INVENTION X COMMERCIALIZATION

PROMOTING APEC INNOVATIVE START-UPS

Ho Chi Minh City, Viet Nam, 15 September 2017

The importance of APEC start-ups to regional quality growth and innovative development

APEC has grown to become a dynamic driving force of regional economic growth and integration. Meanwhile, micro, small and medium-sized enterprises (MSMEs) are a significant source of prosperity and employment, and a major contributor to innovation and the engine of economic growth in the Asia-Pacific region. Recognizing the intensification of innovation-based economic cooperation, APEC has taken the lead in improving the competitiveness and innovation of MSMEs in the region since its early development.

The top 50 technologies driving global innovation and commercial growth


APEC in the World
APEC
Asia-Pacific
Economic Cooperation
APEC member economies


The top 50 technologies driving global innovation and commercial growth
Therapeutic Antibodies
Next Gen Stem Cell
Cancer Screening
Biosimilars
3D Scaffolds
Molecular Scissors
Health andWellness
XaaS
Cybersecurity
Artificial Intelligence
Mixed Reality
Predictive Analytics
5G
Cognitive Computing
Software-defined Anything
Information & Communication Technologies
Neuroprosthetics
Optical Coherence Tomography
X-eluting Stents
Nuclear Imaging
Smart Pill
Medical Devices and Imaging
Energy and Utilities
Lithium Batteries
Home Energy Management
Tight Oil Extraction
Waste Heat Recovery
Microgrid
Global Top 50 Technologies
Microelectronics
Wearables
OLED Lighting
SiC Electronics
Transparent Electronics
Rapid Charging
Environment and Sustainability
Waste-to-Energy
Precision Agriculture
Micro Irrigation
Off-grid Desalination
Wastewater Membrane Filtration
Advanced Manufacturing andAutomation
Additive Manufacturing
Digital Manufacturing
Collaborative Industrial Robots
Agile Robots
Robotic Exoskeletons
Chemicals andAdvanced Materials
Lightweight Materials
Bio-based Materials
Nanocoatings
Graphene
Self-healing Materials
Smart Packaging
Sensors and Instrumentation
Commercial Drones
Biosensors
Terahertz Sensing
Next Gen RTLS
Smart Haptics

CONCLUSIONS

By focusing on innovation, cooperation among APEC countries can help solve joint problems, and share knowledge and best practices

At the national level, cooperation among APEC Countries can support and reinforce national efforts for innovation and also enrich perspectives on best practices and lessons learnt in other countries.