

Welcome to

Japan-India Pilot Symposium

Towards Decarbonization of the Global South

- Fusing Japan's Manufacturing Strength with India's Digital Transformation

Symposium starts from 18:00 (JST), 14:30 (IST)

Please keep your microphones on mute and your video off.



Japan-India Pilot Symposium

towards Decarbonization of the Global South

-Fusing Japan's Manufacturing Strength with India's Digital Transformation

(Online)

Date

November 17 (Fri) 2023

18:00-20:30 (JST), 14:30-17:00 (IST), 10:00-12:30 (CEST), 02:00-04:30 (MST)

Organizer

Technology in Society

International Committee of Japan Society for Research Policy and Innovation Management

India-Japan Forum on Environmental Technology

Charla Griffy-Brown

Editor-in-Chief of Technology in Society, ↵

Professor and Vice-Dean, Thunderbird School of Global Management, Arizona State University ↵

↵



BA, Harvard University

Ph.D., Griffith University, Australia

Researcher, Foundation for Advanced Studies on International Development, Tokyo

Associate Professor, Tokyo Institute of Technology

Professor, Graziadio Business School, Pepperdine University

Program

Charla Griffy-Brown

1	IST 14:30	JST 18:00	5	Opening		Charla GRIFFY-BROWN	Editor-in-Chief of Technology in Society, Prof., Arizona State University	
2	14:35	18:05	10	Perspectives	Japan	Chihiro WATANABE	Chair of the International Committee of JSRPIM, Prof. Emeritus, Tokyo Institute of Technology	
3	14:45	18:15	15		UNIDO	Yuko YASUNAGA	Deputy to the Director General and Managing Director, Directorate of Corporate S/O, UNIDO	
4	15:00	18:30	10		India	Vinnie JAUHARI	Director Education Industry WW Public Sector Team, Microsoft India	
5	15:10	18:40	15	Best practices	Japan Moderator Yuko HARAYAMA (Former President of JSRPIM)	Ind.	Atsushi TANAKA	Head of NEC Labs. India, NEC Corp. India Pvt. Ltd.
6	15:25	18:55	15			Univ.	Kazuyuki MOTOHASHI	Professor, Research Center for Advanced S/T, Univ. of Tokyo
7	15:40	19:10	15			Gov.	Takashi HATTORI	Deputy Representative, Taipei Office, Japan-Taiwan Exchange Association
8	15:55	19:25	5			Summing-up		
9	16:00	19:30	15		India Moderator Prateek SHARMA (Acting Vice Chancellor, TERI School of Advanced Studies)	Ind.	Sudeep S. DALVI	Senior Vice President & Director, Toyota Kirloskar Motor Pvt. Ltd.
10	16:15	19:45	15			Univ.	Arman CHAKRABARTI	Professor, A.K. Choudhury School of Information Technology, University of Calcutta
11	16:30	20:00	15			Gov.	A.S.K. Rajiv SINHA Umaprasana OJHA	Director, Rajiv Gandhi Institute of Petroleum Technology Professor, Indian Institute of Technology, Bhubaneswar
12	16:45	20:15	5			Summing-up		
13	16:50 17:00	20:20 20:30	10	Summing-up		Charla GRIFFY-BROWN	Editor-in-Chief of Technology in Society, Prof., Arizona State University	



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150 minutes

Collaboration Leads to Fusion that Accelerates Decarbonization

Chihiro Watanabe

**Chair of the International Committee of the Japan Society for Research Policy & Innovation Management
Director of the Forum of X-Center Japan (FoXc-J), Professor Emeritus of Tokyo Institute of Technology**



Ph.D., University of Tokyo

Deputy Director-General, Ministry of International Trade & Industry

Professor, Tokyo Institute of Technology (Management of Institutional Innovation)

Visiting Professor, National University of Singapore

Research Professor, University of Jyväskylä, Finland



Collaboration Leads to Fusion that Accelerates Decarbonization
- Lessons from Japan, Learning from India

Chihiro Watanabe

Chair of the Intl. Com. of the Japan Society for Res. Policy & Innv. Mgmt.
Director of the Forum of X-Center Japan (FoXc-J)
Professor Emeritus of Tokyo Institute of Technology

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7. Jugaad: India's Unique Innovation Inducing System

The Role of Fusion in “Jugaad” (Indian indigenous innovation inducing system), **in contrast to Forest Ecosystem**

Jugaad that optimizes chaos to drive growth

1. Resourceful
2. Diverse skills and ingenuity
3. Adaptive solutions
4. Innovation-seeking
5. Problem-solving

Potentials

Forest ecosystem

1. Resourceful
2. Diverse species with strengths
3. Adaptive survival
4. Co-evolution with environment
5. Survive in a changing environment

Fusion of strengths

1. Innovation against chaotic or resource-constrained environments
2. **Collaboration** to find innovative solutions beyond individuals

Challenges

1. Go through cycles of growth, decline, and regeneration
2. Collaboration through symbiotic relationships

Growth and sustainability

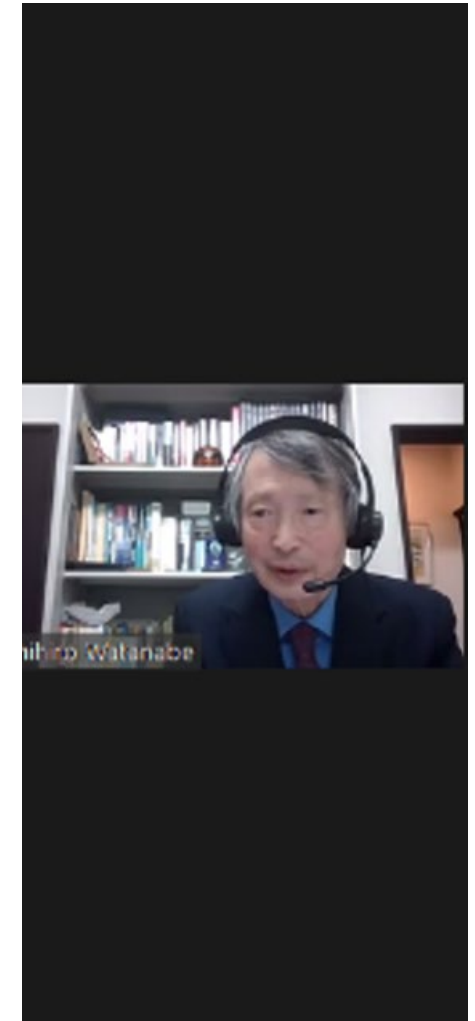
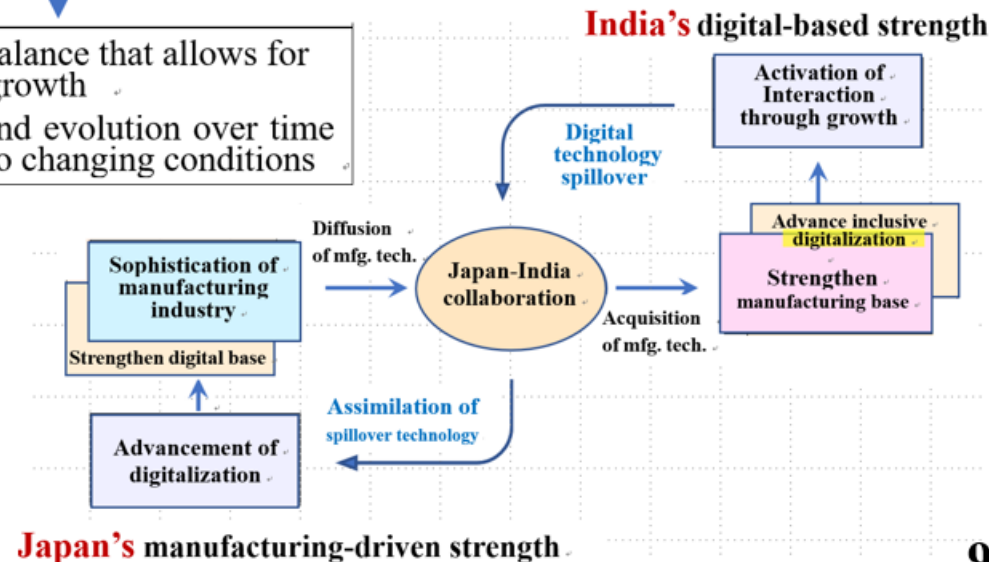
1. Sustainable solutions that optimize available resources
2. Resilience to evolve in the face of uncertainty and chaos

Outcomes

1. Maintain a balance that allows for sustainable growth
2. Resilience and evolution over time in response to changing conditions

Jugaad is similar to the sustainable growth of forest ecosystems and has an affinity with Japan's system of transforming crises into springboards for innovation.

The increasing importance of such fusion facilitates Japan-India collaboration as it leads to a fusion of their strengths that is key to India's indigenous innovation inducing system, “Jugaad,” which optimizes chaos to drive growth in a frugal, flexible and inclusive way.



Digitally-supported Manufacturing and Manufacturing-oriented DX Save the World

Yuko Yasunaga

Deputy to the Director General and Managing Director, Directorate of Corporate Services
and Operations, UNIDO (United Nations Industrial Development Organization)



Ph.D., University of Tokyo

Vice President, National Institute of Advanced Industrial Science and Technology (AIST)

Deputy Director-General, Ministry of Economy, Trade & Industry

Visiting Professor, Japan Advanced Institute of Science and Technology





UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



Digitally-supported manufacturing and manufacturing-oriented DX Save the World



17th Nov. 2023

@Japan-India Pilot Symposium towards Decarbonization of the Global South

Yuko Yasunaga (安永裕幸), Ph.D (y.yasunaga@unido.org)

Deputy to the Director General/Managing Director, Directorate of Corporate Services and Operations, UNIDO





- Take an example of iron/steel making, the current iron/steel industry depends on following boundary conditions:

- i) Uses the most abundant mineral resources which contain Fe = Hematite/Magnetite (= Oxide)
- ii) Ores must be reduced (de-oxidation) for separation of iron from Hematite/Magnetite.
- iii) Reduction can be most efficiently processed by blast furnace with coking coal (coke).

[Chemical reaction of iron/steel making] Hematite : Fe_2O_3 Magnetite : Fe_3O_4 ($\text{FeO} + \text{Fe}_2\text{O}_3$)

$\text{C} + \frac{1}{2}\text{O}_2 \rightarrow \text{CO}$ (CO has a big reduction function)

$\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$ (Reduction of iron ore in blast furnace)

- As long as we have to continuously use Oxide ore and its reduction with blast furnace, we need to develop a “brand new” engineering with a new scientific principle. Now R&D of reduction technology using Hydrogen is being conducted, with a participation of industrial consortia, academia, and government. (It is in a R&D phase, knowing that 100% reduction of CO_2 emission is deemed to be very difficult.)



Sustainability and Decarbonization: Opportunities and Insights from Technology Powered Interventions

Vinnie Jauhari

Director Education Industry WW Public Sector Team, Microsoft Corporation India Ltd.

Advisor of the Forum of X-Center Japan (FoXc-J)



Ph.D., Indian Institute of Technology, Delhi

Post Doc., Institute of Advanced Studies, United Nations University (Tokyo)

Professor and Head, Oxford Brookes University

Regional Lead India – HP Labs Open Innovation Office

Learning and Skills Lead, Microsoft Corporation India Ltd.





SUSTAINABILITY AND DECARBONIZATION : OPPORTUNITIES AND INSIGHTS FROM TECHNOLOGY POWERED INTERVENTIONS

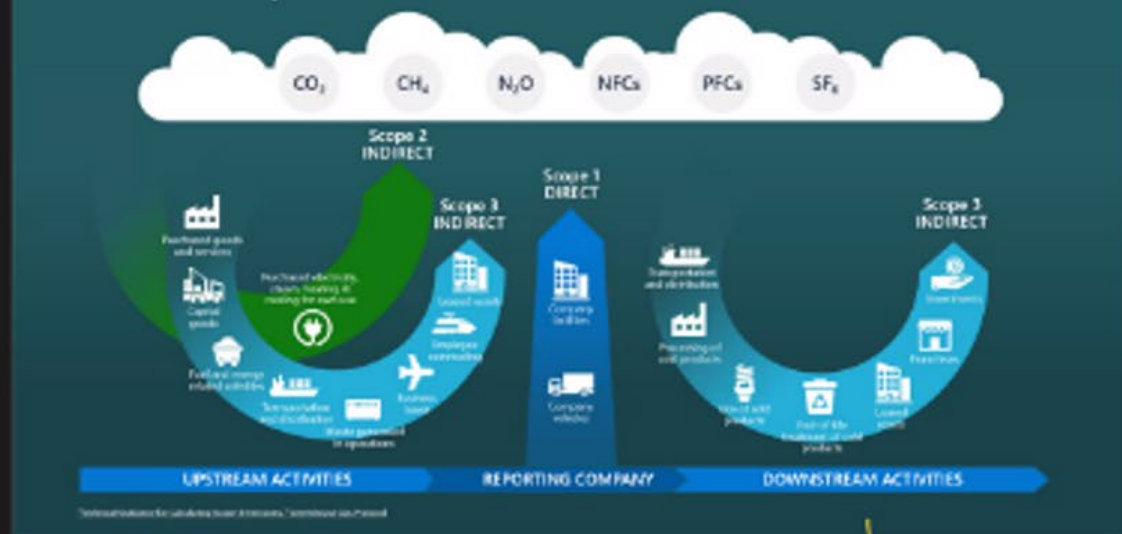
DR VINNIE JAUHARI

WW PUBLIC SECTOR- DIRECTOR EDUCATION INDUSTRY

MICROSOFT CORPORATION INDIA PVT LTD



Scopes and emissions across the value chain



Next slide

Multi-horizon sustainability transformation journey

Build a robust digital foundation and realize your vision



Organizations seeking to reduce carbon emissions are juggling factors that aren't all within their direct control.

Let's take a moment to look more closely at what contributes to a single organization's carbon footprint.

An organization's greenhouse gas (GHG) emissions are measured in three scopes:

<CLICK>

Scope 1 emissions are the **direct emissions** created through an organization's use of fossil fuels, like exhaust from transport trucks or diesel generators.

<CLICK>

A' A'



Yuko Harayama

Former President of the Japan Society for Research Policy & Innovation Management

Former Standing Member of the Council for Science, Technology & Innovation; Professor Emeritus of Tohoku University



Moderator

BS, University of Besancon, France

Ph. D., University of Geneva

Associate Professor, University of Geneva

Deputy-Director of Science, Technology & Industry, OECD

Executive Director of RIKEN (National Research and Development Institute)



Yuko Harayama

Gate Operation Systems for Shorter Supply Chain in India and Expectations for Decarbonization

Atsuhiko Tanaka ♪

Head of NEC Labs. India, NEC Corp. India Pvt. Ltd. ♪



M. Engr. in Information Engineering, University of Tokyo ♪

Former Deputy General Manager, Business Innovation Unit, NEC Corp. ♪

Former General Manager, Secure Systems Research Laboratories, NEC Corp. ♪

Head of NEC Laboratories India, NEC Corp. India Pvt. Ltd. ♪

Former Board Member of Information Processing Society of Japan (IPSJ) ♪



Japan-India Pilot Symposium towards Decarbonization of the Global South

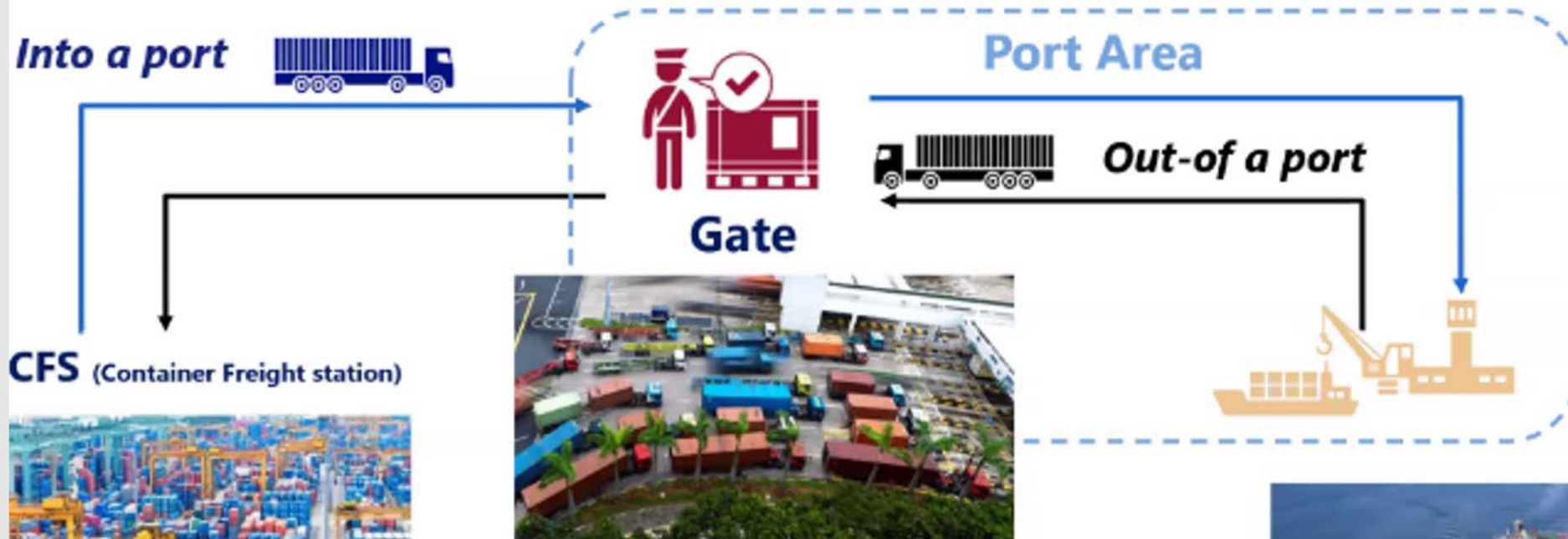
Gate Operation Systems for Shorter Supply Chain in India and Expectations for Decarbonization

17 November 2023

Atsuhiko Tanaka, Head of NEC Labs India
NEC Corporation India Pvt. Ltd.



1-1 Congestion at Port Gate



CFS (Container Freight station)



Container authentication at the gate:

- **Long queue & heavy traffic jams**
- **Manually w/ trucks stopped**



EV Shift for Carbon Neutrality: Win-Win Solution by Japan-India Collaboration?

Kazuyuki Motohashi

Professor, Research Center for Advanced Science and Technology, The University of Tokyo



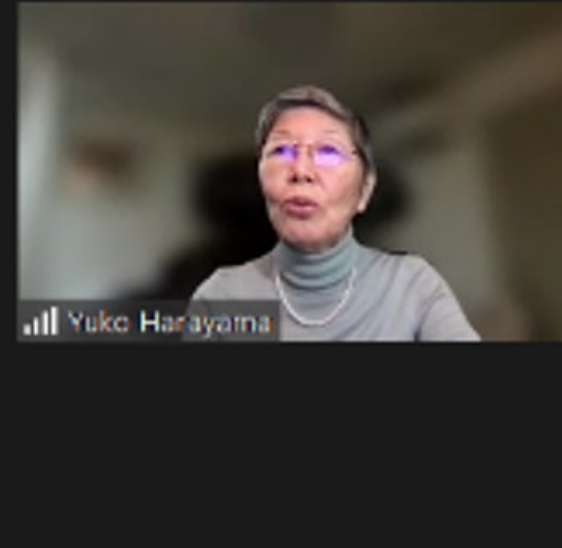
Ph.D., Keio University; MBA., Cornell University

Deputy Director-General, Ministry of Economy, Trade & Industry

Economist, Science, Technology and Industry Directorate, OECD

Sasagawa Peace Fellow, Asia Pacific Research Center, Stanford University

Editor, Research Policy



EV Shift for Carbon Neutrality: Win-Win Solution by Japan-India Collaboration?

2023.11.17

Kazuyuki Motohashi, U of Tokyo

<http://www.mo.u-tokyo.ac.jp/>



東京大学
THE UNIVERSITY OF TOKYO



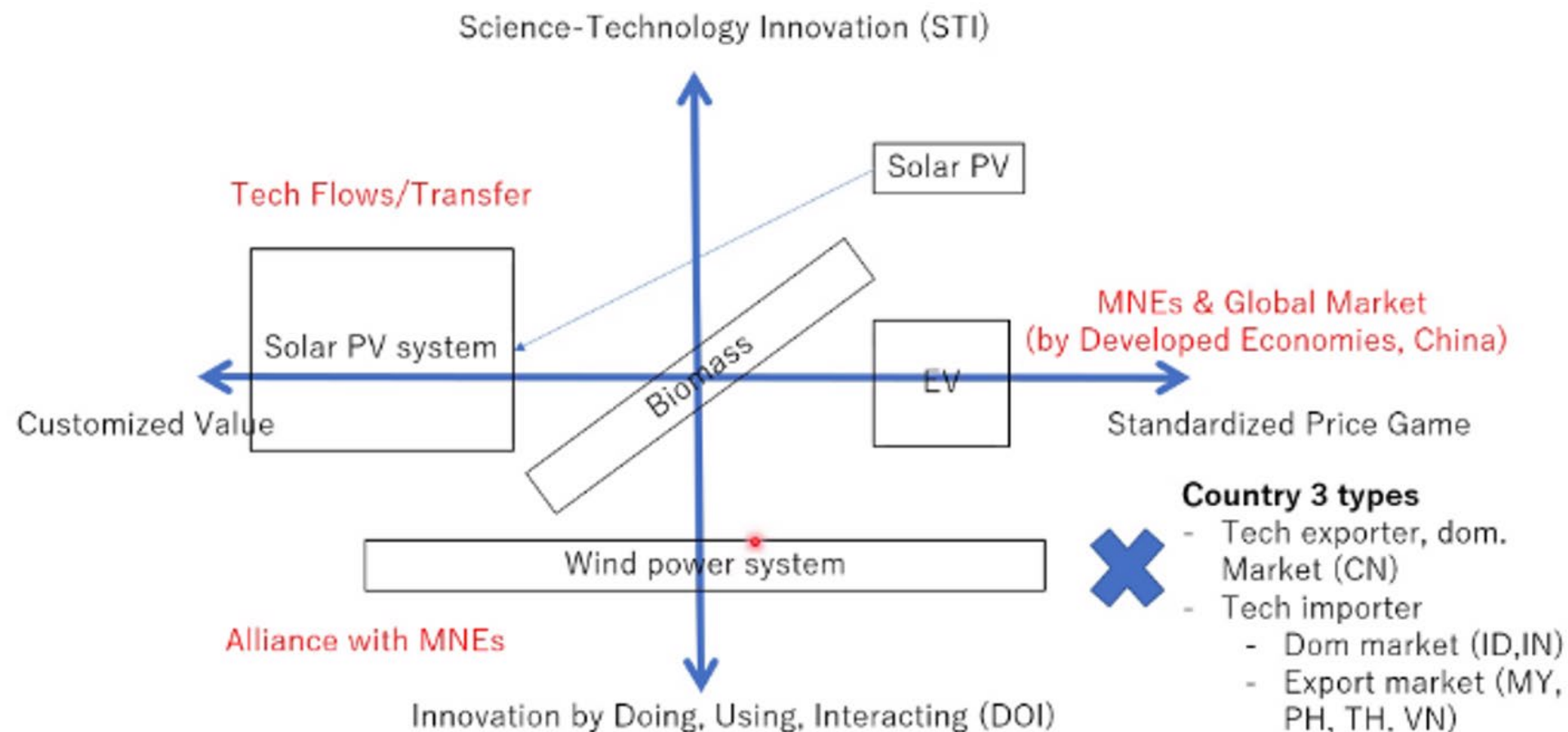
RCAST

Research Center for
Advanced Science and Technology
The University of Tokyo



Kazuyuki MOTOHASHI

JSPS Green Innovation Project (2023-27)



Binz, C. and Truffer, B. (2017), Global Innovation System- A conceptual framework for innovation dynamics in transnational contexts, *Research Policy* 46(2017)1284-1298



Kazuyuki MOTOHASHI

Climate, Energy, and Industrial Transformation in the Digital Age

Takashi Hattori

Deputy Representative, Taipei Office, Japan-Taiwan Exchange Association



Ph.D., Kyoto University; Ph.D., Tokyo Institute of Technology

Deputy Director-General, Ministry of Economy, Trade & Industry

Professor, Institute of Economic Research, Kyoto University

Head, Environment and Climate Change Unit, International Energy Agency

Director, Asia-Pacific Economic Cooperation (APEC) Secretariat



November 17, 2023

Climate, Energy, and Industrial Transformation in the Digital Age:

Searching for the Trilateral Cooperation among India, Japan and Taiwan

Takashi Hattori
Japan-Taiwan Exchange Association



What kind of contribution of Taiwan's semi-conductor industry can be expected in developing fusion between Japan's manufacturing strength and India's strength in digital transformation?

1. Advanced Manufacturing Processes
2. Supply Chain Diversification
3. Innovation in Chip Design
4. Research and Development
5. Market Expansion
6. Skills Transfer
7. Environmental Sustainability
8. Global Leadership

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Yuko Harayama

Summing-up by Prof. Yuko Harayama

New Perspective of Japan-India Collaboration for Decarbonization



Prateek Sharma

Acting Vice Chancellor
TERI School of Advanced Studies

Ph. D. (Environmental Engineering), Indian Institute of Technology, New Delhi;

M.E. (Hydraulics and Flood Control)

Earlier Dean Academics at TERI School of Advanced Studies

Fellow of Wessex Institute of Technology, Ashurst, Southampton, UK in recognition of outstanding scholarly work in the area of air quality modelling.



Moderator



Prateek Sharma

Best Practices of TKM on Sustainability for Mutual Learning ∴

Sudeep S. Dalvi ∴

**Senior Vice President & Director - Technical & Purchase, Chief Communication Officer ∴
Toyota Kirloskar Motor Pvt. Ltd. India ∴**

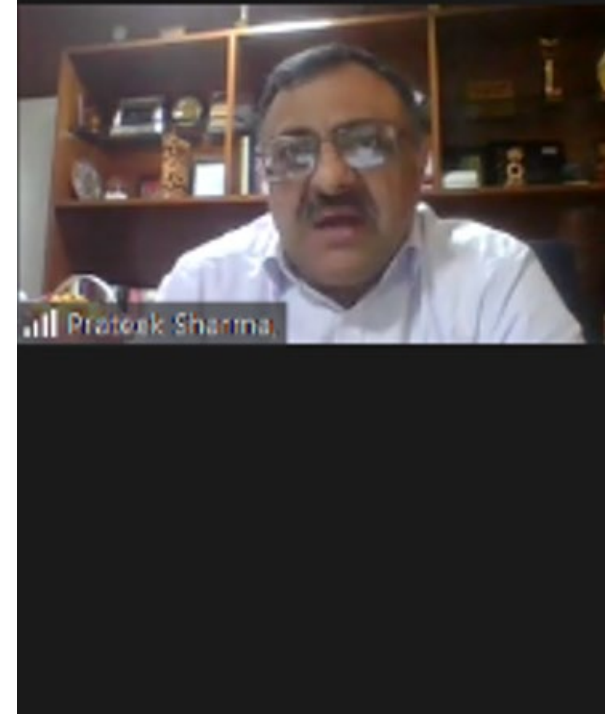


B. Tech (Mechanical Engineering), Mumbai University ∴

Leadership role at TKM and led vehicle and new car manufacturing, Unit Manufacturing, Quality control, New car projects, product design ∴

35 years of rich experience in the Automotive Business, External affairs and CSR ∴

New car projects, Purchasing, Product design & development, New business development, E ∴



Best Practices of TKM on Sustainability for Mutual Learning



Toyota Kirloskar Motor Pvt. Ltd.,



Sudeep Dalvi

all Sudeep Dalvi

Challenge No.4 : Minimizing & Optimizing Water Usage



Approach

Reduce – Specific Consumption



Recycle – (60 – 80%)



Reuse – Rainwater Harvesting Pond (10 – 20%)



Used for Industrial & Domestic

Collection

Purification

Usage

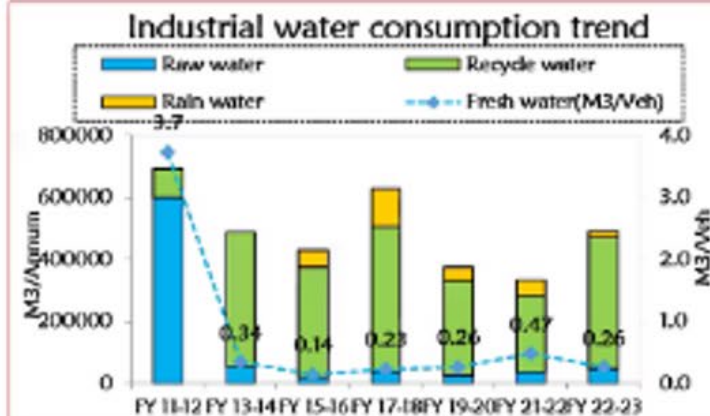


Process (– 20%)



Domestic (5–6%)
Handwash &
Dishwash

Overall Reduction



Groundwater Recharge (Borewell & Pond)



Avg Groundwater level at TKM improved
80 ft (2014) → 25.8 ft – Pre Monsoon &
16.1 ft – Post Monsoon

Kadai

- ❖ Space constrain for setting up additional Rainwater harvesting pond
- ❖ Reduction of per capita consumption

Way Forward

- ❖ Continue Environmental conservation strategies
- ❖ Promote water reduction in plant operation
- ❖ Enhance RWH capacity in the premises (within limited space)
- ❖ Benchmark Best Practices

Reduced consumption of freshwater by 95% for the year 22-23 for manufacturing

Sudeep Dalvi

Sudeep Dalvi

Insights on Machine Learning Models for Solar and Wind Energy ↵

Amlan Chakrabarti ↵

Professor ↵

A.K. Choudhury School of Information Technology ↵

University of Calcutta, India ↵

Post-Doctoral Fellow (School of Engineering), Princeton University, US ↵

Ph.D. (Calcutta University in association with ISI, Kolkata) ↵

H Hamied Visiting Professorship from University of Cambridge, UK ↵

Fellow of West Bengal Academy of Science and Technology ↵

Visiting Professorship from University of Cambridge, UK ↵

Expert member of European Science Foundation ↵



Amlan Chakrabarti

Insights on Machine Learning Models for Solar and Wind Energy ♡

Amlan Chakrabarti ♡

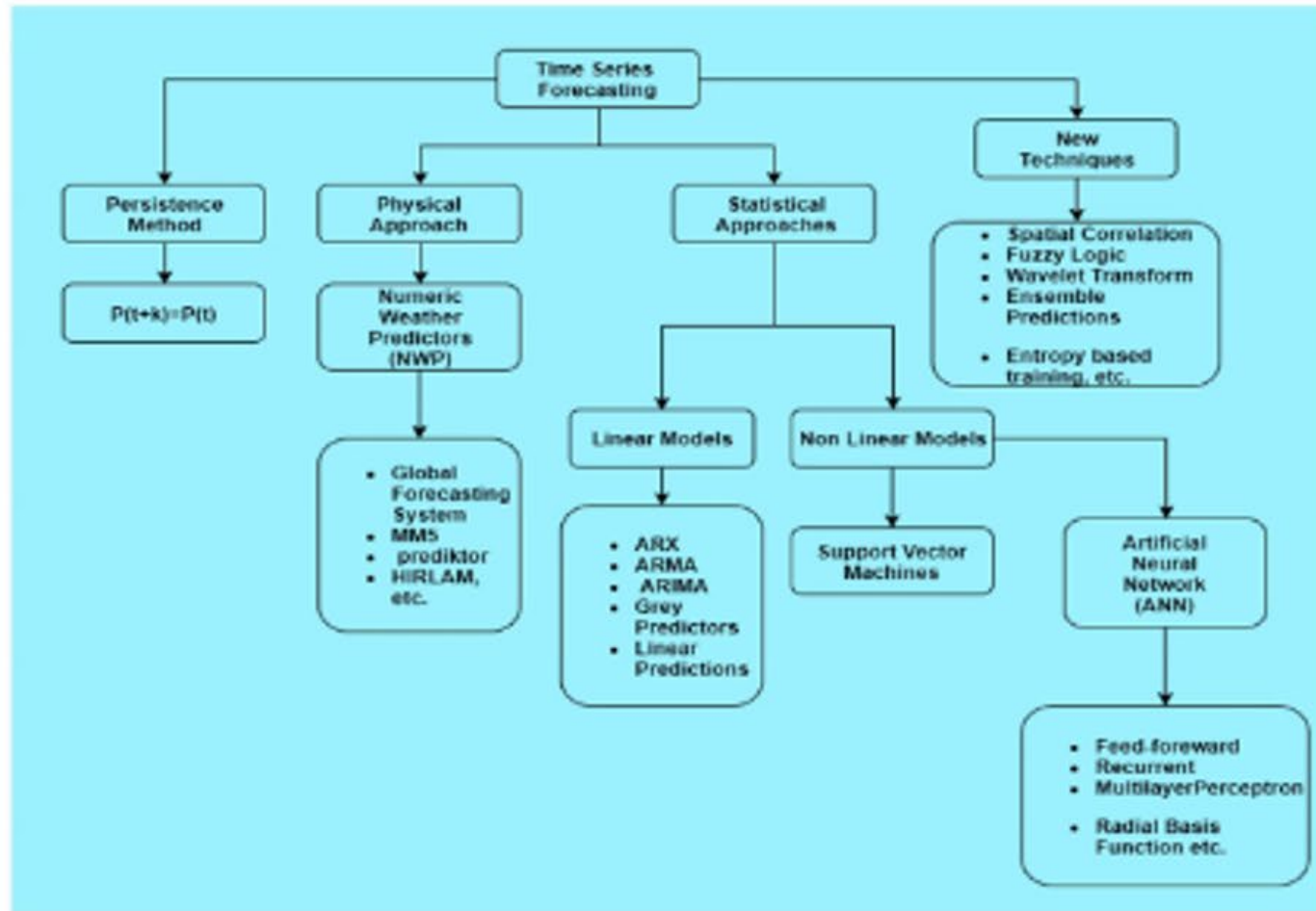
Professor ♡

A.K. Choudhury School of Information Technology ♡

University of Calcutta, India ♡



Forecasting Model Types



Amlan Chakrabarti Calcutta University

**Affordable Green Hydrogen from Sustainable Sources -
-A Prime Facilitator of the Global Decarbonization Drive -**

Prateek Sharma

Akhoury Sudhir Kumar Sinha -

Director -

Rajiv Gandhi Institute of Petroleum Technology -



Ph. D. (Chemical Eng.) IIT(BHU), India -

Ex Head, Ex Dean, Indian Institute of Technology (BHU), Varanasi, India -

Professor and Director, Rajiv Gandhi Institute of Petroleum Technology,
Amethi, Uttar Pradesh, India -

An Institution of National Importance. Government of India. -

Umaprasana Ojha

Professor

Indian Institute of Technology, Bhubaneswar



Professor, RGIPT Jais

Early Career Engagement with American Chemical Society

Member of Society for Polymer Science India

Member of Indian Institute of Chemical Engineers



Current Challenges & Opportunities in Sea Water Electrolysis

delivered at

Japan-India Pilot Symposium towards De-carbonisation of Global South

by

Professor A. S. K. Sinha, *Director*
Rajiv Gandhi Institute of Petroleum Technology
Jais, Amethi
&
Umaprasana Ojha, Professor
Indian Institute of Technology Bhubaneswar

17th November 2023

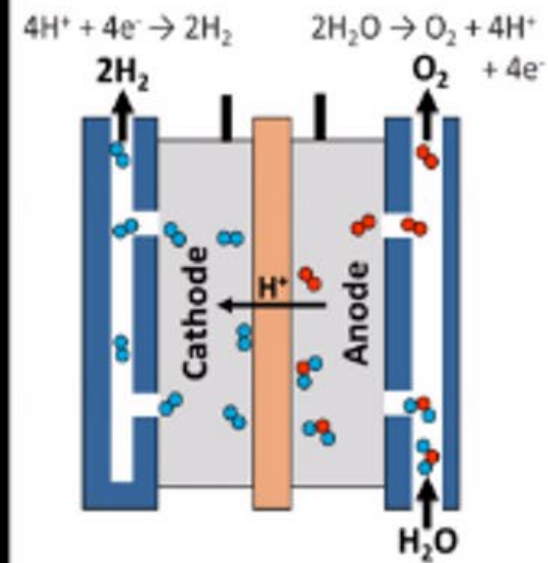
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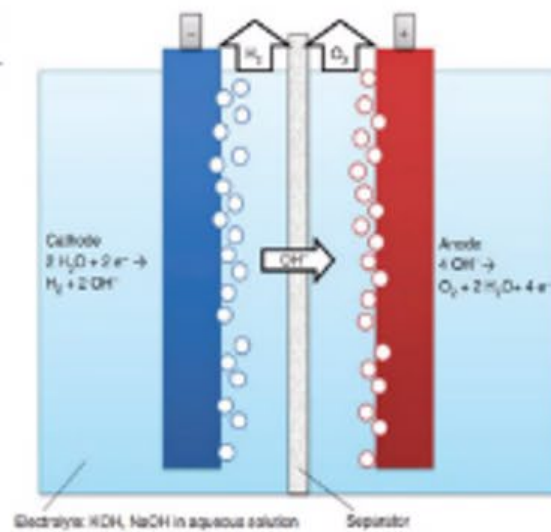


Commercial Electrolyzer Technology

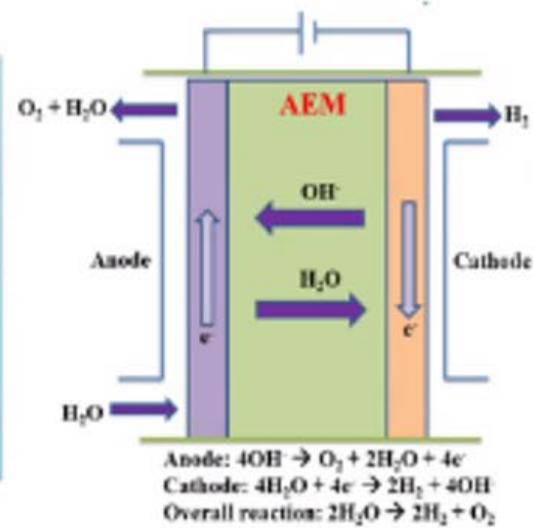
Polymer Electrolyte Membrane (PEM) Electrolyzer



Alkaline Electrolyzer



AEM Electrolyzer

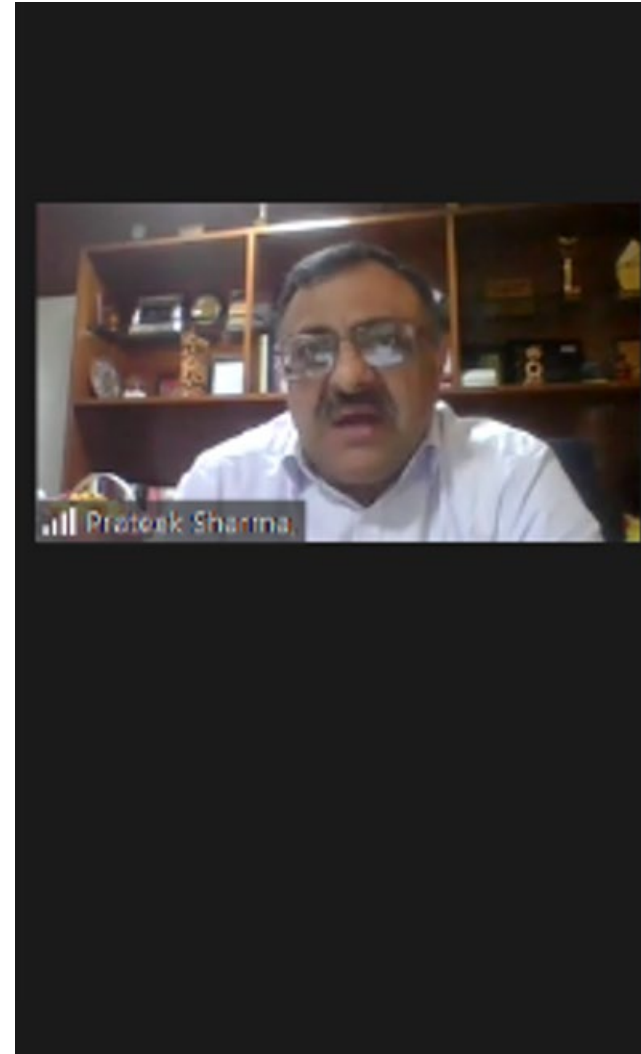


Umapasana Cjha

Prateek Sharma

Summing-up by Prof. Prateek Sharma

Best Practices of TERI School of Advanced Studies for Decarbonization



1. Q/A on the important subjects should be continued through open online chat on the symposium Web.
2. Responses to questions, details of highlighted points and chairperson's summary will be uploaded in the symposium website.
3. Soft collaboration scheme as India-Japan Forum on Environmental Technology, *IJFET* should be further reinforced where contributors to this pilot symposium could be the active members.
4. Successive actions as webinars, on-demand consultations, workshops and publications should be continued.
5. Outcomes of this pilot project should be transferred to countries in the global south for co-evolution, mutually inspiring virtuous cycle, with all of these nations.



Charla Griffy-Brown



Japan-India Pilot Symposium towards Decarbonization of the Global South.

-Fusing Japan's Manufacturing Strength with India's Digital Transformation.

One Earth, One Family, One Future

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