JSPS-ICSSR Seminar 2022

UNDERSTANDING AND ADDRESSING SYSTEMIC RISKS BEHIND THE SOCIO-ECONOMIC IMPACTS OF COVID-19 IN JAPAN AND INDIA: DEVELOPING A ROADMAP FOR A RESILIENT AND SUSTAINABLE FUTURE

Institute for Global Environmental Strategies (IGES)
2108-11, Kamiyamaguchi, Hayama, Kanagawa, 240-0115, JAPAN
TEL: +81-46-855-3720 FAX: +81-46-855-3709
Email: iges@iges.or.jp
URL: http://www.iges.or.jp

Suggested citation: IGES and IIT-T. 2022. Understanding and Addressing Systemic Risks Behind the Socio-economic Impacts of COVID-19 in Japan and India: Developing a Roadmap for a Resilient and Sustainable Future. Proceedings of the JSPS-ICSSR Seminar, 21-22 November 2022, Tokyo, Japan. Hayama, Japan: Institute for Global Environmental Strategies and Indian Institute of Technology, Tirupati.

DOI: https://doi.org/10.57405/iges-12647

Seminar Proceedings.

Cover Page Credits © Designed by S.V.R.K. Prabhakar.

Table of Contents

Figures v
Tables vi
I. Acknowledgements vii
II. List of Abbreviations 1
III. Executive Summary: Elements of A Roadmap for Managing Systemic Risks 2
IV. Introduction 6
V. Seminar Program 9
VI. Session I. Opening Session 12
1. Background and objectives of the seminar 12
2. Welcome remarks, IGES 13
3. Welcome remarks, IIT-T 15
VII. Session II. India: Impacts, Success Stories, and Supply Chains 16
4. Loss to the household economy due to lockdown: A case of COVID-19 in India 16
5. SMEs and COVID-19: Financial constraints and role of government support 16
6. Learning from the COVID-19 pandemic: Lessons for economic theory and policy 17
7. Imagining sustainability: Insights from COVID-19 lockdown in India 19
8. Localizing resilience agenda 22
9. Speaking from field experience: Impact of COVID-19 on Informal workers in India 23
VIII. Session III: Economic and Social Welfare of Japan during COVID-19 25
10. Assessing the capacity of Japan to address the climate change disasters and its implication to respond to COVID-19 risk 25
11. Sustainable Lifestyles and resilient livelihoods in the post-pandemic transitions 27
12. What COVID-19 means for Japan's disaster risk reduction (DRR) capacity? 28
13. Relationship between COVID-19 and climate change: Policies in Japan 29
14. Impacts and implications of the COVID-19 crisis and its recovery for achieving Sustainable Development Goals (SDG) in Asia 30
IX. Session IV: Understanding Gaps in the Research and Policy Processes and their Implications 32
15. Environmental resilience and transformation in times of COVID-19: Climate change effects on environmental functionality 32
16. Over-simplified communication of disease spillover risk during the COVID-19 pandemic 33
17. Planetary health and the triple R framework 34
18. Systemic links between COVID-19 and development: Developmental implications 34
19. COVID-19 as a transboundary risk: Some risk management implications for Asia 36

X. Annexures 40
1. Profiles of the project team members 40
2. PowerPoint Presentations 43
3. Photos 71
4. Social Media Posts 76

FIGURES

Figure 1. Structure of risks of climate-related disasters and pandemics and implications to synergistically respond to these risks....26
Figure 2. COVID-proof facilities implemented during the COVID-19 in Japan....28
Figure 3. COVID-19 pandemic and global repercussions....30
Figure 4. Derived impacts of COVID-19 from SDG interlinkages perspective: Republic of Korea....35
Figure 5. Supply chain risk management received greater attention during COVID-19 than ever before (Prabhakar, 2023)....38
Figure 6. Group photo of participants on the first day of the seminar....71
Figure 7. Group photo of participants on the second day of the seminar....71
Figure 8. A view inside the seminar hall....72
Figure 9. The inaugural session of the seminar....72
Figure 10. Seminar session III on the economic and social welfare of Japan and COVID-19....73
Figure 11. Seminar session IV: Understanding gaps in the research and policy processes and their implications....73
Figure 12. Visiting UNU-IAS on 4th November 2022....74
Figure 13. Visiting ADBI, Tokyo on 4th November 2022....74
Figure 14. Meeting at NIES, Tsukuba on 5th November 2022....75

TABLES

Table 1. Determinants of adaptive capacity and sensitivity to reduce climate disaster risks in Japan 26

I. ACKNOWLEDGEMENTS

This seminar project wouldn't have been possible without the financial support received from the Japan Society for the Promotion of Science (JSPS), Japan and the Indian Council of Social Science Research (ICSSR), India (ICSSR-JSPS/JS-2/2020-IC) which is instrumental in organising this seminar in Tokyo, Japan for which the project team is highly thankful.

The seminar project was successful due to the valuable technical, cooperation and administrative support from various research institutions and researchers in Japan and India. The project team is highly thankful for the cooperation received from the researchers and administrative staff at the Institute for Global Environmental Strategies (IGES), Japan. Notably, we highly regard the moral support and encouragement received from Prof. Kazuhiko Takeuchi, President, IGES; Mr Yasuo Takahashi, Executive Director, IGES and Mr Osamu Mizuno, Director of the Adaptation and Water team. The seminar couldn't have been possible without the hard work and coordination of Ms Miyako Culshaw Ishii and Ms Tomoko Kawakita who were instrumental in managing the visit of the Indian researcher delegation, venue, accommodation etc. We are also highly thankful for the timely support received from the communication team, finance team and other administrative staff of IGES.

We sincerely thank the National Institute for Environmental Studies (NIES), Tsukuba, Japan, the United Nations University Institute of Advanced Studies, Tokyo and the Asian Development Bank Institute, Tokyo for organizing the bilateral meetings during the visit of the Indian researcher team to Japan. We especially acknowledge the valuable time and guidance provided by Dr Yasuke Kameyama, Dr Yasuaki Hijioka, Dr Kazutaka Oka, Dr Kiyoshi Takahashi, Azusa Okagawa of NIES; Dr Akio Takemoto, Dr Himangana Gupta, Dr Richa Kandpal, and Marcin P. Jarzebski of UNU-IAS; and Dr K.E. Seetharam and Dr Dina Azhgaliyeva of ADBI and for meeting the visiting research team and expressing interest in expanding collaboration.

We are thankful for the proactive support received from the Indian Institute of Technology, Tirupati (IIT-T), Indian Institute of Technology, Madras (IIT-M), Indian Institute for Science Education and Research (IISER), Pune; Tata Institute of Social Sciences (TISS), Mumbai and National Institute for Disaster Management (NIDM), New Delhi, India. The moral support and encouragement received from Prof K. N. Satyanarayana, Director, IIT-T was instrumental in implementing the seminar project. We also acknowledge the administrative support received by the project team from participating institutions that facilitated the smooth implementation of the project.

Sivapuram Venkata Rama Krishna Prabhakar, IGES
Chandra Sekhar Bahinipati, IIT-T

II. LIST OF ABBREVIATIONS

ADB	Asian Development Bank
ADBI	Asian Development Bank Institute
AP-PLAT	Asia-Pacific Climate Change Adaptation Information Platform
CCA	Climate change adaptation
CFP	Carbon footprint of products
CMIE	Centre for Monitoring Indian Economy
COVID-19	Novel Coronavirus Disease 2019
DRM	Disaster risk management
DRR	Disaster risk reduction
FDI	Foreign direct investment
FY	Financial year
GDP	Gross Domestic Product
HFA	Hyogo Framework of Action
ICSSR	Indian Council of Social Science Research
ICT	Information and communication technology
IEA	International Energy Agency
IGES	Institute for Global Environmental Strategies
IISER	Indian Institute for Science Education and Research
IIT-M	Indian Institute of Technology, Madras
IIT-T	Indian Institute of Technology, Tirupati
IST	Indian standard time
JSPS	Japan Society for the Promotion of Science
JST	Japan standard time
MOU	Memorandum of understanding
NIDM	National Institute for Disaster Management
NIES	National Institute for Environmental Studies
NPO	Non-profit organization
OECD	Organisation for Economic Co-operation and Development
PDNA	Post-Disaster Needs Assessment
R&S	Resilience and sustainability
SDG	Sustainable Development Goals
SME	Small and medium enterprises
TISS	Tata Institute of Social Sciences
TV	Television
UNU-IAS	United Nations University Institute of Advanced Studies
USD	United States Dollar
UT	Union Territory (of India)

III. EXECUTIVE SUMMARY: ELEMENTS OF A ROADMAP FOR MANAGING SYSTEMIC RISKS

Dr S.V.R.K. Prabhakar, Principal Policy Researcher, IGES, Japan

1. The JSPS-ICSSR seminar entitled 'Understanding and Addressing Systemic Risks Behind the Socio-economic Impacts of Novel Coronavirus Disease (COVID-19) in Japan and India: Developing a Roadmap for a Resilient and Sustainable Future' aimed to develop a roadmap for managing systemic risks in Japan and India. Led by the Institute for Global Environmental Strategies (IGES) and Indian Institute of Technology, Tirupati (IIT-T) in collaboration with various Indian and Japanese research institutions, the seminar provided an overview of the systemic risks of COVID-19 in Japan and India, and the impact of COVID-19 on the domestic economy in these countries. The seminar also provided an overview of the role of governments and institutions in addressing systemic risks. The seminar discussed the nature of systemic risks, and how to manage and mitigate them in the future based on the experiences discussed in the seminar. This Executive Summary tries to provide insights into the discussions and messages that came out of the seminar.
2. **COVID-19 as a systemic risk:** COVID-19 has emerged as one of the prominent systemic risks in recent times. The disease evolved rapidly affecting multiple facets of human life including health and the economy from a local to a global scale. What is challenging about the pandemic was its ability to affect human life on multiple fronts with impacts spanning from local to global and across sectors and scales. The sweeping impacts of the pandemic were possible due to sudden and rapid progression which doesn't seem to go well with the immediate drastic measures taken by some governments. Overall, the pandemic has questioned the ability of governments and risk management institutions to respond systemically.
3. **Commonalities between COVID-19 and climate change:** An assessment of climate change impacts and COVID-19 impacts inform us of startling communities between both these risks. Some common aspects include:
    a. The interconnectedness of our socio-political and economic systems (regional and global economic and social integration, distributed manufacturing/production systems with fragile connections) is responsible for risk transmission and risk magnification.
    b. Risk governance structures that don't govern the entire system within which risks operate leaving 'risk islands' where disruptions can take place (typically and easily visualized in the case of supply chains that span across multiple countries and continents)
    c. Common exposures: A lot of similarities can be found among the exposure elements by both the COVID-19 and climatic events as discussed before (supply chains e.g.).
    d. Information failure: Lack of sufficient information for decision-making and on the risk progression. Due to information imperfection, we can observe either excessive risk-taking or excessive risk aversion in both cases.
4. **Vulnerability characteristics of the society:** Measures such as social/physical distancing, wearing masks and disinfection are commonly implemented. However, some contrasting

differences could be seen in terms of how the governments of India and Japan responded to the pandemic. While the government of India resorted to immediate nationwide lockdowns to curb the further spread of the disease, Japan took cautious and voluntary restrictions of movements. To understand these responses, the motivation behind these measures needs to be understood. The government of India understood that the increasing infections can easily stress the health systems in the country and hence immediate lockdown measures are necessary. However, in the case of Japan, with the prevailing hygiene culture (the Japanese population was already using masks for a long time for various cultural and microclimatic reasons) and public etiquette, the government didn't have to take extreme measures. These socio-cultural variations have contributed to the way the respective governments have taken immediate measures.

5. **Capacity to respond:** Both governments have shown resolve to act immediately to the crisis even though these measures matured over the period as governments learned during the course of their response. Due to a lack of prior experience in managing a pandemic of this scale, it is understandable that governments and institutions needed a certain 'learning curve' to fine-tune the measures as they went about implementing them. The Government of India has provided social support through the free provision of food grains and pulses through public distribution systems, infusion of money into the society through cash transfer to the poor, old aged and widows etc. which helped the poor and vulnerable to buffer the COVID-19 shock on their livelihoods and lives. Similar support measures were also taken by the Government of Japan which included special cash payments to all the residents, children allowances, special allowances to single-parent households, assistance to students, etc. In both countries, the emergence of food delivery services has contributed to significant livelihood for thousands of people who may have been unemployed during COVID-19.
6. **The capacity of long-term strategies:** When it comes to taking long-term measures, governments had to weigh the options in complicated criteria of efficacy, efficiency and public support. While both governments were aiming for high efficacy, the political decision-making also mean that they had to weigh the public support for the measures. Measures were also taken cautiously since governments may not be sure about the long-term implications of the measures, especially for the economy. In terms of medium to long-term measures, both countries have taken initiatives for the protection of their economies from being seriously affected. Measures such as support to the startups, subsidies for SMEs, an extension of certain relaxations beyond their intended duration etc. were taken up by both countries. These measures indicated the capacity and willingness of the countries to take significant immediate and phased measures even if they were financially demanding.
7. While the above measures were intended to protect economies and livelihoods, getting back to normal was difficult without enhancing the vaccination measures in both countries which could also help ease the border control measure and restrictions on internal movements. Consequently, both countries were able to introduce vaccinations in a phased manner subsequently to cover the entire population. The ability of both countries to systematically roll out vaccinations has contributed to the normalization of social conditions in both countries.
8. **Adaptive in locking in the positives:** From the above initiatives, governments and institutions have learned what could work and what may not, and how the public may perceive certain measures. A significant aspect of COVID-19 has been that the innovations that emerged during COVID-19 have come to stay even during the easing phase of COVID-19. For example, the corporate sector realized the benefits of work-from-home measures, and the proliferation of digital payments and food delivery systems has come to stay beyond the peak COVID-19 phase. Governments were quick to accommodate these innovations

and support them beyond the COVID-19 phase. The ability of governments to learn from the experience and to be able to integrate the learning into policy measures is one of the positive aspects of COVID-19.

9. **Challenges and lessons learned:** In the entire experience, what came to the fore is that the people's aspect of the risk needs to be understood much more than looking at the risk from the physical aspect alone. It was the social impacts that made the countries respond the way they responded and hence having a deeper understanding of how pandemics impact people's lives is a key aspect of policy responses going forward. Governments realized that there is a risk in responding and there is also a risk in not responding. In the end, the governments went ahead and responded despite the limited experience in dealing with pandemics.
10. **Interconnectedness can be a boon and bane:** Over the years, a conscious choice was made to rely on goods and services beyond one's borders. This appeared to be the logical approach to harness the efficiency in investments and to take maximum benefit of specialization that countries and societies have to offer. However, COVID-19 taught us that for risks to become systemic, the interconnectedness of countries, sectors, people, and economies is at the core of the mechanism.
11. The challenge now is to make sense of the interconnected world in such a way that the risks are filtered at every step of the connections so that the risks are not spread across the network. Measures such as redundancy (as in the case of supply chains), variety (as in the case of deploying a range of solutions to the same problem), and modularity (designing the components of the system such that the components can work alone if the need arises) have been suggested. However, realizing these solutions in society can take time and could throw some challenges and uncertainties while adopting these solutions. However, one could already see some of these measures organically evolving as in the case of reliance on locally grown food that brings modularity to society.
12. **Adapting to changing risk landscape:** COVID-19 experience informed us of the need to adapt our institutions and strategies to the changing risk landscape. Emerging challenges such as cascading risks, transboundary risks, and multi-hazard risks mean that institutions should enhance their capacity to manage and act in complexity and uncertainty. A part of this adaptation comes from the fact that institutions need to look at the risk as a whole rather than looking at it in a sectoral or disaggregated fashion. Integrated risk assessments are at the core of understanding systemic risks.
13. **Risk communication:** Another area of risk management that needed improvement is the way the risk is communicated. While the proliferation of social media helped speedy communication, it has also brought the challenge of dealing with misinformation. Governments and institutions had to fight misinformation during COVID-19 and it is a challenge for information communication specialists how to manage risk information in an evolving situation such as COVID-19. While appropriate checks and balances can be put in place, the depth and span of the information landscape make it difficult to implement these measures effectively.
14. **Embracing uncertainty:** Reliable information is the key to dependable decision-making. One of the important aspects of systemic risks is that a large part of the risk evolution phase is characterized by a lack of information on the depth and direction of the risk evolution and it can challenge institutions and governments to take appropriate immediate and long-term measures. Hence, managing uncertainty is an area where governments and institutions need to strengthen their capacity. First, not all systemic risks could be understood at the early stages of their evolution, and hence risk management institutions need to identify measures that can provide win-win benefits that can be deployed at the early stages of risk evolution with minimum negative consequences. We currently don't know what these

measures are and how to identify them. Secondly, institutions need to develop adaptive risk management systems that constantly evolve with iterative efforts. This also means constantly improving our risk assessment methods and incorporating them into our decision-making. Institutions also need to rely upon measures such as policy simulations mock drills and scenario exercises to identify the efficacy of policy measures instead of relying on technical desk studies. Finally, providing an appropriate mandate to institutions is the key aspect of making institutions flexible and able to manage uncertainty. Independence can incentivize institutions to innovate and to come up with solutions that they otherwise may ignore in a controlled setup.

IV. INTRODUCTION

The Novel Coronavirus Disease (COVID-19) pandemic has spread to 202 countries and territories infecting 633 million people and killing 6.6 million as on November 09, 2022. 22.7 million people were infected in Japan and 47,000 were killed. In India, 44.7 million people were infected and 531,000 were killed. COVID-19 emerged as a systemic and transboundary risk (e.g. East Asia SARS, 2003; Swine flu, 2009; and West Africa Ebola, 2014).

The global growth rate has been projected as -4.5% by IMF in 2020 over 2019 (PTI, 2020). The economies of all countries have been affected, there are prospects for a global economic recession. IMF also projected that India's economy will contract by 4.5% following a long period of lockdown and slow growth. Consequently, COVID-19 became an added risk to the already slowing Indian economy (Subramanian and Felman, 2020). India's GDP during the first quarter 1 was reduced by 24% (National Statistical Office, 2020). For Japan, the GDP was estimated to contract by approximately 5.0 % for FY 2020 and 3.0% for FY 2021 (Cabinet Office, 2020).

Governments are developing solutions to tackle impacts and developing green recovery plans. However, COVID-19 is unprecedented and there is a poor understanding of the drivers behind systemic risks. Without a deeper understanding of systemic risks, it will be difficult to identify effective and sustainable solutions.

Important systemic risks for which there is a lack of understanding are 1. The supply chains are scattered over different continents and countries, 2. supply chains that cannot be quickly modified to address shifts in supply and demands, 3. lack of robust understanding on how impacts on one country will affect another country, and 4. consumption-driven economies.

The massive job loss from lockdowns and restricted movement of people and goods and services lead to major compression of consumer demand. 21.7 million jobs were lost due to COVID-19 between 2019-20 and 2020-21 (CMIE, 2022). Japan's unemployment has also been projected to rise to 3.2% in 2020 compared to 2.3% in 2019 (Cabinet Office, 2020). The combined free fall of demand and supply raises uncertainties for both the governments and constraints on traditional tools available to policymakers.

Disaster risk management (DRM) systems play a key role in safeguarding economies and social welfare, and they can mitigate systemic risks. Even though DRM systems are being improved, the COVID-19 experience showed that the current systems are not designed to address systemic and transboundary risks (Prabhakar and Issar, 2020). Countries are still dependent on archaic policies developed in an outdated context due to limited awareness of systemic and transboundary risks such as COVID-19.

Japan is 4th largest investor in India accounting for 5.4% of FDI inflows (RBI, 2021), and has significant exports to India (ranked 14th). In 2014, Japan's Prime Minister

pledged JPY 3.5 trillion public-private investments. Indian companies provide goods and services and are the 12th largest exporter to Japan (World Bank, 2022). Japan and India signed MOU on disaster risk reduction (DRR) in 2017. COVID-19 has seriously impacted these engagements. There is a need to understand the impacts to plan for a resilient and sustainable future for these two countries. This seminar provides an opportunity for researchers on both sides to answer important questions raised by COVID-19.

Considering the above background, the **objectives** of the seminar project are:

1. To discuss systemic risks behind the socio-economic impacts of COVID-19 in Japan and India,
2. To identify the transboundary impacts of COVID-19 on Japan and India,
3. To develop a roadmap for a resilient and sustainable future for Japan and India, the region, and
4. To foster strong research collaboration on COVID-19 between relevant researchers in Japan and India

References:

Cabinet Office, 2020. Mid-Year Economic Projection for FY2020. Available at https://www5.cao.go.jp/keizai1/mitoshi/2020/r020730shisan-e.pdf.

CMIE, 2022. Scars of the pandemic. Center for Monitoring Indian Economy Pvt Ltd. Available at https://www.cmie.com/kommon/bin/sr.php?kall=warticle&dt=20220505124252&msec=676.

National Statistical Office, 2020. Estimates of gross domestic product for the first quarter (April-June) of 2020-21. National Statistical Office, New Delhi, India. Available at https://pib.gov.in/PressReleasePage.aspx?PRID=1650021.

Prabhakar, S.V.R.K., and R. Issar, 2020. Strengthening Risk Management Systems to Manage New and Emerging Transboundary Risks: Lessons from COVID-19 Pandemic. *Development Cooperation Review*, 3(2): 3-23.

PTI, 2020. IMF Predicts India's economy to contract by 4.5% this year. New Delhi, India: Press Trust of India. Available at https://www.ndtv.com/business/coronavirus-impact-on-gdp-imfs-world-economic-outlook-predicts-indias-economy-to-contract-by-4-5-this-year-2251630.

RBI, 2021. Foreign Direct Investment Flows to India: Country-wise and Industry-wise. Annual report. Mumbai, India: Reserve Bank of India. Available at https://m.rbi.org.in/Scripts/AnnualReportPublications.aspx?Id=1336

Subramanian, A. and J. Felman, 2020. Are intellectuals killing convergence? Project Syndicate. Available at https://www.project-syndicate.org/commentary/covid-

deglobalization-end-of-convergence-by-arvind-subramanian-and-josh-felman-2020-09?barrier=accesspaylog.

The World Bank, 2022. World Development Indicators. Washington DC, USA: The World Bank. Available at https://databank.worldbank.org/source/world-development-indicators.

V. SEMINAR PROGRAM

Understanding and Addressing Systemic Risks Behind the Socio-economic Impacts of COVID-19 in Japan and India: Developing a Roadmap for a Resilient and Sustainable Future

Date: 21-22 November 2022

Venue: Room No 901, Kokukaikan: 1-18-1, Shinbashi, Minato-ku, Tokyo

The day I – 21st Nov

9:30-10:15 (JST) **Session I: Opening Session**

6:00-6:45 (IST) *Chair: Dr Chandra Shekar Bahinipati, IIT India*

- Dr S.V.R.K. Prabhakar, IGES, Japan: COVID-19 as a systemic risk: Background and objectives of the seminar
- Prof K Takeuchi, President, IGES, Japan: Welcome remarks
- Prof K N Satyanarayana, IIT-T, India: Welcome remarks

Self-introduction (10 min) Photo session (5 min)

10:15-13:00 (JST) **Session II: India: Impacts, success stories, and supply chains**

6:45-9:30 (IST) *Chair: Dr Akio Takemoto, UNU*

- Dr Unmesh Patnaik, TISS, India: Loss to the household economy due to lockdown: A case of COVID-19 in India
- Prof Subash S., IIT-M, India: SMEs and COVID-19: Financial Constraints and Role of Government Support.
- Dr Rahul A. Sirohi, IIT-T, India: Learning from the Covid-19 Pandemic: Lessons for Economic Theory and Policy
- Dr Bejoy Thomas, IISER, India: Imagining sustainability: insights from COVID-19 lockdown in India
- Prof Anil K. Gupta, NIDM, India: Localizing Resilience Agenda
- Dr Chandra S. Bahinipati, IIT-T, India: Speaking from field experience: Impact of COVID-19 on Informal Workers in India

Open Discussion. Understanding knowledge gaps and implications for the research and policy.

13:00-14:00 - Lunch Break

14:00-16:15 (JST) **Session III: Economic and social welfare of Japan and COVID-19**

10:30-12:45 (IST) *Chair: Prof Mikio Ishiwatari, JICA and University of Tokyo*

- Dr Yosuke Arino, IGES, Japan: Assessing the capacity of Japan to address the climate change disasters and its implication to respond to COVID-19 risk

- Dr Atsushi Watabe, IGES, Japan: Sustainable Lifestyles and Resilient Livelihoods in the Post-Pandemic Transitions
- Mr Masashi Tsudaka, IGES, Japan: What COVID-19 means for Japan's Disaster Risk Reduction Capacity
- Dr Yasuko Kameyama, NIES, Japan: Relationship between COVID-19 and climate change: Policies in Japan
- Dr Xin Zhou, IGES, Japan: Impacts and implications of COVID-19 crisis and its recovery for achieving Sustainable Development Goals (SDG) in Asia

Open Discussion. Understanding knowledge gaps and implications for the research and policy.

The day II – 22nd Nov

09:30-11:30 (JST) **Session IV: Panel Discussion. Understanding gaps in the research and policy processes and their implications**
06:00-08:00 (IST)

Chair: Mr Osamu Mizuno, IGES

- Dr Pankaj Kumar, IGES, Japan: Environmental Resilience and Transformation in Times of COVID-19: Climate change effects on environmental functionality
- Mr Andre Mader, IGES, Japan: Over-simplified Communication of Disease Spillover Risk during the COVID-19 Pandemic
- Dr Eric Zusman, IGES, Japan: Planetary Health and the Triple R Framework
- Dr Mustafa Moinuddin, IGES, Japan: Systemic links between COVID-19 and development: Developmental implications
- Dr S.V.R.K. Prabhakar, IGES, Japan: COVID-19 as a Transboundary Risk: Some Risk Management Implications for Asia

11:30-12:30 (JST) **Session V: Group discussion sessions for the roadmap for building back better development**
08:00-09:45 (IST)

Chair: Dr S.V.R.K. Prabhakar, IGES

12:30-12:40 (JST) **Session VI: Conclusion and thanking remarks**
09:45-09:50 (IST)

- Dr Rahul A. Sirohi, IIT Tirupati, India

Day III & IV: Networking: Visiting Research Institutions and Universities

Day 4: November 24, 2022

10.30 - 12.15 (JST)	**United Nations University – Institute for Advanced Studies (UNU-IAS), Tokyo, Japan** Dr Akio Takemoto, Programme Head, and Others Discuss opportunities for collaboration to deepen understanding of the impacts of COVID-19 on India-Japan relations: Focus on education and risk reduction
14.00 - 15.00 (JST)	**Asian Development Bank Institute (ADBI), Tokyo, Japan** Prof K. E. Seetharam, Dr Dina Azhhgaliyeva, and Others Discuss opportunities for collaboration to deepen understanding of the impacts of COVID-19 on India-Japan relations: Focus on economic policies

Day 5: November 25, 2022

10:00 -12.30 (JST)	**National Institute for Environmental Studies, Tsukuba, Japan** Dr Yasuko Kameyama and others To deepen understanding of the impacts of COVID-19 on India-Japan relations: Focus on economy and environmental sustainability

VI. SESSION I. OPENING SESSION

1. Background and objectives of the seminar

Dr S.V.R.K. Prabhakar, Principal Policy Researcher, IGES, Japan

Systemic risks are the type of risk that threatens the entire system. The risk usually starts at a small scale, usually at a micro-scale and small geographical unit or a sub-sector. It rapidly evolves into affecting the entire system, country or even the world with cascading effects. The risk transmission is much more pervasive that it is either not clearly visible or is not effectively isolated at the early stages. This makes the risk take a bigger shape by the time the risk is realized and mitigation actions are put in place.

The Novel Coronavirus Disease (COVID-19) has emerged as one of the prominent systemic risks that have been experienced in recent years. COVID-19 can be treated as a systemic risk for various reasons. COVID-19 started on a small scale. However, it soon evolved into a pandemic. The evolution of COVID-19 from within China to a pandemic took three months (from Dec 2019 to March 2020 for the disease to be declared a pandemic by WHO). The disease was a health risk initially, a public health concern. It became an economic and security concern in less than 3 months when the social life and eventually the economic mission started stalling. In terms of disease progression, both Japan and India have shown different trends. Japan had 189,289/million infections while India reported 31,757/million. India had 3 distinct waves while Japan had much more complex behaviour. The global economy has already been going through a tough growth period before COVID-19 and the pandemic has put further stress on the already ailing economies of the world.

The world GDP growth rate declined by -3.27% while Japan's GDP grew by -5% and India - by 7%. Trade as a % of GDP was also affected in both countries. Some of the major fallouts of the pandemic include impacts within and beyond the health sector. Impact on healthcare workers, the general mental health was impacted, and the rise of health risks due to limited use of hospitals was observed in all the countries (Ringsmuth et al, 2022). Total external private finance to developing countries fell by 13% (OECD 2022), also leading to the diversion of ODA to COVID-19. Labour market losses of $3.7 trillion in income globally in 2020 (255 million full-time jobs losses) (ILO 2021). India experienced a job loss of 9% in the age group of 20-40 years. Unemployment in Japan also stood at 2% in 2020 mainly in the services sector. Globally countries with high income and wealth inequality showed the highest death rates. The ability of governments to respond to other natural disasters was also drastically affected.

COVID-19 has also provided us with some positive trends. Total global emissions in 2020 are estimated to have fallen by 5.8% relative to the 2019 level (IEA, 2021). Large reductions in air pollutants, water pollution, noise pollution and reduced human encroachment into wildlife habitats were also reported. Reduction in air travel, personal mobility, and preference for more active movement modes (walking and cycling). Fewer road accidents and cleaner air with fewer air pollution health impacts were observed during COVID-19. Online conferencing, and more digital social activity compensating for the loss of direct human interactions have become the standard part of work life for most urban workforce.

Keeping the above observations in view, the seminar has several technical and operational objectives:

1. To discuss systemic risks behind the socio-economic impacts of COVID-19 in Japan and India

2. To identify the transboundary impacts of COVID-19 on Japan and India

3. To develop a roadmap for a resilient and sustainable future for Japan and India, the region: The final session tomorrow will have a focused discussion on this aspect. What are the important elements of such a future, how can we realize those elements, and what research and policy gaps do we need to address to build such a future?

4. To foster strong research collaboration on COVID-19 between relevant researchers in Japan and India: Visiting research institutions in Japan UNU-IAS, ADBI, Musashi University, NIES etc.

References:

IEA. 2021. Global Energy Review: CO2 Emissions in 2020. Understanding the impacts of Covid-19 on global CO2 emissions. Paris, France: International Energy Agency. Available at https://www.iea.org/articles/global-energy-review-co2-emissions-in-2020.

ILO, 2021. ILO Monitor: COVID-19 and the world of work. Seventh edition. Updated estimates and analysis. Geneva, Switzerland: International Labour Organization. Available at https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/briefingnote/wcms_767028.pdf.

OECD, 2022. ODA Levels in 2021- Preliminary data. Detailed Summary Note. Paris, France: OECD. Available at https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/ODA-2021-summary.pdf.

Ringsmuth, A. K., I.M. Otto, B. Hurk, G. Lahn, C.P.O. Reyer, T.R. Carter, P. Magnuszewski et al., 2022. Lessons from COVID-19 for managing transboundary climate risks and building resilience. Climate Risk Management, 35: 100395.

2. Welcome remarks, IGES

Prof Kazuhiko Takeuchi, President, IGES

Friends and colleagues! My name is Kazuhiko Takeuchi, I am the President of the Institute for Global Environmental Strategies (IGES). IGES is a think tank established in March 1998 under an initiative of the Japanese government and with the support of Kanagawa Prefecture. The institute aims to achieve a new paradigm for civilization and conduct innovative policy development and strategic research for environmental measures. Given the multi-dimensional nature of environmental issues we face, our institute conducts research and policy advocacy in a broad range of fields including climate change mitigation and adaptation, resource circulation, environmental governance, green economy, biodiversity conservation, sustainable transition and so forth.

It is my great pleasure to welcome you all to Japan and make a few remarks for this important seminar. The seminar is co-organized by IGES and the Indian Institute of Technology Tirupati in India with funding from the Japan Society for the Promotion of Science (JSPS) and the Indian Council of Social Science Research (ICSSR). As you can see from the program, several other institutions from Japan and India are also collaborating in this seminar. The seminar aims to create strong research bonds between the countries of Japan and India by working on subjects of mutual interest.

The subject of COVID-19 and risk reduction is an apt area for this seminar because of the times we are living in now. You all know the COVID-19 pandemic has hit us all seriously. Since its inception in Dec 2019, the pandemic has spread to 207 countries and territories infecting 633 million people and killing 6.6 million as on November 09, 2022. 22.7 million people were infected in Japan and 47 thousand were killed. In India, 44.7 million people were infected and 531 thousand were killed.

The differential impacts among countries have largely been due to socioeconomic differences between countries. Our initial experience shows us that COVID-19 has emerged as a major health risk and eventually it has evolved as a systemic affecting all facets of our lives! The economies of all countries are affected, and there are prospects for an extended global economic recession.

Japan's GDP was estimated to contract by approximately 5.0 % for FY 2020 and 3.0% for FY 2021. India's GDP growth rate was projected as -4.5% in 2020 over 2019. India's GDP during the first quarter of 2020 contracted by 24%. We are also observing that COVID-19 is interacting with various natural and climatic hazards. The record-breaking heatwaves, typhoons and droughts during COVID-19 have undermined the ability of governments to address both the pandemic and climatic hazards. This showed the lack of capacity and understanding on how to manage such multi-hazard scenarios among government agencies and civil society alike.

Governments are now developing solutions to tackle impacts and developing green recovery plans as a consequence. COVID-19 has become unprecedented because of our poor understanding of the drivers behind systemic risks. Without a deeper understanding of systemic risks, it will be difficult for governments to identify effective and sustainable policy solutions. The nexus between climatic hazards and pandemics have exposed our institutional systems and resulted in unbearable impacts on vulnerable communities.

These observations are not just limited to a single country. All countries irrespective of their developmental status are affected by this nexus. This is the time we learn the lessons from these experiences and design our institutions to tackle these challenges for the future. Countries are still dependent on archaic policies and practices developed in an outdated context due to limited awareness of systemic and transboundary risks such as COVID-19. Even though risk reduction institutional systems are being continuously improved, the COVID-19 experience showed that the current systems are not designed appropriately to address systemic and transboundary risks.

We need to strengthen our risk reduction systems to safeguard economies and social welfare and mitigate systemic risks. Our risk reduction systems need to be well coordinated so that the natural hazards including climatic events and pandemics are managed and mitigated in an integrated manner.

I am very much glad to see that this seminar brings together distinguished researchers from Japan and India to discuss some of the important issues pertinent to COVID-19 and related

systemic risks. I am sure that your participation in this seminar will help capture the rapidly changing risk landscape of not only Japan and India but of the entire world and enhance a better understanding of risk from an integrated perspective.

I am very confident that this seminar provides an opportunity for the researchers on both sides of the collaborating countries to ask pertinent questions and seek long-term integrated solutions. I am very much hoping that these discussions will evolve into strong collaborative research between both research teams addressing some of the important issues surrounding systemic risks. As I conclude my remarks, I once again would like to welcome you all to this important seminar and wish you a good and fruitful discussion. Thank you!

3. Welcome remarks, IIT-T

Prof K N Satyanarayana, IIT-T, India

Prof. Satyanarayan welcomed all the researchers from both Japan and India who participated in this seminar and thanked both the team members of IGES and IIT-T for organising this joint seminar. Further, he has also thanked both JSPS and ICSSR for supporting this joint seminar. He started by discussing the progress made by the IIT-T so far on both the academic and research front. He has discussed the following points: IIT-T is always looking forward to collaborating with institutes/ universities based in Japan, and in fact, IIT-T is offering Japanese language courses to BTech students. The HSS department in IIT-T has launched a new program called Master in Public Policy, and I am happy to know that my HSS colleagues are trying to collaborate with not only institutions from India but also institutions/ universities from abroad, including Japan. He informed the seminar that the IIT-T campus is adopting sustainable practices. He has also discussed the relevance of the COVID-19 issue from the current social, economic and political context.

VII. SESSION II. INDIA: IMPACTS, SUCCESS STORIES, AND SUPPLY CHAINS

4. Loss to the household economy due to lockdown: A case of COVID-19 in India

Dr Unmesh Patnaik, TISS, India

(This article is already published in the Indian Journal of Labour Economics)

COVID-19 has disrupted the Indian economy. The lockdown to restrict the spread of infection has impacted the household economy in particular. We propose a novel approach to combine aggregates from national income accounts and large sample microdata of a labour force survey to arrive at losses. The aggregate daily loss to households is USD 2.42 billion. The dominance of informal job contracts and job switching in labour markets intensifies this, with the most vulnerable group consisting of 57.8 million in casual engagement, with a high transition from one stream of employment to another daily. Our analytical framework is appropriate to examine both the generic and episodic nature of vulnerability that households would be exposed to during disruptions, regardless of origin and scale. Policy priorities should be on dual fronts; mitigate economic losses and reduce vulnerable employment, in the context of large transition economies.

5. SMEs and COVID-19: Financial constraints and role of government support

Prof Subash S., IIT-M, India

(This article is already published in Economic Notes Journal)

COVID-19 has severely affected financially constrained small and medium enterprises (SMEs). In response, various countries employed several policies to support SMEs. Using rich firm-level data from 34 countries, we study the impact of the pandemic-led crisis on cash-strapped SMEs and the role of governments in offsetting losses. This paper contributes to the existing literature on SMEs in the following ways. First, existing studies investigate the impact of government support on innovation, finance, and productivity (Mateut, 2018; Lim et al., 2018; Vu and Tran, 2020). Unlike these studies, we examine whether or not the government's support measures are channelized to financially constrained firms. We also analyse whether or not such policy measures have helped the firms tide over the crisis. Second, we focus on employee layoffs during the time of crisis, and whether the firms have resized their workforce in response to the pandemic. In doing so, we also add to the literature on employment implications during the time of economic crisis (Fernandes and Ferreira, 2017; Popov and Rocholl, 2018). Finally, our study links firm survival with government

support during the COVID-19 crisis. Prior studies on firm survival during an economic crisis predominantly focus on innovation, intangible assets, skill developments, and macroeconomic shocks (Landini et al., 2018; Cefis and Marsili, 2019; Guerzoni et al., 2020; Bartoloni et al., 2020). We highlight the significance of government support for the survival of SMEs by coping with new economic situations during the crisis period. Our results suggest that i) government support programmes target mostly financially constrained firms; ii) firm's adjustments to the pandemic are associated with the likelihood of government support; iii) financially constrained firms are more likely to lay off workers; and iv) financially constrained firms layoff more male employees than female employees.

References:

Mateut, S., 2018. Subsidies, financial constraints and firm innovative activities in emerging economies. *Small Business Economics*, 50(1), 131– 162

Lim, C. Y., Wang, J., and Zeng, C. C., 2018. China's "mercantilist" government subsidies, the cost of debt and firm performance. *Journal of Banking & Finance*, 86, 37– 52.

Vu, Q., and Tran, T. Q., 2020. Government financial support and firm productivity in Vietnam. *Finance Research Letters*, 101667. https://doi.org/10.1016/j.frl.2020.101667

Landini, F., Arrighetti, A., and Lasagni, A., 2018. Economic crisis and firm exit: Do intangibles matter? *Industry and Innovation*, 27(5), 445– 479. https://doi.org/10.1080/13662716.2018.1544065

Guerzoni, M., Nava, C. R., and Nuccio, M., 2020. Start-ups survival through a crisis. Combining machine learning with econometrics to measure innovation. *Economics of Innovation and New Technology*, 1– 26.

Bartoloni, E., Arrighetti, A., and Landini, F., 2020. Recession and firm survival: Is selection based on cleansing or skill accumulation? *Small Business Economics*, 1– 22.

Cefis, E., & Marsili, O., 2019. Good times, bad times: Innovation and survival over the business cycle. *Industrial and Corporate Change*, 28(3), 565– 587.

Fernandes, A. P., and Ferreira, P., 2017. Financing constraints and fixed-term employment: Evidence from the 2008-9 financial crisis. *European Economic Review*, 92, 215– 238.

6. Learning from the COVID-19 pandemic: Lessons for economic theory and policy

Dr Rahul A. Sirohi, IIT-T, India

The Covid-19 pandemic has been an unprecedented event in the scope and scale of the devastation that it has caused. The sheer numbers of lives that were lost, the sharp increases in poverty and the economic convulsions that it unleashed are likely to have long-lasting effects beyond the present (World Bank 2022). Recent trends suggest that it will take decades for the developing world to go back to pre-pandemic levels of economic activity.

The pandemic has been labelled as a crisis of an epochal kind. But what is often missed is that it is a crisis in two senses of the word. It is a crisis because of the sheer devastation that it has brought about but it is also a crisis in a second sense in that it has revealed social fault lines, lapses in governance frameworks and vulnerabilities of our economies (Saad-Filho

2021). The pandemic, in other words, has provided an opportunity to take stock of where we have reached and more importantly, to imagine new possibilities of where we are headed (Guggenheim 2014). It is this second perspective of the pandemic that Is the focus of this presentation. Although there are several lessons, we will primarily focus on three important areas linked to economic theory and policy. Thus, the ensuing discussion is necessarily limited in its nature and should not be thought of as an exhaustive list of lessons to be gleaned.

To begin with, the pandemic has once again reminded us of the importance of bringing human beings "back in" to economic policymaking. For far too long, economists have tended to bundle away human behaviour with unrealistic assumptions of consumer decision-making (Bahinipati et al. 2022). These have come to be challenged by behavioural economists and sociologists but by and large, there is a need to refocus attention on the complex nature of human decision-making in light of the pandemic.

The human beings that economists study belong to broader social structures and relations. Economists have often tended to focus on the horizontal relations between agents within markets but have missed out on the vertical relations between people marked by command and hierarchy. The fallout of this has been an unfortunate divorce between "economics" and "politics". The pandemic has once again revealed how our societies are steeped in power relations and how these power relations are central to how our economies are structured (Kothakapa and Sirohi 2022).

Finally, the covid-19 pandemic has revealed the vulnerabilities of west-centric models of development. Although policymaking across the world has come to raise Anglo-Saxon institutional frameworks on a pedestal, the outbreak of the pandemic showed just how vulnerable and impotent Western modes of governance were against calamity. Amid the devastation, it was countries like Vietnam, Cuba and South Korea that were most effective in dealing with the crisis head-on. These patterns point to the broader need to break away from existing epistemic boundaries and embrace models and visions beyond the Western horizon (Escobar 2015; Sirohi and Gupta 2019).

References:

Escobar, A., 2015. Degrowth, postdevelopment, and transitions: a preliminary conversation. Sustainability Science, 10(3), 451-462.

Guggenheim, M., 2014. Introduction: disasters as politics–politics as disasters. The Sociological Review, 62(1_suppl), 1-16.

Kothakapa, G., and Sirohi, R. A., 2022. 'Capital as power': an alternative reading of India's post-2011 economic slowdown. Area Development and Policy, 1-23.

Saad-Filho, A., 2021. The Age of Crisis. Palgrave Macmillan

Sirohi, R. A., & Gupta, S. S., 2020. The political economy of race and caste: Revisiting the writings of Mariátegui and Ambedkar. Journal of Labor and Society, 23(3), 399-413.

7. Imagining sustainability: Insights from COVID-19 lockdown in India

Suryadeepto Nag and Bejoy K. Thomas (Presented by Dr Bejoy K. Thomas, IISER, India)

The COVID-19 lockdown in India in 2020 was one of the most significant shocks to the rural economy on a national scale in recent history. The stringent lockdown was announced on 24th March 2020 and continued till the end of May, after which relaxations were announced in phases. Due to the prolonged and strict lockdown, this period involved a considerable reduction in work hours and loss of employment for several wage labourers paving the way for an economic and social crisis. The adverse economic impacts of the lockdown in the context of income and unemployment are well documented (Singh et al. 2020, Gupta et al. 2021a, Gupta et al. 2021b). The observed impacts of the lockdown on inequality, however, are more complex. Researchers from Azim Premji University (2021) argued that the lockdown saw the poor being affected disproportionately. Gupta et al. (2021b) found that inequality was reduced during the lockdown. In particular, while there is consensus regarding a spike in the Gini coefficient of income (Gupta et al. 2021b) and consumption (Gupta et al. 2021b, Kapoor et al. 2021), there were differences in findings regarding the relative reduction of income and consumption. While Kapoor et al. (2021) showed that the relative reduction in consumption was greater among poorer households in rural India, Gupta et al. (2021b) found the opposite result. However, the latter result is significantly weaker in rural households compared to urban ones. These studies looked at reductions in income and consumption during the lockdown period and studied the variation of relative reductions in consumption with income or consumption-based quintiles. Gupta et al. (2021b) discussed several mechanisms by which the richer quintiles may have seen a greater relative reduction in income and consumption. These impacts were based on capital incomes and labour demand and supply. However, underlying this relationship between wealth and the reduction of income and consumption may be other factors such as occupation, caste and education. The livelihoods of households or more specifically, the primary occupations that they pursue, could play a significant role in how the lockdown impacted them, along with other determinants like financial and social capital.

Following the announcement of the lockdown, India witnessed a mass migration of labourers resulting from the shutting down of commercial activities. Migrant labourers left their urban centres of employment to return to their villages, often in faraway states (Bhagat 2020). An immediate consequence of the influx of labourers in rural regions was an increase in the rural labour supply and unemployment. In rural areas, landed farmers were unable to sell the farm produce (Narayanan 2020) and small businesses were adversely impacted. Although agricultural products were designated as essential commodities, there were several restrictions to the proper functioning of supply chains including restrictions on the mobility of vehicles and temporary closures of wholesale markets (Ramakumar 2020, Narayanan and Saha 2021). According to a phone survey conducted during the lockdown, nearly two-fifths of the farmers who had harvested their crops had opted to store them, with more than half of them citing lockdown-related reasons for choosing to do so (Jaacks et al. 2021). Unemployment rates were different in different occupations and sectors. While there was a spike in labour shortage following the onset of the pandemic and the announcement of the lockdown, labour participation in agriculture increased (Vyas 2020). Different livelihood groups were thus likely to have been impacted differently by the pandemic-induced

lockdown. Hence it is necessary to study the impact of the lockdown on livelihoods along with wealth and other socio-economic factors to better understand the mechanisms which led to the observed trends in income and consumption inequality.

The impact of the lockdown in India has been studied extensively for specific livelihoods groups, especially in the case of migrant labourers (Adhikari et al. 2020a, Adhikari et al. 2020b Agoramoorthy and Hsu 2021, Kumar and Choudhury 2021), and farmers (Ceballos et al. 2020, Dev 2020, Jaacks et al. 2021, Kumar et al. 2021). However, exclusive studies of individual livelihoods groups, although insightful in their exhaustive analysis of the impacts of the lockdown on the groups studied, do not allow for a comparative analysis of the differences in impacts between groups. Mohanty and Jaimon (2021) explored the differences in wages among individuals involved in non-agricultural occupations during the lockdown and subsequent months in rural India. In comparison, income trends are difficult to study in agriculture due to the seasonal nature of returns and the short duration of the shock.

In this article, we extend these analyses by empirically examining consumption and inequality in rural India during the lockdown in 2020, with an explicit emphasis on the impact on different livelihood groups. We use data from the World Bank's survey on COVID-19-related shocks in rural India representative of a population of 442 million people and 52% of India's rural population (The World Bank 2020). We classify rural livelihoods into three broad categories, farmers, labourers, and non-cultivators. We present our results in two stages. First, using cross-section data, we show the change in consumption and inequality among the groups during February, May, July and September 2020 representative of the periods before, during and after the lockdown. Second, we examine the factors determining changes in household consumption between February and May 2020.

We build upon and extend the previous studies on the impact that the COVID-19 lockdown had on income/consumption using representative data for rural India. Gupta et al. (2021b) considered only income/consumption, but their analysis covered urban as well as rural populations. They found that the rich had a higher relative reduction of income during the pandemic. Kapoor et al. (2021) used the World Bank dataset that was used in this study to do a quintile-based analysis of consumption over the three survey rounds to see which quintiles showed a reduction in consumption in rural India. Our findings are comparable to them in that Gini coefficient-based inequality increased over the initial months of the pandemic. Our analysis indicated a reduction in employment and income/consumption of labourers which Mohanty and Jaimon (2021), who also used the World Bank dataset, observed. However, their study did not cover agricultural households.

Most of the empirical studies on the impact of the lockdown, including the above, looked at changes in income/consumption or focused on specific livelihood groups such as the farmers or the labourers. These studies thus limit their analysis to inequality based on income/consumption or impact on specific groups and do not look at the factors that led to the changes in consumption. Our study looked at the different factors, including the primary occupation that the households pursued, that determined the impact of the lockdown on consumption. An interesting insight that has emerged from our analysis was that whether a household was primarily dependent on agriculture or labour in itself did not make them vulnerable during the lockdown, as much as other factors such as wealth, caste, and education. Our finding implies that at least in the short run, in the wake of major stress like the lockdown, the differential impact felt across the different livelihood groups was due to socio-structural factors, in addition to economic variables. This shows that even as we look at the immediate impact and outcomes, there should be a deeper investigation into the complex

causal structure of household vulnerability, which will help us understand why certain households coped with the lockdown better than others.

References:

Adhikari, A., Narayanan, R., Dhorajiwala, S. and Mundoli, S., 2020a. 21 Days and Counting: COVID-19 Lockdown, Migrant Workers, And the Inadequacy of Welfare Measures in India.

Adhikari, A., Goregaonkar, N., Narayanan, R., Panicker, N. and Ramamoorthy, N., 2020b. Manufactured Maladies: Lives and Livelihoods of Migrant Workers During COVID-19 Lockdown in India. *The Indian Journal of Labour Economics*, 63(4), pp.969-997.

Agoramoorthy, G. and Hsu, M.J., 2021. How the Coronavirus Lockdown Impacts the Impoverished in India. *Journal of Racial and Ethnic Health Disparities*, 8(1), pp.1-6.

Azim Premji University, 2021. State of Working India 2021: One Year of COVID-19. Report.

Bhagat, R.B., Reshmi, R.S., Sahoo, H., Roy, A.K. and Govil, D., 2020. The COVID-19, Migration and Livelihood in India: Challenges and Policy Issues. *Migration Letters*, *17*(5), pp.705-718.

Ceballos, F., Kannan, S. and Kramer, B., 2020. Impacts of a National Lockdown on Smallholder Farmers' Income and Food Security: Empirical Evidence from Two States in India. *World Development*, 136, p.105069.

Dev, S.M., 2020. Addressing COVID-19 Impacts on Agriculture, Food Security, And Livelihoods in India. IFPRI, pp.33-35.

Gupta, A., Malani, A. and Woda, B., 2021a. *Explaining the Income and Consumption Effects of Covid In India* (No. W28935). National Bureau of Economic Research.

Gupta, A., Malani, A. and Woda, B., 2021b. *Inequality in India Declined During Covid* (No. w29597). National Bureau of Economic Research.

Jaacks, L.M., Veluguri, D., Serupally, R., Roy, A., Prabhakaran, P. and Ramanjaneyulu, G.V., 2021. Impact of the COVID-19 Pandemic on Agricultural Production, Livelihoods, And Food Security in India: Baseline Results of a Phone Survey. *Food security*, *13*(5), pp.1323-1339.

Kapoor, M., Ravi, S. and Kumar, A.S., 2021. COVID-19, Consumption and Inequality: A Systematic Analysis of Rural Population of India. *medRxiv*.

Kumar, S. and Choudhury, S., 2021. Migrant Workers and Human Rights: A Critical Study on India's COVID-19 Lockdown Policy. *Social Sciences & Humanities Open*, 3(1), p.100130.

Kumar, P., Singh, S.S., Pandey, A.K., Singh, R.K., Srivastava, P.K., Kumar, M., Dubey, S.K., Sah, U., Nandan, R., Singh, S.K. and Agrawal, P., 2021. Multi-Level Impacts of the COVID-19 Lockdown on Agricultural Systems in India: The Case of Uttar Pradesh. *Agricultural Systems*, 187, p.103027.

Mohanty, P.C. and Jaimon, J.J., 2021. Economic Impact of COVID-19-Induced Lockdown on Rural Households. *Economic and Political Weekly*, *56*(44), pp.23-27.

Narayanan, S., 2020. Food and agriculture during a pandemic: Managing the consequences. *Ideas for India*, 27 March 2020.

Narayanan, S. and Saha, S., 2021. Urban Food Markets and the COVID-19 Lockdown in India. *Global Food Security*, *29*, p.100515.

Ramakumar, R., 2020. Agriculture and The Covid-19 Pandemic: An Analysis with Special Reference to India. *Review of Agrarian Studies*, *10*(2369-2020-1856).

Singh, I., Singh, J. and Baruah, A., 2020. Income and Employment Changes Under Covid-19 Lockdown: A Study of Urban Punjab. *Millennial Asia*, *11*(3), pp.391-412.

The World Bank, 2020. COVID-19 Related Shocks in Rural India - Rounds 1-3 (COVIDRS) 2020. Ref. IND_2020_COVIDRS_v01_M.

8. Localizing resilience agenda

Prof Anil K. Gupta, NIDM, India

Globally there has been significant policy evolution looking to the changing contexts, understanding and discourses based on experiences and lessons of disasters over the recent three decades. At national levels too and even at the provincial and state levels legal and institutional frameworks are in place. However, the growing emphasis globally and in India on localizing resilience agenda comes with the fact that ground realization of the benefits of DRR would depend on how local planning and actions are ensured in a concerted, well-coordinated and proactive manner, and how are resources and capacities at the local level are developed.

There is also a significant gap in enabling inter-sectoral and inter-agency/stakeholder coordination at different layers of state and local level interventions. Alongside the two major facets of recent contexts – disruptive changes in technology access and usage, and disruptive changes in social settings in cities, industry and villages, there are contexts of internal migration, gender imbalances, and economic challenges, to be addressed, as witnessed during Covid-19 pandemic disasters greatly. The COVID-19 pandemic has given several multi-sectoral multidimensional lessons in disaster management and risk reduction, not only for health disasters but in general for improving disaster resilience planning and practice in the future as

well.

In India, and also largely in Asia-Pacific, the trends of new and emerging disasters or hazards, like a heatwave, forest fires, air pollution emergencies, dust storms, lightning, etc are special concerns as there were no disasters of high emphasis in normal course conventionally. Floods, drought, cyclones, landslides, etc were the key focus in climate change-related disasters as also have been witnessed by several disasters showing an increase in frequency and intensity. However, there are anthropogenic dimensions and human angles implicit for example, the Uttarkhand flash flood disaster, Kerala Flood, Srinagar Flood, Chamoli flash flood, etc. Flash floods appeared a major concern.

There have been significant studies to capture trends in climate disasters over the different policy regimes in India. A study of all states and UTs in India across 25 years covering pre-HFA, post-HFA and during HFA how the trends were witnessed and what was the impacts, were recorded and mapped. Also, there was an effort to go one step ahead of PDNA. Post-disaster damage and needs assessment doesn't capture losses in systemic ways but focuses on assessment to give insight into the need for relief and early recovery. Most emphasis is on infrastructure and direct bearing economic damages. There are challenges in capturing non-economic losses and damages. A study has been carried out to analyse the underlying causes of losses and damages, in the case of two recent major cyclones across 4 major states of India, to draw lessons for future proactive improvement in disaster preparedness, response and risk reduction. A study on an institutional mechanism to evaluate human deaths due to disasters has also been carried out, to help states and districts to develop and use the process for effective damage assessments in case of disaster deaths.

Emerging contexts like peri-urban ecosystems in particular, besides the emphasis on nature-based solutions, impact assessment of environmental losses in disasters, livelihoods complex, opportunities and challenges of financial strategies and insurance as risk solutions, and blending of modern scientific and traditional – local knowledge in risk management, and enhancing cooperation and sharing of knowledge and experience between and among the nations of Asia-Pacific, and with other nations of other parts of the world, is also within the emerging thought process at national level in India and the National Institute of Disaster Management of New Delhi.

9. Speaking from field experience: Impact of COVID-19 on Informal workers in India

Dr Chandra S. Bahinipati, IIT-T, India

Globally, COVID-19 Pandemic has significantly affected social and economic conditions. This Pandemic has led to extreme demographic shifts, unemployment, and the cessation of crucial socioeconomic activities to preserve lives. It has traumatised the entire world, from everyday activities to the complete collapse of economies. In the unorganised sector, the merchants became the ultimate sufferers at the receiving end. In this regard, the Pandemic had a detrimental effect on the employment and wages of the poor in Odisha, an eastern Indian state. The intra-state and inter-state migration is shared among the inhabitants of Odisha to earn a livelihood. These migrants suffered during the lockdown.

Additionally, activities like building, trade, and agriculture also deteriorated, impacting people's ability to support themselves. The objective of the study was to find out "how COVID-19 Pandemic affected the livelihood of the unorganized sector in Bhubaneswar, the capital city of Odisha?"

Secondary data has been collected from the municipality of Bhubaneswar. The number of affected cases both from local and quarantine data, recovered, deceased and active cases data have been collected. The primary data have been collected from vendors and people engaged in the informal sector in the Bhubaneswar City of Odisha.

The purposive sampling technique has been used to select Bhubaneswar city as the study area. The random sample technique is used to select households in the study area. The primary data has been collected from hundred respondents from the study area. In this study, there are 10 types of vendors used and 10 numbers of respondents were taken from each vendor group. The informal sector i.e. vendors have been categorised into Essential and Non-Essential Commodity. The essential commodities consist of grocery shops, vegetable shops, fruit shops, non-veg vendors (mutton, chicken and fish shops), and hotel boys in small hotels. The non-essential commodities consist of different vendors like Tiffin Stalls, Fast Foods, Dahi Bara, Gupchup and Chat, and hotel boys in restaurants/ big hotels.

Primary data was collected from households by direct interview through structured questionnaires. This study was based on both quantitative and qualitative methodologies. The questionnaire consisted of close-ended questions. Sample respondents were requested to give a free and frank response. To increase the accuracy of research work, both quantitative and qualitative data scaling techniques such as nominal scale and ordinal scale are used. The qualitative methods were used explicitly in the exploratory state to initiate and provide information for the further quantitative investigation. It covers a broad range of statistical procedures that allows summarizing data and determining. It also contains several tools for

analysing data. The data was analysed by using statistical methods, frequency distribution, average and percentage etc.

The study has found the results on the impact of COVID-19 on the informal sector, mainly street vendors of Bhubaneswar city. Vendors such as vegetable shopkeepers, fruit shop keepers, fast food sellers such as *dahibara*, *gupchup* and chat sellers, and other sellers, grocery shopkeepers and restaurant workers have been taken for the study. The impacts of the COVID-19 pandemic on livelihood particularly income, expenditure, asset creation, lifestyle, social relationships, cultural festivals, and celebrations by the street vendors have been examined through the survey. Within the household lifestyle of the vendor, they have reduced travelling due to less investment capacity and travel mostly by bicycle or tricycle, motorbike, auto-rickshaw and bus.

The impact on other lifestyles particularly telephone usage, internet usage, internet shopping, indoor entertainment, and indoor exercise has increased significantly, whereas normal shopping, social gatherings, religious gatherings, outdoor exercise outdoor entertainment, local travel, and travel outside the city have been reduced significantly. Vendors' opinions on the performance of the government goods which are the relevant stakeholders were consulted, the rule of law was ensured, and they were informed of the process and decisions, also they found the response of the government was quick and a consensus approach followed in decisions and also responsible officers were made answerable.

Vendors are happy with the functions of the state government during COVID-19 on Policymaking, implementation of policies, guidance to different stakeholders, and maintaining peace and stability, but they are dissatisfied with no provision of compensation for their livelihood loss. Respondents are quite satisfied with the major functions of the Bhubaneswar Municipality during the COVID-19, providing safety guidelines, information provision, Coordination with other departments, Capacity building of stakeholders, Surveillance, control & risk management, Loss compensation (income, loss of life etc.), Monitoring and evaluation to improve, allocate financial resources, provision of essential relief such as cooking food and dry food items but no cash and there is rare research on new issues shows in the TV or social media. For managing future pandemics, vendors are expected that the government should mainly focus on designing support packages in advance for vulnerable people and businesses, enhance the transparency of support packages for ensuring trust and accountability, strengthen healthcare facilities and services particularly the provision of more hospital bed, social hygiene practices and more focus should be on social safety nets.

VIII. SESSION III: ECONOMIC AND SOCIAL WELFARE OF JAPAN DURING COVID-19

10. Assessing the capacity of Japan to address the climate change disasters and its implication to respond to COVID-19 risk

Dr Yosuke Arino, IGES, Japan

Hydrological climate change disasters have been increasing over recent decades and will become intensified and more frequent due to global warming and population growth. It is therefore vital for the world to enhance adaptive capacity at all levels from national to local or individual, while simultaneously reducing exposure and sensitivity to climate hazards. At the same time, newly-emerging vulnerabilities due to ageing and depopulation and COVID-19 pandemic risks need to be combatted in an integrated manner. Hence, this presentation first introduces a study's methodology and findings about the capacity to adapt to climate change disasters, and it discusses the implications of simultaneously responding to COVID-19 risks.

In preceding literature, although adaptive capacity indicators at provincial and city levels have been devised, the local-level indicators are not necessarily tested for efficacy of risk reduction due to the limitation of long-term datasets on the local scale. Recognizing these, the study analysed the determinants of the adaptive capacity for reducing climate change disaster risks (i.e. human damages) in Japan, using an integrated analysis comprising field/interview and questionnaire surveys (Part I) and statistical analysis (Part II). Part I identifies the cognition of local government officials on key adaptive capacity and helps variable selections and refinement of the hypothesis for Part II. Subsequently, a risk assessment framework is adopted in Part II to identify the determinants of adaptive capacity across 47 prefectures in Japan for the period 1976-2014, while controlling for the variables of climate hazards and sensitivity.

The results of the study (Table 1) indicate that statistically-significant determinants for reducing human damages are not only hardware infrastructures but also software measures such as fire-fighting parties of local communities and fiscal spending of local governments for disaster relief and recovery. Moreover, the result of Part I shows key determinants as viewed by local government officials to include information and communication technology (ICT), the human capacity of local governments for disaster risk management (DRM), and community-based organizations for DRM. The methodology and findings are expected to be used for the policy-making in Japan and Asian countries that are prone to climate change disasters, and these can be even utilised for the discussion to respond to COVID-19 risks.

COVID-19 had a direct impact on deaths and an indirect impact of bringing about more social isolation, weakening the bond of local communities and causing mental illnesses.

These changes triggered by COVID-19 have given negative impacts on the vulnerability (adaptive capacity and sensitivity) of local communities in Japan (Figure 1).

Table 1. Determinants of adaptive capacity and sensitivity to reduce climate disaster risks in Japan

		Determinants in Questionnaire analysis (Part 1)	Determinants in Quantitative analysis (Part 2)	Determinants common in both analyses
Sensitivity	Human (Age)	Age	Proportion over 75	Proportion over 75
	House type		Wooden/one-storied house	
Adaptive capacity	Infrastructure		Hard infrastructure (coast, river, mountain)	
	Economy	Not much correlated		
	Education			
	Information	ICT (radio, TV, smart phone)	Not correlated	
	Local governance (risk awareness)	• Fire fighting party • Voluntary disaster prevention organization cover rate • Number of residents participating in local briefing session	Fire fighting party No data	Fire fighting party
	Institution	• Fire station • Number of times of local briefing session by the staff • Number of DRR government officials	Not correlated No data	
	Finance	• Financial status of local government • Local government disaster prevention budget scale	• Fiscal power index • Disaster relief expenses • Disaster recovery expenses	• Fiscal power index • Disaster relief expenses • Disaster recovery expenses (Financial status of local government, Local government disaster prevention budget scale)

Hence, synergized actions that can enhance the capacity to respond to the dual risks of climate change and pandemics should be pursued. Enhancing local bonds (social capitals) is essential in addition to national-level actions such as providing vaccination and waterfront measures at airports and individual actions such as wearing masks. Municipalities' networking with NPOs and citizen/religious groups can enhance social capitals to help each other. Moreover, innovative actions including ICT to enable each individual to trace close contacts of COVID-19 can be a solution to synergise responses to both risks.

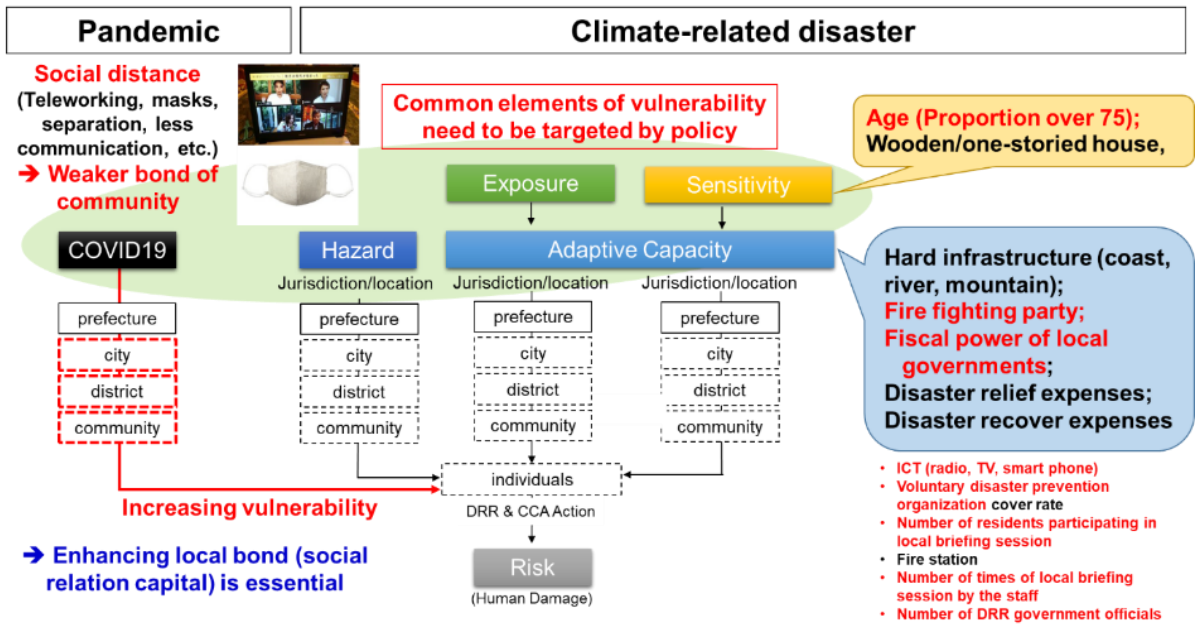


Figure 1. Structure of risks of climate-related disasters and pandemics and implications to synergistically respond to these risks

11. Sustainable Lifestyles and resilient livelihoods in the post-pandemic transitions

Dr Atsushi Watabe, IGES, Japan

Science has clarified the vast potential of carbon reduction through demand-side mitigation efforts, including transforming our lifestyles. According to the study by IGES and Aalto University, we should cut down our carbon footprints associated with our daily living (hereafter called lifestyles CFP) from 4.8t CO2e/person/year to 2.5t in 2030 and 0.7t in 2050 to meet the 1.5-Degree target of the Paris Agreement. This is a very ambitious target given the high footprints in some countries, such as Japan (7.6t in 2015).

Since 2019, IGES has worked with local governments, citizens and businesses to analyse the citizens' carbon footprints in cities and communities and identify the opportunities for changing citizens' lifestyles. We collaborated with six cities in 5 countries (Japan, India, Thailand, Brazil, and South Africa). We analysed the lifestyles-related CFP in respective cities, based on the carbon intensity and consumption statistics, and developed lists of low-carbon behaviours with possible CFP reduction potentials. Then 30 to 40 citizens gathered in the workshops to discuss the opportunities for low-carbon lifestyles taking account of the available infrastructures, products and services and the demands of the citizens. Following the first workshop, participating citizens brought back the ideas of low-carbon behaviour options, tested some of them for two weeks, and recorded what they could and could not do in their daily lives. Participants gather again and exchange their learnings to develop the city's future visions of low-carbon behaviours. The results were summarised in the 6 City Visions released in September 2021.

Since late 2021, IGES has tried to utilise the methodology in the local governments' planning process: In the city of Odate, Akita Prefecture, IGES has collaborated with the citizens to provide inputs to the city's carbon neutrality plan toward 2050. About 15 citizens aged 15 to 70 exchanged their views on lifestyle changes. In a depopulating rural city, some low-carbon behaviour options were not attractive to the citizens. For instance, the reduction of the use of private cars is effective in reducing the carbon footprint. But such an option makes people feel anxious unless alternative systems allow them to move to their workplaces, hospitals, shops, and so on. Moreover, people are often afraid of job losses or price hikes. Thus, if we try to talk to them to reduce car use to mitigate climate change, only a few people will listen to us.

However, when they start talking about the future of their living conditions, such as ageing and population decrease, they are already aware that their local society needs an alternative transportation system that allows people to access essential services even when they become older and are no longer able to drive cars. They start seeking opportunities to collaborate with local authorities and businesses toward creating such alternatives together.

In such manners, local people are not just the recipient or beneficiaries of the transitions but the primary drivers of innovation in the systems providing nutrition, housing, healthcare, and learning, that are circular, decarbonised and more accessible.

12. What COVID-19 means for Japan's disaster risk reduction (DRR) capacity?

Mr Masashi Tsudaka, IGES, Japan

The presentation started with an introduction of Speaker Mr Tsudaka, and the substance of this presentation was set to subjective observations based on his humanitarian experiences in disaster fields rather than statistical analyses of objective data. He first compared COVID-19 response measures in Myanmar and Japan. Myanmar largely used non-material coping mechanisms within communities through voluntary actions. The decision was made by the small geographical unit based on each context. However, they struggled due to rumours and non-scientific information. On the contrary, the Japanese public waited for top-down instructions to obey, and individual decisions were rarely made. However, once the system was set up and valuable information started to be timely shared, for example, the health sector became very efficient to save lives.

Secondly, he explained why Japan needs to be prepared for multiple disaster management. 10% of active volcanos on earth exist in the Japanese territory, and 20% of the world's earthquakes larger than magnitude six happen in Japan. Japan is exposed to such high volatility of natural disasters which increases the likelihood for the people to be sheltered. This contributes to high anxiety in society, and to reduce it, people tend to pay serious attention to preparedness. The public administration's reaction to the pandemic was the need to prepare a COVID-proof disaster management system.

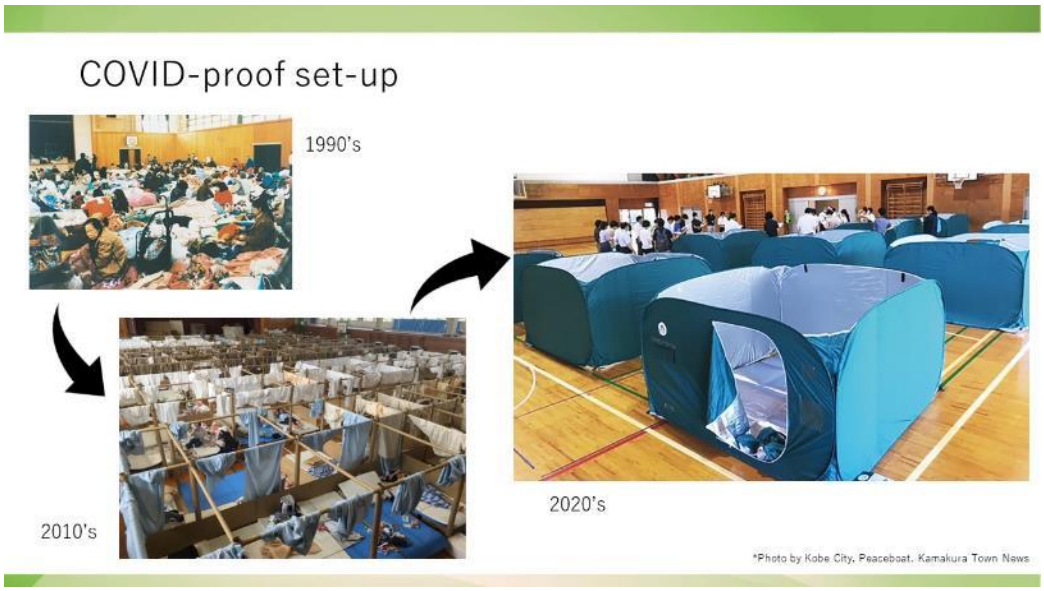


Figure 2. COVID-proof facilities implemented during the COVID-19 in Japan

Japan usually uses schools as temporary shelters. The presentation slides showed some photos of shelters decade by decade. The temporary shelters developed from gathering places to the household-based unit to more private spaces with partitions. COVID-19 has added another element to have a separate space with a bed with good ventilation in case a person gets ill. With the aged population especially in rural Japan, the shelter is always better to be equipped with quasi-hospital type units because many who seek shelter already have a certain level of chronic diseases which can rapidly deteriorate their health status once they get infected by COVID-19.

Thirdly, Mr Tsudaka tried to unwrap the meaning of preparedness in a multi-layered disaster such as a natural disaster combined with the pandemic. From the civil service point of view, the provision of infrastructure, guidelines and training opportunities can be preparedness. For those, equipment, ICT and resources can be key to delivering such services. Moreover, those who are sheltered also need to have awareness (a certain level of anticipation on how life can be in the shelter), discipline and micro-level governance (household, community level). It is important to understand that "preparedness" is a multifaceted concept that each stakeholder needs to function to promote DRR.

Even if all the efforts for preparedness were made, Mr Tsudaka lastly stressed that people's compassion and teamwork would save lives in the time of disaster as he has seen in a disaster volunteer centre during the East Japan Great Earthquake and Tsunami. When people unite to overcome a great difficulty, preparedness has the largest impact.

13. Relationship between COVID-19 and climate change: Policies in Japan

Dr Yasuko Kameyama, NIES, Japan

Japan did not focus on a positive relationship between COVID-19-related policies and climate change mitigation policies. Ideas such as the EU's "Green New Deal" or Mr Biden's "Build back better" during his presidential election campaign were not heard in Japan. Investment into renewable energy, energy-efficient buildings, electric vehicles, virtual meetings, etc. Hence, Japan implemented some COVID-19-related policies that contradiction with climate mitigation policies. Examples included "Go-to-travel", which subsidized expenditure for sightseers' travelling. Even today, Japan's two policies (COVID-19 policies and climate mitigation policies) are considered separately. In the latest climate mitigation policy package, the net-zero emission strategy is considered as subsidizing innovative technology development, particularly those related to energy. Very few debates on climate justice or social equity. It should be noted that those who have economic difficulties are the ones who will be affected most, both by COVID-19 as well as climate mitigation policies.

Researchers at NIES had a fruitful meeting with the Indian research team on 25 Nov. 2022. The NIES team made an introductory presentation about NIES. Then, it also made a presentation about activities conducted by the Center for Climate Change Adaptation. The centre was established in 2018, based on a new legislation Climate Change Adaptation Law, adopted also in 2018 by the national Diet.

The centre is responsible for the implementation of the law as well as for conducting research related to climate change impact and adaptation. As for the implementation of the law, the centre offers data related to the impact of climate change, such as temperature and precipitation changes, to local areas in Japan, to help local governments, develop their respective climate change adaptation (CCA) plans. As for research, the centre staff conducts the acquisition of monitoring data and modelling exercises to estimate future changes. AP-PLAT is a website platform to display the latest scientific knowledge related to climate change impacts in the Asia-Pacific region. Because India is a significant member of the Asian region, data related to weather patterns in India is important for the Center for Climate Change Adaptation to conduct research on the region and contribute to data dissemination via AP-PLAT. By having meaningful discourse between the NIES team and the Indian research team, both teams shared a common understanding and interest in appointing an institution in

India where it can play a role similar to the Center for Climate Change Adaptation where climate change impact related data in India can be gathered in one place. The data should be obtained at high resolution so that local governments in India can consider their adaptation plan. The two teams discussed areas for further collaboration.

14. Impacts and implications of the COVID-19 crisis and its recovery for achieving Sustainable Development Goals (SDG) in Asia

Dr Xin Zhou, IGES, Japan

Starting as a health emergency, the COVID-19 pandemic has evolved into a global crisis impacting health, the economy, society, the environment and institutions. The crisis reveals that building a resilient and sustainable society is important and achieving the Sustainable Development Goals (SDG) is urgently needed. It is imperative to ensure that the immediate COVID-19 response measures and the medium to long-term development planning are tailored to building a resilient society which is in harmony with nature.

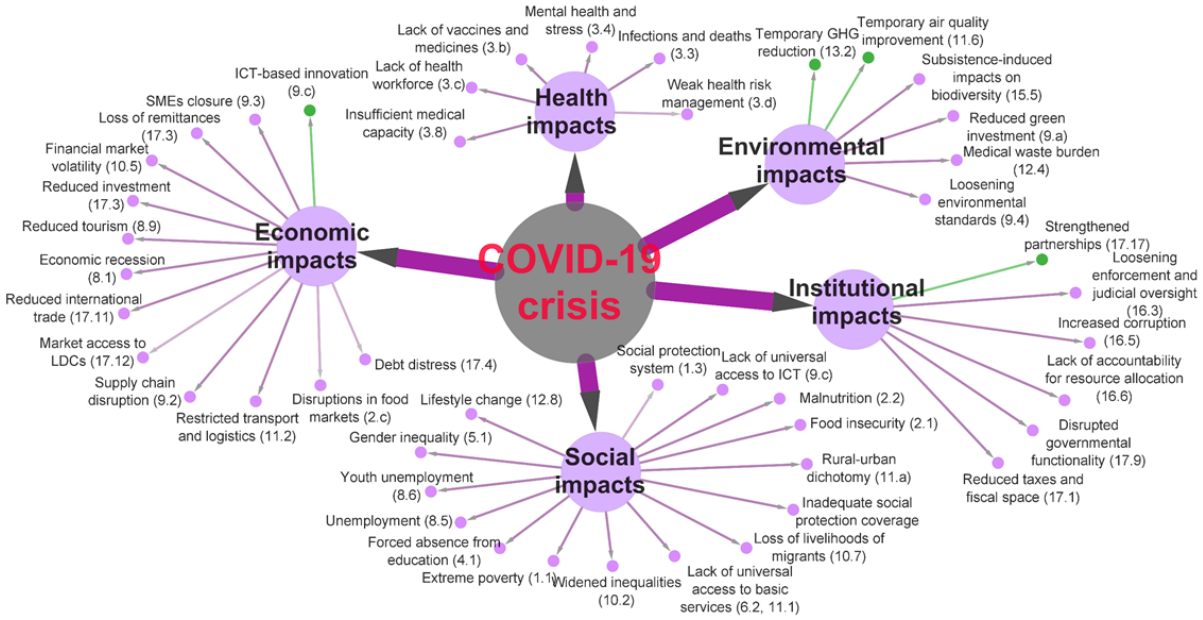


Figure 3. COVID-19 pandemic and global repercussions

To address the root causes of the global crisis, we developed a framework for building a resilient and sustainable (R&S) society in the post-COVID-19 era from a systemic perspective. The R&S framework, including individual resilience, infrastructure resilience, environmental resilience, structural resilience and institutional resilience, is closely linked with the SDGs.

- Individual resilience links with food security and nutrition (Goal 2), access to basic services (Goals 1, 3, 6, 7, 9 and 11), stable jobs and decent work (Goal 8), etc.
- Infrastructure resilience links with: hospitals, healthcare systems (Goal 3), water supplies, sanitation and sewage (Goal 6), telecommunication networks (Goal 9), etc.
- Environmental resilience links with: freshwater (Goal 6), climate change and mitigation (Goal 13), marine ecosystems Goal (14) and terrestrial ecosystems (Goal 15), etc.
- Structural resilience links with social protection systems (Goal 1), gender equality (Goal

5), social inequalities, sound financial markets and institutions (Goal 10), etc.
- Institutional resilience links with policies for pro-poor and gender-sensitive development (Goal 1), rule of law and good governance (Goal 16), finance, investment, technology, policy coherence (Goal 17), etc.

The five R&S areas and their sub-components are interlinked their achievements require an integrated approach to take account of the synergies and trade-offs. We developed a four-step methodology for identifying and quantifying the interlinkages among the SDG targets. We used this methodology to analyse the synergies and trade-offs among the R&S areas and recommend priority areas for their achievements.

- The employment structure with 68% of jobs in the informal sectors in Asia is vulnerable. Transition policies, such as the promotion of renewable energy and removing fossil fuel subsidies, may cause employment trade-offs which should be taken into account in policymaking.
- The significance of sanitation and hygiene is even more pronounced during the pandemic. Insufficient investment due to the lack of financial resources becomes a development drag. Strengthening domestic and international financial resource mobilisation is important.
- Biodiversity conservation has been regressive in Asia driven by unsustainable agricultural and industrial production and unsustainable resource use. Major changes in consumption and production patterns are needed to achieve positive human-environment linkages.
- Structure-related issues such as inequalities and the coverage of social protection systems have been worsening in some Asian countries caused by enlarged gender inequality, among others, which needs to be addressed.
- Institutional resilience through building strong governance is an important enabler for achieving R&S. Promoting the rule of law, which is poor in Asia, is needed to remove its drag on other development areas.

IX. SESSION IV: UNDERSTANDING GAPS IN THE RESEARCH AND POLICY PROCESSES AND THEIR IMPLICATIONS

15. Environmental resilience and transformation in times of COVID-19: Climate change effects on environmental functionality

Dr Pankaj Kumar, IGES, Japan

While research work on human health and food security scarcely considers the surrounding natural ecosystems, a relatively new discipline, called planetary health, examines the health of human being along with the state of the natural systems or global environmental changes/challenges on which it depends. The field of planetary health is gaining attention, as the connections between human well-being and ecosystem health become increasingly evident. Infectious outbreaks, like COVID-19, threaten to become more common as human populations destroy habitats, forcing wildlife into closer proximity to humans. COVID-19 is very symbolic of such frequent disturbances we have imposed on ourselves by destroying the ecosystem balance.

To restore and maintain planetary health, the international community must act to promote not only technological innovations but also social and lifestyle innovations. The role that science and technology play in improving people's health and well-being is significant. However, we must not forget that 'innovations' most broadly defined—social system and lifestyle innovations in addition to technological innovations—are essential for the transition to a sustainable, resilient, and inclusive society.

Regarding the COVID-19 pandemic, all of us are aware that COVID-19 has affected the whole world in every possible way whether it is an economic meltdown, loss of life, loss of employment etc. The COVID-19-induced lockdown has also bought several challenges as well as some opportunities for all of us. We should build a resilient society by finding better adaptation and mitigation approaches to live efficiently in the new normal condition.

Considering this unprecedented condition, a sound scientific study is very important, which can give a clear picture of cross-cutting issues whether estimating the effect of COVID-19 on natural resources, socio-environmental processes etc., or looking for different possible solutions from management and governance point of view.

Considering this aforementioned knowledge gap, this book is very timely in nature as this has a wide spectrum of issues covered. The unique part of this book is both spatial and thematic coverage. The book presents five different themes with thirty-four different chapters trying to give a clear picture of the above problems. The first part of the book deal with assessing the

effect of COVID-19 pandemic-induced lockdown/emergencies on socioeconomic and environmental aspects. It ranges from impacts on water, atmosphere, marine environment, human health, and economy, considering case studies from different continents. It gave a comprehensive analysis from both developed and developing nations, which makes it more appealing in nature.

The later part of the book is dealing with the impact of COVID-19 on different efforts and progresses made by different nations to achieve global goals and governance as promised at different platforms. Then this book discusses different ways forward to achieve global goals with a specific focus on SDGs. It includes environmental justice, governance, and a transdisciplinary and holistic approach. Some of the key examples to achieve systematic changes are a green economy, nature-based solutions, better nature-human relations, food-water-health-energy nexus, net-zero society, interlinkage between different SDGs etc. The bottom line of the message is that even though we have different management solutions, we need to carefully judge the trade-off and synergies between the different management options available for sustainable environmental development and its relation to human well-being.

Featuring many case studies from around the globe, this book offers a crucial examination of the intersectionality between climate, sustainability, the environment, and public health for researchers, practitioners, and policymakers in environmental science.

16. Over-simplified communication of disease spillover risk during the COVID-19 pandemic

Mr Andre Mader, IGES, Japan

In the abundant media around COVID-19, one common message has been that land change (an umbrella term for various kinds of destruction and degradation of nature) increases the risk of zoonotic disease spillover. Like other studies, we found that the empirical literature is, however, far from unanimous on this question. In a small majority of cases we reviewed, there was a positive correlation between land change and spillover risk. There were, however, many other studies that found a mixed, uncertain, or even negative relationship between land change and spillover risk. Unlike any previous studies we are aware of, we found that the secondary peer-reviewed literature, defined as commentary and some reviews, mostly matched the media's oversimplified message. This is a concern for at least three reasons:

1) If policy decisions are based on a broad generalization that does not acknowledge multiple exceptions, communities living under such exceptional circumstances could be severely disadvantaged. For example, in some cases, the removal of vegetation or wetland areas can protect communities from disease vectors.

2) In cases where land change turns out not to increase spillover risk, or even decreases it, the credibility of the body of literature and media may be severely discredited.

3) Too much emphasis on the land change as a driver of spillover risk, may result in too little attention to other known drivers of spillover risk such as wildlife farming, global travel, and accidental transmission to researchers.

To improve accuracy and increase nuance, we advocate specifying context, defining terminology, describing mechanisms, and acknowledging uncertainty.

17. Planetary health and the triple R framework

Dr Eric Zusman, IGES, Japan

The novel coronavirus disease (COVID-19) pandemic has caused immense suffering and loss in nearly every corner of the globe. Yet, as often occurs with crises, COVID-19 has also offered an opportunity for a more inclusive, resilient and sustainable course change in development. The course change is urgently required because threats like COVID-19 are partially related to the need to protect the health of the planet.

This presentation underlined the close links between COVID-19 and the growing call for protecting planetary health. It then suggested the design features of the framework that helps policymakers protect the planet and its people. What the Institute for Global Environmental Strategies (IGES) calls the "Triple R" Framework consists of connecting targeted "response" interventions with broader "recovery" policies and related stimulus spending while "redesigning" socioeconomic systems to support the framework's response and recovery elements.

In many ways, this Triple-R framework parallels approaches that have been suggested in multi-level sustainability transitions in that it calls for aligning narrow responses with broader policy and institutional reforms. It also calls for taking advantage of external events to drive forward transformative changes to existing systems.

In recommending that policymakers use the Triple-R framework, the presentation then demonstrated how the framework applies to actions taken in Kawasaki, Japan. In Kawasaki, policymakers not only adopted narrowly focused measures to respond to the immediate health impacts of COVID-19, but they also used recovery funds to support broader shifts needed for a redesign of the industrial structure and infrastructure in the city. In addition, Kawasaki has benefited from a redesign of institutions that have strengthened the alignment between local and national climate policies.

The presentation closed by underlining that a similar framework could be employed to retain improvements in air quality that followed COVID-19-related shutdowns. This will happen if there is an emphasis on aligning smaller project-level changes with broader policy and institutional reforms against the backdrop of crises.

18. Systemic links between COVID-19 and development: Developmental implications

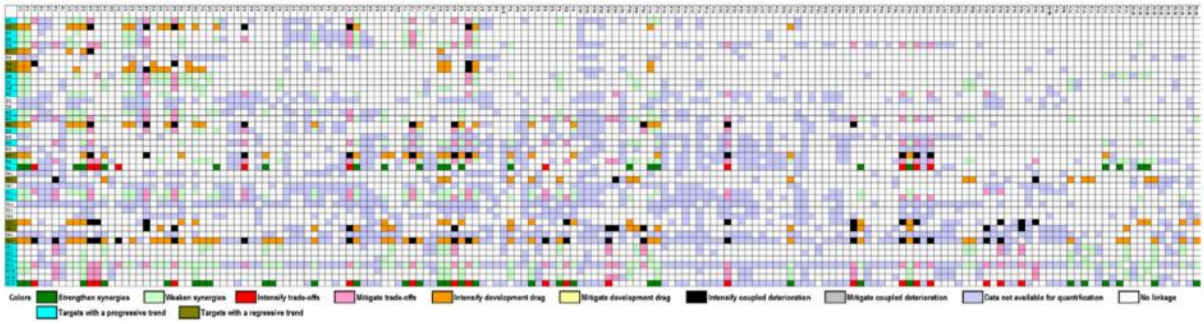
Dr Mustafa Moinuddin, IGES, Japan

The COVID-19 pandemic has reversed decades of progress in many developmental areas and aggravated the already-existing gaps in implementing Sustainable Development Goals (SDGs). Measures by countries to recover from the crisis have been varied. These measures, if designed properly and implemented efficiently, can stimulate progress in many pandemic-hit SDG areas, with synergistic effects on other SDGs. However, ignoring the broader sustainability perspectives may further intensify the existing trade-offs, particularly in the environmental domain.

We proposed and applied an SDG interlinkage methodology to assess the impact of COVID-19 and its recovery on the SDGs (Zhou and Moinuddin, 2021). While COVID-19 is a global tragedy, implementing an effective recovery may enhance global resilience and sustainability.

This study aimed at contributing to seizing this opportunity in Asia. Using the IGES SDG Interlinkages Analysis methodology, we analysed the impacts of COVID-19 and the implications of the recovery measures for Bangladesh and the Republic of Korea.

Our study found that COVID-19 exposed the vulnerability of individuals, communities, societies, and many global systems such as the global value chains. Between the two countries, the negative shock was more severe in Bangladesh, affecting the livelihood of many. Economic slowdown improved the environmental domain, but only temporarily. The crisis, however, has provided an impetus for innovation in both countries. As for the recovery measures, the focuses of the two countries are different and the impacts of these measures are expected to be different as well. Bangladesh prioritised livelihood and economic recovery, but this may intensify some of the existing trade-offs with environmental SDGs and deteriorate biodiversity and ecosystems. In the Republic of Korea, where the focus is more on the Korean New Deal, stimulating progress in some areas such as renewable energy and resource efficiency will help interlinked sectors such as health and basic services.



Derived impacts of COVID-19 from SDG interlinkages perspective: Republic of Korea

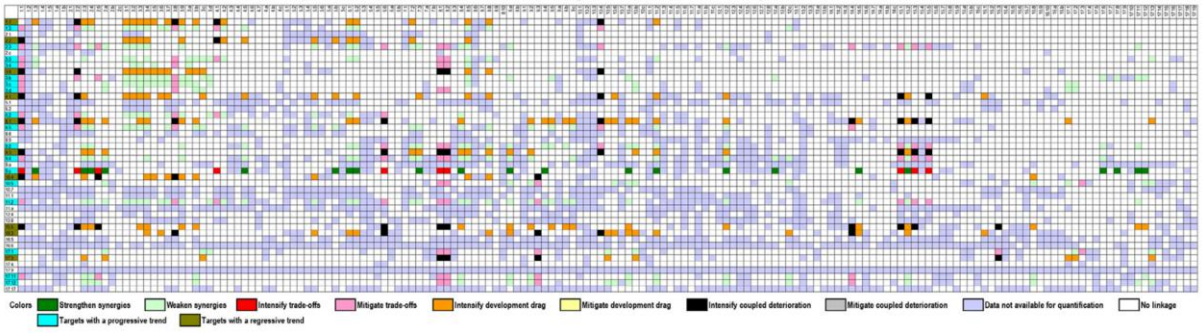


Figure 4. Derived impacts of COVID-19 from SDG interlinkages perspective: Republic of Korea

Amid the growing call for building back better, our interlinkage analysis for the case study countries also demonstrates the significance of resilience building. For example, the poor and marginalised in both countries are vulnerable to the crisis. In Bangladesh, the poor were directly hit by derived impacts: health damage disrupted agricultural production and food insecurity, school dropouts, interrupted basic services, or losing jobs and incomes. The country's inadequate social protection system exacerbates the compounding effects of poverty). In the Republic of Korea, the existing regressive trend in poverty elimination will be worsened due to the hit by COVID-19 and through derived impacts: damaged healthcare system, education interruption, and contracted economic growth.

The COVID-19 pandemic suggests that governmental plans and recovery policies should include resilience building to enhance the preparedness for future crises, such as those induced by climate change. The Korean New Deal appears to provide a broader, longer-term

framework incorporating resilience building, particularly for building environmental resilience.

Reference

Zhou, X. and Moinuddin, M. (2021) 'Impacts and implications of the COVID-19 crisis and its recovery for achieving Sustainable Development Goals in Asia: A review from an SDG interlinkage perspective', In A.L. Ramanathan et al. (eds) *Scenarios of Environmental Resilience and Transformation in Times of Climate Change: Effects and Lessons from the COVID-19*. Elsevier.

19. COVID-19 as a transboundary risk: Some risk management implications for Asia

Dr S.V.R.K. Prabhakar, IGES, Japan

Transboundary risks are risks that emanate from outside the boundaries of a country or region. Countries have always faced transboundary risks. Wars for example are a typical example of a transboundary risk as opposed to an internal conflict in a country. Climate change impacts can be transboundary in nature. For example, a drought or extreme flood event in a food exporting country can impact not only the food security of that country but will also impact the food security of the importing countries.

Pandemics span multiple countries, multiple continents, and even worldwide. COVID-19 is a perfect example of a pandemic, it evolved into a truly global pandemic. COVID-19 has affected 228 countries and territories infecting 642 million people and killing nearly 6.6 million people by the time of this seminar. While COVID-19 has affected individual countries due to infections within that country, COVID-19 emerged as a transboundary risk for several reasons: In-country impacts which were discussed in most of the seminar, and transboundary impacts which have similarities with climate change impacts including disruption of global industrial supply chains, increase in global food prices and disruption of the global tourism industry.

Disruption of Industrial Supply Chains: During COVID-19, a serious disruption of the production of various kinds of goods and services was observed. Disruption of transboundary movement of goods and supplies resulted in a shortage of goods in importing countries including raw materials and machinery used in manufacturing. Disruption of manufacturing occurred due to a lack of supply of industrial supplies/inputs. Underestimation of demand by manufacturers contributed to further effects (e.g. semi-conductors which take time to produce) and has contributed to shortages during and immediate aftermath of the lockdowns. Lockdowns and restricted movements resulted in a loss of sales and unsold inventory affecting the business revenues. Businesses had to sell off at low prices, especially for perishable goods resulting in losses. Supply chain disruptions were observed in the following order: manufacturing>construction>retail. Consequently, the global merchandise trade declined by 8.5 % in 2020 (OECD 2021).

COVID-19 has also increased food prices. As a result, the undernourished increased from 361.3 million to 418.0 million between 2019 and 2020 in Asia (ADB, 2021). A large part of this increase in undernourishment is attributed to an increase in food prices and reduced access to food. Food inflation in Asian countries ranged between 1 to 11% within a span of a

year (ADB 2021). Restricted movement of migrant workers affected farm operations leading to production disruptions and even food loss due to untimely harvests. The combined impact of reduced food production, disruption of transportation, and severe labour shortages negatively impacted the overall food economy.

Several of the above impacts could find commonalities with climate-related events as well. A similar impact could be observed during the 2008 and 2012 global food price crises. Nearly an 83% increase in global food prices between 2005 and 2008 was observed. Crops such as Maize prices increased by 300% while other crops also witnessed a similar increase in prices (e.g. wheat 127%, rice 170%). This led to a 10-15% decline in food consumption, and a 15-20% increase in food expenditure. This event affected 50-70% of poor households from 2007 to 2008 with an impact on the livelihoods of petty traders and labourers.

Another climate-related event to analyse for commonality is the Bangkok floods and industrial supply chain disruptions. A total estimated loss of 47 billion USD, 90% of the losses were accrued to Japanese companies and related investments due to the Bangkok floods. More than 550 Japanese affiliate firms were affected by these floods, and production facilities such as buildings and machinery were severely affected. As these firms provide supplies to other factories in Malaysia, Vietnam and Indonesia and other parts of the world, the production of these factories was also affected due to the shock to the supply chains. The loss borne by the Japanese insurance companies stood at about 1.8 billion USD. The impact on the industrial production of the world was estimated to be 2.5% (Haraguchi & Lall, 2015).

These experiences inform us of several commonalities between pandemic impacts and the impacts of climatic events. The factors that led to these common impacts include the interconnectedness of our socio-political and economic systems, regional and global economic and social integration, and distributed manufacturing/production systems with fragile connections. Risk governance structures that don't govern the entire system within which risks operate leaving 'risk islands' where disruptions can take place (typically and easily visualized in the case of supply chains that span across multiple countries and continents). Several similarities can be found among the exposure elements by both the COVID-19 and climatic events as discussed before (supply chains e.g.). Both have affected countries with high socioeconomic inequalities (Ringsmuth et al. 2022). Lack of sufficient information for decision-making and on the risk progression. Due to information imperfection, one could observe either excessive risk-taking or excessive risk aversion in both cases.

These experiences inform us of the need to embrace uncertainty. It is important to understand that not all risks are tacit, quantified, and replicated in our simulation exercises (e.g. Dr Eric talked about external shocks concerning policies and projects). This demands us to develop adaptive risk management systems that constantly evolve with iterative efforts. This also means constantly improving our risk assessment methods. There is a need to rely on policy simulations, mock drills and scenario exercise to understand the implications of inexperienced extremes.

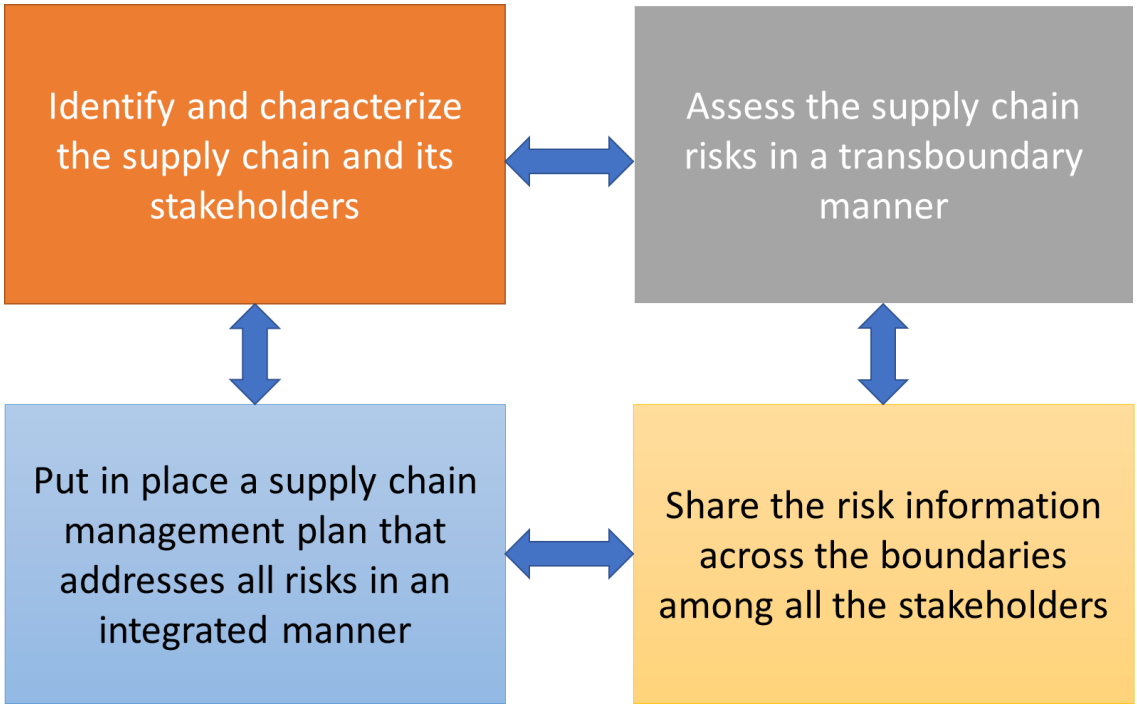


Figure 5. Supply chain risk management received greater attention during COVID-19 than ever before (Prabhakar, 2023)

At the institutional level, it means more independence of institutions and incentivizing institutional innovation, e.g. to encourage them to think long-term. We also need to bring a systems perspective to risk management. It means we need to look at the whole rather than understanding the whole as a collection of individual components or looking at them separately. The systems should encourage redundancy: Multiple pathways as in the case of identifying multiple supply chains to quickly shift sources on short notice; variety: Rely on a range of solutions, and engaging diverse stakeholders in the decision-making can contribute to resilience by bringing more flexibility to the system; and modularity: Design components of the system such that they can work independently if the whole has to collapse or contain the shock within a cluster. This also means some amount of redundancy of functions built into each cluster.

References:

ADB, 2021. Food Inflation and Food and Nutrition Security Situation in Developing Asia During the COVID-19 Pandemic. Manila, The Philippines: Asian Development Bank. Available at https://www.adb.org/news/features/food-inflation-food-nutrition-security-situation-developing-asia-covid-19-pandemic.

Haraguchi, M. and U. Lall, 2015. Flood risks and impacts: A case study of Thailand's floods in 2011 and research questions for supply chain decision making. International Journal of Disaster Risk Reduction, 14(3): 256-272.

OECD, 2021. International Trade in 2020: a look back and a look ahead. International Trade Pulse – March 202. Paris, France: OECD. Available at https://www.oecd.org/sdd/its/OECD-International-Trade-Pulse-2020-2021.pdf.

Prabhakar, S.V.R.K., 2023. Globalization of local risks through globally interconnected industrial supply chains. In: Adaptation Without Borders Transboundary Climate Risk

Flagship Report 2022. Brussels, Belgium: Adaptation Without Boundaries and European Union.

Ringsmuth, A. K., I.M. Otto, B. Hurk, G. Lahn, C.P.O. Reyer, T.R. Carter, P. Magnuszewski et al., 2022. Lessons from COVID-19 for managing transboundary climate risks and building resilience. Climate Risk Management, 35: 100395.

X. ANNEXURES

1. Profiles of the project team members

JSPS-ICSSR Seminar Visiting Team 2022

Dr. S.V.R.K. Prabhakar

Principal Policy Researcher, Institute for Global Environmental Strategies, Hayama, Japan

Dr Prabhakar works on the subjects of transboundary impacts of climate change, mainstreaming CCA and DRR into development plans and policies, risk insurance, adaptation metrics, adaptive policies and institutions, loss and damage, vulnerability assessments, and capacity needs assessments. He led research and development projects on climate change adaptation (CCA) and disaster risk reduction (DRR) in South and South-East Asian countries. He obtained a PhD in Field Crop Management from Indian Agricultural Research Institute, India, and worked for more than 20 years in participatory research and development with international and national research and development organizations, including IGES, Kyoto University, UNDP, NIDM, CIMMYT-RWC, IARI, and ICRISAT. A strong publication record with several peer-reviewed papers supports his work experience. He has been a Contributing Author to the Fifth and Sixth Assessment Reports of the IPCC Working Group II, Coordinating Lead Author for the UNEP Geo-6 report, Lead Author for the ASEAN State of Climate Report (SOE6), and Lead Author for the HIMAP Report.

Webpage: https://www.iges.or.jp/en/about/staff/sivapuram-prabhakar
Google Scholar: https://scholar.google.com/citations?user=2QNDqvoAAAAJ&hl=en

Prof. Chandra Sekhar Bahinipati

Assistant Professor, Department of Humanities and Social Sciences, Indian Institute of Technology Tirupati, India.
Execute Committee Member (Elected), Indian Society for Ecological Economics (INSEE)

Prof. Bahinipati works as an Assistant Professor at the Indian Institute of Technology in Tirupati, India. His major research interests include climate change economics, environmental economics, behavioural economics, natural resource management and development economics. He has carried out several research projects sponsored by the Indian Council of Social Science Research (ICSSR), South Asian Network for Development and Environmental Economics (SANDEE), Asia-Pacific Network for Global Change Research (APN-GCR), International Institute for Environment and Development (IIED), GIZ-India, Organisation for Economic Cooperation and Development (OECD), and Institute for Global Environmental Strategies (IGES).

Webpage: https://hss.iittp.ac.in/dr-chandra-sekhar-bahinipati#
Google Scholar: https://scholar.google.com/citations?user=uck6G1EAAAAJ&hl=en

Prof. Anil K. Gupta

Professor of Policy-Planning & Strategies, DRR & Sustainability, Head of the Division, Coordinator - International Cooperation, Advisory Services.
Programme Director - Centre for Excellence on Climate Resilience, National Institute of Disaster Management (Ministry of Home Affairs, Govt. of India), New Delhi, India

Prof. Gupta joined NIDM in 2006. He is a disaster mitigation & crisis management professional. He obtained PhD in 1995, Post-doctorate from (CSIR, NEERI in 1996. He possesses interdisciplinary expertise, in institutional development - administration & management, coordinated several international/national projects, over 100 publications including 10 books and 45 papers, and guided PhD research. His area of interest includes risk/vulnerability analysis, DMP, PDNA, CCA-DRR, housing safety & local emergency preparedness, DM planning, governance, etc. He also served NMDC, DMI, NEERI and CICON in administrative/technical capacities. He is the coordinator of the Technical Advisory Committee of NIDM, a member of Governing Council & Academic/Research Advisory of several institutions and High level/Ministerial delegations abroad.

Google Scholar:
https://scholar.google.com/citations?hl=en&user=hDIVB4AAAAAJ&view_op=list_works&authuser=1

Prof. Bejoy K. Thomas

Associate Professor and Associate Dean (Academic, Graduate Studies), Department of Humanities and Social Sciences, Indian Institute of Science Education and Research, Pune, India.

Prof. Thomas is an interdisciplinary social scientist working on development, sustainability and water resources. Originally trained in Economics, he received a PhD in Development Studies from Tilburg University, The Netherlands. He was a Fellow at ATREE, Bangalore and has held visiting positions in University of Waterloo, Canada and The University of British Columbia, Canada.

Thomas's recent research focuses on water resources management, where he has been collaborating with engineers and natural scientists, and undertaking research projects and outreach in agrarian and peri-urban areas. He looks at water management in an integrated manner taking a river basin perspective. He is specifically interested in the questions of adaptation, water access and use in agricultural and domestic sectors.

Webpage: https://www.iiserpune.ac.in/research/department/humanities-and-social-sciences/people/faculty/regular-faculty/bejoy-k-thomas/346
https://sites.google.com/view/bejoykt/home

Prof. S. Subash

Associate Professor, Department of Humanities and Social Sciences, Indian Institute of Technology Madras, Chennai, India.

Prof. Subash is interested in working on Foreign Direct Investment, Economics of Innovation and Technological Change, Small Firms and Industrial Development, and International Trade. He is also an affiliated researcher with the Centre for Technology, Innovation and Economic Research (CTIER). He is an Associate Editor of the Indian Economic Journal, IIM Kozhikode Society and Management Review, Sage Publications, Editorial Board Member, S N Business and Economics, and Springer Nature. He obtained PhD in Economics in 2008 and M.Phil in Planning and Development in 2003 from the Indian Institute of Technology Bombay. He is a recipient of the UNCTAD-India post-doctoral fellowship at the Centre for Development Studies, Thiruvananthapuram, 2008.

Webpage: https://hss.iitm.ac.in/team-members/subash-s/
https://sites.google.com/view/subash-s/home
https://scholar.google.co.in/citations?user=qO2OmwYAAAAJ&hl=en

Prof. Rahul A. Sirohi

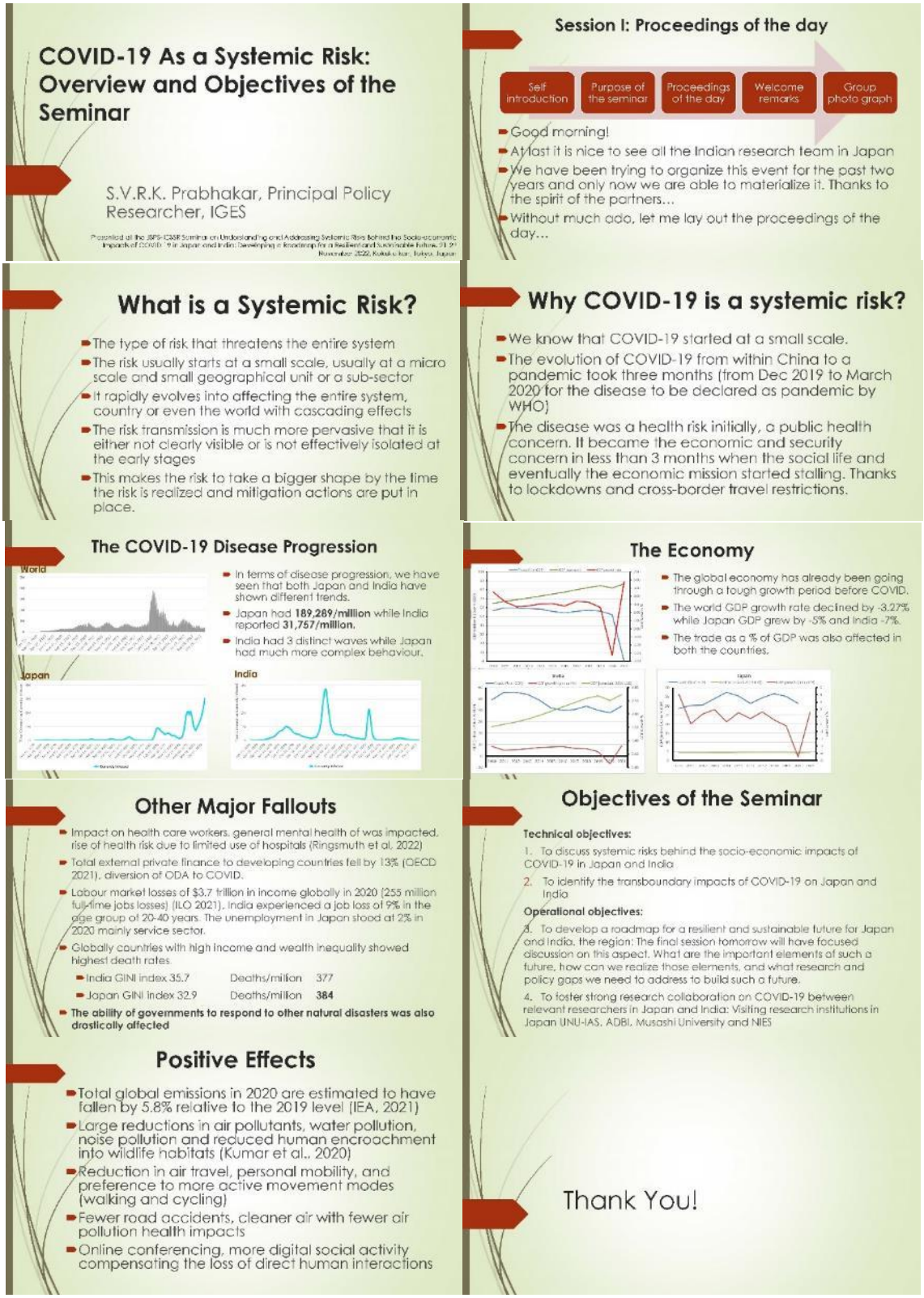
Assistant Professor, Department of Humanities and Social Sciences, Indian Institute of Technology Tirupati, India

Prof. Sirohi works in the areas of development economics and political economy. He has authored books on the development experiences of Asian and Latin American economies. He has published several peer-reviewed journal papers with highly acclaimed academic publishers.

Webpage: https://hss.iittp.ac.in/dr-rahul-a-sirohi
Scopus: https://www.scopus.com/authid/detail.uri?authorId=57193274319

2. PowerPoint Presentations

a) Session I: Overview and objectives of the seminar



b) Session II: Loss to the household economy due to lockdown: A case of COVID-19 in India

Loss to the household economy due to lockdown: A case of COVID-19 in India

Bino Paul, Unmesh Patnaik, Kamal Kumar Murari, Santosh Sahu, T. Muralidharan

Introduction

2

- The ensuing lockdowns due to COVID-19 have resulted in multiple economic challenges for transitional economies like India.
- Households play a pivotal role in the circular flow of goods & services, especially in post-colonial economic systems.
- Indian labour market vastly differs from geographies like the US, Europe & China (regular wage employment accounts for one-fourth of total employment).
- In the absence of jobs with any employment relations, employment streams tend to be embedded with the household economy that has principal stakes in production, consumption & distribution.
- The impact of the lockdown on India while different from the above geographies may be representative of other countries in South Asia.

Objective

3

- We attempt to examine these with the COVID-19 breakdown of the economic system as a case.
- The approach is replicable for other exogenous risks but could become endogenised within the economic system resulting in the suspension or disruption of economic activities.

Methods

4

- Counting & Accounting the labour in the economy
- Employment & Unemployment Status
- Types of Employment
- Status of Employment: Principal & Subsidiary
- Computing the Losses to Household Engagements due to Lockdown: Wages & Earnings in different sectors
- Aggregating Employment with Losses across different sectors & groups
- Scenarios for Loss Calculation during Lockdown Periods

Data

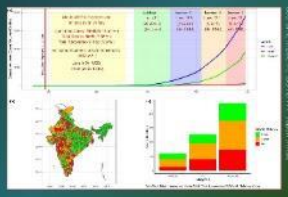
5

- Covid-19 Cases: Centre for System Science & Engineering, John Hopkins University
- Census 2011: Govt. of India
- Periodic Labour Force Survey 2019 microdata: Govt. of India

Results (Losses)

6

- Economic activity suspensions result in a daily loss of 2.42 billion USD for households.
- Approximately 0.679 billion USD (28 %) is the wage loss.
- The rest 1.741 billion USD (72%) is the loss in earnings, discounting for wage protection present for some.

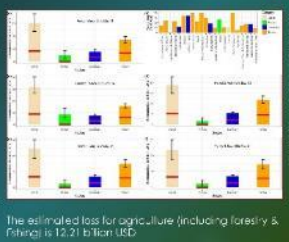


Does not account for the losses to the industry & government, which would escalate the figure.

Results (Losses)

7

- Maximum impact on the services sector with the loss standing at 33.59 billion USD (28.06, 39.44).
- The secondary & primary sector losses are 19.68 billion & 12.42 billion USD, with high variability.
- The wholesale (retail & trade) is the most affected with a loss of 16.26 billion USD during 68 days of lockdown.
- Manufacturing sector has a loss of 12.65 billion USD



The estimated loss for agriculture (including forestry & fishing) is 12.21 billion USD

Results (Extremely Vulnerable Employment)

8

- Employment stability is the chance of remaining in the same engagement during a short time.
- Higher chances of transition imply more vulnerability.
- For SE & R, chances vary from 0.07 to 0.1.
- For CL the measure varies from (0.19 to 0.29).
- Extremely vulnerable employment is a subset of not just precarious consumption patterns but also uncertainties due to frequently changing occupation

Nature of Employment	Status of Employment	Chances of Transition	Share in Employment	Count of Extremely Vulnerable Workforce (Million)
		(1)	(2)	(3)=(1)*(2)
Casual	Casual wage labour - Non-agriculture	0.287	0.087	25.0
	Casual wage labour - Agriculture	0.194	0.045	8.7
Regular	Regular wage/Salary earners in Wage employment	0.076	0.049	3.7
Self Employed	Employer	0.106	0.018	1.9
	Own account worker	0.068	0.123	8.3
	Unpaid helper in household enterprise	0.000	0.000	0.0
	Total	0.072	0.078	5.6

Note: Sample size = 422,331. NREGA is National Rural Employment Guarantee Act of the Govt. of India that ensures 100 days of employment to one. Author calculations based on PLFS microdata, 2019

While 25 million casual workforces are extremely vulnerable, the share in R & SE report 13 million & 20 million respectively

Conclusion

9

- Structural change, like a lockdown due to COVID-19, may have a permeable impact on the extremely vulnerable.
- The dominance of informal job contracts & job switching in labour markets intensifies this phenomenon.
- Public policies may envisage:
  - Upgradation of household-based production into high value-added activities across supply chains in this economy.
  - Absorbing the casual workforce in public work systems, particularly transient actors like migrants, to create assets for a sustainable & inclusive society.
  - Building labour market intelligence systems that coordinate matching between the supply & demand of labour through affordable digital solutions.
  - The direct transfer of monetary benefits to the extremely vulnerable transient labour.

The Impact of COVID-19 on the Household Economy of India

Bundesrepublik Deutschland

Urkunde

10

Knowledge Outputs

c) Session II: SMEs and COVID-19: Financial constraints and role of government support

SMEs and COVID-19: Financial Constraints and Role of Government Support

Subash S
Indian Institute of Technology Madras

*with Radeef Chundakkadan, IIT Bombay and Rajesh Raj S N Sikkim University

Introduction

- The COVID-19 significantly impacted the world economy.
- Governments resorted to several measures that curb economic activities(Carnap et al., 2020).
- The intensity of the adverse effect fell severely on the small and medium enterprises (SMEs), which are more financially constrained (Cao and Leung, 2020; Baldwin and Mauro, 2020).
- Policy makers relied on various forms of short-run and long-run policies to support SMEs (see Humphries et al., 2020).
- **Objective**:
  explores the impact of the pandemic-led crisis on financially constrained SMEs and the role of government support to offset the perils of the economic shock.

Introduction

- Previous studies:
  - SMEs are financially more constrained, and the presence of financial constraints poses a negative impact on the growth and survival of SMEs
- The COVID-19 pandemic has added to the existing woes of SMEs.
- Financial constraints could severely impact millions of jobs and, affect development goals
- The need for financial support for SMEs becomes imperative during the time of crisis

Introduction

- **An important question**- whether these support measures have really succeeded in targeting financially vulnerable SMEs?
- Further, we examine whether financially constrained firms resize their workforce in response to the pandemic.

Contribution

- Our study links firm survival with constraints to access to finance during the COVID-19 crisis
- We examine whether the government support measures are channelized to financially constrained firms, and how these measures have helped the firms to cope with the crisis
- Focus on employee layoffs during the time of crisis, and whether the firms have resized their workforce in response to the pandemic

Economy in the peril of COVID-19

- COVID-19 shock turned out to be a leading factor for the current economic recession, which affected firms both from demand and supply sides (Baldwin and Mauro, 2020).
- The supply chain disruption led firms to shut down their operations and worker layoffs, which further accelerated the intensity of the crisis.
- Contraction in global GDP, shutting down of businesses, disrupted millions of lives and jeopardized decades of development progress.

Economy in the peril of COVID-19

- MSMEs in emerging and developing economies faced the brunt of the widespread disruption.
- Sudden and prolonged lockdown led to widespread exit of SMEs since they are more financially constrained, heavily reliant on internal funds and informal sources of finance (Cao and Leung, 2020).
- The policy measures:
  - **SR measures**: income and profit tax deferrals, loan guarantees and direct lending, and wage subsidies to
  - **LR measures**: new alternative markets, teleworking and digitalization, innovation and training of the workers.

Data

- ✓World Bank COVID-19 Follow-up Enterprise Survey (CFES).
  - This survey is conducted during May-December 2020.
  - The CFES provides information on 25,114 firms belongs to 34 countries during the pandemic period.
  - We mainly use the information on operating status, issues related to finance issues, government support, employment, and adjustments in production/services.
- ✓World Bank Enterprise Survey (WBES) - age, location, and international exposure.
- ✓Matching WBES and CFES - 23,486 firms.
- ✓**Data cleaning**
  - Omit firms with missing values for any of the variables - final sample 12,858 firms.

Variables

Financial Constraint:

- We utilize the survey question "*How Much Of An Obstacle: Access To Finance (k30)*".
- Dummy variable that takes value 1 for the firms that face obstacles in accessing external finance; zero otherwise.

Govt Support:

- We construct this variable using the responses to the survey question "*…has this establishment received any national or local government support in response to the COVID-19 crisis? (COVJ1)*".
- Dummy variable, which equals 1 if the firm has received government support or expect to receive within 3 months , and 0 otherwise.

Variables

Government measures

- ✓Access to new credit (New Credit),
- ✓Cash transfers for businesses (Cash Transfer),
- ✓Deferral of credit payments, rent or mortgage, suspension of interest payments, or rollover of debt (Deferral),
- ✓Fiscal exemptions or reductions (Fiscal Measures),
- ✓Wage subsidies (Wage Subsidies),
- ✓Support in other forms (Other Support).

Variables

Coping with Pandemic:

- Survey question "*Has this establishment adjusted or converted, partially or fully, its production or the services it offers in response to the COVID-19 outbreak?* (COVc3)", which takes value 1, if the firm adjusted its production or services due to the pandemic; zero otherwise.

Layoff: ordinal variable from the responses to the survey question "*Has the number of permanent workers remained the same?* (COVd3a)".

- It takes the value 1 if the firm reports that the number of permanent workers has increased, 2 if it has remained the same and 3 if it has decreased.

Female-to-male layoff ratio:

This variable denotes the ratio of the number of female to male employees who have been laid off. This variable construction relies on the question "*Number of female workers laid off* (COVd7)" and *Total Layoff*.

Does Government support target financially constrained firms

Probit Model

$$y_{i,c,post} = f(\textit{Financial Constraint}_{i,pre}, \textit{Firm Controls}_{i,pre}, \textit{Country Dummies}, \textit{Provincial Dummies}, \textit{Industry Dummies}, \textit{Survey Month Dummies}) \quad (1)$$

$$\textit{Coping with Pandemic}_{i,post} = f(\textit{Govt Support}_{i,post}, \textit{Firm Controls}_{i,pre}, \textit{Country Dummies}, \textit{Region Dummies}, \textit{Industry Dummies}, \textit{Survey Month Dummies})$$

Endogeneity concerns

- Endogeneity issue - reverse causality.
  - On the one hand, the government provides support to financially vulnerable firms during the crisis; on the other hand, lack of government support especially during a crisis period pushes firms to be more financially constrained.
- We estimate equation (1) using the instrumental variable probit model (IV-Probit).
- Requires valid instrumental variable that satisfies two conditions:
  - relevance and exogeneity condition.
- Relevance condition - instrument to be highly correlated with the endogenous variable, exogeneity condition- instrument should not have a direct role in our model.

Endogeneity concerns

- Instrument - overdraft facilities available for firms.
  - a dummy variable that takes the value equal to one if a firm has an overdraft facility from any financial institution; zero otherwise (Overdraft).
- Financial institutions generally provide overdraft facilities for financially sound firms.
- Our instrument is highly correlated with our financial constraint measure and satisfies the **relevance condition.**
- **Exogeneity condition** – Govt support is not based on the availability of overdraft facilities of the firms or overdraft is a short-term borrowing, which is not enough for firms during the crisis period, the instrument is not directly correlated with the dependent variable.

TABLE 2 Government support and financial constraints: IV-Probit

Variables	(1) Govt support	(2) New credit	(3) Cash transfer	(4) Deferral	(5) Fiscal	(6) Wage subsidy
Financial constraint	0.575***	0.552***	1.040***	1.447***	1.441***	0.481***
	(0.133)	(0.0329)	(0.179)	(0.126)	(0.172)	(0.210)
Age	-0.00370	-0.0743***	-0.00404	-0.150***	-0.0333***	-0.0921***
	(0.00659)	(0.0106)	(0.00899)	(0.0441)	(0.0154)	(0.0519)
Size	-0.0509***	0.0904**	-0.0654***	0.0564	-0.0245*	0.0332**
	(0.0544)	(0.0432)	(0.0282)	(0.0358)	(0.0146)	(0.0151)
Export	0.0727**	0.0309	-0.0977	-0.0570	-0.0430***	-0.0131
	(0.0336)	(0.0376)	(0.0739)	(0.0354)	(0.00683)	(0.0139)
Subsidiary	0.107***	0.0450***	0.0581**	-0.0635**	0.0768*	0.0743*
	(0.0206)	(0.0107)	(0.0460)	(0.0265)	(0.0421)	(0.0409)
Location	0.0612	0.137***	0.00133	0.0649***	-0.00873	0.0406
	(0.0075)	(0.0219)	(0.0299)	(0.0125)	(0.0269)	(0.0305)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Provincial dummies	Yes	Yes	Yes	Yes	Yes	Yes
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Survey month dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,264	4376	4638	4594	4355	4614

Note: This table provides the nexus between government support and financial constraints. The marginal effects are presented. Control measures are observed in pre pandemic period. Standard errors in the parenthesis are clustered at country level.

TABLE 3 Layoff and financial constraints

Variables	(1) Layoff (probit)	(2) Female-to-male layoff ratio (OLS)
Financial constraint	0.235***	-0.686***
	(0.0762)	(0.146)
Firm-level controls	Yes	Yes
Industry dummies	Yes	Yes
Provincial dummies	Yes	Yes
Country dummies	Yes	Yes
Survey month dummies	Yes	Yes
Observations	12,552	814

TABLE 4 Robustness check and further analysis—IV Regression

Variables	(1) New financial constraint measure	(2) Lewbel estimation technique	(3) Essential	(4) Non-essential
Financial constraint2	1.296***			
	(0.325)			
Financial constraint		0.0194**	2.246**	0.567***
		(0.00019)	(1.106)	(0.143)
Firm level controls	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Provincial dummies	Yes	Yes	Yes	Yes
Country dummies	Yes	Yes	Yes	Yes
Survey month dummies	Yes	Yes	Yes	Yes
Hansen J statistic (p-value)	-	0.079	—	—
Observations	12264	12,761	1550	10,321

Note: This table reports robustness check results of the nexus between government support and financial constraints. Government support is used as the dependent variable in all the estimation. Control measures are observed in pre-pandemic period. Standard errors in the parenthesis of column 1, 3, and 4 are clustered at country level, and robust standard error is reported in Lewbel estimation.

***p < 0.01; **p < 0.05.

TABLE 5 Government support and coping with pandemic

Variables	(1) Cope with pandemic	(2) Cope with pandemic	(3) Cope with pandemic	(4) Cope with pandemic	(5) Cope with pandemic	(6) Cope with pandemic
Govt support	0.0982***					
	(0.0147)					
New credit		0.116***				
		(0.0177)				
Cash transfer			0.0202			
			(0.0769)			
Deferral				0.149***		
				(0.0328)		
Fiscal exempt					0.0745***	
					(0.0271)	
Wage subsidy						0.130***
						(0.0492)
Firm level controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Provincial dummies	Yes	Yes	Yes	Yes	Yes	Yes
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Survey month dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,558	4568	4488	4457	4644	4845

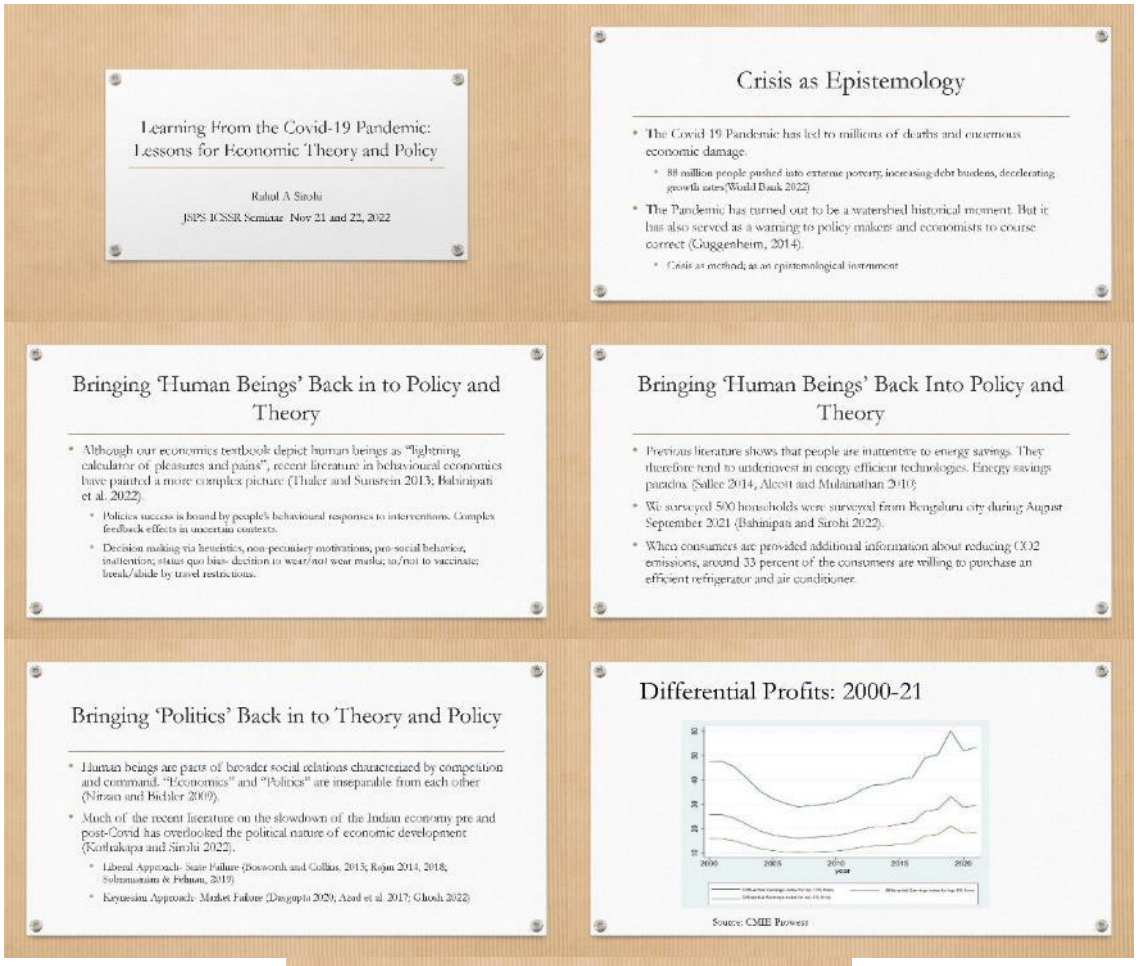
Note: This table provides the nexus between government support and coping with pandemic. The marginal effects are presented. Control measures are observed in pre-pandemic period. Standard errors in the parenthesis are clustered at country level.

***p < 0.01.

Conclusion

- Using rich firm-level data from 34 countries, we find that government support programmes are more inclusive as they target mostly financially constrained firms.
- The result is robust to concerns arising from endogeneity of financial constraints and also to alternative measures of financial constraints.
- We find the same effect on both essential and non-essential good sectors, however, the magnitude of the effect is higher in the essential good sector.
- Further, we find this support is significant for SMEs to cope with the pandemic.
- Our final set of analyses reveals that financially constrained firms are more likely to sack workers; and there is evidence of male employees are losing more jobs.

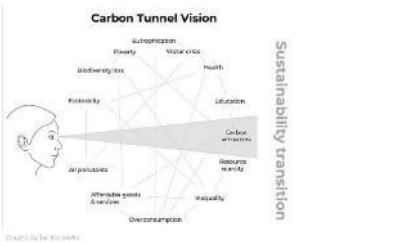
d) Session II: Learning from the COVID-19 pandemic: Lessons for economic theory and policy



e) Session II: Imagining sustainability: insights from COVID-19 lockdown in India

Imagining sustainability:
insights from COVID-19 lockdown in India

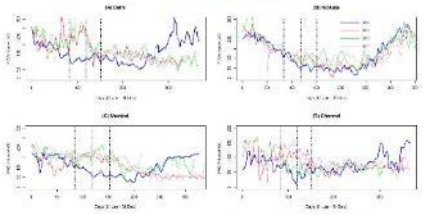
Bejoy K Thomas
Humanities and Social Sciences
& Centre for Water Research
Indian Institute of Science Education and Research (IISER) Pune
bejoy@iiserpune.ac.in



https://digitally.cognizant.com/moving-beyond-carbon-tunnel-vision-with-a-sustainability-data-strategy-codex7125/

'Tunnel vision' during COVID-19

Environmental 'improvements' during 2020 lockdown



Joint work with S. Bhar and S. Chakravarty; Thomas et al, 2021

Social and economic impacts of the lockdown

- Massive economic slowdown: 23.9% drop in GDP during Apr-Jun 2020
- Unemployment: 7.8% to 23.5% between Feb and Apr 2020 (CMIE estimates)
- Most affected
  - urban poor, migrant labourers, agriculturists (initial stage)
  - Middle 'category' households (later stage): severe decline in consumption among the 40%-80% category (Kapoor et al, 2021, based on World Bank COVID survey data)
- What factors led to decrease in consumption?

Change in consumption and inequality

Average Household Consumption and Net Change in Average Household Consumption between February and September 2020

	Average Household Consumption (INR)				Average Net change in Consumption (%)			
	Feb	May	Jul	Sep	Feb-May	May-Jul	Jul-Sep	Feb-Sep
Agriculture	2541.68	2320.60	1672.34	1839.86	-8.70%	-27.94%	10.02%	-27.61%
Non-cultivation	2235.19	2186.23	1648.64	1950.45	2.10%	24.96%	18.33%	12.74%
Labour	2201.12	1964.97	1571.57	1829.03	6.68%	20.02%	3.66%	22.47%

Inequality and Net Change in Inequality between February and September 2020

	Household Consumption (Gini Coefficient)				Net change in Household Consumption (% change in Gini Coefficient)			
	Feb	May	Jul	Sep	Feb-May	May-Jul	Jul-Sep	Feb-Sep
Agriculture	0.4039	0.4495	0.4539	0.4703	11.31%	0.98%	3.61%	16.45%
Non-agriculture	0.3693	0.3875	0.3827	0.4198	10.01%	-1.24%	9.69%	17.59%
Labour	0.3771	0.4501	0.3940	0.3803	21.76%	-14.21%	-3.47%	0.84%

Joint work with S. Nag; Nag and Thomas. In preparation

Determinants of change in consumption

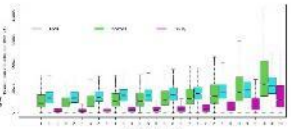
Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

- Consumption decreased and inequality increased during the first months of the lockdown
- Wealth, caste, household size and education determined change in consumption, but not whether the household is primarily agricultural or labour

Joint work with S. Nag; Nag and Thomas. In preparation

Questions of 'equity' and 'sustainability'

- Increasing inequality since 1980s (Chancel and Piketty, 2019)
  - 22% of income share held by richest 1%
  - Increase in Gini index (based on IHDS): .53 (2004-05) to .55 (2011-12)
- Consumption of the poorer and middle-income households is at subsistence or on essentials with the significant environmental footprint coming from the affluent
- 'Magical Thinking' and the redistribution numbers: Can we bring 86% of the Western population to accept the current mean global income of $PPP 16? (Milanovic, 2021)



Source: IHDS 2011-2 (rural and urban), Thomas et al, 2021

Imagining sustainability

- Environmental concerns more relevant than ever; alongside huge socio-economic disparities
- Both were evident during COVID-19 lockdown

- Environmental sustainability post COVID-19
  - Green Growth – an oxymoron?
  - Degrowth – too idealistic? And Eurocentric?
    - Degrowth for the rich, and growth for the poor perhaps?

f) Session II: Localizing resilience agenda

Localizing Resilience Agenda

Transformational Governance, Innovations and Capacities: Learnings across boundaries

Prof. Anil K Gupta
Director of Projects & COE
Head - ECDRMD, International Cooperation
NIDM, Govt. of India, New Delhi

Migrant workers in cities

Chapter 22
Multi-Hazard Risk Management During Pandemic

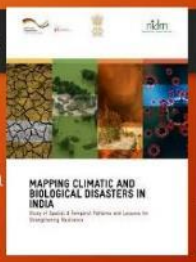
Thinles Chondol, Shweta Bhardwaj, Ashish Kumar Panda, and Anil Kumar Gupta

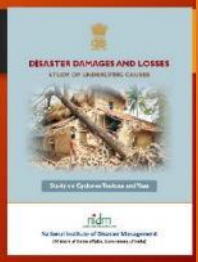
Abstract Disasters not necessarily occur one at a time rather multiple disasters may occur amid another, in a form of secondary or cascading disaster or a new disaster may occur from a new origin due to the aggravated vulnerability factors. In past

M. K. Goyal, A. K. Gupta (eds.), *Integrated Risk of Pandemic: Covid-19 Impacts, Resilience and Recommendations*, Disaster Resilience and Green Growth,
https://doi.org/10.1007/978-981-15-7679-9_22

Recent Studies

- 25 years / 3 period
- 4 climatic, 3 biological disasters
- All states / UTs
- Frequency, Mortality





Disasters: Trends and Transformations

- Damage and Losses: Life, Infrastructure, Economy, Environment
- New disasters trends: Forest fire, Heat, Industrial..
- Sectoral contexts
- Disruptive changes - Futuristic concerns

Innovations

- Self Reliance
- Integrated planning process
- Finance - Climate & DRR
- Volunteerism
- S&T and Innovation Policy
- Scoreboard : City resilience
- L&D - Underlying causes
- Climate knowledge network

Sectoral dimensions

- National Health Adaptation Plan
- Disaster management plan of Central Ministries/ Departments
- Experience of Covid Pandemic, Non-medical actors, DM Act, Social - Migrants
- Lateral - Role of traditional knowledge - Ayush, Food advisory
- Multi-hazard risk management during Covid Pandemic - Industrial /chemical
- Business sectors DRR - BCM

Recent inititiaves

- CAP RES (DST, GOI) - CECR
- HER-CAP (WHO), CDH (NPCCHH)
- RSS2047 (Jan 2022)
- LiFE Mission: Global Call for Ideas
- G20: Forest fire, Land degradation, Drought, Floods, Food & nutritional security
- Cooperation to support other nations
- CDRI
- NAPCC, SAPCC, DAPCCs


Future vision
• Vision 2047
• Health - Environment - Climate - DRR Nexus
• Institutional revamping
• Asia - Pacific network / framework
• Enablers and resource support system
• Human capacity programmes
भूमे मातर्नि धेहि मा भद्रया सुप्रतिष्ठितम् ।
संविदाना दिवा कवे श्रियां मा धेहि भूत्याम् ॥
LiFE
LIFESTYLE FOR ENVIRONMENT
"With an utter sense of ethics and dutiful attitude, we can live happily in an honourable position. It is reiterated that the evolving Earth, of one accord with the Sun sets the supersentient seer in glory and in wealth."
Atharva Veda (A.V.) 12.1.63
Our Environment is Our Life
The Climate Resilience Framework (CRF)
ISET, GEAG & NIDM
Scaling Up 3 States and National Level Lessons
nidm
Ecosystem Approach to Disaster Risk Reduction
URBAN RESILIENCE AND SUSTAINABILITY
Nature-based Solutions for Resilient Ecosystems and Societies
JAIPUR CITY
CITY RESILIENCE
Integrated Risk of Pandemic: Covid-19 Impacts, Resilience and Recommendations
अश्वत्थो देवसदनस्तृतीयस्यामितो दिवि ।
तत्रामृतस्य चक्षणं देवाः कुष्ठमवन्वत ॥
– अथर्ववेद ५.४.३
It is prohibited to cut Vat Vriksha as Gods live in this tree and you get no disease where this tree is planted.
- Atharvaveda 5.4.3
दशकूपसमा वापी दशवापीसमो ह्रदः ।
दशह्रदसमः पुत्रो दशपुत्रसमो द्रुमः ॥
– मत्स्य पुराण १५४:५१२
A pond equals ten wells and a reservoir equals ten ponds. A son equals ten reservoirs, and a tree equals ten sons!
- Matsya Puran 154 : 512
God pervades the entire universe. Enjoy all of nature as gifts from God, but with a spirit of renunciation! Do not be attached to them! Do not covet the wealth of others. Control Greed!
- Isha Upanishad, Mantra 1
समुद्रवसने देवि पर्वतस्तनमण्डिते ।
विष्णुपत्नि नमस्तुभ्यं पादस्पर्शं क्षमस्व मे ॥
Mother Earth, who has the ocean as clothes, adorned by mountains and forests, and is the consort of Lord Vishnu, I bow to you to please forgive me for touching you with my feet.

g) Session II: Speaking from field experience: Impact of COVID-19 on informal workers in India

Speaking from field experience: Impact of COVID-19 on Informal Workers in India?

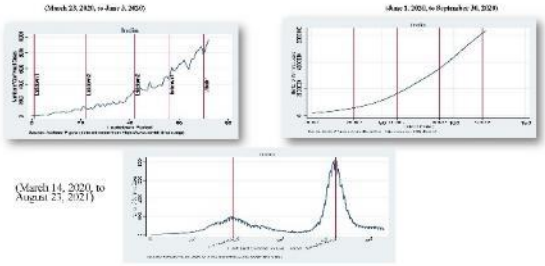
Chandra Sekhar Bahinipati
Department of Humanities and Social Sciences
Indian Institute of Technology Tirupati, India

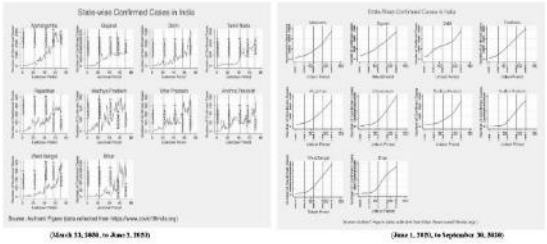
JSPS-ICSSR Seminar
Understanding and Addressing Systemic Risks Behind the Socio-economic Impacts of COVID-19 in Japan and India: Developing a Roadmap for a Resilient and Sustainable Future
November 21, 2022, Tokyo, Japan

Introduction

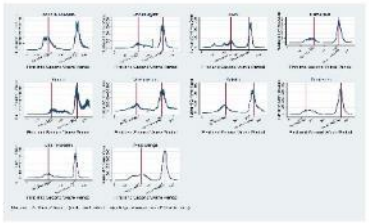
- Covid-19
  - India has been severely impacted by COVID-19
  - The first positive case was reported on January 30, 2020 in India
  - Countrywide lockdown that started on March 24
  - Although the central government implemented stringent actions at an early stage
  - Declining or flattening of the curve was not observed even after almost 70 days of lockdown and after 110 days of 'unlocking'
  - As on today, 2.82 crore people infected with COVID 19.
  - Normative approach – carrot and stick – detect people's behaviour
  - Covid-19 and informal Economy – Street vendors

Number of confirmed cases in India (First & Second wave)





State-wise confirmed cases in India (March 14, 2020, to August 23, 2021)

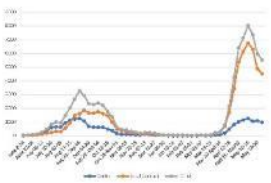


Behavioural biases in physical/ Social distancing

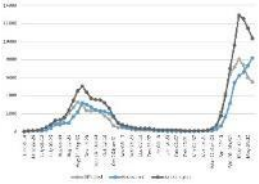
High-discount rate	Optimism bias	Overconfidence bias	Confirmation bias	Status quo bias	Loss aversion bias
• Sooner rewards prefer over larger ones • Trade-off: Stay at home or went outside • Myopic individual will value to go outside	• Adverse events are underestimated • Sometimes people are optimistic about their health and they feel that they wouldn't get infected	• The tendency to overestimate one abilities and skills • Young people are sometimes overconfidence regarding the infection	• Tendency to cherry-pick information that confirms our existing beliefs • If a person not get infected even he room outside, then he confirms the less chance of infection	• Irrational preference for the current situation • Notably, the younger generation finds it very difficult to relinquish recreational outings with their friends	• Loss looms larger than equal amount of gain • Shutdown' on Saturdays and Sundays gives more psychological distress than the pleasure of the gain of freedoms on weekends

Study Area: Bhubaneswar, Odisha,

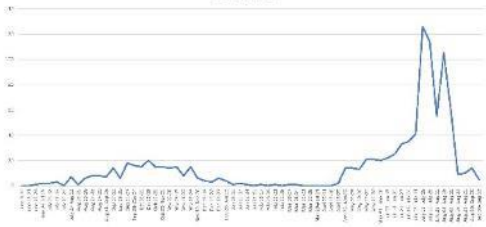
Trend of weekly Covid-19 affected cases during May 2020 to June 2021



Trend of Affected, Recovered and Active Cases during June 2020 to May 2021



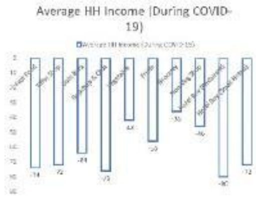
Deceased

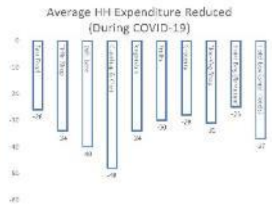


Average Annual Household Expenditure during COVID-19

EC/NEC	Vendor Type	Average HH Expenditure
Non-Essential Commodity (NEC)	Fast Food	-28
	Tiffin Shop	-31
	Gift Bara	-43
	Gupchup & Chat	-42
	Hand Bag (Readymade)	-25
	Sub Total	-50.8
Essential Commodity (EC)	Vegetable	34
	Fruits	41
	Grocery	-20
	Non-Veg Shop	-31
	Hand Bag (Small Hands)	57
	Sub Total	32
	[illegible]	[illegible]

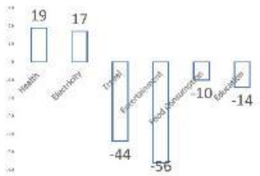
COVID 19 and Street vendors Bhubaneswar

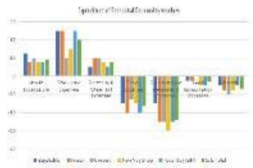


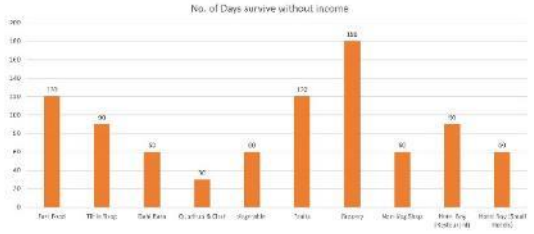


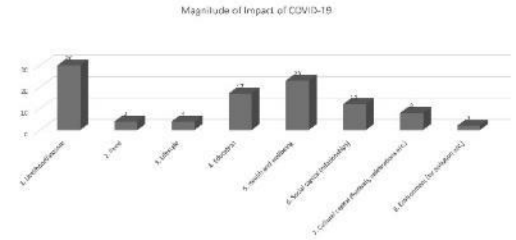
Source: Authors' figure

Expenditure during COVID-19 Pandemic





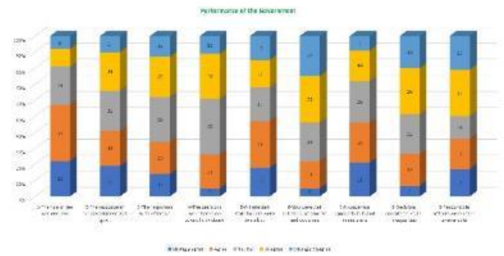




Source: Author's Figure

Family members' health conditions during the Covid-19 pandemic

Health conditions	Increased	Decreased	No change
Attention span	74	13	12
Repetitive behaviours	14	0	35
Worry/Irritation	96	0	4
Concentration on daily tasks	44	42	14
[illegible]	14	30	56
Common fever	13	10	82
Diarrhea/dysentery	51	0	49
Flu	10	0	91
Cholera	0	0	100
Malaria	0	0	100
Dengue	0	0	100
Cough and colds	54	0	35
Urinary Tract Infection	0	0	100
Hypertension	75	0	21
Allergies	15	0	91



Source: Authors' figure

Medium of information on COVID19 (in percentage)

Action	EC	NEC	Overall
Newspapers	35	14	10
Radio	10	34	12
Television	50	30	36
Internet (YouTube, website etc.)	5	0	10
Social media (e.g. Facebook)	5	0	10
Friends/neighbours	20	22	21
Local social groups	18	58	34

Action to be taken by Government for managing the future pandemics

Actions	EC	NEC	Overall
Design support packages in advance for vulnerable people and businesses	57	75	75
Enhance the transparency of support packages for ensuring trust and accountability	26	38	37
Strengthen social hygiene practices	40	6	01
Strengthen healthcare services	17	18	13
Strengthen social safety nets	24	36	23

Thank You

Email: csbahinipati@iittp.ac.in

Acknowledgements:

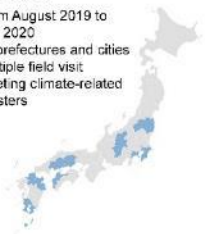
h) Session III: Assessing the capacity of Japan to address the climate change disasters and its implications to respond to COVID-19 risk

Methodology to assess adaptive capacity & sensitivity

Part 1: Qualitative analysis

Field visit

-From August 2019 to April 2020
-12 prefectures and cities
-Multiple field visit targeting climate-related disasters



Questionnaire survey

- During April-July 2020
- 38 responses from prefectures and capital cities

Qualitative analysis based on:

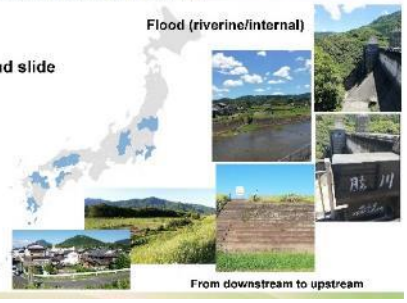
- Level of policy preparedness and implementation (Hardware, Software, and Transformative adaptation)
- Cognition on essential adaptive capacity elements

Methodology to assess adaptive capacity & sensitivity

Field visit

Land slide

Flood (riverine/internal)



From downstream to upstream

Methodology to assess adaptive capacity & sensitivity

Part 2: Quantitative analysis — Statistical model

- UNDP (2004), Japan society of natural disasters (2018), Hayashi (2014), etc.

$$Risk = f(Hazard, Exposure, Sensitivity, Adaptive\ Capacity)$$

Specification

$$Risk = Hazard \times Exposure \times Sensitivity\ /\ Adaptive\ capacity$$

$(R, H, E, V \geqq 0, AC > 0)$

- Panel regression models:
  fixed effect (FE) model $y_{it} = \alpha_i + \lambda_t + x'_{it}\beta + \varepsilon_{it}$
  pooled OLS (pool) $y_{it} = \alpha + x'_{it}\beta + \varepsilon_{it}$

x'_{it}: vector comprising variables for hazard, exposure, vulnerability, and adaptive capacity,
β: coefficients for these variables,
i: prefectures, t: year

- Test **Log-log** or **linear-log** model

13

Data & Hypothesis

- Best available data (publicly available)
- 47 Prefectural-level data during 1976-2014 (n=1833) & 2000-2014 (n=705)
- No modification of outliers
- Explained variables
  - **Risk**: **Death rate** or **Death and injured rate** by hydrological disasters such as typhoon, riverine flood, and landslide
- Explanatory variables
  - **Hazard** [+] Precipitation (e.g., annual maximum daily precipitation)
  - **Exposure** [+] Population density in populated areas
  - **Sensitivity** [+] Age, House structure (one-story), etc.
  - **Adaptive capacity** [-] Infrastructure, Information, Local governance (risk awareness), Institution, Finance

Hardware measures (e.g., infrastructure) should be statistically significant especially in the long-term regression (1976-2014) and the role of software measures such as fire-fighting parties should be highlighted in more recent years (2000-2014).

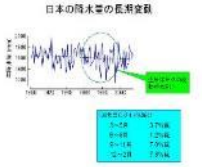
14

Data list for statistical (quantitative) analysis

Data on precipitation

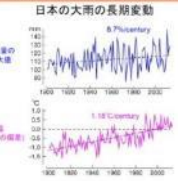
Long-term precipitation in Japan (Time-series)

Annual total precipitation



Annual maximum precipitation per day

日本の大雨の長期変動



Upward trend over the past 100 years

16

Results of regression analysis (1/2)

Precipitation, age (over 75), house type, infrastructure, fire fighting party, fiscal power index, fiscal spending are statistically significant.

17

Results of regression analysis (2/2)

- **1976-2014** *Since premature stage of development*
  - Log-log fixed effect models are more suited
  - Death rate is explained statistically significantly by precipitation, fire-fighting parties
  - Death & injured rate is explained statistically significantly by precipitation, hard infrastructure, and fire-fighting parties.
- **2000-2014** *Mature stage of development*
  - Age, house type, infrastructure, fiscal power index, and fiscal spending for disaster relief and recovery are statistically significant.
  - Linear-log pooled OLS models are more suited → diminishing returns of adaptive capacity or adaptation measures as economy develops or time passes.

Determinants

Hardware & software measures

Vulnerability, exposure, and financial aspect of adaptive capacity

ICTs and fire stations were not found statistically significant

18

Result: Determinants of adaptive capacity and sensitivity

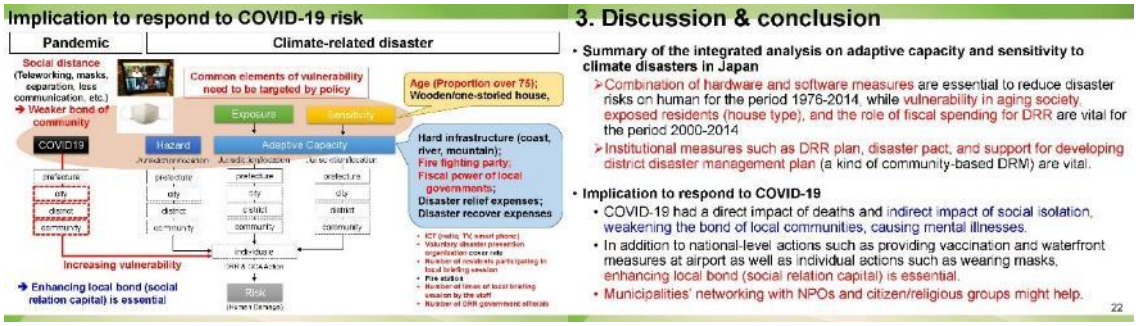
		Determinants in Questionnaire analysis (Part 1)	Determinants in Quantitative analysis (Part 2)	Determinants common in both analyses
Sensitivity	Human (Age)	Age	Proportion over 75	Proportion over 75 (Age)
	House type		Wooden/one-storied house	
Adaptive capacity	Infrastructure		Hard infrastructure (coast, river, mountain)	
	Economy	Not much correlated		
	Education			
	Information	ICT (radio, TV, smart phone)	Not correlated	
	Local governance (risk awareness)	• Fire-fighting party • Voluntary disaster prevention organization cover rate • Number of residents participating in local briefing session	Fire-fighting party No data	Fire-fighting party
	Institution	• Fire station • Number of times of local briefing session by the staff • Number of DRR government officials	Not correlated No data	
	Finance	• Financial status of local government • Local governments' disaster prevention budget scale	• Fiscal power index • Disaster relief expenses • Disaster recovery expenses	• Fiscal power index • Disaster relief expenses • Disaster recovery expenses (Financial status of local governments, Local governments' disaster prevention budget scale)

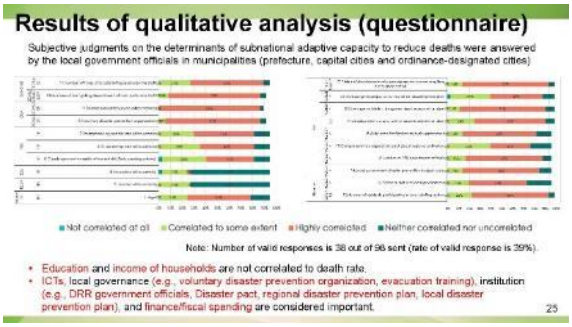
Note: More than 50% of "Highly correlated"

Determinants on **information** and **institution (local governments)** have yet to be found statistically correlated. Further tests are necessary

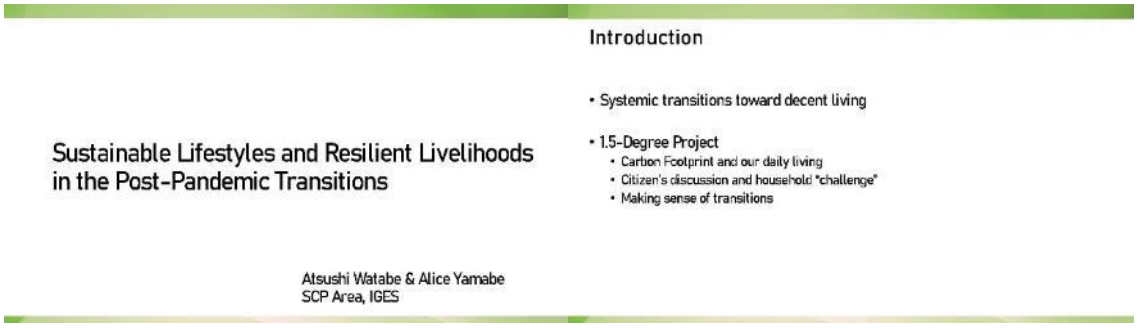
19

2. Implication to respond to COVID-19 risk



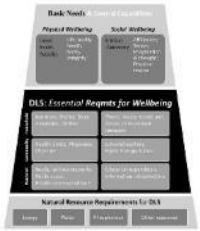


i) Session III: Sustainable lifestyles and resilient livelihoods in the post-pandemic transitions



Systemic transitions toward *decent living*

Systemic transitions toward *decent living*

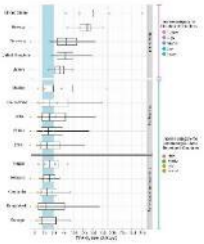


2.6 billion have little or no access to energy for clean cooking

1.2 billion lack energy for cleaning, sanitation and water supply, lighting, and basic livelihood tasks

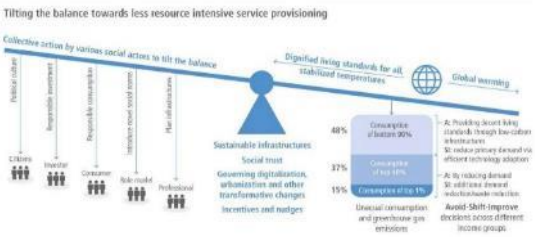
Systemic transitions toward *decent living*

Economic growth in equitable societies is associated with lower emissions than in inequitable societies and income inequality is associated with higher global emissions



Systemic transitions toward *decent living*

Tilting the balance towards less resource intensive service provisioning

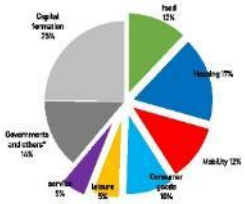


In search of sustainable and resilient living beyond pandemic

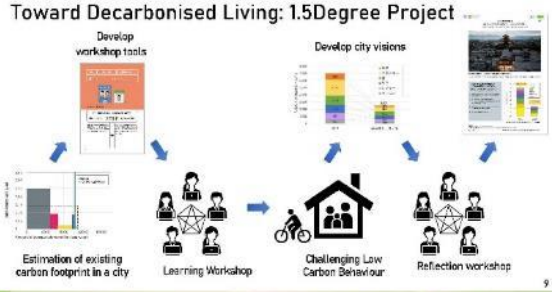
1. Systemic change is needed, not just behavioral changes
2. Local socioeconomic systems delivering essential services are already threatened
   - Long-lasting stresses: Shrinking population and economy, Climate Change
   - Short-term shocks: Natural disaster, Pandemic, War, Economic crisis

How to help local actors drive systemic changes, while their living conditions are already endangered?

Toward Decarbonised Living: 1.5Degree Project

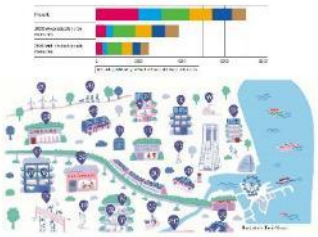


Toward Decarbonised Living: 1.5Degree Project



9

Toward Decarbonised Living: 1.5Degree Project

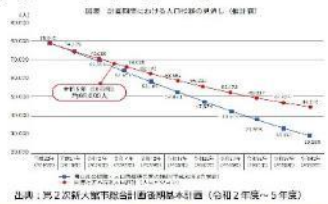


Toward Decarbonised Living: 1.5Degree Project
A Case of Odate City, Akita, Japan

Former Mining City, Now Rapidly-Depopulating Area

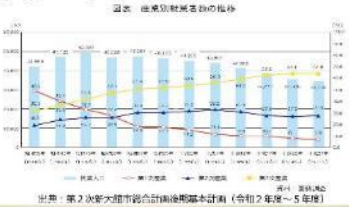
Toward Decarbonised Living: 1.5Degree Project
A Case of Odate City, Akita, Japan

Former Mining City, Now Rapidly-Depopulating Area



Toward Decarbonised Living: 1.5Degree Project
A Case of Odate City, Akita, Japan

Former Mining City, Now Rapidly-Depopulating Area



出典：第２次秋田大館市圏合計画後期基本計画（令和２年度～５年度）

Toward Decarbonised Living: 1.5Degree Project
A Case of Odate City, Akita, Japan

1st Workshop: Participants' Initial Thoughts on Decarbonised Living

	Attractive	Not Attractive/Not Suited
Ride Sharing Car Sharing	• Want to try, ride sharing may reduce traffic jam for commuting • Looks interesting, may be good to help older people's mobility in future	• Difficult in the city • These measures will accelerate the shrink of public transport
Use public transport Use bicycle	• I already use bicycle when I move to nearby places • I use train and bus to go to school	• The city has limited public transportation • It is more costly than private vehicles

Toward Decarbonised Living: 1.5Degree Project
A Case of Odate City, Akita, Japan

1st Workshop: Participants' Initial Thoughts on Decarbonised Living

	Attractive	Not Attractive/Not Suited
Live closer to schools or workplaces Develop a compact city	• Shorter commuting will give us more free time	• Those who already purchased houses can't move • May need to force some people (in the remote areas) to move to the city center and abandon the local society
Set up solar panels at home Switch to RE100 Electricity	• Perhaps possible • The city may also be able to use micro hybrids	• Solar panels will lead to deforestation

Toward Decarbonised Living: 1.5Degree Project
A Case of Odate City, Akita, Japan

1st Workshop: Participants' Initial Thoughts on Decarbonised Living

	Attractive	Not Attractive/Not Suited
Reduce meat consumption and introduce vegetarian diet / meat alternatives	• I can do this if not everyday	• We can reduce meat consumption, but not entirely • I feel meat alternatives less satisfactory though its taste and nutrition should be the same... • This may threaten local cattle producers
Eat local and seasonal food, reduce waste; Save snacks, alcohol, smokes	• We can support local farmers and reduce CO2 • Seasonal foods are tasty • We can improve our health	• I don't want to save alcohol • We want to improve our dietary balance, but not every day...

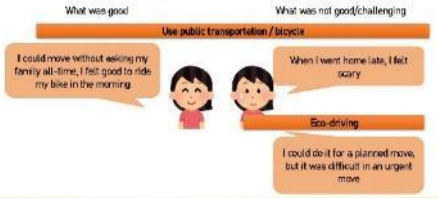
Toward Decarbonised Living: 1.5Degree Project
A Case of Odate City, Akita, Japan

1st Workshop: Participants' Initial Thoughts on Decarbonised Living

	Attractive	Not Attractive/Not Suited
Reduce long travel Reduce flights Online homecoming		• This will lead to fewer visitors, resulting in a serious damage to the economy and society • Nonsense. We should see face-to-face, that is how homecoming works

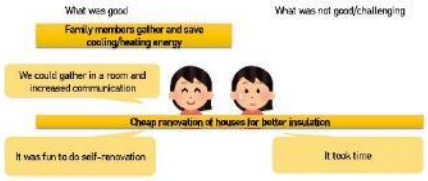
Toward Decarbonised Living: 1.5Degree Project
A Case of Odate City, Akita, Japan

Household Challenge: Learning from 2-week trial of alternative practices



Toward Decarbonised Living: 1.5Degree Project
A Case of Odate City, Akita, Japan

Household Challenge: Learning from 2-week trial of alternative practices



Toward Decarbonised Living: 1.5Degree Project
A Case of Odate City, Akita, Japan

Household Challenge: Learning from 2-week trial of alternative practices

Toward Decarbonised Living: 1.5Degree Project
A Case of Odate City, Akita, Japan

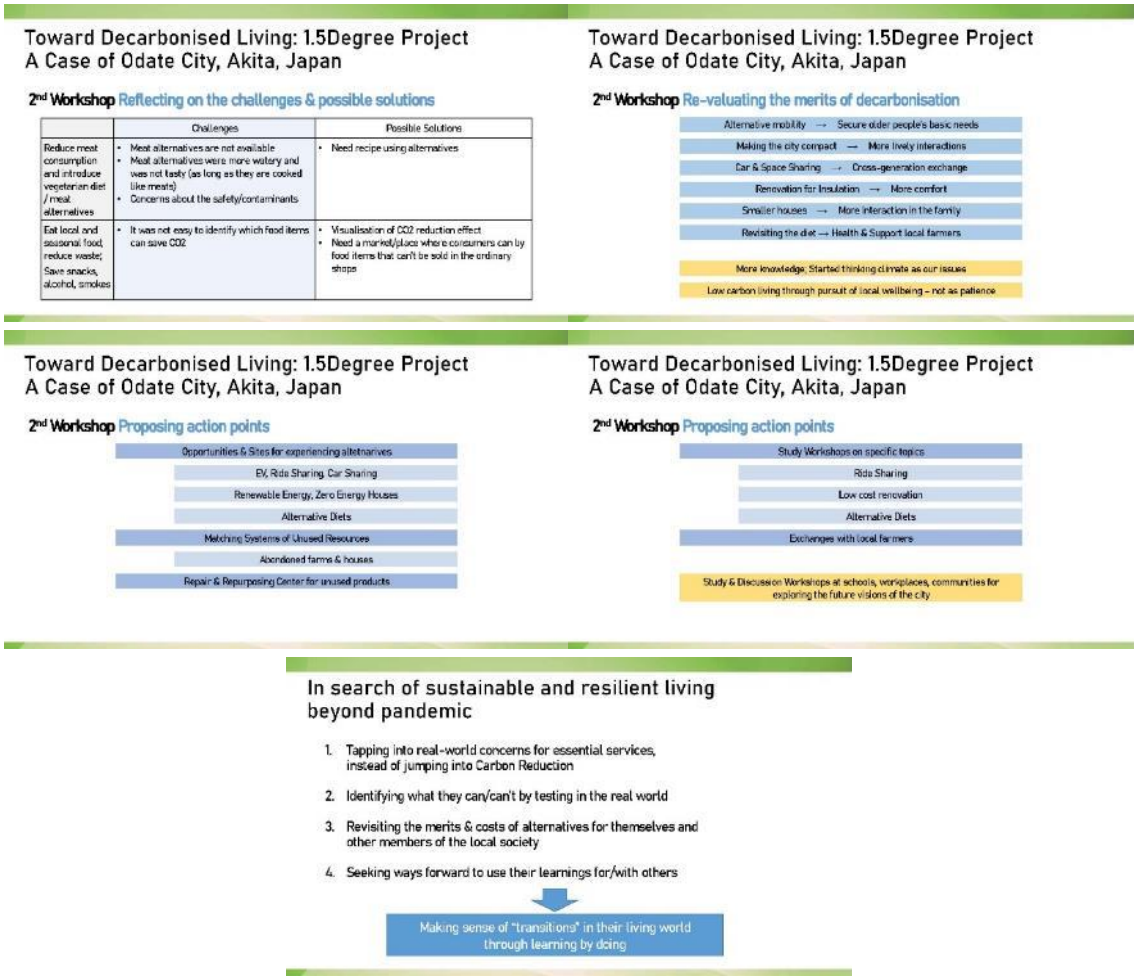
2nd Workshop Reflecting on the challenges & possible solutions

	Challenges	Possible Solutions
Ride Sharing Car Sharing Use public transportation	• Many old people can't ride nor drive • *Akbi* (ride-sharing service) started but run in a limited area, and is difficult to use the app. • Buses are already reduced	• Secure & grow the operators & drivers of the ride sharing service • Need a study workshop for *Akbi* • Shopping support service is desired
Use EV	• EVs are still too expensive • Charging stations are scarce • Charging takes time	• Cheaper EVs • More charging stations and sharing of information

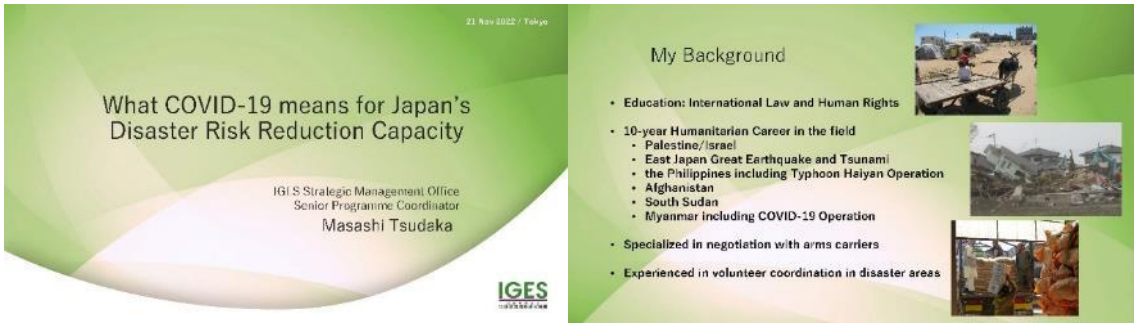
Toward Decarbonised Living: 1.5Degree Project
A Case of Odate City, Akita, Japan

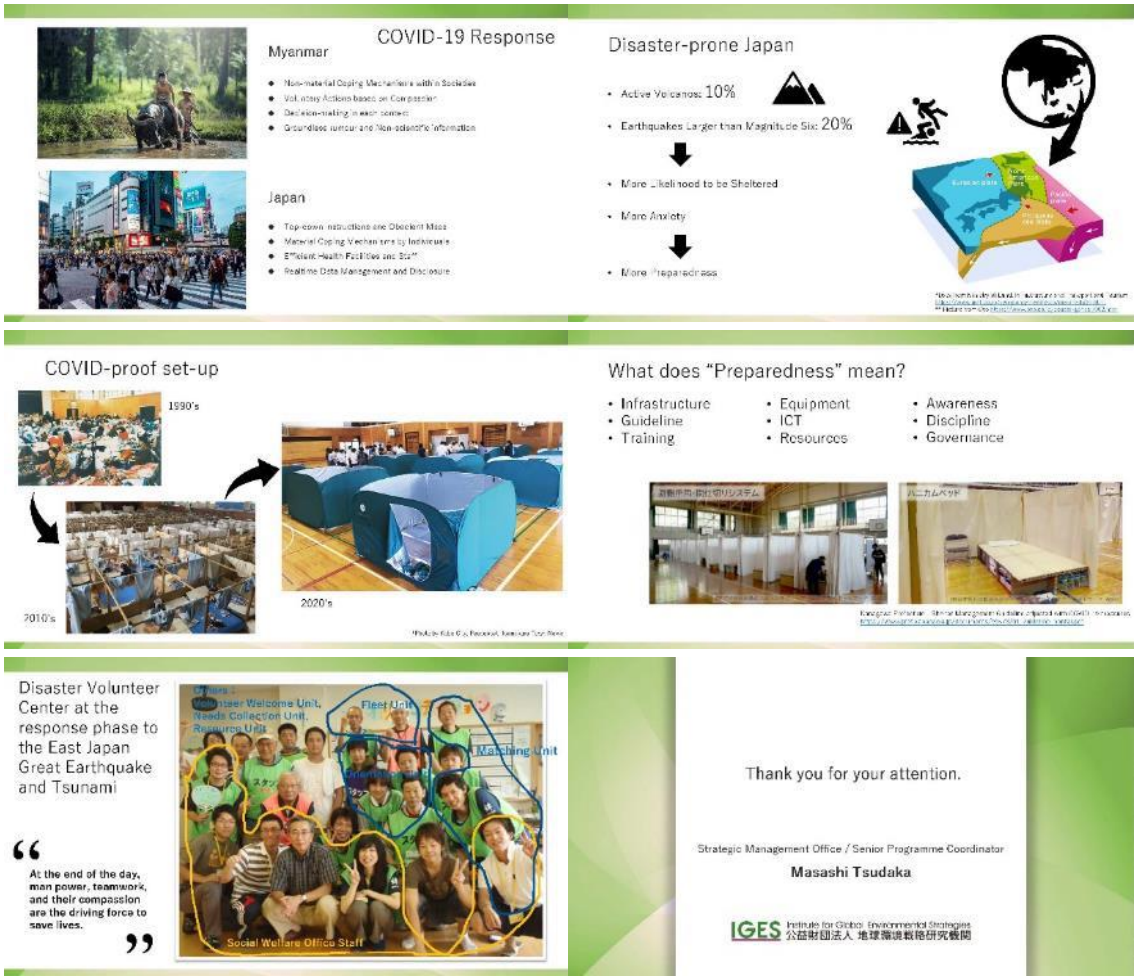
2nd Workshop Reflecting on the challenges & possible solutions

	Challenges	Possible Solutions
Live closer to schools or workplaces Develop a compact city	• Public services are scattered in the city • I feel worried about losing hometown by developing a compact city • The city already has many abandoned houses • Less and less farmers	• Matching of houses, farm lands, etc. across generation • Subsidies to support zero-carbon renovations of abandoned houses
Set up solar panels at home Switch to RE100 Electricity	• Initial cost is expensive • Concerns about safety	• Need more information • Sharing of solar systems among neighborhoods instead of individual houses

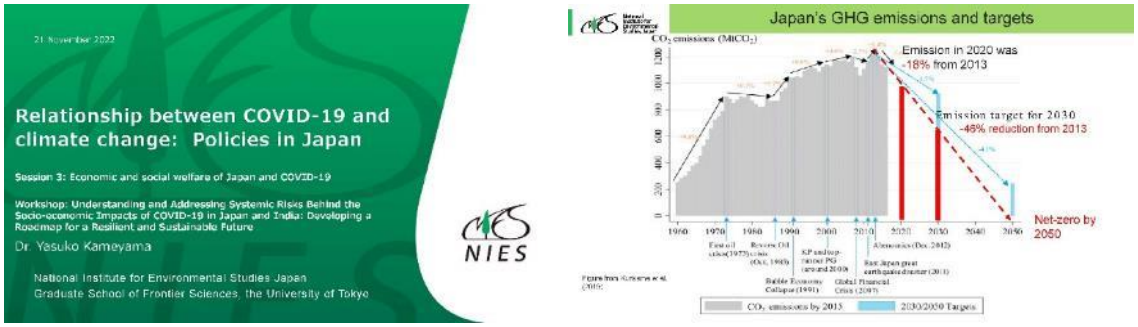


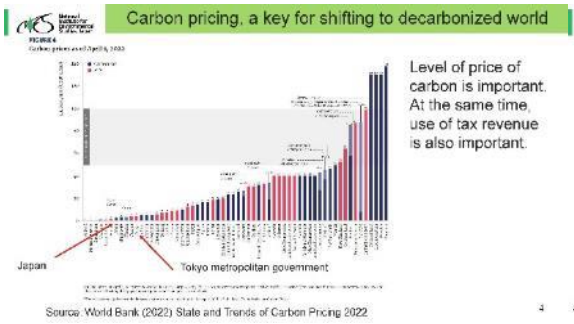
j) Session III: What COVID-19 means for Japan's disaster risk reduction (DRR) capacity?

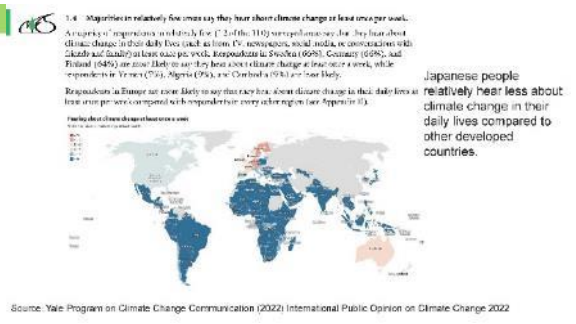




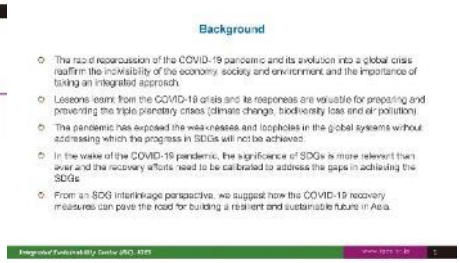
k) Session III: Relationship between COVID-19 and climate change: policies in Japan

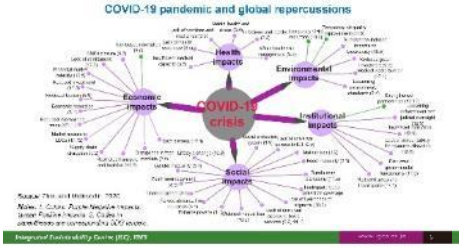


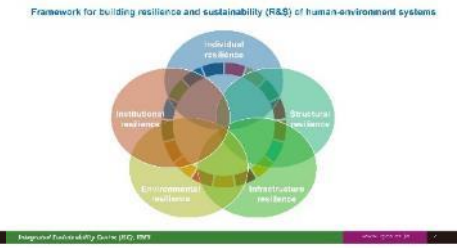


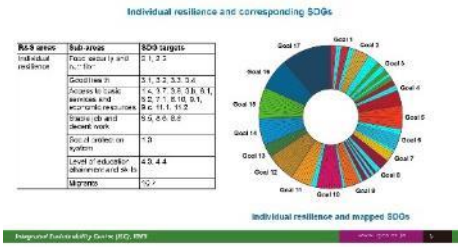


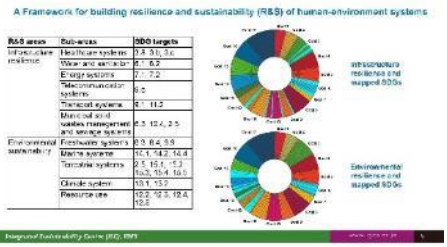
l) Session III: Impacts and implications of the COVID-19 crisis and its recovery for achieving Sustainable Development Goals (SDGs) in Asia

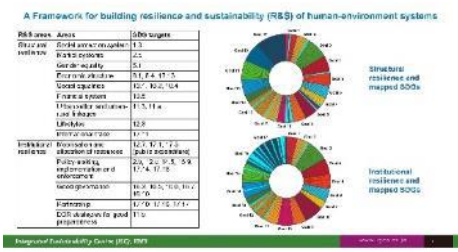


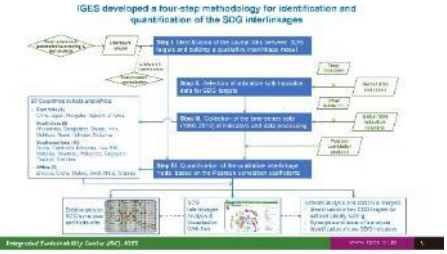


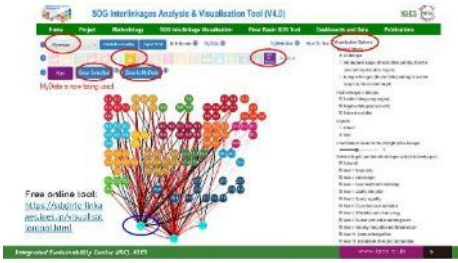



Individual resilience and corresponding SDGs
R&S areas
Sub-areas
SDG targets
Individual resilience
Food security and nutrition
2.1, 2.2
Good lives in
3.1, 3.2, 3.3, 3.4
Access to basic services and economic resources
1.4, 3.7, 3.8, 3.b, 6.1, 6.2, 7.1, 8.10, 9.3, 9.c, 11.1, 11.2
Stable job and decent work
8.5, 8.6, 8.8
Social (relief) on system
1.3
Level of education attainment and skills
4.3, 4.4
Migrants
10.7
Individual resilience and mapped SDGs

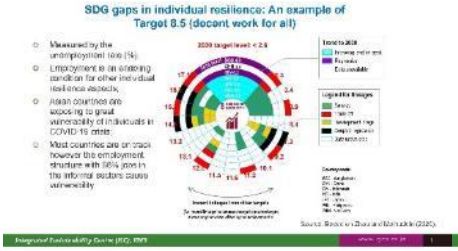

A Framework for building resilience and sustainability (R&S) of human-environment systems
R&S areas
Sub-areas
SDG targets
Infrastructure resilience
Healthcare systems
3.8, 3.b, 3.c
Water and sanitation
6.1, 6.2
Energy systems
7.1, 7.2
Telecommunication systems
9.c
Transport systems
9.1, 11.2
Municipal solid wastes management and sewage systems
6.3, 12.4, 12.5
Environmental sustainability
Freshwater system's
6.3, 6.4, 6.6
Marine systems
14.1, 14.2, 14.4
Terrestrial systems
15.1, 15.2, 15.3, 15.5, 15.8, 15.9
Climate system
13.1, 13.2
Resource use
12.2, 12.3, 12.4, 12.5
Infrastructure resilience and mapped SDGs
Environmental resilience and mapped SDGs

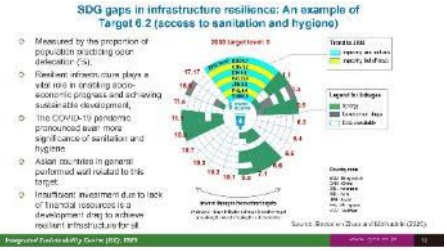

A Framework for building resilience and sustainability (R&S) of human-environment systems
R&S areas
Areas
SDG targets
Structural resilience and mapped SDGs
Institutional resilience and mapped SDGs

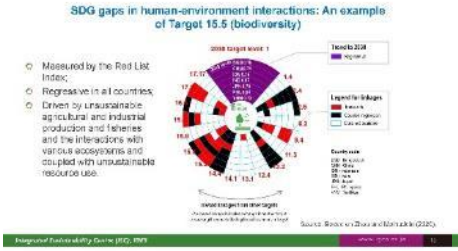

IGES developed a four-step methodology for identification and quantification of the SDG interlinkages

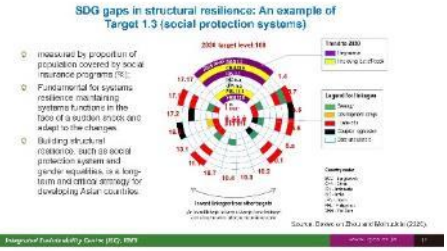

SDG Interlinkages Analysis & Visualisation Tool (V4.0)
Free online tool:

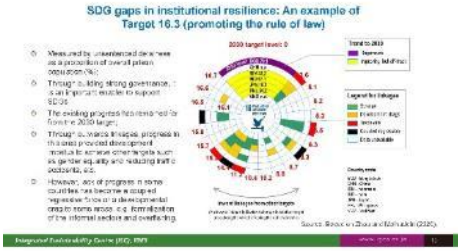

Classification of the SDG interlinkages
Development trend of paired targets (T1, T2)
T2: Progressive
T2: Regressive
T1: Progressive
A Synergy
B Trade-off
T1: Regressive
C Development drag
D Coupled deterioration
Seven countries covering South Asia, Southeast Asia and East Asia

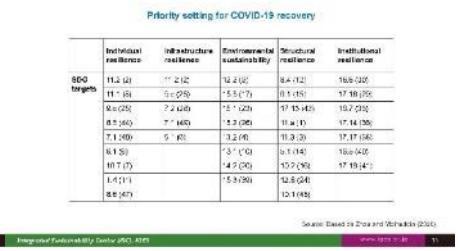

SDG gaps in individual resilience: An example of Target 8.5 (decent work for all)


SDG gaps in infrastructure resilience: An example of Target 6.2 (access to sanitation and hygiene)

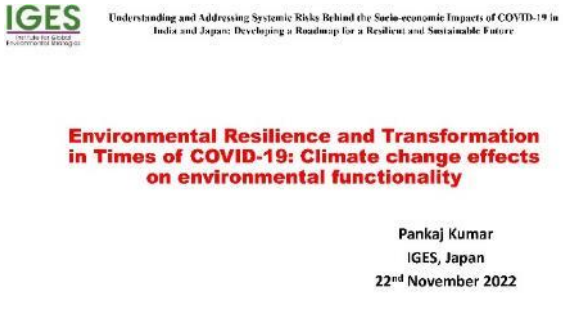

SDG gaps in human-environment interactions: An example of Target 15.5 (biodiversity)

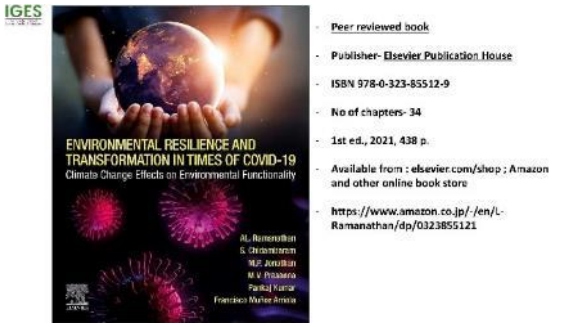

SDG gaps in structural resilience: An example of Target 1.3 (social protection systems)

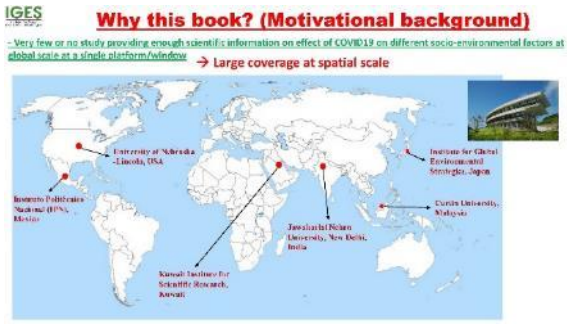


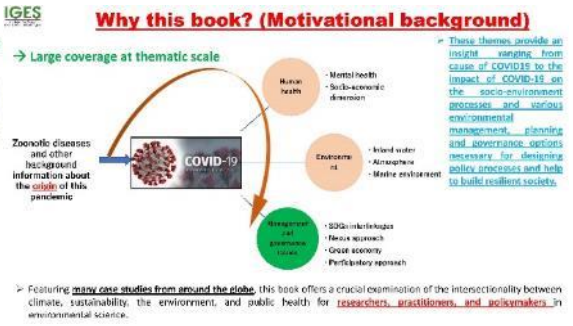


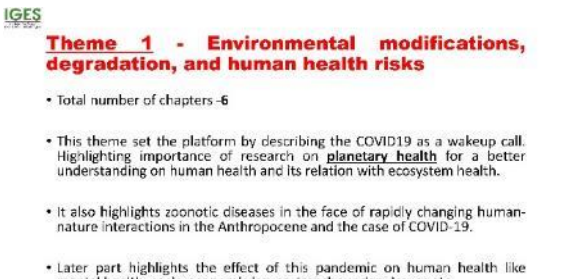
m) Session IV: Environmental resilience and transformation in times of COVID-19: Climate change effects on environmental functionality



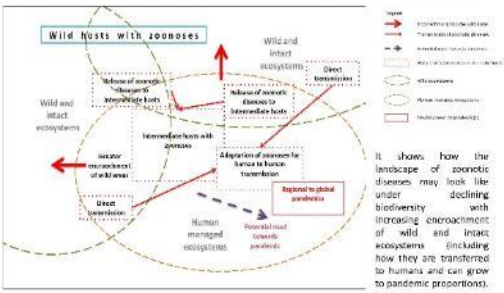








Schematic diagram showing possible pathways of transfer of zoonotic diseases



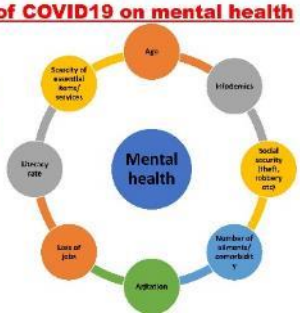
It shows how the landscape of zoonotic diseases may look like under declining biodiversity with increasing encroachment of wild and intact ecosystems (including how they are transferred to humans and can grow to pandemic proportions).

Impact of COVID on marine plastic/solid waste

- Two chapters also reviewed about increased use of plastic materials in terms of (PPE kits, medical equipment, medicinal packaging etc.) and highlighted that a many fold increase in marine plastic was found during this COVID-19 period.
- This causing additional environmental burden especially for the countries with inadequate management options/facilities.
- One chapter specially focussed on the issues of plastic pollutions in coastal zones, which is severely affecting biodiversity hotspot of mangrove ecosystem in India.

Effect of COVID19 on mental health

- Study investigated the role of socio-environmental factors on mental health of people during COVID-19 using Composite COVID Stress Index (CCSI) and COVID Anxiety Scale (CAS) through web-based survey.
- Empirical results from Explanatory Factor Analysis (EFA) and Weighted Least Square (WLS) suggest that respondents are highly worried (anxiety, stress, anger etc.) about following things shown in the diagram:
- Thus, findings propose the need of both physical and psychological healthcare services, online-based healthcare programs and spread of authentic COVID-19 information and basic amenities sufficiency.

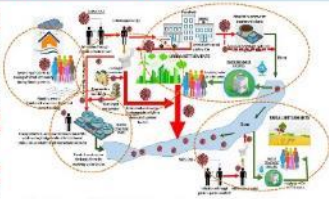


Theme 2- Impact of COVID 19 on water resources (planning, management, and governance)

- Total number of chapters -8
- First part in this section, provides a glance of methodologies to track COVID-19 and evaluate environmental states (water quality in terms of hydrochemical parameters, heavy metals etc.) during the lockdown imposed by COVID19.
- Later part of this theme highlights about the fate of water and wastewater contamination of COVID RNA in various countries.
- It stresses the framework for epidemiological management and proper surveillance of wastewater to avoid feca/ urinal shedding of infected individuals.
- In most of countries studied, effective monitoring in infected communities at an early-stage through wastewater-based epidemiology, together with clinical diagnostic testing or clinical surveillance is poor.
- Effective interventions and preparedness actions can be taken as early as possible to restrict the movements of the infected population, as well as to minimize the pathogen spread and a threat to public health.
- To get an insight into the existing challenges and bottlenecks, cases across the Asia-Pacific was carried out in this section.

Addressing associated risks of COVID-19 infections across water and wastewater service chain in Asia

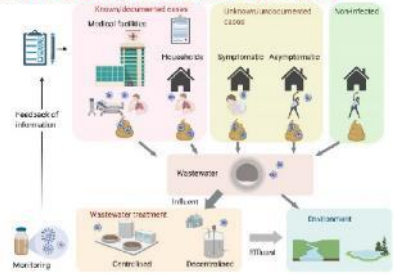
- ✓ SARS-CoV-2 was **detected and spreading through human feces; and gradually ended up in sewage/wastewater treatment plants**. SARS-CoV-2 could **maintain their viability** (e.g. in raw sewage, hospital wastewater, raw wastewater discharges from quarantine buildings/spots, SARS-CoV-2 contaminated floodwater, and water bodies that was originated from fecal discharge of infected patients) for several days in vitro after leaving the feces; thus **posing a potential risk to public health, if it is not properly handled and treated.**
- ✓ Therefore, **precautionary measures, effective interventions and control strategies should be taken** to stop the spread of SARS-CoV-2 infections from these possible routes, especially from aerosol transmission in above mentioned hotspot areas.
- ✓ Regular virus surveillance in wastewater has a long history of use and a proven concept in public health, which can be utilized as **an early warning tool for the occurrence of COVID-19 in communities**, monitoring the status of COVID-19 infection in local communities, evaluating the trends and tracking hotspots, **revealing true scale of the coronavirus outbreak.**



Possible routes of SARS-CoV-2 infections and contamination in water and wastewater service sector

Governance of wastewater surveillance systems to minimize the impact of COVID-19: Cases across Asia-Pacific

- Wastewater Surveillance was found to be an effective tool to support clinical testing for monitoring COVID-19
- Various governance challenges exist (in terms of infratsructure in the developing nations) before a robust sytem can be implemented in all countries studied



Effect of COVID19 on water quality

- Less industrial activities, wastewater discharge in the surface water bodies results in the improvement of water quality

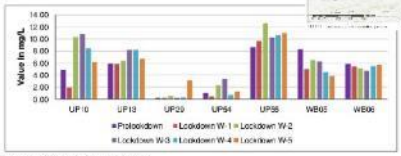


FIG. 12.6 Variation in DO before and after lockdown.

Effect of COVID induced lockdown on water quality from Ganges river, India

Effect of COVID19 on water quality

- Water quality improvement also helps in improving aquatic ecosystem

14.1 Reduction coastal pollution in Gulf of Mannar coast.

Effect of COVID19 on water quality

Theme 3- Air quality: Monitoring, fate, transport, and drivers of socio-environmental change

- Total number of chapters -6
- Here most of the chapters are focusing on impacts of COVID19 induced standstill on the atmospheric environment with reductions in major air pollutants (e.g. CO, NO_2, SO_2, Pb, O_3 and $PM_{2.5}$) particularly coming out from the industrial and transportation sectors from India, Russia, Mexico and other part of the world.
- One section also demonstrated a safe way to collect airborne samples of COVID-19 virus through high precaution.
- At last, this section highlights various lessons learned and possible adaptation strategies to cope up with it.

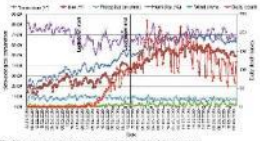
Effect of COVID19 on water quality

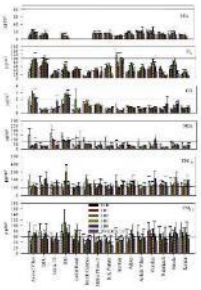
Theme 3- Air quality: Monitoring, fate, transport, and drivers of socio-environmental change

- Total number of chapters -6
- Here most of the chapters are focusing on impacts of COVID19 induced standstill on the atmospheric environment with reductions in major air pollutants (e.g. CO, NO_x, SO_2, Pb, O_3 and $PM_{2.5}$) particularly coming out from the industrial and transportation sectors from India, Russia, Mexico and other part of the world.
- One section also demonstrated a safe way to collect airborne samples of COVID-19 virus through high precaution.
- At last, this section highlights various lessons learned and possible adaptation strategies to cope up with it.

Effect of COVID19 on air quality

- Less industrial activities, vehicular emission results in the improvement of ambient air quality
- Relation between meteorological parameters and its relation with COVID19 related death rate in Russia
- Shows how to do the safe air sampling to detect COVID19 transmission



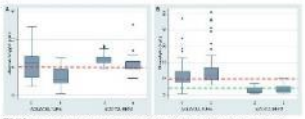


Effect of COVID19 on air quality

Theme 4- Marine and lacustrine environment

- Total number of chapters -3
- This theme focuses on the impact of the pandemic on the marine, lagoonal and lacustrine environment.
- The Marine environment (coastal, lagoon zones), has served as the key for the survival of corals, dependent biota and plays a significant role in the food chain.
- It shows an incipient evidence of trophic recovery in the lagoonal environment and hence biodiversity enrichment (case studies from Mexico, Philippines, India).
- It is emphasized that the interconnectivity of the marine ecosystems should be considered for deriving the management policies to protect the ecological health of these coastal habitats.

Effect of COVID19 on marine environment



Increase in the population of native as well as non-native fish species in seven lakes of Philippines

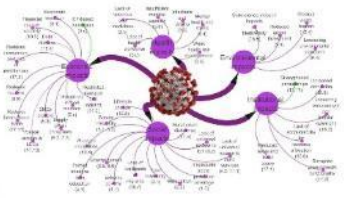
Theme 5- Management perspectives (Environmental justice and governance)

- Total number of chapters -11
- This section highlights the impacts of COVID19 on the slowing down the progress for achieving different global goals especially those in the world's developing economies
- Also, it highlights, what are the additional challenges and opportunities imposed by COVID-19 pandemic to achieve them in a timely manner.
- The area of thrust of all eleven chapters within this theme ranges from sectors like energy, natural resources and food security.
- Different approaches are highlighted to redesign our system to revive the economy as well as socio-environmental system. Main ideas discussed here are :
  - Green economy (Decarbonized society or net zero society)
  - Transdisciplinary approach
  - SDGs interlinkages
  - Gender inclusiveness
  - Nexus (food-energy- water) approach
  - Transboundary application
  - Planetary health

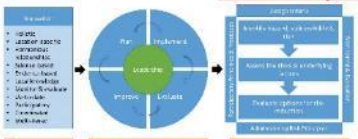
SDGs interlinkage approach

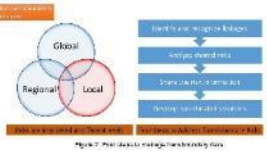
The existing gaps in SDG progress in Asia was worsened by the emergence of the COVID-19 pandemic and the subsequent global crisis reversing the decades of progress in many development areas.

- Due to the intrinsic interactions among the SDGs, understanding the impacts of COVID-19 and its recovery on achieving the SDGs from an interlinkage perspective is important to help grasp a wider picture of COVID-19 impact and inform about the synergies and trade-offs of the COVID-19 measures.
- In this study, a methodology based on an SDG interlinkage analysis was proposed for analyzing the impacts of COVID-19 and its recovery.

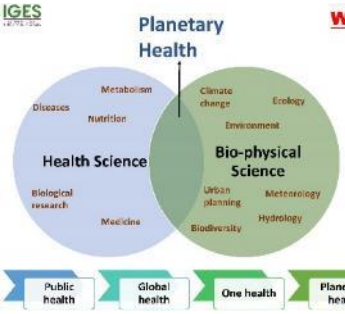


Strengthening Risk Management Frameworks to Mitigate Transboundary Risks



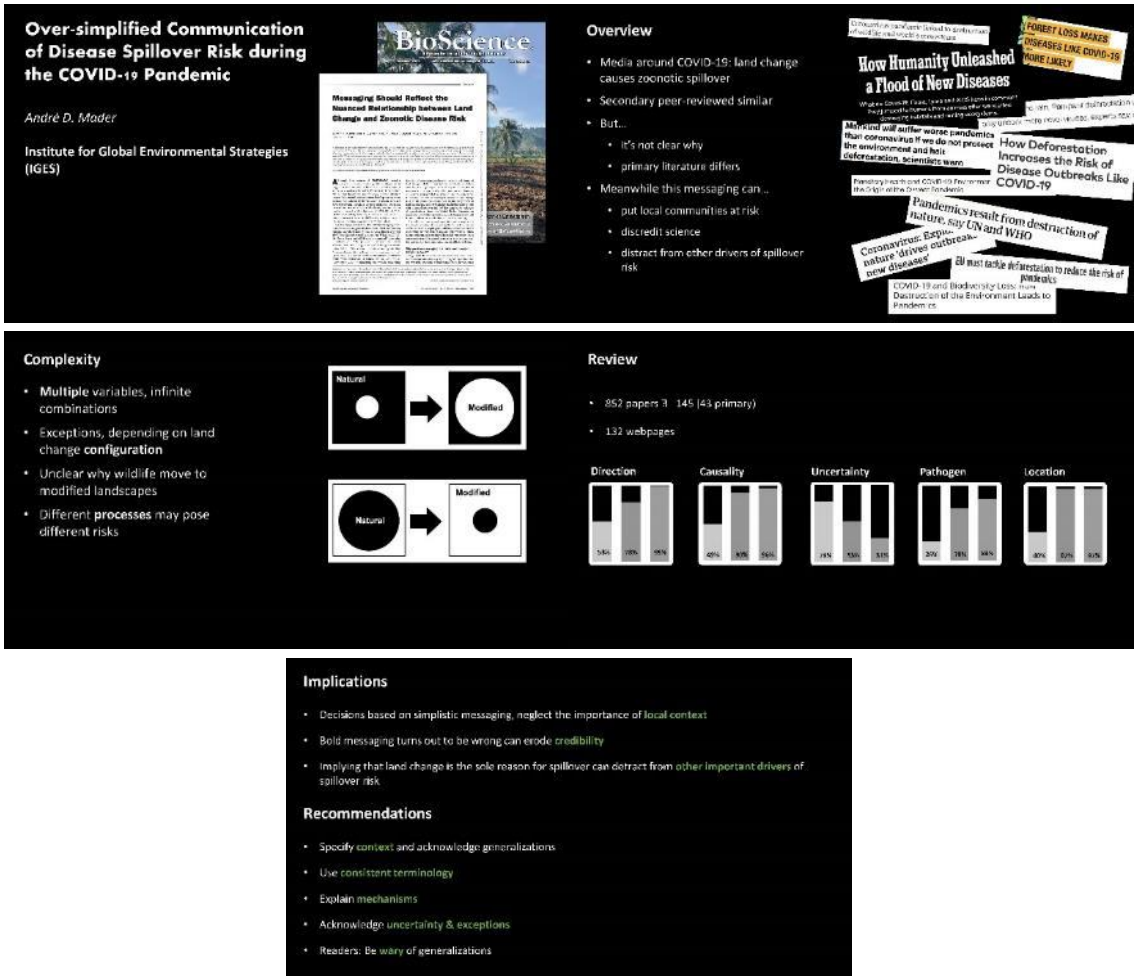


Way forward



- Finally it highlights the importance of research on planetary health, which examines the health of human being along with the state of the natural systems or global environmental changes/challenges on which it depends.

n) Session IV: Over-simplified communication of disease spillover risk during the COVID-19 pandemic



o) Session IV: Planetary health and the triple R framework

Policy Implications of Planetary Health

1. Systemic Transformation-Lock-in and Punctuated Equilibria
2. Sectoral Integration-Policy Coherence
3. Social Innovation-Just and Sustainable Transitions

"A crisis is a terrible thing to waste"

Paul Romer, Nobel Laureate

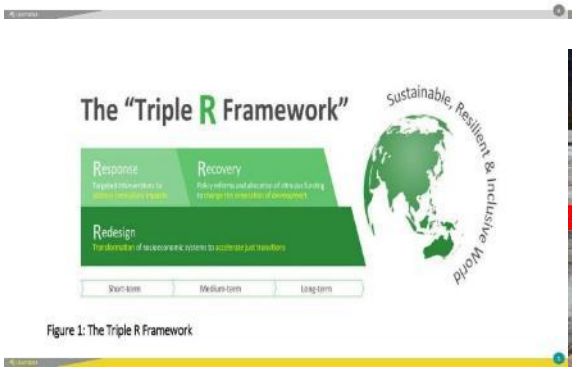
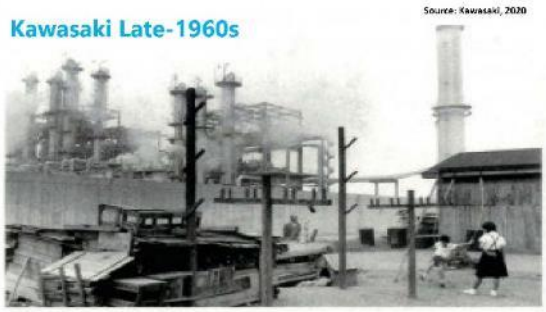
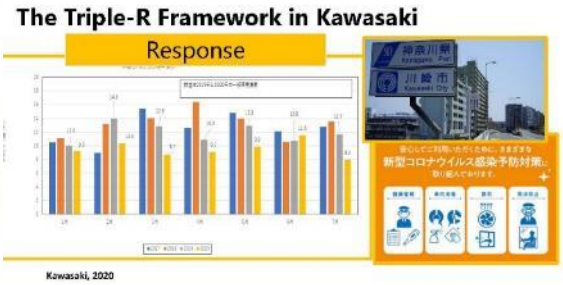
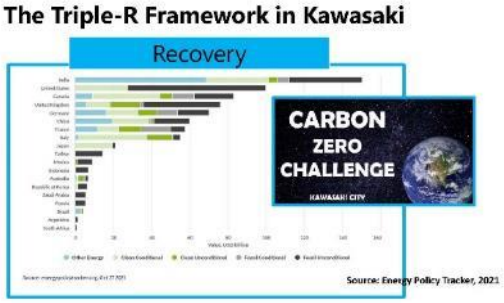
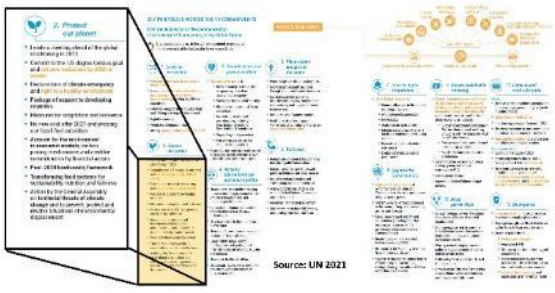


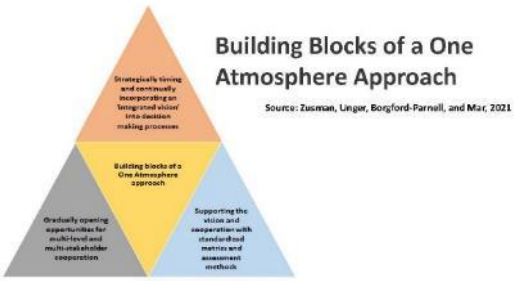
Figure 1: The Triple R Framework











p) Session IV: Systemic links between COVID-19 and development: Developmental implications

Systemic links between COVID-19 and development: Developmental implications

Dr. Mustafa Moinuddin
Deputy Director, Integrated Sustainability Centre
Institute for Global Environmental Strategies (IGES)

JSPS-ICSSR Seminar
Understanding and Addressing Systemic Risks Behind the Socio-economic Impacts of COVID-19 in Japan and India: Developing a Roadmap for a Resilient and Sustainable Future
21-22 November 2022, Tokyo

COVID-19 and the subsequent global crisis have reversed decades of progress in many developmental areas

Countries around the world have adopted a wide array of measures to recover from the crisis

- These measures can stimulate progress in many pandemic-hit SDG areas, which will also exert synergistic effects across many other SDGs.
  - Depends on the design and efficiency of the implementation
- However, ignoring the broader and longer-term sustainable development perspectives may lead these measures to further intensify the existing trade-offs among the SDG areas, particularly in the environmental domain.

An empirical study on the impact of COVID-19 and its recovery on the SDGs

- At IGES, we proposed and applied an SDG interlinkage analysis methodology to assess the impact of COVID-19 and its recovery on the SDGs.
- While COVID-19 is a global tragedy, implementing an effective recovery may put the world on the path toward resilience and sustainability.
- This study aims at contributing to seizing this opportunity in Asia.
- Empirical analysis of the study was conducted on two Asian countries – Bangladesh and the Republic of Korea.

Methodology

Literature review
- Impacts of COVID-19
- Adopted and planned recovery measures of the case study countries

Mapping with SDGs
- Key aspects mapped with SDGs at the target level

SDG interlinkage analysis
- Impacts of COVID-19 on SDGs
- Implications of COVID-19 recovery measures on SDGs

- The identified synergies and trade-offs were then reviewed in terms of
  (i) the effectiveness of the recovery measures in addressing their impacts on SDGs, and
  (ii) the implications for building long-term resilience and sustainability.

IGES SDG Interlinkages Analysis & Visualisation Tool

(https://sdginterlinkages.iges.jp/visualisationtool.html)

- The IGES SDG Interlinkages Analysis & Visualisation Tool to help identify, quantify and visualise the interlinkages among the SDGs at the target level

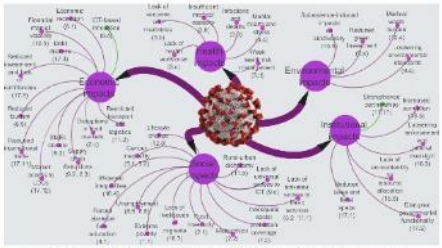
Application of the SDG Interlinkages Tool for an SDG interlinkage analysis of the impacts of COVID-19 and its recovery.

Impact assessment from SDG interlinkages perspective

Trajectories of achieving the SDGs in the pre-and-post-COVID-19 eras

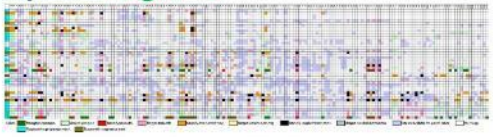
- COVID-19 shock could change the trajectories of the COVID-hit SDG targets
- Impact of the shock can be either negative (for example, on economic growth [SDG Target 8.1]), or positive (for example on innovation [SDG Target 9.3])
- Deceleration or acceleration of a given target depends on pre-existing trajectories of that target
- Other interlinked targets are affected on the basis of their association with the COVID-hit targets
- Impact of countermeasures is assessed by replacing the COVID-hit targets with the targets mapped for countermeasures for the case study countries

Derived Impacts of COVID-19 and mapped SDG targets



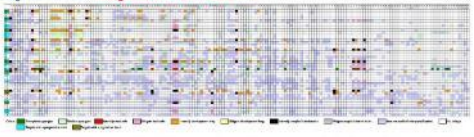
Note: Codes in brackets are the mapped SDG targets. Purple: Negative impacts; Green: Positive impacts.

Derived Impacts of COVID-19 from SDG Interlinkages perspective: Bangladesh

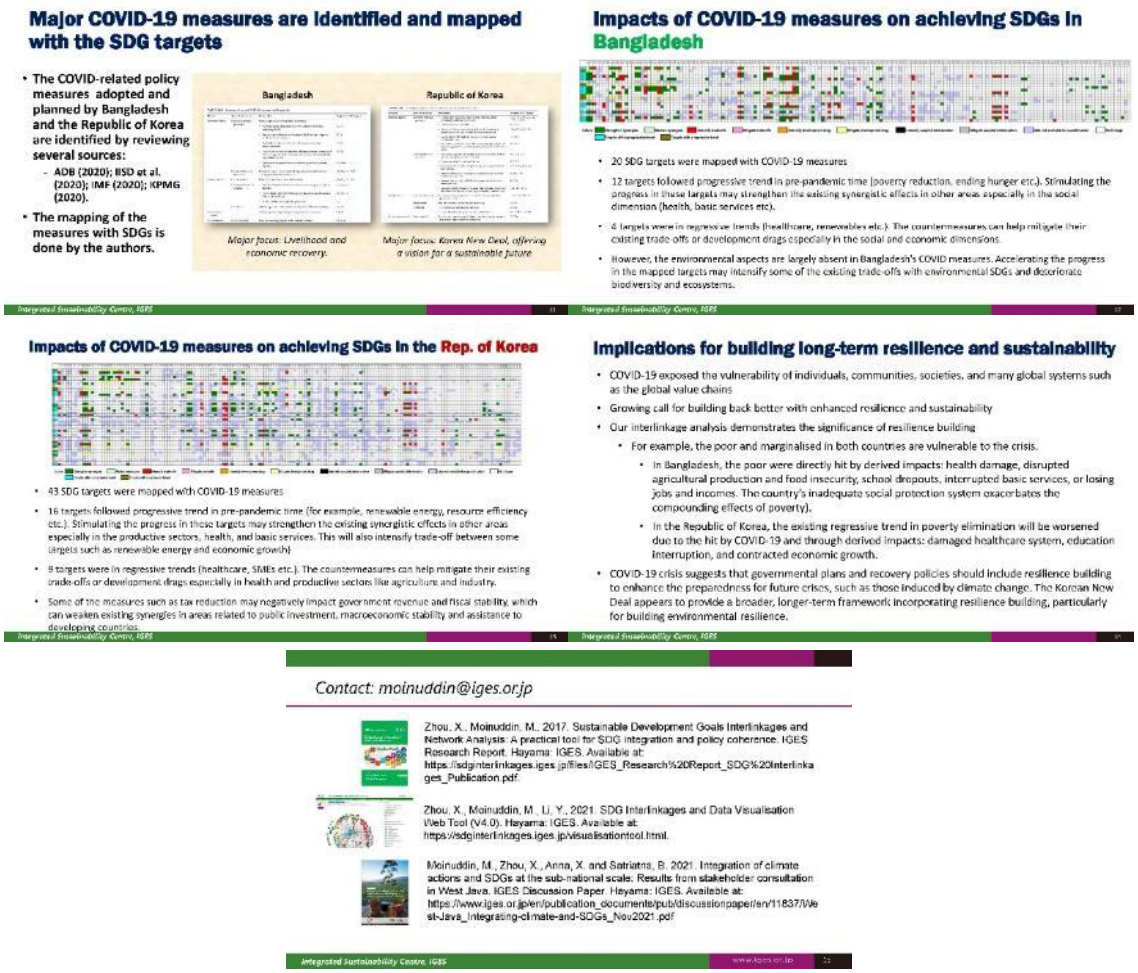


- Most of the 44 COVID-hit targets received negative shocks from the pandemic
- Past progresses in many areas including poverty reduction will be decelerated, with derived impacts on other areas.
- Existing gaps in certain tagged areas such as social protection or informal sector may further widen due to tightened public resources during the pandemic
- Some improvements in the area of the environment are temporary (result of economic slowdown, not structural change or innovation.
- Some progress in innovation and partnership will strengthen synergies with efficiency improvement in other areas.
- COVID-hit targets with pre-existing regressive trends (for example full and productive employment) will intensify development drag in other interlinked areas (such as poverty eradication).

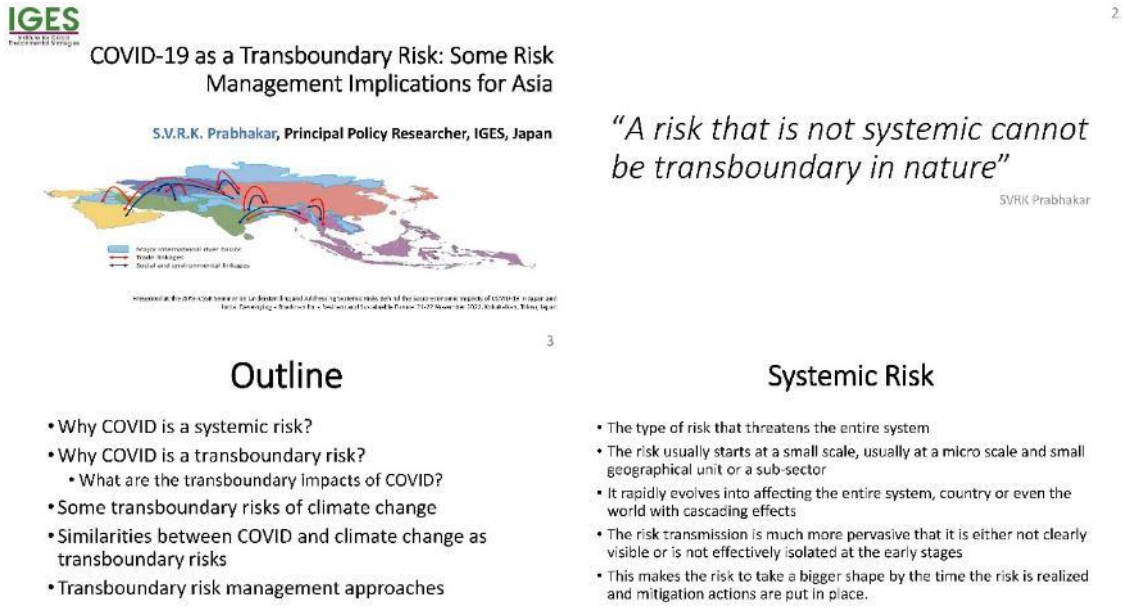
Derived Impacts of COVID-19 from SDG Interlinkages perspective: Republic of Korea



- 16 out of 44 COVID-hit targets followed a progressive trend in the pre-pandemic time, and the negative shock will also weaken their synergies with other associated areas including hunger and malnutrition.
- Some improvements in the area of the environment are temporary (result of the economic slowdown).
- Positive shocks on innovation will accelerate its development and derived impacts will strengthen synergies for example in improving gender parity in education.
- COVID-hit targets with pre-existing regressive trends (for example healthcare coverage) will intensify development drag in other interlinked areas (such as social protection).
- Major concerns related to the derived impacts are in the SDGs related to health, economic, growth, SMEs, inequalities and environment-related targets.



q) Session IV: COVID-19 as a transboundary risk: Some risk management implications for Asia



Why COVID-19 is a systemic risk?

- We know that COVID-19 started at a small scale.
- The evolution of COVID-19 from within China to a pandemic took three months (from Dec 2019 to March 2020 for the disease to be declared as pandemic by WHO)
- The disease was a health risk initially, a public health concern. It became the economic and security concern in less than 3 months when the social life and eventually the economic mission started stalling. Thanks to lockdowns and cross-border travel restrictions.

6

Transboundary Risks

- Transboundary risks are risks that emanate from outside the boundaries of a country or region.
- Countries have always faced transboundary risks. Wars for example are a typical example of a transboundary risk as opposed to an internal conflict of a country.
- Climate change impacts can be transboundary in nature. For example, a drought or extreme flood event in a food exporting country can impact not only the food security of that country but will also impact the food security of the importing countries.

7

Why COVID-19 is a Transboundary Risk?

- Pandemics span across multiple countries, multiple continents, and even worldwide. COVID-19 is a perfect example of a pandemic, it evolved into a global pandemic.
  - COVID-19 has affected 228 countries and territories infecting 642 million people and killing nearly 6.6 million people.
- While COVID has affected the individual countries due to infections within that country, COVID emerged as a transboundary risk for several reasons.
  - In-country impacts
  - Transboundary impacts>>A lot of these impacts have similarities with climate change impacts
    - Disruption of global industrial supply chains
    - Increase in global food prices
    - Disruption of global tourism industry

8

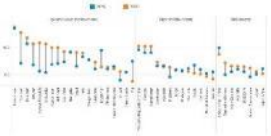
Disruption of Industrial Supply Chains

- Disruption of production of various kinds goods and services.
- Disruption of transboundary movement of goods and supplies resulted in shortage of goods in importing countries including raw materials and machinery used in manufacturing.
- Disruption of manufacturing due to lack of supply of industrial supplies/inputs.
- Underestimation of demand by manufacturers contributed to further effects (e.g. semi-conductors which take time to produce)
- Lockdowns and restricted movements resulted in loss of sales and unsold inventory affecting the business revenue. Businesses had to sale off at low prices especially for perishable goods resulting in losses.
- Supply chains disruptions were in the following order: manufacturing>construction>retail
- Consequently, the global trade declined by 8.5 % during 2020 (OECD 2021)

9

Increase in food prices: Compounded by domestic and transboundary causes

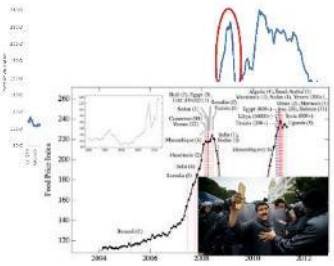
- The undernourished increased from 361.3 million to 418.0 million between 2019 and 2020 in Asia (ADB, 2021).
- A large part of this increase in undernourished is attributed to increase in food prices, and reduced access to food.
- Food inflation in Asian countries ranged between 1 to 11% within a span of a year (ADB 2021).



- Restricted movement of migrant workers affected the farm operations leading to production disruptions and even food loss due to untimely harvests.
- The combined impact of reduced food production, disruption of transportation, severe labour shortages negatively impacted the overall food economy.

10

2008 and 2012 Global food price crisis



- 83 per cent increase in global food prices between 2005 and 2008
  - Maize prices: 300% increased
  - Wheat prices: 127% increased
  - Rice prices: 170% increased
- 10-15% decline in food consumption, 15-20% increase in food expenditure
- Affected 50-70% of poor households from 2007 to 2008
- Impact on livelihoods: petty traders & labourers

USDA 2009; UNCTAD 2009

11

2008 and 2012 global food price crisis

- Thailand's long-grain rice prices exceeded $1,000 per ton in late April 2008, more than double of prices in early February and triple of prices in November 2007.

Major short-term factors for price rise

- **Floods:** Thailand, Vietnam, Lao PDR experienced heavy rainfall events leading to floods

IDDRI, 2022

- Export bans and restrictions by rice exporters: Vietnam, Cambodia
- Panic buying by several large rice importers: The Philippines
- Flow of funds into commodity markets from stocks and real estate in 2007 and early 2008 that added to price volatility and may have temporarily boosted prices.
- A sharp decline in the value of dollar in fall 2007 and winter 2008

USDA 2009; FAO 2009; UNCTAD 2009

12

2008 Global food price crisis: Major long-term factors

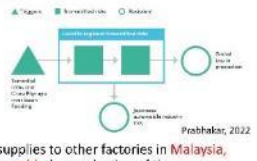
- Extremely **high nominal crude oil fuel** and fertilizer prices (conflict in Middle East, Iran nuclear plans, Hurricane Katrina etc)
- **Increased biofuel use** of corn and oilseeds, food-fuel conflict of associated agricultural land use for biofuels
- The **depletion of excess global rice** stocks
- Negligible yield growth for rice over the past decade
- Sharply rising incomes in developing Asian countries
- Very high prices for other foods

USDA 2009

13

Bangkok Floods and Industrial Supply Chain Disruptions

- A total estimated loss of 47 billion USD, 90% of the losses were accrued to Japanese companies and related investments.
- More than 550 Japanese affiliate firms were affected by these floods, production facilities such as buildings and machinery were severely affected.



Prabhakar, 2022

- Supply chain impacts: As these firms provide supplies to other factories in Malaysia, Vietnam and Indonesia and other parts of the world, the production of these factories were also affected due to the shock to the supply chains.
- The loss borne by the Japanese insurance companies stood at about 1.8 billion USD.
- The impact on the industrial production of the world was estimated to be 2.5% (Haraguchi & Lall, 2015).

14

Commonalities Behind COVID and Climate Change as Transboundary Risks

- Interconnectedness of our socio-political and economic systems
  - Regional and global economic and social integration.
  - Distributed manufacturing/production systems with fragile connections
- Risk governance structures that doesn't govern the entire system within which risks operate leaving 'risk islands' where disruptions can take place (typically and easily visualized in the case of supply chains that span across multiple countries and continents)
- Common exposures: A lot of similarities can be found among the exposure elements by both the COVID and climatic events as discussed before (supply chains e.g.). Both have affected countries with high socio-economic inequalities (Ringsmuth et al. 2022).
- Information failure: Lack of sufficient information for decision making and on the risk progression
- Due to information imperfection, we can observe either excessive risk taking or excessive risk aversion in both the cases.

15

The Boon and Bane of Integration in Asia

- Asia, the Southeast Asia followed by Hindu Kush Himalaya Region, are rapidly undergoing regional and global integration. We are more interconnected today than ever before.
- Benefits these interconnectedness: The reduction in poverty, increase in standard of life, and increased employment opportunities due to freedom of movement across the region (especially ASEAN) are some of the immediate benefits that people in the region have benefited from, increased resilience to shocks.
- On the contrary, regional integration has also brought distinct risks closer. Countries with under-developed risk management systems are the most affected, resulting in the globalization of local risks, and greater exposure to global risks.
- With greater dependency on transboundary natural resources, the natural resources in the region are coming under immense pressure because of the regional integration. With natural resource governance poorly developed, this could mean a significant impact for all the countries in the region.

16

Risk Management Implications

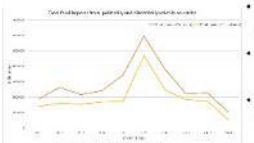
17

Embracing Uncertainty

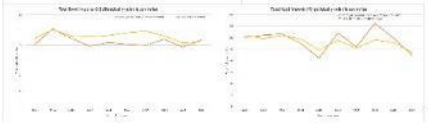
- Understand that not all risks are understood, quantified, and replicated in our simulation exercises (e.g. Dr Eric talked about external shocks with regard to policies and projects).
- Develop adaptive risk management systems that constantly evolve with iterative efforts. This also means constantly improving our risk assessment methods.
- More reliance on policy simulations, mock drills and scenario exercises to understand implications of unexperienced extremes
- At the institutional level, it means more independence of institutions and incentivizing institutional innovation, for e.g. to encourage them think long-term

18

Reduce Food Import Dependency on Fragile Countries: India



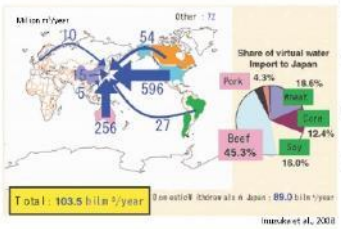
- India imported food from **23** of top 30 climatically and **11** politically unstable/vulnerable countries during 2011-2020.
- During 2011-2020, **42%** of total food imports came from climatically vulnerable countries, and **29%** from politically unstable countries.
- The nexus between political stability and climate change is well recognized globally. This puts India's food imports at risk (Ukraine-Russia war?)



India also exports food to several of these countries in significant quantities.

19

Reduce Food Import Dependency: Japan



- Japan's climate security concerns originate both from within and across its borders.
- **Food and water:** Japan imports more freshwater than the water withdrawn within its borders.
- Japan saves nearly 20 km^3 of water by importing food per annum.
- Climate change impacts on countries from where Japan imports food means food and water insecurity for Japan.

20

Technical Measures to Mitigate Transboundary Risks on Food

- A global **food price forecasting system** that takes all risk factors into consideration.
- **Flexible food supply chains:** Food supply chains tend to be fixed in a short term. There is a need to understand food supply chains, make them resilient by making them more organic/flexible to take advantage of short-term shifts in supply and demand.
- Rely on **local food supply chains** and phaseout dependency on global supply chains.
- **Smart food buffer stocks:** that are linked to the medium and long-term risk projections (including weather, climate and pandemic shocks)

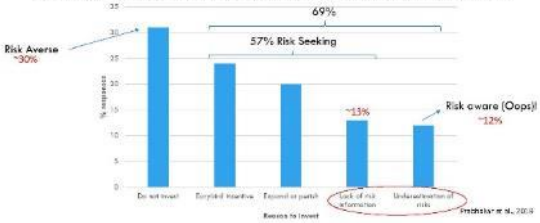
21

Supply Chain Risk Management

- The current supply chains operate with high 'secrecy' with limited understanding of vulnerabilities of individual layers/tiers and entities.
- Conduct risk assessments at the whole supply chain level as opposed to individual tier/node level
- Share risk information within and beyond supply chains transparently.
- Supply chain risk management should be put in place and shared across the chain, and organize scenario exercises
- Supply chain risk insurance?

22

Risk Assessment and Risk Communication is the Key



- Majority of foreign investing entities do not have deeper understanding of local risks!
- Transboundary climate risks are seldom considered.
- There is a poor risk communication between FDI recipient countries and investment entities.

23

Revisiting Risk Assessments

- **Integrated risk assessments:** fragmented risk assessments not recognizing links with other sectors and regions lead under estimation of risks and inefficient risk communication.
- Removing the **'sensitivity'** attached to sharing risk information, can spark regional cooperation in risk management (Among all, corporate risk information is highly protected).

24

Bringing Systems Perspective to Risk Management

- What do we mean by systems perspective? Look at the whole rather than understanding the whole as a collection of individual components or looking at them separately.
  - Redundancy: Multiple pathways as in the case of identifying multiple supply chains to quickly shift sources in a short notice
  - Variety: Rely on a range of solutions, and engaging diverse stakeholders in the decision making can contribute to resilience by bringing more flexibility to the system
  - Modularity: Design components of the system such that they can work independently if the whole has to collapse or contain the shock within a cluster. This also means some amount of redundancy of functions built into each cluster.

Thank You!

3. Photos

Figure 6. Group photo of participants on the first day of the seminar

Figure 7. Group photo of participants on the second day of the seminar

Figure 8. A view inside the seminar hall

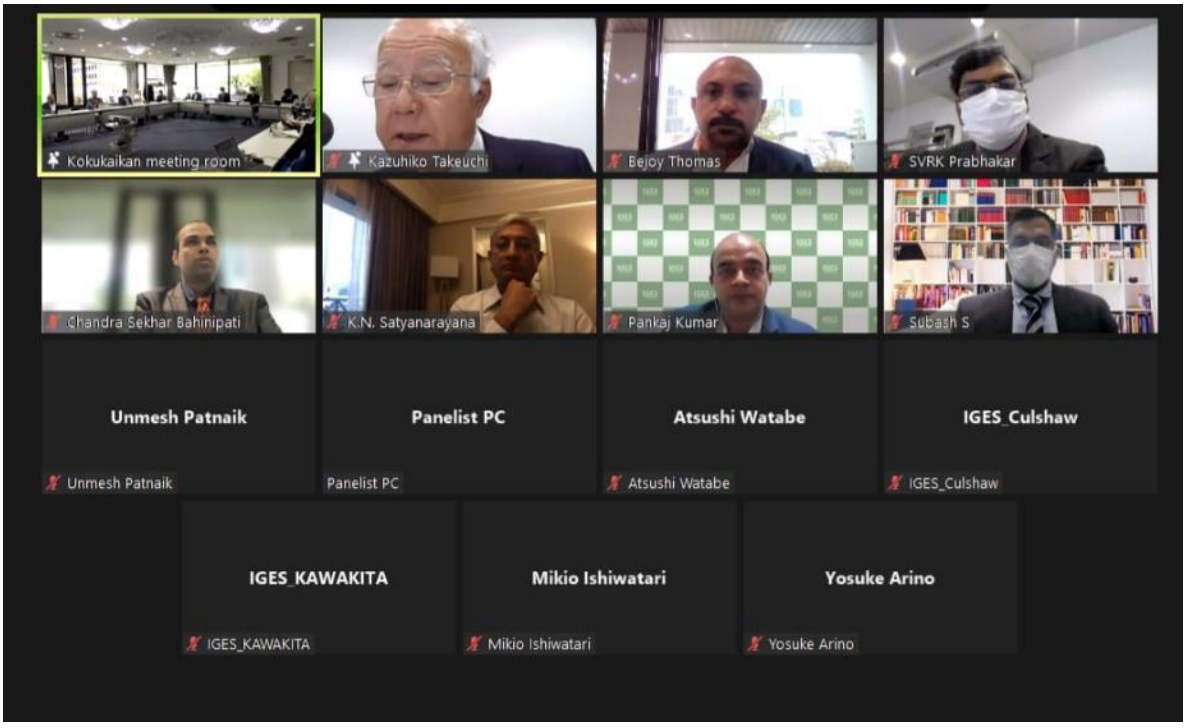


Figure 9. The inaugural session of the seminar

Figure 10. Seminar session III on the economic and social welfare of Japan and COVID-19

Figure 11. Seminar session IV: Understanding gaps in the research and policy processes and their implications

Figure 12. Visiting UNU-IAS on 4th November 2022

Figure 13. Visiting ADBI, Tokyo on 4th November 2022

Figure 14. Meeting at NIES, Tsukuba on 5th November 2022

4. Social Media Posts

---

a) Inaugural Session:

IGES, IIT-T, and several institutions in Japan and India are organizing a seminar on Understanding and Addressing Systemic Risks Behind the Socio-economic Impacts of COVID-19 in Japan and India: Developing a Roadmap for a Resilient and Sustainable Future. You are requested to participate in this seminar and contribute to the discussions.
Date: 21 Nov 2022.

Time: 09:30-10:15AM (JST) /6:00-6:45 (IST)
For in-person participation: contact prabhakar@iges.or.jp, a few slots are available.

Zoom details for online participation:
Zoom link:
https://us02web.zoom.us/j/89675863940?pwd=MXdFZ1piQjJWVG82NXcyeDhQQnRzdz09
Meeting ID: 896 7586 3940
PassCode: 212813

Banner file link: https://drive.google.com/file/d/1YpXhBMANostHIF0YEqNL3mX-IRBf8ZZc/view?usp=share_link

b) Session II

IGES, IIT-T, and several institutions in Japan and India are organizing a session on '**Impacts, success stories, and supply chain aspects of COVID-19 in India'** as a part of the seminar on 'Understanding and Addressing Systemic Risks Behind the Socio-economic Impacts of COVID-19 in Japan and India: Developing a Roadmap for a Resilient and Sustainable Future.'

You are invited to participate in this seminar and contribute to the discussions.

Date: 21st Nov 2022.

Time: 10:15-13:00AM (JST)/6:45-9:30 (IST)

For in-person participation: contact prabhakar@iges.or.jp, a few slots are available.

Zoom details for online participation:
Zoom link:
https://us02web.zoom.us/j/89675863940?pwd=MXdFZ1piQjJWVG82NXcyeDhQQnRzdz09
Meeting ID: 896 7586 3940
PassCode: 212813

Banner file link:
https://drive.google.com/file/d/1auf5ekSnbYDiOoiNEWkisd25BufNdDlr/view?usp=share_link

c) Session III

IGES, IIT-T, and several institutions in Japan and India are organizing a session on ' **Economic and social welfare aspects of COVID-19 in Japan '** as a part of the seminar on 'Understanding and Addressing Systemic Risks Behind the Socio-economic Impacts of COVID-19 in Japan and India: Developing a Roadmap for a Resilient and Sustainable Future.'

You are invited to participate in this seminar and contribute to the discussions.

Date: 21 Nov 2022

Time: 14:00-16:15 (JST)/10:30-12:45 (IST)

For in-person participation: contact prabhakar@iges.or.jp, only a few slots are available.

Zoom details for online participation:
Zoom link:
https://us02web.zoom.us/j/89675863940?pwd=MXdFZ1piQjJWVG82NXcyeDhQQnRzdz09
Meeting ID: 896 7586 3940
PassCode: 212813

Banner file link:
https://drive.google.com/file/d/1B3CMANC28G76FzbsV9MibhhsOlXh_DEl/view?usp=share_link

d) Session IV

IGES, IIT-T, and several institutions in Japan and India are organizing a session on **'Understanding gaps in the research and policy processes and their implications**' as a part of the seminar on 'Understanding and Addressing Systemic Risks Behind the Socio-economic Impacts of COVID-19 in Japan and India: Developing a Roadmap for a Resilient and Sustainable Future.'

You are invited to participate in this seminar and contribute to the discussions.

Date: 22nd Nov 2022.

Time: 09:30-11:30AM (JST)/06:00-08:00 (IST)

For in-person participation: contact prabhakar@iges.or.jp, a few slots are available.

Zoom details for online participation:
Zoom link:
https://us02web.zoom.us/j/89675863940?pwd=MXdFZ1piQjJWVG82NXcyeDhQQnRzdz09
Meeting ID: 896 7586 3940
PassCode: 212813

Banner file link:
https://drive.google.com/file/d/1B3CMANC28G76FzbsV9MibhhsOlXh_DEl/view?usp=share_link

All presentations of the seminar are available here:

Contact

Institute for Global Environmental Strategies (IGES)
2108-11, Kamiyamaguchi, Hayama, Kanagawa, 240-0115, JAPAN
TEL: +81-46-855-3720 FAX: +81-46-855-3709
Email: iges@iges.or.jp
URL: http://www.iges.or.jp