

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

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Seminar Proceedings.

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I.FOREWORD

The world has been witnessing an increasing number of disasters and their impacts over the past several decades. While some of these trends can be attributed to the increasing movement of humans to vulnerable and hazard-prone locations including encroachment into river catchments, our increasing ability to monitor disaster losses and damages, climate change and more importantly the human pressure on the environment including the destruction of forests and mangroves etc. Several of these factors have not been considered with the rigour that they demand in our responses in terms of disaster risk reduction and climate change adaptation. What is clear all through these years of experiencing disasters is our inability to understand the complex mechanisms behind these disasters that make them difficult to be mitigated in the first place.

The complex human socio-economic and institutional systems we have developed over the years and our zeal to be connected between geographical regions and societies we built over the years though have contributed to human well-being socio-economically speaking, but they have also further contributed to the pervasiveness of disasters and to become more lethal. We have seen the implications through cascading disasters, compound risks, transboundary risks and systemic risks. The COVID-19 pandemic is one such experience.

The COVID-19 pandemic had a pervasive impact on our personal lives, including socioeconomic and health aspects, and our economies, from local to global. Understanding what enabled COVID-19 to have a such serious impact on our lives is an important research question that can solve the mystery behind systemic risks. That was the objective of the seminar organized under the collaboration of the Institute for Global Environmental Strategies (IGES) and the Indian Institute of Technology, Tirupati (IIT-T). The researchers from Japan and India joined to discuss the impacts of COVID-19 on our lives and societies, what made COVID-19 evolve into a systemic risk, and what measures to be taken to mitigate such future risks. There are more questions to be answered and this is a worthy beginning. The proceedings are an output of the seminar and I hope that the proceedings help the reader to gain insights into this important topic.

Yasuo Takahashi Executive Director, IGES

II.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

III.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)				

IV.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 longterm 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.

V.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 GDP 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 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).

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.

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 the drivers of systemic risks, it will be difficult to identify effective and sustainable solutions.

Important factors behind 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.

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

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VI.SEMINAR PROGRAM

Understanding and Addressing Systemic Risks Behind the Socioeconomic 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) <u>Session III:</u> 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

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 *08:00-09:45 (IST)* better development

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 United Nations University Institute for Advanced Studies (UNU-IAS),
- 12.15 **Tokyo, Japan**
- (JST) 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 Asian Development Bank Institute (ADBI), Tokyo, Japan
- 15.00 Prof K. E. Seetharam, Dr Dina Azhhgaliyeva, and Others
- (JST) 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 - National Institute for Environmental Studies, Tsukuba, Japan

- 12.30 Dr Yasuko Kameyama and others
- (JST) To deepen understanding of the impacts of COVID-19 on India-Japan relations: Focus on economy and environmental sustainability

VII.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:

- To discuss systemic risks behind the socio-economic impacts of COVID-19 in Japan and India
- To identify the transboundary impacts of COVID-19 on Japan and India
- 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?
- To foster strong research collaboration on COVID-19 between relevant researchers in Japan and India: Visiting research institutions in Japan UNU-IAS, ADBI, NIES etc.

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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.

VIII.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.

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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).

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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.

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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. Postdisaster 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 noneconomic 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 naturebased 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.

IX.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	Not much correlated		
	Information	ICT (radio, TV, smart phone)	Not correlated	
	Local governance	al governance • Fire fighting party • Voluntary disaster prevention organization cover rate • Number of residents participating in local briefing session	Fire fighting party	Fire fighting party
	(risk awareness)		No data	
	Institution	Fire station	Not correlated	
	 Number of times of loca session by the staff Number of DRR government 	 Number of times of local briefing session by the staff Number of DRR government officials 	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 postpandemic 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.





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 policies (and climate mitigation policies) are considered 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.

X.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 pandemichit 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.





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

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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).



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

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.

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.

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XI.ANNEXURES

1. Profiles of the project team members

JSPS-ICSSR Seminar Visiting Team 2022



Dr. S.V.R.K. Prabhakar

Prin<mark>cipal Policy Researcher, Institute for Global Environmental Strategies, Hayama, Japan </mark>

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=2QNDgvoAAAAJ&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.littp.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_o p=list_works&authuser=1



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/humanitiesand-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: <u>https://hss.iitm.ac.in/team-members/subash-s/</u> 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



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

- · 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

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

- · 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: Incention
 SR measures: Incention 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.

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? (COVII)".
- · Dummy variable, which equals 1 if the firm has received government support or expect to receive within 3 months , and 0 otherwise.

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

- An important guestion- 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.

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.

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 clear
- Omit firms with missing values for any of the variables final sample 12,858 firms.

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),
- ✓Fiseal exemptions or reductions (Fiseal 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? (COVe3)", which takes value 1. If the firm adjusted its production or services due to the pandemuit; zero otherwise.
- Layoff: ordinal variable from the responses to the survey question "*ilas the number of permanent workers remained the same*? (COVd3a)". It takes the value (i the firm report that the number of permanent workers has increased, 2 if it has creased.

Female-to-male layoff ratio:

This variable drouble 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 (COVdT)" and I total Layoff.

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.

Variables	ED. Cost support	121 Now credit	12 Circle in ansler	(4) Deferred	(1) Prest	08 Ways undering
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Survey month dummies	Yes	Vas	Ves	Yes	Y28	Ves
Characters	12.2 AB	4876	4631	19994	4345	46.14

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Variables	New tinancial constraint measure	Lewbel estimation technique	Essertial	Non-essential
Financial constraint2	3.396***			
	(0.325)			
Financial constraint		0.0194**	2.246**	0367***
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Firm level controls	Yes	Ves	Ves	Yes
Industry duramies	Yes	Ves	Vet	Yes
Provincial dumnics	ves	Yes	YES	Yes
Cisetty dannies	Yas	Vec	Vas	Yes
Survey month downles	Yes	Ves	Ves	Yes
Horssen / statistic (p-value)	-	0.074		-

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 pandemie
- 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.

Does Government support target financially constrained firms

Probit Model

$$\label{eq:general} \begin{split} \gamma_{triped} = & f(Financial Constraint_{triper}, Firm Controls_{per}, Country Dummies, Provincial Dummies, Industry Dummies, Survey Month Dummies) \end{split}$$
(1

Copieg with Pandamic_{Land} – HGord Support, _{print}, Firm Controls _{Land}, Country Dummies, Region Du industry Dummies, Survey Month Dummies)

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.

	(1)	(2)
Variables	Layoff (probit)	Female-to-male layoff ratio (OLS
Financial constraint	0.235***	-0.486***
	(0.0762)	(0.1/(6)
Finn-level controls	Yes	Yes
industry dumenics	Yes	Yes
Provincial dummies	Yes	Yes
Country duminies	Yes	Yes
Sarvey month damnies	Yes	Yes
Observations	12,552	814

	(1)	673	110	141	- 258	2.63
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presented. Co country level.

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





Environmental 'improvements' during

2020 lockdown

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 (inítiai stage)
 - · Middle 'category' households (later stage): severe decline in consumption among the 40%-80% category (Kapcor et al, 2021, based on World Bank COVID survey data)
- · What factors led to decrease in consumption?

Determinants of change in consumption

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NE2	4.0053 (0.0295)
1990	185 5151* (106.2215)
HHSLOW	78.2584*** (17.8491)
18:	187 7876 (140.6253)
MC	252.9106** (115,6699)
110	362.7367** (1.67.4975)
斑	91.3313(151.5340)
Constant	548 (Statem (255 8627)
diamateur	1434
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ses ^{and} p-0.01, ^{ad} p-0.05, p^b-0.

 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 5. Nag; Nag and Thomas. in preparation



- · 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?

1

Joint work with 5. Bhar and 5. Chakravarty, Thomas et al, 2021

data strategy codex7121

Change in consumption and inequality

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

Americ	ge Househol	d Cansum	ption (INR)		Average	et change	in Corna	mption (%)
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griculture	2541.68	2320.60	3672.34	3839.86	-8.70%	-27.94%	10.02%	-27.61%
ion cultivation	2235.19	2185.23	3648.64	1950.45	2.10%	24.56%	38.31%	12.74%
about	2101.12	1964.97	1571.57	1629.03	6.48%	20.02%	3.66%	22.47%

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	3.4039	0.4495	0.4539	8.4733	11.31%	0.98%	3.61%	16.45%
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ur:	0.377L	0.4592	0.3040	0.3603	21.76%	-14.21%	-3.47%	0.84%
		Join	t work w	ith 5. Na	g; Nag and I	homas, is	n prepara	noti

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 The case nené Osna 🗮
- heads with the affective Report '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

46

f) Session II: Localizing resilience agenda





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



APPENDINGTON

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49

Average Annual Household Expenditure during COVID-19

COVID 19 and Street vendors Bhubaneswar



Expenditure during COVID-19 Pandemic







Magnitude of Impact of COVID-19



Source: Audice's Figure



Sinder Autor figure

Action to be taken by Government for managing the future pandemics

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Family members' health conditions during the Covid-19 pandemic

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Acknowledgements:



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



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-Fron	n August 201 2020	9 to	 38 response 	es from	Land slide
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-Mult	iple field visit	it diles			
targe	ting climate-	related		Carlos and the second	
disas	ters		Qualitative analy	vsis based on:	
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		-	implementation /	Hardware	At 10
	100	W =T	Software and Tr	ansformative	asta
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	UNDP(2004), 4	Japan society or natural disast	cers (2010), mayashi (2014), 4	<u>FEG.</u>	47 Prelectural-level data during 1975-2014 (II=1655) & 2005-2014 (II=705)
	Risk =	f (Hazard, Exposure, Se	nsitivity, Adaptive Ca	pacity)	No modification of outliers
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-	Risk =	nuzuru x exposure x s	ensurvery / naaperver	apactey	Explanatory variables
			(R, 1	H. E. V≧ 0, AC > 0)	Hazard [+] Precipitation (e.g., annual maximum daily precipitation)
	anel represe	ion models			Exposure [+] Population density in populated areas
fi	xed effect (F	E) model $y_{it} =$	$= \alpha_i + \lambda_t + x'_{it}\beta$	$+ \varepsilon_{it}$	Sensitivity [+] Age. House structure (one-story), etc.
		-,			Adaptive capacity [-] Infrastructure, Information, Local governance (risk awareness), Institution, Finance
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stractify	Economy		notional		
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	(risk awareness)	Voluntary disaster presentes manufactor operative	rive signing party	the righting party	2. Implication to respond to COVID-19 fisk
		Kumber of residents participating in Invalid binding on the sectors	Tvo data		
	Institution	Fire station	Not correlated		
		 sumper or times of local briefing sussion by the staff Number of DRR or 	No data		
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				THE WERE CONCERNENT OF THE OWNER	

Determinants on information and institution (local governments) have yet to be in und statistically correlated Further tasts are necessary

	Climate-related of	lisaster	Operation of the Internated analysis and deather and all the second second the test
Bockal distance begeholden and begeholden an	Common elements of vulnerability meet to be targeted by policy received to	disaster Age (Proportion over 75); Voodenkne-storied house, Hard infrastructure (coast, five; mountain); Profigiting party: Profigiting part	 Summary of the integrated analysis on adaptive capacity and sensitivity to climate disasters in Japan Combination of hardware and software measures are essential to reduce disaster risks on human for the period 1976-2014, while vulnerability in aging society, exposed residents (house type), and the role of fiscal spending for DRR are vital the period 2000-2014 Institutional measures such as DRR plan, disaster pact, and support for developin district disaster management plan (a kind of community-based DRW) are vital. Implication to respond to COVID-19 COVID-19 had a direct impact of deaths and indirect impact of social isolation, weakening the bond of local communities, causing mental illnesses. In addition to national-level actions such as providing vaccination and waterfront measures at airport as well as individual actions such as wearing masks, enhancing local bond (social relation capital) is essential. Municipalities' networking with NPOs and citizen/religious groups might help.
Thank you	very much	A CONTRACTOR OF	Appendix

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

Not correlated at all Correlated to some extent in Highly correlated Investment and incorrelated

Education and income of households are not created to doubt rate
 Education and income of households are not created to doubt rate
 IOTs, local governance (6cg., voluntary disaster prevention organization, vescuation training), institution
 (e.g., DRR governance (6cg.), Sibaster part, regional disaster prevention plan, local disaster
 prevention plan), and finance/fiscal spanding are considered important.

Note: Number of valid responses is 38 out of 96 sent (rate of valid response is 39%).

25

	Introduction
Sustainable Lifestyles and Resilient Livelihoods in the Post-Pandemic Transitions	Systemic transitions toward decent living 1.5-Degree Project Carbon Footprint and our daily living Olitzen's discussion and household "challenge" Making sense of transitions
Atsushi Watabe & Alice Yamabe SCP Area, IGES	



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

14 Workshop: Participants' Initial Thoughts on Decarbonised Living

	Attractive	Not Altractive/Not Suited
Live closer to schools on 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 REI00 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

14 Workshop: Participants' Initial Thoughts on Decarbonised Living

-	Attractive	Not Altractive/Not Suited
Reduce long Iravel		 This will lead to fewer visitors, resulting in a serious damage to the economy and society
Reduce flights		
Online homecoming		 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

1^{er} 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: Participents' Initial Thoughts on Decarbonised Living

·	Attractive	Not Altractive/Not Suited
Reduce meat consumption and introduce vegetarian diet / meat alternatives	 I can de this if not everyday 	Vie can reduce meat consumption, but not ordinaly Treet meat alternatives less satisfactory though its taste and nutrition should be the same., This may threaten local calitle producers
Eat local and seusonal food reduce waste; Save snacks, alcohol, smokes	We can support local farmers and reduce CO2 Seasonal foods are testy We can improve our health	 I don't want to save alcohol We want to improve our distany balance, but not every day

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 Ado/ fride-sharing service) started but run in a timited 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 workhop for <i>math</i> Shapping support service is desired
Use EV	EVs are still too expensive Charging stations are scarce Dharging takes time	Cheaper EVs More charging stations and sharing of information

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
Live closer to schools on workplaces Develop a compact city	 Public services are scattered in the city I feel worried about losing hometown by developing a compact oily The city already has many abandaned houses Lass and less fermers 	Matching of houses, farmlands, etc. across generation Subsidies to support zero-carbon renovations of abandoned houses
Set up solar panels al home Switch to REI00 Electricity	 Initial cost is expensive Cancerns about safety 	Need more information Sharing of actar systems among neighborhoods instead of individual houses

Toward Decarbonised Living: 1.5Degree Project Toward Decarbonised Living: 1.5Degree Project A Case of Odate City, Akita, Japan A Case of Odate City, Akita, Japan 2nd Workshop Reflecting on the challenges & possible solutions 2nd Workshop Re-valuating the merits of decarbonisation Challenges Possible Solutions Meat alternatives are not available Meat alternatives were more watery and was not tasty (as long as they are cooked like meats) Concerns about the safety/contaminants Need recipe using alternat Making the city compact - More lively interactions Reduce meat and introduce vegetarian diet / meat alternatives Car & Space Sharing ---- Cross-generation exchange Renovation for Insulation --- More comfort Smaller houses ---- More interaction in the family Visualisation of CO2 reduction effect Need a market/place where consumers can by food items that can't be sold in the ordinary shops It was not easy to identify which food iteres can save CO2 Eat local and sessonal food, reduce waste; Revisiting the diet \rightarrow Health & Support local farmers More knowledge; Started thinking climate as our issues Save snacks, alcohol, smok Low carbon living through pursuit of local weilbeing - not as patience Toward Decarbonised Living: 1.5Degree Project Toward Decarbonised Living: 1.5Degree Project A Case of Odate City, Akita, Japan A Case of Odate City, Akita, Japan 2nd Workshop Proposing action points 2nd Workshop Proposing action points Opportunities & Sites for experiencing alternatives Study Workshops on specific topics EV, Ride Sharing, Car Sharing Ride Sharing Renewable Energy, Zero Energy Houses Low cost renovation Alternative Diets Alternative Diets Metching Systems of Unused Resource with local farmers Abondoned farms & houses Repair & Repurposing Center for unused products Study & Discussion Workshops at schools, vorrigilaces, communities fo exploring the future visions of the city In search of sustainable and resilient living beyond pandemic 1. Tapping into real-world concerns for essential services, instead of jumping into Carbon Reduction 2. Identifying what they can/can't by testing in the real world 3. Revisiting the merits & costs of alternatives for themselves and other members of the local society 4. Seeking ways forward to use their learnings for/with others Making sense of "transitions" in their living world through learning by doing

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





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















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







Effect of COVID19 on mental health Study investigated the role of socie-entivironmental factors on mental health of people during COVID-14 using Compacing COVID Stress Index (CCSI) and COVID Anadety Scale (CAS) Intrudu web-based survey. Empirical results from Epglanatory Factor Analysis (EA) and Weighted Least Sociare (WLS) suggest that respondents are highly wormed (analety, stress, anger etc.) about following things shown in the cligram: Thus, Bridings propage the need of Directory gate cliagram: 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.

IGES

V SARS-CW2 was detected and spreading through human faces: and gradually ended up in swagalveshcelar training thins. SARS-CK2-2 cxXII maintain their vtailally (e.g. in me senage, humpai veshcelar: raw veshcelar circlarging: forg-querent the tutingspread. SARS-CK2-2 continued focolution, and write toots the two organical come field discharge of refered patients) for several cays in vite: other leaves pre-forms the senigring a potential risk to public health. If it is not properly handled and travia.

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Antino Yao Qalit Medanginto

Therefore, proceeding measures, effective interventions and control strategies should be taken to stop the spread of SARS CoV2 infections from these possible routes, expenditly from acrossil transmission in showe mentioned hotspot areas.

FIG. 12-6 Variation in DO before and after lockdow

IGES Effect of COVID19 on water quality

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

²⁷ Regular airus surveilance in wattevater has a long history of use and a proven consect in public heath, which can be uitbed as an early warning teel for the occurrence of COVID-18 in communities, minituring the dates of COVID-19 infection in local communities, evaluating the tends and tooking hotports, investing the sected of the companies outlines.



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.

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Surveillance found to effective support clini

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

- First part in this section, provides a glance of methodologies to track COVID-19 and evaluate environmental statis (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 invarious counters.
- It stresses the framework for epidemiological management and proper surveillance of wastewater to avoid fecal/ 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 proparedness actions can be taken as carly 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.





tel collation in Gulf of Mannee coast 14.1 Reducts

<u>Theme 3-</u> 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 standshill on the atmospheric environment with reductions in major air pollutants (e.g. CD, NO, SO, Pb, O, and PM, J, perticularly coming out from the industrial and transportation sectors from <u>India, Russia,</u> <u>Meetico and other part of the world</u>.

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.

IGES



UP20 UPIS

UP51 UP55

Protockdown = Lockdown W-1 = Lockdown W-2
 #Lockdown W-3 = Lockdown W-5

Total number of chapters -8



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



0

"A crisis is a terrible thing to waste"

Paul Romer, Nobel Laureate







The Triple-R Framework in Kawasaki





The Triple-R Framework in Kawasaki





Source: Kawasaki, 2020






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



 Impact of countermeasures is assessed by replacing the COVID-hit targets with the targets mapped for countermeasures for the case study countries lay Centry, IGES

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

- Note of the 42 COVID-hit targets received negative shocks from the pandomic.
 Note of the 42 COVID-hit targets received negative shocks from the pandomic.
 Rest progresses in many areas including power ty reduction will be decelerated, with derived impacts on other areas.
 Exhibiting pars in certains target ames with a scalar protection on informal evolution must be decelerated. With derived impacts on other areas, and public reduction with derived impacts on other areas.
 Some improvements in the area of the environment are temporary (result of scenamic slowdown, not structural change ar innovation.
 Some progress in innovation and partnership will strengthen synergies with efficiency improvement in other areas.
 COVID-hit targets with pre-oxising regressive trends (for example field and enductive employment) will intensity development days in other interlinked areas (such as powerty endication).

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

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

- 1 The second appende and a second a second and a second a second
- 16 out of 44 COVID-hit targets followed a progressive trend in the pre-pandemix time, and the negative shock will slow weaken their synergies with other associated areas including imager and malkutritism. Some improvements in the areas of the emioritment are temporary (result of the economic dowdown). Forsitive shocks on innovation will accelerate its development and tender dimpact will storegistion synorgies for particle shocks on innovation will accelerate its development and development and storegist empiots will storegistion synorgies for
- Positive shock on inneration will accelerate its development and derived impacts will strongthon synergies for example in improving approach parity in education. EVUID in targets with pre-existing represive renais (for example healthcare coverage) will interstify development drag in other interlined areas (such as sace) protection). Major concern resided to the derived impacts are in the SUGs related to health, economic, growth, SMEs, inequalities and environment-related targets.

Major COVID-19 measures are identified and mapped Impacts of COVID-19 measures on achieving SDGs in with the SDG targets Bangladesh The COVID-related policy measures adopted and planned by Bangladesh and the Republic of Korea are identified by reviewing Bangladesh Republic of Karea ---ng several sources: - ADB (2020); IISD et al. (2020); IMF (2020); KPMG (2020). 20 SDG targets were mapped with COVID-19 measures 12 targets followed progressive trendlin pre-pandemic time [poverty reduction, ending hunger etc.]. Stimulating the progress in these targets may strengthen the adding synergistic affacts in other areas especially in the social dimension (besits), basis services etc.). The mapping of the measures with SDGs is done by the authors. 4 largets were in regressive trends (healthcare, renewables etc.). The countermeasures can help mitigate their cidisting trade-offs or development drags especially in the social and economic dimensions. Major focus: Livelihi Major focus: Korea New Deol, offer a vision for a sustainable future However, the environmental aspects are largely absent in Bangladesh's COVID measures. Accelerating the progress in the mapped targets may intensify some of the existing trade-offs with environmental SDGs and descriptions biodiversity and ecosystems. Impacts of COVID-19 measures on achieving SDGs in the Rep. of Korea Implications for building long-term resilience and sustainability COVID-19 exposed the vulnerability of individuals, communities, societies, and many global systems such as the global value chains Growing call for building back better with enhanced resilience and sustainability Our interlinkage analysis demonstrates the significance of resilience building · For example, the poor and marginalised in both countries are vulnerable to the crisis teampoint of the poor were directly hit by derived impacts: heat of damage, dirupted agricultural production and food inscurity, school dropouts, interrupted basis services, or losing jobs and incomes. The caurity's inadequate social protection system exacerbates the compounding effects of poverty). - 43 SDG targets were mapped with COVID-19 measures 16 targets followed progressive trend in pre-pandemic time (for example, renewable energy, resource efficiency etc.). Simulating the progress in these targets may strengthen the existing vancegistic effects in other areas expecially in the productive sectors, health, and basic services. This will also internafy trade-off between some largets such as renewable energy and economic growth) 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, educati interruption, and contracted economic growth. B targets were in regressive trends (healthcare, SMEs etc.). The countermeasures can help mitigate th trade-offs or development drags especially in health and productive sectors like agriculture and index COVID-19 crisis suggests that governmental plans and recovery policies should include resilience building to enhance the preparedness for future erises, such as those induced by dimate change. The Korean New Deal appears to provide a broader, longer-term framework incorporating resilience building, particularly for building environmental resilience. Some of the measures such as tax reduction may negatively impact government revenue and fiscal stability, which can weaken existing synergies in areas related to public investment, macroeconomic stability and assistance to developing countries. proted Strawbatellay Centre, 1015 Contact: moinuddin@iges.or.jp pu, X., Moinuddin, M., 2017. Sustainable Development Goals Interlinkages and work Analysis: A practical tool for SDG Integration and policy coherence. IGES search Report, Hayams IGES. Available at: s: MidginterIntegressies jp/files/IGES_Research%20Report_SDG%20Interlinka s_Publication.pdf. , X., Moinuddin, M., U, Y., 2021. SDG Interlinkages and Data Visualisation Tool (V4.0). Hayama: IGES. Available at: Wadginterlinkages.iges.igs/sisualisationtool.html.

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

Moinuddin, M., Zhou, X., Anna, X. and Satriatna, B. 2021. Integration of climate actions and SDDs at the sub-national scale. Results from stakeholder consultation in West Java. (SDE Sticassion Paper Heyner): ICSE. Available at this //www.ijas.or.jbert/houbloation_document/opublicitious/sionaper/#rm11837/West-Java_integrating-chinate-and-SDG_Nov222, pdf



COVID-19 as a Transboundary Risk: Some Risk Management Implications for Asia

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

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Outline

- Why COVID is a systemic risk?
- Why COVID is a transboundary risk?
- What are the transboundary impacts of COVID? • Some transboundary risks of climate change
- Similarities between COVID and climate change as transboundary risks
- Transboundary risk management approaches

"A risk that is not systemic cannot be transboundary in nature"

SVRK Prabhakar

2

Systemic Risk

- 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 to take a bigger shape by the time the risk is realized and mitigation actions are put in place.

3

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.

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.
 - EVERAL FEBSONS. In-country impacts Transboundary impacts Disruption of global industrial supply chains Disruption of global industrial supply chains Disruption of global courism industry

Increase in food prices: Compounded by domestic and transboundary causes

- The undernourished increased from 361.3 million to 418.0 million betwee 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 yea (ADB 2021).
- Restricted movement of migrant workers affected the farm operations leading to production disruptions and even food loss due to untimely harvests.

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Annual Annual I

Prabhakar, 2022

USDA 2009; FAO 2009; UN(TAD 2009

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The combined impact of reduced food production, disruption of transportation, severe labour shortages negatively impacted the overall food economy.



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

Bangkok Floods and Industrial Supply Chain Disruptions

- A total estimated loss of 47 billion USD, 90% of the losses were accrued to Japane 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.
- Supply chain impacts: As these firms provide supplies to other factories in Malaysia, Vietnam and Indonesia and other parts of the world, the producti-factories were also affected due to the shock to the supply chains. orld, the production of these
- 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).

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.

Disruption of Industrial Supply Chains

Social impacts	Disruption of production of		Disruption of
Isolation etc.	supplies of various kinds	Disruption of transboundary incident.	manufacturing
		transboundary inovement.	

- Disruption of transboundary movement of goods and supplies resulted in shortage of goods in importing countries including raw materials and machinery used in manufacturing.
- 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)
- Conductors which take time to producer 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 pershable goods resulting in losses. Supply chains disruptions were in the following order: manufacturing-constructionretail
- · Consequently, the global trade declined by 8.5 % during 2020 (OECD 2021)

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
- 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 2005

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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

Commonalities Behind COVID and Climate Change as Transboundary Risks

Interconnectedness of our socio-political and economic systems

- Interconnectedness of our socio-political and economic systems Regional and global economic and social integration. Distributed manufacturing/production systems with fragle 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)
- comments) 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.

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The Boon and Bane of Integration in Asia

- Benefits these interconnectedness: The reduction in poverty, increase in standard of life, and increased employment opportunities due to freedom of movemer 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.

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

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 km³ of water by importing food per

19

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Climate change impacts on countries from where Japan imports food means food and water insecurity for Japan.

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?

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).

18 Reduce Food Import Dependency on Fragile Countries: India



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)

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

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!

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Risk Management Implications

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 <u>prabhakar@iges.or.jp</u>, a few slots are available.

Zoom details for online participation: Zoom link: <u>https://us02web.zoom.us/j/89675863940?pwd=MXdFZ1piQjJWVG82NXcyeDhQQnR</u> <u>zdz09</u> Meeting ID: 896 7586 3940 PassCode: 212813

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



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 <u>prabhakar@iges.or.jp</u>, a few slots are available.

Zoom details for online participation: Zoom link: https://us02web.zoom.us/j/89675863940?pwd=MXdFZ1piQjJWVG82NXcyeDhQQnR zdz09 Meeting ID: 896 7586 3940 PassCode: 212813

Banner file link:

https://drive.google.com/file/d/1auf5ekSnbYDiOoiNEWkisd25BufNdDlr/view?usp=sh are_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 <u>prabhakar@iges.or.jp</u>, only a few slots are available.

Zoom details for online participation: Zoom link: <u>https://us02web.zoom.us/j/89675863940?pwd=MXdFZ1piQjJWVG82NXcyeDhQQnR</u> <u>zdz09</u> Meeting ID: 896 7586 3940 PassCode: 212813

Banner file link: https://drive.google.com/file/d/1B3CMANC28G76FzbsV9MibhhsOIXh_DEI/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 <u>prabhakar@iges.or.jp</u>, a few slots are available.

Zoom details for online participation: Zoom link: https://us02web.zoom.us/j/89675863940?pwd=MXdFZ1piQjJWVG82NXcyeDhQQnR zdz09 Meeting ID: 896 7586 3940 PassCode: 212813

Banner file link:

https://drive.google.com/file/d/1B3CMANC28G76FzbsV9MibhhsOIXh_DEl/view?usp =share_link



All presentations of the seminar are available here:



Contact

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