

International Symposium

“Transforming Mobility for Humanity”

Commemorating the 50th Anniversary of The Club of Rome “The Limits to Growth”

14 December 2022

Venue: Chulalongkorn University, Bangkok / Online

I. Introduction

1. The Transforming Mobility for Humanity International Forum to commemorate the 50th anniversary of the Club of Rome “The Limits to Growth” was a high-level policy dialog and workshop co-organized by the Japanese Association of The Club of Rome, Chulalongkorn University, Japan Transport and Tourism Research Institute (JTTRI), ASEAN-India Regional Office (AIRO), JICA/JST SATREPS Project “Smart Transport Strategy for Thailand 4.0”, United Nations Centre for Regional Development (UNCRD), Asian Development Bank Institute (ADBI), World Conference on Transport Research Society (WCTRS), Chubu University Center for Sustainable Development and Global Smart City, Japan Association for Human and Environmental Symbiosis, and the Society for Social Management Systems.
2. The context for the event was that mobility is an indispensable element of humanity, as human life and livelihoods are greatly dependent on efficient and safe mobility. While modern transport systems have contributed to remarkable industrial development and economic growth in most parts of the world throughout the 20th century, too many lives have been lost due to various unintended consequences. All over the world, a total of around 1.35 million people die each year because of traffic accidents, and another 50 million people are seriously injured. Meanwhile, air pollution causes over 6.5 million deaths each year globally, one key cause of which is vehicle emissions. Also, transportation is undeniably a major source of greenhouse gas emissions that are responsible for climate crisis and also contribute to the spread of pandemics. As catastrophic changes to the global climate become a real possibility with existential consequences for humanity, mobility must be transformed. The main sources of emissions are rapidly growing in megacities in Asian and African emerging economies.
3. The Club of Rome report “The Limits to Growth” warned in 1972 that food and other resources would not catch up with the exponentially growing population. Likewise, transport infrastructure supply today cannot catch up with rapidly growing motorization. Similarly, technological innovations in developed countries do not always work. We are hence in dire need of substantial behavioral transformation. To commemorate and reflect on the 50th anniversary of The Club of

Rome’s 1st Report “The Limits to Growth,” this international symposium focuses on critical issues and policy options that aim to transform mobility, so that humans can escape eventual extinction while still leading worthy and meaningful lives.

II. Opening Plenary

4. The event was opened by the Master of Ceremonies Ms. Michiko Yoshida, Director, Division of Global Networking and Engagement, Office of International Affairs and Global Network, Chulalongkorn University.
5. *Prof. Dr. Bundhit Eua-arporn*, President, Chulalongkorn University delivered the opening welcome. Prof. Eua-arporn stated he was delighted by the collaboration with the Club of Rome and several key regional and international organizations as part of the event to join efforts to create timely policy dialog and roundtable discussion. Cities in emerging economies are facing massive challenges made worse by the COVID-19 pandemic and the climate crisis and there is a need to raise awareness and take action to address the interconnected social challenges of our time or we will threaten the livelihood of future generations. A focus on mobility allows us the opportunity to examine larger social challenges across areas of energy, health, justice and equity. Prof. Eua-arporn pointed out that Universities have a public role to play in facing interconnected challenges and that innovation is imperative. Innovation is needed not just new technologies but also in effective and meaningful approaches and strategies that are delivered in partnership to solve the problem of today and sustain our futures. Prof. Eua-arporn welcomed the dialog and sharing as part of the event and encouraged collaboration.
6. *Ms. Tomoyo Nonaka*, Full Member, Club of Rome and Former Chairperson and CEO of Sanyo Electric, gave the first opening address. Ms. Tomoyo first paid her respects to the ‘Limits to Growth’ work published by the Club of Rome and echoed the need for a new perspective to approach our modern problems. Calling for a global approach that moves past arguments about what is right and wrong in order to collaborate to create new approaches and solutions that draw on experience and perspectives from all over the world, this is the ‘ocean of opportunity’ for our future. Ms. Tomoyo called for collaboration between all religions to protect our shared future. Ms. Tomoyo shared the story of the first Japanese express train and pointed out that early users were surprised by the short trip time and that real happiness is in sharing our time together and embracing our common future while being very clear on what is important to our communities and economy.
7. *Mr. Masafumi Shukuri*, Chairman, Japan Transport and Tourism Research Institute (JTTRI), gave the second opening address. Mr. Shukuri started by congratulating the Club of Rome on the 50th anniversary of “The Limits to Growth” and thanked the host, Prof. Dr. Yoshitsugu Hayashi, and other dignitaries present. Mr. Shukuri called for mobility to be transformed to contribute to the

greater wellbeing of human kind with a focus on inclusiveness. Improving quality of life is extremely important and JTTRI is focused on research to find solutions.

III. Policy Dialogue: Mobility for Humanity: Where We Are, Where We Should Be

8. *Prof. Dr. Yoshitsugu Hayashi*, Executive Committee Member and Japan Association President, The Club of Rome, Ex-President of World Conference on Transport Research Society, and Distinguished Professor, Chubu University, pointed out that mobility should be focused more on people because there are currently significant health implications for people from transport. Prof. Hayashi pointed out that the growth in private vehicle ownership has grown substantially in a number of cities in Asia, while at the same time the associated length of roads in the transport system has been decreasing, causing issues. Prof. Hayashi pointed out the implications of traffic and health and well-being, noting that there are three fatalities each hour in Bangkok, and on average 66 people are killed across Thailand. Prof. Hayashi pointed out a range of transport planning options have created issues such as fixed time destination commuting, needing extensive space to park vehicles in cities, car oriented sprawl, and the lack of walkability.
9. Prof. Hayashi pointed out a range of strategies and policies for decarbonisation across the three areas of ‘Avoid’, ‘Shift’ and ‘Improve’. A key aspect is consideration of the effectiveness of road versus rail transport options. Prof. Hayashi advocated for a focus on electric vehicles and pointed out that there is a need to increase the generation of electricity from clean and renewable sources to displace fossil fuels. Other innovations such as Mobility as a Service (MaaS) are needed with such solutions needing to be tailored to each city’s own situation. Prof. Hayashi called for understanding that shared transit systems are often running at or near capacity and need to be enhanced and expanded in most large cities around the world in order to provide effective and accessible mobility. Such an agenda can be enhanced by new technologies such as using Virtual Reality (VR) to visualise before and after situations with reduced car lane width and expanded walking spaces. Prof. Hayashi pointed out that a “Third Place” to work, along with home and office, should be a key focus of urban fabrics with informal spaces such as coffee shops and cafes providing valuable work spaces that avoid central commuting requirements. There is a need for a focus on sufficiency and the ability to use digital tools to manage and understand mobility choices and the associated quality of life to create ‘Mobility Sufficiency’.
10. *Dr. Wei-Shiuen Ng*, Economic Affairs Officer, UNESCAP, pointed out the need to focus on accessibility as part of the intention to ‘leave no one behind’, and called for transport planning to cater to all users, including those with disabilities, women and children, low income families, and to ensure rural urban connectivity. Dr. Ng pointed out a number of valuable UNESCAP events related to transport and sustainability pointing out a range of solutions that provide significant benefits, calling in particular for further discussion around ‘inclusive transport and mobility’. Dr. Ng pointed

out that choices around transport infrastructure and vehicle design affect people and can cause social exclusion if not properly envisioned. Looking at the data it appears that the transport sector is not yet on track to meeting decarbonisation targets by 2050 and Dr Ng called for further collaboration between sectors and regions in order to progress the goals of the Paris Agreement. Dr. Ng reiterated that it is imperative to improve the sustainability of transport and called for a prioritisation on the electrification of public transport along with efforts to improved social inclusiveness of infrastructure services and transport operations. Dr. Ng pointed out that we need to harness the power of new technologies and increase the capacity of local governments and transport operators to ensure policy directions are understood by local officials and the transport sector. Dr. Ng mentioned the launch of UNESCAP initiatives such as the ‘*Region Cooperative Mechanism on Low Carbon Transport*’ and the ‘*Asia-Pacific Initiative on Electric Mobility*’ and called for participation by audience members.

11. *Mr. Ahmad Rifai*, Co-Founder/Executive Director, Kota Kita Foundation, expressed his support for a focus on mobility for people rather than further perpetuating what he referred to as “A Kingdom for Cars”. Mr. Rifai focused on how modern concepts of mobility marginalise, and can even exclude, particular groups of people. Mr Rifai provided a summary of findings from a study on disability-inclusive cities pointing out issues that limit mobility, including the implications of social stigma and the dependence on a companion/carer which can affect mobility options. Mr Rifai provided a summary of findings from the Koto Kita ‘Inclusive Urban Mobility Initiative’ including gaining a better understanding of “who is being left behind and why” due to discrimination, geography, socio-economic status, governance approaches and susceptibility to shocks. The process uses community based data collection methods to inform co-design with local government and communities to propose urban interventions in specific areas. Mr Rafia outlined projects including: working on the co-design of safe and inclusive space to create a safe school zone, working with students and other key stakeholders; working to prototype accessible vehicles for disabled persons; awareness raising activities including city tours, public awareness campaigns, a gallery walk, and documentaries; the ‘Women on Wheels’ program that promotes bicycle use by women in collaboration with a range of associated stakeholders and organisations.
12. *Mr. Sanon Wangsrangboon*, Deputy Governor, Bangkok Metropolitan Administration, shared how the Bangkok Metropolitan Administration is focusing on creating liveable cities with a people focused approach that is issue based. Mr Wangsrangboon pointed out the key role that universities and NGO’s play in informing approaches to mobility that incorporate the views and experience of universities, government, industry and civil society. Mr Wangsrangboon pointed out the need for active collaboration and cautioned that this can be difficult when there are many stakeholders involved and it needs to be managed carefully, pointing out that BMA is well placed to manage such collaboration.

13. In the final session the panel discussed a number of topics including the need to extend the concept of ‘no person left behind’ to include ‘no detail left behind’ when considering comprehensive solutions to mobility that provide services to all people in a way that improves quality of life. Dr Ng pointed out that gender is relevant to transport in both supporting women working in the transport sector (pointed out that less than 10 percent of transport workers are women in Asia) as well as supporting women to access mobility services (especially active modes such as cycling). Dr. Ng pointed out that it is often the case that mobility use is male dominated and it is important to understand how mobility needs differ based on gender and that this data is often lacking. The panel discussed options for engaging with the political process to support human-centred mobility planning and operation. The panel highlighted the need for wide collaboration to achieve both global climate change goals and local mobility goals.
14. In response to a question from the Moderator (Assoc. Prof. Dr. Apiwat Ratanawaraha, Faculty of Architecture, Chulalongkorn University; Full Member, The Club of Rome) about each speakers final message around steps forward, Prof. Hayashi reiterated the need to move on from the old view that people mostly work in the centre of the city and commute at the same time from all over the city. Mr. Rifai encouraged increased capacity to listen to different actors to harness insights around what is actually useful for people’s lives. Dr Ng called for mainstreaming of “Inclusive Transport” in planning and design, much like the previous mainstreaming of sustainable development in transport to make it common practice. The Moderator provided closing words and pointed out that it is wise to rethink what we take for granted to ensure that what is good for today is also good for tomorrow, and that humanity has a capacity to be creative and this needs to be applied to solutions for the future.

IV. Roundtables: Current Challenges, Future Solutions

Roundtable I: Mobility and Mortality Risk Challenges

15. *Mr. Yukio Yamashita*, Senior Research Fellow/Senior Director, ASEAN-India Regional Office (AIRO), Japan Transport and Tourism Research Institute (JTTRI), emphasised the need or safety to be a high priority highlighting options for facility and system improvements such as platform screen doors. Mr Yamashita emphasised the need for effective education and awareness for safety. Mr Yamashita provided an overview of the safety management mechanism of Japan.
16. *Mr. Cornie Huizenga*, Co-Team leader Asian Transport Outlook (ADB), provided a summary of the Asian Transport Outlook (ATO) and encouraged all elements of the transport sector to be considered. The outlook looks at infrastructure, activities and services, access and connectivity, air pollution, road safety, climate change, and economic impact. The scope includes a spectrum from regional, national rural, urban and project based. Mr Huizenga outlined a number of knowledge products associated with the ATO including a set of databases, reference scenarios and stories, along with a

‘Regional EST Baseline Report’ in collaboration with the UNCRD. Mr Huizenga pointed out that there is some good news related to air pollution and that despite vehicle ownership continues to increase PM10 Black Carbon and Nitrogen Oxides (NO_x) and Sulphur Oxides (SO_x) are decreasing, and discussed the regional variances in reductions.

17. Mr Huizenga pointed out that transport decarbonisation is ongoing however progress is relatively slow with emissions levels continuing to grow and suggests that transport emissions are unlikely to peak before 2050. Mr Huizenga mentioned that the uptake of EVs is slow and called for an increase in the pace of electrification of mobility and associated renewable clean energy generation. The findings of the ATO suggest that the transport policy landscape in Asia needs to improve with some 39% of ATO economies not having transport policies. Such policies can be used to structure the gradual and appropriate ratcheting up of requirements to improve performance on a range of transport related metrics.
18. *Prof. Dr. Junyi Zhang*, Co-Chair, World Conference on Transport, Research Society COVID-19 Taskforce, Hiroshima University, discussed the impact of COVID-19 pandemic on mobility. Dr. Zhang outlined changes in global mobilities during COVID-19 and highlighted a decrease in public transport use and an increase in private vehicle use and active transport modes. Dr. Zhang outlined findings that indicated that there was a higher infection and mortality rate in transport workers in China, France, Sweden, and the UK. The research also identified worsened working conditions and unemployment in transport workers including cruise ships workers. The research also investigate gaps between the global north and south in relation to Carbon Dioxide (CO₂), Methane (CH₄), and Nitrous Oxide (N₂O) emissions from all forms of transport and pointed out that both experienced and bounce back in 2020, particularly in aviation and shipping.
19. In response to a question by the Moderator (*Prof. Dr. Atsushi Fukuda*, College of Science and Technology, Nihon University) about what each roundtable member considers a key challenge, Mr. Yamashita highlight the need to further promote the use of public transport to reduce traffic congestion issues and improve road safety. Cornie how can we develop the transport sector in a balanced manner (sustainability and increased access) policy pays off, how can we develop clear policy standards targets and guidelines of the range of sustainability areas in the transport sector. Prof. Zhang focused on the need to promote planetary health including the co-health of individuals, society and nature. And focus on transport in all policies approach to see transport related items being incorporated and considered across government portfolios as it is closely connected to many policy goals.

Roundtable II: Alternative Solution Strategies and Instruments

20. *Prof. Dr. Peter Hennicke*, Full Member, The Club of Rome; Ex-President of Wuppertal Institute for Climate, Environment and Energy, Germany discussed the topic of ‘Transforming The Energy System to Net Zero: Europe in A Global Context’. Prof. Hennicke discussed the need for policy integration in order to decarbonise the world’s economy by 2050 and asked what ‘Sustainable Mobility for All’ might contribute to this agenda. Prof. Hennicke outlined some key climate and resource consumption related facts and trends and pointed out that material productivity is stagnating and a range of material efficiency innovations are needed. Prof. Hennicke called for consideration of methods to ‘pre-finance’ future cost reductions in technologies and lifestyle changes to reduce greenhouse gas emissions. In particular the focus on phasing out internal combustion engine vehicles needs to be supported and achieved in combination with an efficiency revolution and the generation and storage of clean and renewable energy. Prof. Hennicke outlined approaches to achieve emissions reduction and pointed out the role of shared transit and active modes of mobility, emphasising the ‘Avoid’, ‘Shift’ and ‘Improve’ approaches, and focusing on the shift to electrification in transport. Prof. Hennicke pointed out that this will require changes to the planning hierarchy to start with active modes and discourage private automobile use, while externalising the cost of transport on society and the economy.
21. *Dr. Carlos Álvarez Pereira*, Vice President, The Club of Rome discussed the topic of ‘The Role of DX in Mobility for Humanity’. Dr. Pereira focused on the need to ask the right questions in order to transform mobility for humanity, raising the question of “*it so obvious that digitalisation is always a good thing?*” Dr. Pereira provided a summary of the thesis presented in the book “The Limits to Growth” with a focus on the warning that collapse could be possible by 2050 if action is not taken to avert it. Dr. Pereira pointed out that the book not only provided this warning but also provided a series of opportunities to address the challenge in a manner that re-balances wellbeing within planetary boundaries. It will be important to grow the commons for the good of all to achieve high well being and low impacts and it may be the case that digitisation provides the tools in the future to achieve this. Dr. Pereira questioned the social process of digitisation and how it might be harnessed for common good rather than creating and strengthening private monopolies. The key question is where in digital processes are new societal challenges likely to emerge, in short will the “solutions” of today become the “problems” of tomorrow? Dr. Pereira called for the co-creation of desirable futures based on design criteria, challenge formulation process s design and iterative deployment and feedback with well being in the biosphere at the heart.
22. *Prof. Fumihiko Nakamura*, Graduate School of Frontier Sciences, The University of Tokyo Practices of MaaS Systems in Advanced Economies discussed the topic of ‘Practices of MaaS Systems in Advanced Economies’. Prof. Nakamura outlined key elements of a Mobility as a Service (MaaS) approach including integrated information, booking, and payment options, with consideration of policy related implications. Prof. Nakamura provided a summary of early leaders in MaaS including

the Helsinki model and the ANA in Japan, and highlighted the integrated platform nature of the approach that brings together multiple transport modes into a single booking and tracking application. Prof. Nakamura pointed out that MaaS platforms can accommodate individual or collective users along with public and private access. Prof. Nakamura also outlined the approach of ‘Mobility on Demand’ and its overlaps with MaaS. Prof. Nakamura provided an overview areas of future consideration including the setting of environmental, equity and economic policy targets, the application of new and emerging technologies to reduce costs, enhance friendliness and monitor the system. Prof. Nakamura conclude by providing an overview of how MaaS can be used for both supply and demand side modal shift.

23. In response to a question by the Moderator (Dr. K. E. Seetharam, Task Manager Bill & Melinda Gates Foundation, Asian Development Bank Institute) Prof. Hennicke discussed the issue of the lock in of private vehicle ownership and mentioned that Germany needs to half the fleet of private vehicles in order to meet its goals, and that the global south can leap-frog the mistakes made. Prof. Nakamura pointed out that the application of MaaS in rural areas is increasing especially in relation to tourism offering that are recovering from COVID-19 interruption. Dr. Pereira discussed the concept of a common good and emphasised a cultural transformation to investigate what well-being actually is rather than assuming it is every growing material consumption per capita.

Roundtable III: Solution Package for Bangkok - SATREPS Sukhumvit Model

24. *Assoc. Prof. Dr. Varameth Vichiensan*, Faculty of Engineering, Kasetsart University discussed the topic of ‘QOL-MaaS for Urban Restructuring and Behavioural Transformation in Bangkok’. Dr. Vichiensan provided an overview of the Bangkok rail system and pointed out the densification of office buildings and high rise condominiums around the centre of the city and the opportunity to decentralise development along transit routes. Dr. Vichiensan provided an overview of the Sukhumvit Model, a hierarchal spatial design concept, and outlined its key components, including the underlying centrality analysis of the urban railway network in Bangkok. Dr. Vichiensan outlined the polycentric city approach where land use and transport is integrated to create new opportunities, including revitalising outer city areas with shifts in employment and housing from the centre of the city. As part of this a work/study/shop at home approach can be supplemented by localised working spaces such as those mentioned by Dr. Pereira.
25. *Assoc. Prof. Dr. Pawinee Iamtrakul*, Faculty of Architecture and Planning, Thammasat University discussed the topic of ‘Need for Evaluation of QOL in Transportation Planning’. Dr Iamtrakul provided an overview of the current urban density situation in Thailand and other ASEAN nations. The presentation included data around traffic congestion, energy consumption, road accidents and pollution and health, and highlighted the need for quality of life to be a key consideration that can

be quantified under physical, mental, social and economic wellbeing as they relate to transport. Dr Iamtrakul outlined a number of key mobility considerations and their interaction with quality of life.

26. *Prof. Dr. Kenji Doi*, Graduate School of Engineering, Osaka University discussed the topic of ‘Last-Mile Strategies for Decarbonation and Gentrification by Small & Smart Vehicles and Walkable Streets’. Prof. Doi outlined a range of issues related to poor mobility options including interrupted sidewalks. Prof. Doi provided a summary of work on ‘Smart Mobility Design’ and ‘Smart Planning System’ as part of the development of the Sukhumvit Model for “Street for All” and provided an overview of the objectives of the program. Prof. Doi provided an overview of the “Smart Small Vehicle Service” (SSVS) experiment to provide access to a free shared vehicle using a mobile phone application, and discussed key findings. Prof. Doi outlined research into the use of VR to survey walkability of street scapes and inform simulations of street configurations.
27. In response to a question by the Moderator (Assoc. Prof. Dr. Saksith Chalermpong, Faculty of Engineering, Deputy Director, Transportation Institute, Chulalongkorn University) Dr. Vichiensan outlined the need to provide appropriate infrastructure when seeking to decentralise work locations to outer areas of the city, such as social, health, education etc rather than just providing employment options. Dr Iamtrakul shared how land use and transportation integration is very important and that top down approaches to relocation away from city centres can cause issues. Prof. Doi shared how bike-taxi’s can be incorporated into last mile efforts and called for increasing the safety of the mode as a first consideration, calling for consideration of building compassion for new mobility solutions.

V. Closing Remarks

28. *Prof. Tetsushi Sonobe*, Dean, Asian Development Bank Institute (ADBI), provided the initial closing words and thanked partners and supporters with sincere appreciation for the Japanese Chapter of the Club of Rome for organisation and the support from Chulalongkorn University. Prof. Sonobe provided an overview of the legacy of the “Limits to Growth” and pointed out that we face challenges of rapidly changing demands of civilisation and modernisation and that we need new approaches and collaborations. Prof. Sonobe cautioned that new solutions may cause future problems and careful consideration is needed.
29. *Dr. Kazushige Endo*, Director, United Nations Centre for Regional Development (UNCRD) provided the closing words and expressed gratitude for the opportunity to be a partner in the “Transforming Mobility for Humanity” International Symposium to commemorate the 50th Anniversary of “The Limits to Growth”. Dr. Endo pointed out that this influential report to the Club of Rome raised serious concerns about the implications of growth and called for strategic approaches to be developed in order to continue to support growing cities and towns across the world to flourish. Dr. Endo provided a concise summary of key points raised in the event. Dr. Endo provide an

overview of the UNCRD ‘Regional Environmentally Sustainable Transport Forum in Asia’, the EST Forum, which is focused on providing a strategic platform between governments and selected experts to discuss various Environmentally Sustainable Transport related issues and to share best practices and experiences.

30. Dr. Endo provided an overview of the Aichi 2030 Declaration’ launched in 2021 at the UNCRD EST Forum with the intention to pave the way towards affordable, safe and sustainable transport systems, in a manner that creates economic growth and development in Asia. The Aichi Declaration includes a set of ‘Sustainable Transport Goals’ for Achieving Universally Accessible, Safe, Affordable, Efficient, Resilient, Clean and Low-carbon Passenger and Freight Transport in Asia. The intention of the Aichi Declaration 2030 is to support the transport related aspects of these global agendas and agreements to ensure that associated policy discussions are well informed and are undertaken in meaningful synergy with global efforts in the transport sector.
31. The event was closed by the Master of Ceremonies Ms. Michiko Yoshida, Director, Division of Global Networking and Engagement, Office of International Affairs and Global Network, Chulalongkorn University.