TRaNS: Trans -Regional and -National Studies of Southeast Asia (2026), 1–6
doi:10.1017/trn.2026.10029

CAMBRIDGE UNIVERSITY PRESS

INTRODUCTION

Special section introduction: Technoenvironments in Southeast Asia

Sandra Kurfürst[1] and Martina Padmanabhan[2]

[1]Social and Cultural Anthropology, University of Cologne, Germany and [2]University of Passau Faculty of Arts and Humanities, Germany
Corresponding author: Sandra Kurfürst; Email: s.kurfuerst@uni-koeln.de

(Received 12 February 2025 UTC; revised 12 February 2025 UTC; accepted 4 October 2026 UTC)
Keywords: environment; imaginaries; infrastructure; social media; Southeast Asia

Technoenvironments

Technology enables invisible, physical and social infrastructures accumulating into technoenvironments. These networks of artifacts, relations and human and non-human bodies and landscapes are increasingly becoming the core of life, work, culture and identity in Southeast Asia. It is necessary to put these interweavings into a critical perspective by positioning the realities of the digital and technological world in a context of colliding socio-political, cultural and natural environments (Jurriëns and Tapsell 2017). We are interested in the relationship between infrastructural materialities and contemporary socio-technical and natural environments in particular with respect to power relations, social imaginaries and transdisciplinary research. This critical approach contributes to the conceptualisation of technoenvironments constituted as hybrid spaces with consequences for social and political in- and exclusions, economic advantage and exploitation and the ecological relations between humans, more-than-humans and the world.

We employ the notion of technoenvironments to mark a historical conjuncture at which technological progress and imaginaries of modernity have vast environmental impact. In particular we illuminate the entanglements of environmental destruction and aspirations to well-being and a good life in contemporary Southeast Asia (Nguyen *et al.* 2024). This is pronounced by the undeniable chance the Capitolocene brought about in this region of the world with unpreceded economic growth accompanied by ruthless instrumentalisation of humans and more-than-humans. Thus, Southeast Asia appears as a particular region, where the belief in capitalistic progress has left its lasting mark on the planet and its inhabitants' well-being.

This special issue is an outcome of a double panel at the EuroSEAS conference in Paris in 2022 in combination with a laboratory investigating the effects of emerging technoenvironments in Southeast Asia and the resulting methodological challenges. The authors took the conference as a starting point to elaborate what a critical post-COVID and postcolonial theorizing of the socio-ecological and technological spaces in Southeast Asia entails. Southeast Asia presents itself as a testing room for technological futures. The panels in conjunction with the interactive laboratory invited different perspectives from disciplines as diverse as anthropology, political science, history, philology, socio-ecology and area studies. The contributions assembled in this special issue tackle different facets of technoenvironments focusing on case studies from Indonesia, Malaysia and Vietnam, thereby outlining tendencies of socioecological, technological and social change across Mainland and Peninsular Southeast Asia.

© The Author(s), 2026. Published by Cambridge University Press on behalf of Institute for East Asian Studies. This is an Open Access article, distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives licence (http://creativecommons.org/licenses/by-nc-nd/4.0), which permits non-commercial re-use, distribution, and reproduction in any medium, provided that no alterations are made and the original article is properly cited. The written permission of Cambridge University Press or the rights holder(s) must be obtained prior to any commercial use and/or adaptation of the article.

https://doi.org/10.1017/trn.2026.10029 Published online by Cambridge University Press

Technological progress and change have been integral drivers of socioeconomic transformations in Southeast Asia, since the 1980s/90s (Kurfürst and Wehner 2020). Malaysia's aim to become a knowledge society, Singapore's transformation from labour intensive to a high-tech export-oriented industry and the recent development of industries 4.0 throughout the region (e.g. Vietnam, Indonesia) are all driven by massive technological change. On another note, the pan-Asian social movement called Milk Tea Alliance is facilitated by social media, allowing citizens from different nation-states to unite in solidarity, and in opposition to authoritarian regimes (Thailand and Myanmar for SEA and Taiwan and Hong Kong for East Asia) (Schaffar and Wongratanawin 2021). The examples show the entanglements of technological change with processes of decolonisation, nation-building and civil society development.

Technoenvironments are constituted and mediated by material infrastructures, connecting and simultaneously excluding people, things, and ideas. More empirically grounded work is needed in the field of socio-materiality to reveal interlinkages between newly introduced technologies and socio-political realms. Material characteristics of things and technology dictate the particular forms for their conceptualisation (Holbraad 2011). According to Latour (2005) 'the social' is an assembly of human and non-human interactions. Alaimo and Hekman (2008) underline that the non-human realm has signifying force and intersectionality determines human-material connections.

Thinking about technoenviroments ultimately calls upon the notion of hybridity. However, to avoid a mere anything goes or rather everything is related, differentiation is inevitable for analytical sake. However, these ontological and epistemological devices embedded in categories like "natural", "cultural" or "technological" are historically and geographically contingent. The boundaries between these fluid categories are contested and overladen (Barry 2001), especially given the post-colonial context of Southeast Asia. Two camps dominate the debate on who has agency in technonatural worlds and where it is located. On the one hand, the neo-marxist cyborg approach by Swynedouw (2010) sees agency in human social worlds only with the likeliness, that non-humans are relegated to the background where they function as "nature" to the unfolding of social people. On the other hand, more-than-human approaches (Whatmore and Hinchliffe 2010) see agency distributed in hybrid networks consisting of anthropomorphised other-than-humans. Assigning personhood to them may result in possibly overlooking subaltern human positions. Within the framework of feminist political ecology, both approaches must answer how non-human actors in technological and ecological networks articulate political agency. Thus, the level of analysis decides on the possibilities to pay attention to local nuances and textures, while also keeping in mind macro networks, for example of capitalistic logics, that penetrate the micro and meso level alike.

As a result, we employ the notion of technoenvironments to address the interlinkages between newly-introduced technologies and socio-political realms, combining insights from Science and Technology Studies, sustainability studies, with approaches from area studies and arts-based research. Accordingly, we identify the three intersecting themes: 1. Social media and politics. 2. Imaginaries and 3. Socio-ecological transformations.

Social Media and Politics

Southeast Asia is the region of the world in which societies are most permeated by social media (Wearesocial 2024), a tendency, which accelerated after the Covid-19 pandemic and through large infrastructural investments and integration in the wake of the Chinese Belt and Road Initiative (Rowedder and Tappe 2022; Sidaway *et al.* 2020). The very countries that have made a spectacular turn towards authoritarian governments are also the ones that are worldleading in social media penetration. For example, political campaigns in national elections make use of bots and trolls (e.g. Philippines), while networked social movements such as the Milk Tea Alliance organise and coordinate civil society actions through digital networks, mostly social media, and are driven by youth

https://doi.org/10.1017/trn.2026.10029 Published online by Cambridge University Press

activism (Sastramidjaja 2025). Social power relations are reproduced, augmented and challenged in new technical environments.

The articles in this section by Wolfram Schaffar and Patrick Keilbart focus on the political realm and its technology-mediated change. It observes the transformation of power relations affecting the political sphere, the organisation of labour and class divisions. By focusing on digital networks, they examine different facets of technoenvironments. In the realm of social media and politics technoenvironments are considered as 1) sociotechnical infrastructures provided by multinational companies and censored or facilitated e.g. through legal frameworks of national governments, 2) as hybrid spaces that offer room of manoeuvre for civil society actions, and at the same time a means of oppression by authoritarian governments, and finally 3) as a form of labour. With regards to the latter, Wolfram Schaffar argues that in the context of a far-reaching digitalisation and platformisation in the world of material reproduction, consumption and social life, a meaningful distinction between a societal lifeworld and a public sphere of political discourse is no longer possible. In his article "Platformisation, Political Change and Democracy in Southeast Asia – for a Labour Turn in Digital Media Studies" he argues for an integrated approach, proposing to take working conditions as a starting point to comprehend of the entanglements between digitalisation, social life worlds and politics.

Patrick Keilbart's article "Mediatised Agricultural TechnoEnvironments in Indonesia. Reimagining Embodied Knowledge and Practice in Technological Environments" analyses imaginaries of cultural modernisation in Indonesia and their mediatisation. Taking the case study of organic agriculture as a case in point, he shows how the embodied practices and knowledges of farmers are reimagined and narrated anew in the digital sphere. Studying imaginaries of organic agriculture by both the government in the form of policy documents and by social movements, he demonstrates how citizens and the state interact through mediatisation, while negotiating visions of organic agriculture online and their embodied knowledges. Analysing how Indonesian citizens make use of social media's participatory potential to create cultural narratives and challenge state policies, his article is situated at the intersection between 1) social media and politics and 2) imaginaries of technoenvironments.

Imaginaries of Technoenvironments

Visions and ideas of how a technology-informed society looks like are frequently expressed in the works of arts and literatures. The arts and literatures help us to imagine worlds to come and to envision alternative ways of being together. Such imaginaries are informed by ideologies, religious or spiritual beliefs, cosmologies as well as ideas of development, and technological progress.

In Southeast Asia national governments enthusiastically embraced the idea of technological progress. Since the 1980s in particular Malaysia and Singapore have embarked on routes to become knowledge societies, and to foster the conversion of governance of people, and territory through technologies (Evers 2002). Moreover, Southeast Asia witnessed a shift from labour intensive production in the export-oriented industries to high-tech driven industries. In the 1980s and 1990s, Malaysia most prominently placed investments and development of high-technology, especially in Information and Computer Technology (ICT), on the political agenda, the so-called "Vision 2020". This way forward had implications way beyond the political and economic sphere and surfaced in the arts and literatures as well, particularly in the upcoming genre of science fiction embraced by the youth. In his contribution entitled "Malaysian Science Fiction in the Mahathir Era (1981-2003): From 'Knowledge Society' to "Lingkungan Teknikal" (Technoenvironments)?", Arndt Graf examines several of these textual scientific and technical imaginaries, including the novel Panrita by Arena Wati (1993), as well as popular science fiction novels. In these narrations technology was to assist the achievement of a higher moral and spiritual state of both individuals and society at large. The stories presented reveal how imaginaries of technological progress were deeply entangled with those about spiritual worlds known in Islam. Anchoring his analysis in literary texts written in Malay, and produced in a period of government-driven innovation, de-centring away from the Anglosphere, Arndt Graf asks whether

https://doi.org/10.1017/trn.2026.10029 Published online by Cambridge University Press

the English term of technoenvironments should be localised, proposing the Malay term "lingkungan teknikal", while drawing on Malay scholarship, such as "teknoteks" (Sohaimi Abdul Aziz 2013).

While Arndt Graf focuses on the evolvement of imaginaries of technoenvironments, or *lingkungan teknikal* in the Mahathir era, Patrick Keilbart confronts the more recent production of government imaginaries of organic agriculture in Indonesia with ideas of civil society actors and their visions of organic agriculture. Naturally, Southeast Asia's economic development and technological advancement is subject to scrutiny by civil society. In various countries, civil society actors have and keep on claiming the improvement of working conditions, livelihoods, while calling to reduce environmental pollution, and protect the natural environment. These visions and counter-imaginaries again are circulated, shared and contested in different media, as demonstrated in the last section on social-ecological technoenvironments.

Social-ecological Technoenvironments

Technoenvironments describe newly evolving social-ecological materialities connected to technology in environmental transformations in SEA. Technological change and progress have been embraced by many Southeast Asian nations since the 1970s. However, we have now reached a point in time where adverse effects with regard to the degradation of soils, waters, climate change, and biodiversity loss have become clearer than ever. In Indonesia and Vietnam, this has resulted in a heightened awareness of how to create habitable and liveable places in rural and urban areas for humans and more-than-humans.

Against this backdrop, Martina Padmanabhan and Sandra Kurfürst deliberate through the lens of technoenvironments on contemporary expressions of human to more-than-human interactions in Southeast Asia. Technoenvironments are understood as evolving networks that bind non-animate and animate life together and are shaped by mutual agency, care, and resistance. In their article "Between the Mountains and the Sea: Performative Approaches to Human and More-than-Human-Relations in Technoenvironments in Indonesia and Vietnam" they compare case studies in Indonesia and Vietnam to explore the potential of performative practices to express and shape understandings of the co-becoming of humans and other-than-humans. A productivist understanding of the environment as a resource shaped by the political structures constitutes technoenvironments in Vietnam as well as in Indonesia, though each in a peculiar way (Ehlert and Padmanabhan 2025). Technoenvironments are both an ethical and political shift in thinking about progress and the future.

As already discussed by Patrick Keilbart above, technoenvironments are mediated when the online and the offline world meet at the very site of performative protests. Trees, plants, seeds and soil become agents in the performative representation of people's entanglements with their more-than-human environment thus extending the public sphere to include more-than-human actors in (potentially) policy making, as the precondition for the creation of liveable cities and societies.

In his article "Living with Floods: Applying the Adversity Acceptance as Resilience Framework to Flood Management Practices in Hoi An Ancient Town" Nguyen Ky Nam shows how floods have been woven into a town's identity, illustrating how socio-ecological transformations appear as opportunities for cultural sustainability. He draws on adversity acceptance, which focuses on peoples' ability to comprehend, acknowledge, and adapt to challenges. People predict the onset and retreat of floods by observing changes in the natural environment, while adaptation to flooding is enhanced by the town's layout and adaptive architecture, and by the comprehensive measures taken each year to prepare for flooding. This proactive and holistic approach to flood management is deeply rooted in transgenerational knowledge. Digital practices as assemblages of actions and digital technologies connected to social goals and social identities, like weather forecasts and social media now play a significant role in flood management strategies, and floods have been incorporated into the town's tourism experience.

https://doi.org/10.1017/trn.2026.10029 Published online by Cambridge University Press

Outlook

This special issue demonstrates, how technoenvironments as evolving networks that bind non-animate and animate life together, shaped by mutual agency, care, and resistance, produce powerful forms of making the earth habitable for some, and less so for others. The notion of technoenvironments offers a productive angle to investigate habitability as the conditions under which human and non-human life can persist and flourish on a changing planet. With an outspoken intersectional and culturally informed perspective, technoenvironments enable a contingent understanding towards differentiated planetary well-being.

Thus, technoenvironments in Southeast Asia help to conceptualise and observe interlocking material, political and technological transformations through social media and politics, imaginaries and hybrid socionatures. By embedding our research in the cosmologies of Southeast Asia informed by its situatedness between the mountains and the sea, we would like to propose the following questions for future research on technoenvironments: What cultural repertoires are available to place humans between the mountains and the sea? How can art-based and transdisciplinary practice contribute to future research on technoenvironments? Whose knowledge counts as representation and whose is ignored?

For this by no means final research programme, we envisage applying a transdisciplinary approach. We understand transdisciplinarity as utilising different disciplinary bodies of knowledge, in the sense of interdisciplinarity, while integrating non-academic actors and their knowledges fully into the research process (Padmanabhan 2018). These include knowledges derived from practices of farmers and policy makers, but also the tacit and embodied knowledge of more-than-human lifeworlds. To grasp these imaginaries of alternative more-than-human relations the workshop model of performance art holds promises to gain embodied knowledge through art-based-research (Padmanabhan under review). We perceive these many ways of being, speaking and knowing as constitutive for adequate problem description and finding more sustainable ways forward. Thus, transdisciplinary knowledge production ideally involves co-design with affected constituencies and co-creation in the context of technoenvironments.

References

Alaimo, Stancy, and Susan Hekman, eds. 2008. *Material Feminism*. Bloomington, IN: Indiana University Press.

Barry, Andrew. 2001. *Political Machines. Governing a Technological Society*. London: Athlone.

Ehlert, Judith, and Martina Padmanabhan. 2025. "The missing lens: Feminist perspectives on agro-food system transformation in Vietnam and Indonesia." *Österreichische Zeitschrift für Soziologie* **50**(1). https://doi.org/10.1007/s11614-025-00617-2

Evers, Hans-Dieter. 2002. *Knowledge Society and the Knowledge Gap*. Bonn: ZEF.

Hinchliffe, Steve, and Sarah Whatmore. 2010. "Living cities: Toward a politics of conviviality." In *Technonatures. Environments, Technologies, Spaces, and Places in the Twenty-first Century*, edited by Damian F. White, and Chris Wilbert, 105–124. Waterloo: Wilfrid Laurier University Press. https://doi.org/10.51644/9781554581764.

Holbraad, Martin. 2011. "Can the thing speak?" Working Paper Series 7, Open Anthropology Cooperative Press.

Jurriëns, Edwin, and Ross Tapsell, eds. 2017. *Digital Indonesia: Connectivity and Divergence*. Singapore: ISEAS Publishing.

Kurfürst, Sandra, and Stefanie Wehner. 2020. *Southeast Asian Transformations. Urban and Rural Developments in the 21st Century*. Bielefeld: Transcript.

Latour, Bruno. 2005. *Reassembling the Social. An Introduction to Actor-Network- Theory*. Oxford: Oxford University Press.

Nguyen, Minh TN, Phill Wilcox, and Jake Lin. 2024. "The good life in late socialist Asia: Aspirations, politics and possibilities." *Positions: Asia Critique* **32**(2): 1–25. https://doi.org/10.1215/10679847-10889921

Padmanabhan, Martina. (Under review) "Imaginaries of organic agriculture in Indonesia. A transdisciplinary workshop model of performance art for embodied knowledge." In *Southeast of Now: Directions in Contemporary and Modern Art in Asia*.

Padmanabhan, Martina. 2018. "Transdisciplinary research and sustainability: Collaboration, innovation and transformation." In *Studies in Environment, Culture and Society*, edited by Martina Padmanabhan, London & New York: Routledge.

Rowedder, Simon, and Oliver Tappe. 2022. "Contested Resource Frontiers in Mainland Southeast Asia." In *Extracting development: Contested resource frontiers in Mainland Southeast Asia*, edited by Oliver Tappe and Simon Rowedder, 1–27. Singapore: ISEAS Publishing.

https://doi.org/10.1017/trn.2026.10029 Published online by Cambridge University Press

Sastramidjaja, Yatun. 2025. "Connective spaces of radical hope: Rhizomatic youth struggles for viable futures in Southeast Asia." *Journal of Youth Studies* **28**(6): 867–884. doi: 10.1080/13676261.2025.2556927.

Schaffar, Wolfram, and Praphakorn Wongratanawin. 2021. "The #MilkTeaAlliance: A new transnational pro-democracy movement against Chinese-centered globalization?" *Austrian Journal for Southeast Asian Studies (ASEAS)* **14**(1): 5–35.

Sidaway, James D., Simon Rowedder, Woon, Chih Yuan Weiqiang Lin, and Vatthana Pholsena. 2020. "Politics and spaces of China's Belt and Road Initiative." *Environment and Planning C – Politic and Space* **38**(5): 795–802.

Sohaimi Abdul Aziz. 2013. *Teknoteks dan Transformasi Pengajian Kesusasteraan: Mensinergikan Sastera, Teknologi dan Kritikan*. Pulau Pinang: Penerbit Universiti Sains Malaysia(Siri pelantikan profesor, 2011/4).

Wati Arena. 1993. *Panrita.Dewan Bahasa dan Pustaka*, Kementerian Pendidikan, Malaysia.

Wearesocial. 2024. *Special Report. Digital 2024*. https://wearesocial.com/de/blog/2024/01/digital-2024/

Cite this article: Kurfürst, Sandra, and Martina Padmanabhan. 2026. "Special section introduction: Technoenvironments in Southeast Asia." *TRaNS: Trans -Regional and -National Studies of Southeast Asia* 1–6. https://doi.org/10.1017/trn.2026.10029

https://doi.org/10.1017/trn.2026.10029 Published online by Cambridge University Press