Migration and the Environment

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Recent debates about the impact of climate change in Southeast Asia and beyond have refocused attention on the linkages between the environment and migration in the region. 'Environmental migration' is becoming a key theme in the climate change research agenda, following pronouncements that future environmental change will lead to mass displacement of populations from locations vulnerable to climate change effects (Myers 2002, Stern 2007). In Southeast Asia, the region's heavily populated delta areas are identified as particular 'hot spots', taking in low-lying metropolitan regions such as Bangkok, Metro Manila, Jakarta and its neighbouring cities, Ho Chi Minh City and Hanoi (Asian Development Bank 2011, Bardsley and Hugo, 2010; McGranahan et al., 2007, Fuchs et al., 2011, World Bank 2010). Drawing the link between environment and migration by focusing on mass displacement in this way tends to view migration in largely negative terms, seeing mobility as a failure of adaptation to a changing environment. In common with other sedentarist approaches to governance in Southeast Asia, both transborder and internal population mobility is framed as a security issue (Bardsley and Hugo, 2010, see also De Koninck 2000, Scott 2009). As this framing is translated into policy, it runs the risk of creating new forms of vulnerability, as strong measures to regulate and limit population movement serve to undermine livelihoods in very specific and frequently unjust ways (Tacoli 2009, Black et al., 2011, Geddes et al. 2012).

Attempts to counter discourses of environment-induced migration that have grown up around the climate change research industry have sought to complicate simple causal models that see environmental change as a principal driver of migration, offering more nuanced frameworks of multiple interconnected drivers (e.g. Black et al, 2011). This includes approaches that draw attention to the role of migration as an adaptive, resilience-building strategy (Adger et al., 2002, Tacoli 2009, Dun 2011) and perspectives that show how the geographies of future environment-induced migration are likely to follow already-established migrant networks and relationships (Bardsley and Hugo, 2010, Warner 2011).

These more nuanced frameworks invite a reconsideration of the multifarious historical and contemporary linkages between migration and the environment in Southeast Asia: a region

which has long been characterised by mobility, local and transnational migration, and where livelihoods are increasingly conducted on a multi-local basisis (Rigg 2012). Migration, whether caused by displacement or undertaken to improve livelihoods, is shaped by the environment and environmental change in numerous ways across the diverse agro-ecologies of Southeast Asia. An overemphasis on environmental catastrophe and 'natural hazards', which is inevitable in climate change-related research, may overlook the ways in which environments in Southeast Asia are themselves socio-political products. Various kinds of environmental governance projects in past and present-day Southeast Asia have created human-induced environmental 'events' that set in motion displacements and other forms of mobility. Indeed, Southeast Asia's development is built on the conjuncture of capital, nature and *mobile* labour, indicating that environments themselves have been produced through migration of various forms, and this process continues as landscapes take shape through migration and migrant practices. The aim of this chapter, therefore, is to explore the multiple links between migration and the environment in Southeast Asia, in part to complicate and contextualise otherwise simplistic framings of environemental crisis and migration in the region, and to reconnect with more sophisticated theorizations of the mutually constituted agencies of society and nature (Oliver-Smith, 2012).

(i) Nature's agency and migration in Southeast Asia

The role of nature and the environment in shaping societies, polities and economies has a long history in Southeast Asia. Fisher (1966) for example, attributes the region's human geography to its intrinsic physical character, and by extension it is topography, climate and hydrology that has shaped the volume and variety of human mobility in Southeast Asia (see also Reid 2000). Various iterations of human-ecological relationships have also been linked to migration and mobility, distinguishing upland (swidden) agriculture and lowland irrigated rice cultivation and therefore the ecological underpinnings of state-building, colonial extraction and human mobility (Geertz 1963, Pelzer 1945, Boomgaard 2007). Whilst negative associations with environmental determinism drew many scholars away from such ideas (Glassman 2005), recent work in political ecology has given new emphasis to the environment, arguing that nature's materiality has important effects on the world 'beyond – if not fully outside of – human politics and society' (Robbins 2012: 76, Latour 2005).

Historically, human mobility has been an elemental part of life in Southeast Asia, as part of a strategy to manage natural resources in accordance with the flows and cycles of marine, forest and agro-ecosystems. Taking a contextual approach to the entanglements of human and non-human nature (society and nature), migration is part of an assemblage constructed through the interaction of ecologies, technologies, economies and (re)territorializations of political power (Braun, 2006). Mobility is central, for example, to semi-nomadic swidden cultivation systems, where soil fertility is managed through forest clearance, cultivation and extended fallows, coupled with the movement of settlements (Conklin 1957, Fox et al., 2000). Until the mid twentieth century, shifting cultivation was the dominant type of agricultural system in Southeast Asia, involving a third of the region's territory (Rasul and Thapa, 2003). Mobile cultivation practices enable farmers to make use of a diversity of elevations and microclimates, spreading risk and adapting to change. In the case of the Akha, inhabiting the borderlands between China, Burma, Laos and Thailand, Sturgeon refers to the spatial and temporal dynamics of borderland livelihoods as 'landscape plasticity', involving cross border mobilities of various kinds (Sturgeon, 2005: 9). In her account, as with others, shifting cultivation involves a range of activites beyond subsistence farming, including wage labour, lowland settled agriculture and so on as people adapt not only to environmental changes but also negotiate markets, development projects and forest policies through mobility practices (Dove 1999, Cramb et al., 2009).

In equal measure, marine environments are managed through mobility in the case of the Bajau (sea gypsies) around the islands of Indonesia and the southern Philippines, and in the Irrawaddy Delta. Sea nomads include the Moken and Koklen of the Mergui archipelago of Burma and the islands of southern Thailand (Ivanoff 1997), the Orang Suku Laut of the Riau-Lingga archipelago and coastal waters of eastern Sumatra-southern Johor (Chou, 2003), and the Bajau Laut, in the Sulu archipelago of the Philippines, eastern Borneo, Sulawesi and the islands of eastern Indoneisa (Djohani 1995, Sather 1997). In her study of the Orang Suku Laut, Chou describes the repertoire of 'material and intellectual technology' through which this group understands and manages marine biodiversity (Chou 1997: 612). This involves fishing close to villages or embarking on distant voyages to 'borrowed' territories, depending on the season for particular marine species. Moving through a network of marine territories allows the Orang Suku Laut to avoid exhausting fish stocks (Chou 1997).

Nature's materiality also takes shape through the rhythm of the region's monsoon climate, which acts as a pulse for both land and water-based farming systems in the region's lowlands. Pronounced seasonality in wet rice cultivation across Southeast Asia's lowlands equates with changes in labour demand throughout the year, making it necessary for some household members to migrate in search of other labour opportunities, either in other rural areas or in towns and cities (Hugo 1982, Rigg, 2001). This is a pattern with a long history: in rural Vietnam during the colonial period as many as two thirds of the peasantry were involved in circular movement between rural areas during the wet rice transplanting and harvesting seasons (Dang 1997). As farm labour has become increasingly commodizied since the late 1970s, labour recruitment (and therefore wage labour mobility) continues to be strongly shaped by monsoon-based seasonality amongst other factors (Alexander et al. 1991, Spaan 1999). In agro-aquatic ecosystems, such as Cambodia's Tonle Sap, the south west monsoon and the floods that follow are critical to the productivity of agriculture, wetlands and fisheries (Lebel et al, 2011), as are the so-called 'rice floods' in the Mekong Delta. Both are strongly linked to seasonal migration to cities and urban centres, as well as to cross-border livelihood-based migration (Lebel et al., 2011, Dun 2011).

Human migration is also linked to species migration, through a 'co-evolved entanglement' of mobile natures and mobile societies (Haraway 2003). This is perhaps most evident in the forms of migration associated with various cash crop booms in the colonial and contemporary periods in Southeast Asia. Migration is closely associated with booms in the production of rubber, sugar and tobacco: both species were introduced from other (sometimes distant) territories, whilst at the same time Chinese and Tamil indentured workers were brought in to meet the labour demands associated with the cultivation characteristics of these crops (Breman 1989, Stoler 1985). In the contemporary period, migrants figure variously in Hall et al's (2011) discussion of booms in the production of oil palm in Sarawak, cocoa in Sulawesi, Indonesia, shrimp farming in Thailand and coffee cultivation in Vietnam. Whilst Hall et al's analysis is framed around the territorializations and exclusions that accompanied the introduction and expansion of commercial cultivation, a conjunction of power, land and species contributes to particular migration patterns and practices. The physical properties of these crops and their cultivation are productive factors in shaping agrarian labour migration and migrant livelihood practices in a number of crop boom frontier regions (Agergaard et al, 2009, Tan, 2000). In this way, as with non-mobile nature, migration in Southeast Asia can be seen as part of a larger entanglement with

nature's agency, suggesting the 'intimate role of non-humans in constituting human life and experience' (Robbins, 2012: 80).

(ii) Migrants in Southeast Asia's socially-produced environments

In Southeast Asia, where mercantilism, colonial and postcolonial development have largely been predicated on natural resource exploitation, the social production of environments through a complex mix of political, economic and social processes has set in motion population displacements and other forms of mobility. Conceptualizing the social production of nature in this way (Castree and Braun 2001) also signals the role of migration as a factor in producing Southeast Asia's landscapes and socio-environmental conditions through the conjuncture of capital, nature and *mobile* labour.

Prior to the 16th century and the arrival of European mercantile interests, migration within Southeast Asia was relatively small-scale and limited geographically (Kaur, 2003). Migration accompanied Chinese and Indian trade links that were based on resource exploitation within the region. Chinese miners came to the tin mines of Bangka and Belitung, where migrants engaged in some subsistence agriculture (gardens and pigsties (Ungar 1944). In what is now the Indonesian province of West Kalimantan, Hakka-speaking miner farmers arrived from China in the late eighteenth and early nineteenth centuries to mine for gold, converting swampand swamp forest to wet rice fields along coastal rivers (Cramb et al, 2009). Other scholars have noted the role of Chinese in cultivating sugar in Banten, and pepper, tobacco and sugar in Siam in the 17th century, whilst Hainanese migrants from China controlled the coastline of modern Cambodia and parts of southern Vietnam in the 19th century, before turning to pepper cultivation, which persisted until the 1960s (Heidhues 2006).

As European commercial interests became more established in the region, and particular as an imperial drive took hold, the establishment of colonies and protectorates from the mid nineteenth century until the early twentieth century was accompanied by relatively large scale immigration to promote the commercial development of colonial territories. In places that were labour-short, e.g. Malaya, Sumatra and Cochin-china, indentured contract labour

arrived, particularly from China but also from other colonial territories, to work in the mines and rubber plantations of European colonial entrepreneurs (Kaur 2003). Although many of these workers left at the end of their contracts, their presence left an indelible mark on the region's landscape and, in some places, ethnic profile (Suryadinata et al., 2003).

This link between the commodification of environments for resource exploitation and migration continues today, through large scale extractive projects of various kinds, from which the state and corporate firms seek to capture resource rents (Barney 2012). The rapid expansion of oil palm in many parts of Southeast Asia, arguably the region's most profound environmental transformation, is widely associated with new forms of enclosure, displacement of small-scale farmers, and the arrival of migrant labour gangs brought in from areas of labour surplus (Li 2011) . Characterized as 'accumulation by dispossession' (Glassman 2006), processes today carry echoes of the region's Green Revolution in the 1970s, where agricultural mechanisation and the introduction of improved crop varieties simultenously transformed agroecologies and intensified class differentiation, producing concentrations in land holdings, landlessness and by extension, migration, processes that were felt particularly in Java and in the Philippines (Hart et al. 1989, Alexander et al. 1991).

Debate over the causes of displacement continues apace in Southeast Asia (Rigg 2012). In some areas, there is a clear association between the development of commercial crops and the displacement of small scale farmers. In Sarawak, research has shown how state actors and private companies have acquired large amounts of contested land for oil palm estates, which are largely worked by Indonesian migrants. Local Dayak farmers have found themselves at risk of being excluded from this process in the wake of changes to government land policy (Hall et al. 2011, Cooke 2002, Cramb 2007). In other places, the relationship between migration, migrants, agricultural change and displacement more nuanced (Hall 2012).

Migration is associated with the production of environments by the state and other forces that influence access to and control of territories (Ribot and Peluso 2003). In Southeast Asia, processes of territorialization have set in motion various forms of development-induced displacement and mobility, from the gazetting of land for cultivation or conservation, through to the construction of hydropower dams and control over waterways.

State sponsored agricultural resettlement schemes of the kind found in Indonesia and Vietnam and Laos are emblematic of this process of territorialization, involving on the one hand the relocation of people to state-established resettlement sites, and on the other, displacements of those found to be 'out of place' (in uplands, in conservation areas, in the way of infrastructure developments) who are then enrolled in the resettlement process. Such schemes are driven by a number of factors. These include efforts to bring environmental and economic integration to upland or peripheral regions (Baird and Shoemaker 2007), to securitize 'unruly' border areas (as Tirtosudarmo (1995) shows for the Malaysia-Indonesia border in Kalimantan and in West Papua in the 1980s), to facilitate the delivery of services to remote and mobile upland populations (Baird and Shoemaker 2007) and to remove upland swidden cultivators from fragile watershed environments by relocating them in lowland resettlement sites (Vandergeest 2003, Elmhirst 1999, 2012). In Indonesia, state-sponsored resettlement has become entwined with corporate interests as transmigration settlements are being established around oil palm investments (Potter 2012). The neoliberalisation of transmigration builds on an earlier pattern of population resettlement to support large scale commercial agriculture, mimicking in aspiration (if not in reality) the FELDA projects of Malaysia's 1970s export-oriented New Economic Policy (Sutton 1989, Lie and Lund 1999).

In Thailand, Indonesia and the Philippines, similar processes of territorialization underpin enclosures for conservation, and have brought in their wake population displacement (Dressler and Roth 2011, Elmhirst 2012). State-led conservation through designated parks and protected areas has produced particularly coercive forms of land zoning, regulating how people can use resources or removing them altogether. Roth, for example, describes the conflicts that have accompanied park development in northern Thailand (Roth 2008), whilst in Indonesia, the designation of protected watersheds in Lampung province continues to prompt the resettlement of thousands of so-called 'forest squatters' (Elmhirst 2012). In many instances, displacement for conservation is itself complicated by the social and political dynamics of migration. Dressler (2006) describes contrasting ways in which migrants and indigenous people are affected by coercive national park management on Palawan island in the Philippines. In this setting, indigenous swidden cultivation was regarded as a threat to the park, whilst migrant land use practices were seen are more in line with national conservation discourses. This, and the workings of local political networking, enabled migrants to gain access to the park and its management, whilst indigenous swiddeners were

excluded. More recent iterations of displacement for conservation are associated with an intensified process of nature commoditization through carbon markets. McCarthy et al (2012) describe processes of land acquisition associated with enclosures for carbon sequestration, so-called 'green grabs', that are becoming evident in parts of Indonesia: similar instances of neoliberalised conservation and accompanying displacements are evident in Thailand and the Philippines (Dressler and Roth 2012).

Displacement and resettlement is also a feature of the region's many infrastructure projects. The construction of hydropower dams is on the one hand associated with the in-migration of labour gangs (sometimes from outside the region as in the case of Chinese-funded dams in the Mekong) yet also sets in motion forms of involuntary displacement and resettlement. In Laos, for example, the construction of hydroelectric dams on the tributories of the Mekong has been an important part of the country's neoliberalisation, with hydropower a major contribution to export earnings. Large scale population displacements have accompanied such projects (Baird and Shoemaker 2007; Vandergeest 2003, Hirsch 2010). The Houay Ho dam, one of 10 scheduled for the countr's Bolaven Plateau, involved the relocation of 2,500 people from 12 villages to 'planned villages' (Delang and Toro 2011). The accompanying hardships associated with relocation echo those found in studies of similar displacements across Southeast Asia (Hall et al. 2011), such as those described by Yong in relation to the resettlement of Orang Asli following dam construction in Malaysia (Yong 2006).

Mobility associated with development-induced displacement is also a feature of Southeast Asia's cities. As 'theatres of accumulation' (Armstrong and McGee 1985), spectacular high rise apartments, shopping malls and regional corporate headquarters have been a leitmotif of mega-urbanisation in cities such as Jakarta, Bangkok and Manila, as productive agricultural land is given over to urban functions (Douglas 2010, Firman 2000). Studies across Southeast Asia document conflicts between agricultural and industrial sectors over environmental services, such as water for irrigation or the contamination of agricultural land by waste water (Maneepong and Webster 2008) as urban and peri-urban environments are reterritorialized. For example, research in the Jakarta-Bogor-Tangerang-Bekasi (JABOTABEK) region of Indonesia (Firman 2009), CALABARZON region of metropolitan Manila in the Philippines (Kelly 1998) and the greater Bangkok region (Sajor and Ongkasul 2007) illustrate the environmental injustices of urban development that lead to displacement of the poor and politically marginalised through such processes. In other settings, urban redevelopment

or 'beautification' has involved the reclaiming of public land and conflict over tenure, especially in relation to informal housing (Olds 2001). Harms (2011) describes aggressive acts of 'accumulation through dispossession' in Vietnam as a form of 'spatial cleansing'. The establishment of the Thu Thiêm New Urban Zone has involved the eviction of 14,000 households, the razing of all built construction and the filling in of marshes and streams to make way for new office space, luxury high rise appartments and new public spaces. Similar actions in Phnom Penh (Olds et al. 2003) point to an ongoing social production of urban environments across Southeast Asia that give rise to new (and old) forms of displacement and onward migration, and that illustrate the 'interconnected economic, political, social and ecological processes that together go to form highly uneven and deeply unjust urban landscapes' (Swyngedouw and Heynen 2003: 914).

(iii) Environment, migration and strategies to improve livelihoods

In contrast to a narrative of the impact of socially-produced environments on migration in Southeast Asia, migration and migrants themselves have also had a hand in producing the region's environments in both rural and urban settings. Migration to the agricultural frontier from denesely populated regions elsewhere is associated with forest clearance, and more specifically, with a sequence of intensification to bush- and grass-fallow systems, through to the establishment of continuous cropping, made possible through the introduction of lowland agricultural technologies (Cramb et al., 2009, Pelzer 1945, De Koninck 2000). Examples include the movement of Cebuano and other groups into frontier regions of Palawan (Cramb et al., 2009) and Mindanao (Eder 2006) in the Philippines, the movement of lowland Kinh to Vietnam's Central Highlands (Hardy 2003), and the movement of lowland Javanese into the uplands of Lampung province, Indonesia (Elmhirst 2012). In this way, the frontier has played an important role in relieving demographic pressure, either spontaneously, or through state-sponsored resettlement schemes of the kind found in Vietnam and Indonesia (De Koninck 2000, Tirtosudarmo 1995, Potter 2012).

Migrants seeking to better their livelihoods have been blamed for rapid deforestation in some parts of Southeast Asia, although there is a growing recognition that it is the role of largescale capital that sets these practices in motion (Sundarlin et al, 2001). A lack of land for second generation migrants and absence of local off-farm work can also trigger onward

frontier migration, patterns of which are strongly shaped by kin and friendship networks (Hein and Faust 2010). Beyond being a simple demographic equation, research has described the ways in which migrants can disrupt local forms of natural resource management and customary conservation practices (Witasari et al., 2006). As community-based conservation in forest frontiers has attempted to build on notions of custom and territorial attachment, frontier migrants may be excluded and/or demonised (Li 2002a, Elmhirst 2012), and become embroiled in ethnicized conflicts over natural resources (Hein and Faust 2010).

Migrants have also contributed to the commoditization of frontier environments, through what Hall has referred to as 'smallholder land grabs', usually associated with crop booms of one sort or other (Hall 2011). Examples include migrants' acquisition of land for cocoa production in Sulawesi (Li 2002b, Hein and Faust 2010), rubber in Kalimantan (Peluso 2009), coffee in Vietnam (Hardy 2003, Winkels 2008) and Indonesia (Potter 2008), and for shrimp production in Thailand (Hall 2011). The environmental transformation of Vietnam's Central Highlands is associated with the arrival of lowland Kinh migrants who took advantage of a combination of Doi Moi reforms and kinship networks to etablish themselves as coffee farmers, doubling the region's population between 1976 and 1989 (De Koninck 2000, Hardy 2003). These previously sparsely populated hills of forest and swidden became a promised land for lowlanders, as the land use practices of ethnic minorities gave way to intensive coffee production (Hardy 2003, Tan 2000). In Sulawesi's Lore Lindu region, the migrant cocoa boom has prompted further mobility as second generation migrants moving onward to other agricultural frontiers as cocoa lands command prohibitively high prices and as there is a shortage of local off-farm work (Hein and Faust 2010, see also Li 2002b).

Urban and transnational migration has also brought with it environmental changes. On the one hand, permanent migration, or at least, a permanent withdrawal from agriculture-based livelihoods has led some to note abandonment or undercultivation of land in some parts of Southeast Asiawhere alternatives to farming are relatively wellpaid and secure, e.g. in parts of Thailand (Rigg 2001) and Negri Sembilan in Malaysia (Kato 1994). Cramb et al (2009) suggest that the complex agro-ecological landscapes associated with swidden cultivation may be disappearing in parts of Southast Asia, as temporary and permanent outmigration (for work or for education) reduces the size of the local labour force, particularly at key times of high labour demand (planting and harvesting, when many children work in the

fields). Responses to this may be varied, but include reductions in the area cleared for cultivation, by foregoing production for a season or two, or by introducing high value cash crops such as rubber or cocoa into swidden systems (Li 2002b, Cramb et al., 2009). Elsewhere, rural attachments remain strong and migrant remittances have played a part in transforming environments. In the Philippines, the adoption of cash crops is widely associated with the availability of capital from migrant wages, producing 'remittance landscapes' in some parts of the country (McKay 2005). In central Laos, early evidence suggests youth remittances are contributing to the privatization of upland swiddens and the introduction of rubber cash-cropping (Barney 2012).

Finally, migration has been an important factor in the production of new kinds of human-induced landscapes on the edges of cities, where peri-urban development is marked by the presence of export-oriented factories, migrant workers and commercial investment (malls and the like), and where households are characterised by their extensive links to rural areas. (McGee 1995, Sajor and Ongsakul 2007, Hirsch 2009). Firman's study of the Jakarta-Bandung Region (JBR), an extensive multi-centred peri-urban region, describes the continued importance of migration into the region, where the 2001 census noted the arrival of 1.35 million migrants largely from other parts of Java (Firman 2009). Migrants are drawn to factories in the JBR (Silvey and Elmhirst 2003), whilst others enter informal sector occupations (street vending, garbage picking). The unplanned and somewhat chaotic form taken by peri-urban development here, as well as in other parts of Southeast Asia, has also prompted more 'everyday' forms of mobility through a rapid increase in relatively long-distance commuting between urban centres is increasingly a feature of peri-urban landscapes (Firman 2009, see also Resurreccion and Khanh 2007 for Hanoi).

Southeast Asia's mobility revolution (Rigg 2012) and the prevalence of increasingly multi-local and multi-sectoral livelihoods associated with local and transnational migration is also altering the social production of environments in Southeast Asia, as labour mobility alters the salience of resource access in both rural and urban livelihoods. Peluso's recent work in the teak forests of East Java documents how better links between forest villages and nearby cities has facilitated circular migration and reduced villagers' dependency on the forests as a source of livelihood. Livelihood diversification through circular migration has altered the terms on which teak forest access is negotiated, whilst the state's monopoly on teak production is weakened as migrant income enables villagers to grow teak as a smallholder

cash crop. Peluso suggests that changing household spatialities and the mobilities of labour, trees and capital are 'transforming hegemonic relations in the political forests of Java' (Peluso 2011: 817). This signals an important aspect of migration in relation to the power dynamics of socially-produced environments: the 'fugitive nature' of migration and mobility has the potential to frustrate appropriation by the state and other powerful actors in a manner similar to that described by Scott, where state subjects attempt to place themselves out of range to avoid corvee labour, taxes, conscription, struggles over succession, religious dissent (Scott 2010: 326).

(iv) Environmental hazards and migration in Southeast Asia

Migration is also linked to the various environmental hazards that characterize much of Southeast Asia. In parts of the region, there is relatively frequent exposure to major environmental hazards that include both slow-onset stresses, such as lengthening dry seasons and drought, soil fertility decline and saline intrusion of agricultural land, and short-term shocks, including earthquakes, volcanic activity, typhoons, floods and tidal or storm surges. In the case of slow onset environmental hazards, migration and multi-local livelihood strategies have long been an important resilience-building strategy through which those affected spread risk across a range of environments (Adger et al, 2002, Dun 2011). In the context of extreme soil fertility decline that is evident in some of Indonesia's transmigration resettlement schemes, circular migration is a key factor in enabling those resettled to maintain livelihoods in very difficult circumstances (Leinbach and Watkins 1998), just as multi-local livelihood strategies are amongst responses to environmental degradation in North East Thailand (Mills 2005). In this sense, migration is seen not as a failure to adapt, but as a form of resilience-building in the face of environmental hazard (Tacoli 2009, Black et al 2011).

Environmental 'shocks', by contrast, are often accompanied by major population displacement. In 2011, more than 4.7 million people were displaced by environmental hazards, including floods, tropical storms, earthquakes and volcanic eruptions in Southeast Asia. Particularly hard-hit were Thailand, the Philippines and Myanmar, whilst earthquake and volcanic hazards brought displacement in seismically active areas of Indonesia (particularly West Sumatra and parts of Java) (Norwegian Refugee Council 2012). Whilst the

focus for relief agencies is often on tackling the forced relocation of affected populations, as seen in Thailand in 2011 and in Aceh following the Asian tsunami, migration is often a strategy deployed by those affected as they seek to build resilience to disaster. Those affected may draw on migrant networks, either reeiving transfers from rural areas or having the opportunity to move elsewhere as recovery gets underway (Adger et al, 2002). Others suggest that a lack of capacity to migrate is what puts people at risk in the face of rapid onset hazards (Black et al 2012 in press).The social marginalization of migrants contributes to their vulnerability to hazards of this kind, especially where a lack of tenure security and, importantly, citizenship rights curtails capacity to 'return home' or to utilise migrant networks. News reports following the extreme flooding in Thailand in late 2011 suggested that international migrants from Myanmar, Cambodia and Laos were particularly hard-hit as the factories employing them were forced to close because of the flooding in and around peri-urban Ayutthaya, Pathum Thani and Nakorn Patham provinces. At the same time, their precarious legal status dissuaded them from accessing shelter and other forms of help from the Thai authorities, marking them out as a particularly vulnerable group (Phongsathorn 2012). Similar patterns have been noted for 'hidden' migrants such as domestic workers, who faced particular hardship following severe flooding in the Indonesian city of Semarang in central Java (Marfai et al. 2008).

Environmental hazards may also have rather specific impacts on migrants in other ways. In urban and peri-urban coastal areas of Southeast Asia, insecure migrants often end up inhabiting insecure spaces, such as those parts of the city most prone to flooding (Dun 2011, Lebel et al 2011). The settlement patterns of migrants generally reflect the cost of rent compared to the very low wages they are able to command, and this may expose them to further vulnerabilities that are produced as city governments seek to engineer away environmental hazards, sometimes in unjust ways. The redistribution of risk from wealthier parts of cities and into poorer areas (generally inhabited by migrants) has been noted in relation to the management of flood waters in Bangkok (Phongsathorn 2012) and in other parts of Thailand, where some areas are earmarked for protection (areas of expensive urban real estate and industrial parks) at the expense of poor or largely agricultural areas (Lebel et al 2009, 2011). Moreover, post-disaster reconstruction efforts can have a damaging effect on peoples' capacity for mobility, as noted by Samuels in her study of a newly-built neighbourhood in Aceh following the devastating tsunami (Samuels 2012). Here, limited physical mobility caused by the isolated nature of the relocation village restricted work

opportunities for low income households, and had a particularly marked impact on women, whose lack of mobility was directly associated with new forms of gendered social exclusion.

In each of the cases described here, migration (and mobility) is embedded in complex ways in the socio-political dynamics that underpin both exposure to environmental hazards and the institutional responses that anticipate or follow such events. This exceeds any simple linear relationship between environmental hazards (as a driver) and displacement (as a response). In Southeast Asia, where lives are especially marked by mobility and multi-locality, this is particularly the case, highlighting a need to recognise environmental hazards as socio-natural assemblages into which human mobility is interwoven.

(v) Conclusion

This chapter has considered the multifarious ways in which migration and human mobility link with environmental questions in Southeast Asia, in part to complicate dominant discourses associated with climate change that have, until recently, tended to offer a simple characterization of migration as a failure to adapt to environmental shocks or stresses. Viewed through a series of conceptual lenses that attend to the social production of environments or the mutuality of human and non-human nature, the importance of migration vis-à-vis the environment in Southeast Asia comes into focus more clearly. Not only have histories of migration and migrant practices shaped the region's environments, but also environments, and in particular, configurations of power in relation to environments, continue to produce new forms of migration, mobility and displacement. Whilst there is certainly a need to temper prevailing views of migration as a 'problem' associated with declining environmental security, a more critical reading of the environment-migration nexus is also necessary to rein in simplistic renderings of migration as a panacea for tackling environment-development problems where this means eliding underlying socio-political causes. In this rapidly changing region, the link between migration and the environment needs to be understood within a wider global political economic and regional context marked by uneven geographies of marketization, neoliberalism and intensified interconnections between people and places. Querying the mutual constitution of migration and the environment offers another pathway towards tackling the region's myriad social and environmental injustices.

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