



# Missing links in the forest–migration nexus

An analysis of trends, literature and data sources

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Forests, Trees and  
Agroforestry



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# Contents

<b>Acknowledgments</b>	<b>v</b>
<b>Executive summary</b>	<b>vi</b>
<b>Introduction</b>	<b>1</b>
<b>1 Patterns, trends and background of migration</b>	<b>3</b>
1.1 Introduction	3
1.2 Internal mobility	4
1.3 International migration	15
1.4 Conclusion	22
<b>2 Drivers and effects of migration and their relation to forests</b>	<b>24</b>
2.1 Introduction	24
2.2 Environmental factors	24
2.3 Economic factors	28
2.4 Social and political factors	30
2.5 Conclusion	32
<b>3 Sources of data on migration and their connection to forests</b>	<b>35</b>
3.1 Introduction	35
3.2 Overview and assessment	37
3.3 Description of the surveys	40
3.4 Administrative data	48
<b>4 Lessons, limitations and directions for future research</b>	<b>51</b>
<b>References</b>	<b>53</b>

# List of figures and tables

## Figures

1	Different distinctions commonly applied to migration.	4
2	Map of interprovincial migration intensity per province, 2010–2015.	8
3	Map of interprovincial net migration rate, 2010–2015.	8
4	Map of immigration into North Kalimantan by province of origin as a proportion of the total number of in-migrants.	10
5	Map of out-migration from North Kalimantan by province of destination as a proportion of the total number of out-migrants.	10
6	Reasons for recent interprovincial migration throughout Indonesia (left) and recent interprovincial migration to North Kalimantan (right).	11
7	Number of Indonesians living in the top 23 destination countries in 2015.	20
8	Remittance flows into and out of Indonesia in USD million.	21
9	Overview of topics covered in the review of data sources.	37

## Tables

1	Interprovincial lifetime migration, according to the 2015 SUPAS.	6
2	Recent interprovincial migration (2010–2015), according to SUPAS 2015.	7
3	The distribution of recent and lifetime interprovincial migrants between cities and rural areas.	9
4	In-migrant stocks in Indonesia.	16
5	In-migrant stocks in Indonesia per country of birth, 1990–2015.	16
6	Indonesians living abroad, by gender, 1990–2015.	18
7	Indonesians living abroad by major area of destination, 1990–2015.	18
8	Outmigrant stock from Indonesia living in the 23 countries that were among the top 20 most popular destination countries in 1990, 2015 or both, between 1990 and 2015.	19
9	Overview of data sources per category.	36
10	Overview of surveys.	39
11	Administrative sources of data.	40

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# Executive summary

The Center for International Forestry Research (CIFOR) is currently leading a research project aimed at understanding the links between migration, remittances and forests in South America, Africa and Asia, in order to enable policy makers and other stakeholders to improve forest management practices and policies. This paper supports this project by presenting an overview of the current state of knowledge about the relationship between migration and forests in Indonesia. So far, the literature on forestry in Indonesia has been largely disconnected from the literature on migration, and existing studies of the relationship have been limited in scope and outlook, focusing on certain aspects of the forest–migration nexus instead of examining it as an interrelated whole. By introducing the issues at stake, this paper demonstrates why a more holistic interpretation is necessary and contributes to a broader argument for taking migration seriously in forestry.

**Section 1** describes current **patterns** and recent **trends** of migration in Indonesia. International out-migration has increased greatly by all measures, with an estimated 3.9 million Indonesians living abroad in 2015, generating an estimated USD 10 billion in remittances. Over 60% of these migrants were living in Saudi Arabia and Malaysia, most of them economic circular migrants, and these migrant streams were highly gendered according to occupation and destination.

The story of internal migration is more complex. National surveys distinguish between lifetime migrants, i.e. people who live in a different place from their place of birth, and recent migrants, who live in a different place compared with 5 years previously. In 2010, 11.4% of the population, amounting to 27.8 million individuals, were classified as interprovincial lifetime migrants. Almost half of them lived on Java (46.5%). Indonesia's interdistrict migration rate increased between 2000 and 2010 from 4.0% to 5.8%.

In contrast, interprovincial migration intensity is relatively stable at the national level. Between 1980 and 2010, it fluctuated around 2.4%. But in individual provinces, interprovincial migration intensity reveals dynamics that are specific to the province in question. For example, in-migration into Central Kalimantan rose from 49,700 in 1975–1980 to 124,400 in 1995–2000, but plummeted to 31,500 in 2000–2005. Recent migration levels were highest among people aged 20–24 years old, there were slightly more male than female recent migrants, and migration to cities was three times as prevalent as migration to rural areas. This indicates that migration contributes to the growth of urban areas and has impacts on the demographics of sending and receiving areas. Reasons for (interprovincial) migration are most often family related (46%), followed closely by work related (40%), while the third most important reason, education, is much rarer (8%). The main reasons for migration vary strongly with destination. For example, migrants to Yogyakarta are highly likely to migrate for educational reasons and highly unlikely to do so for economic reasons. This is reversed for migrants to Papua or Riau.

Overall, migration in Indonesia has been increasing over the last decades. However, there are many different aspects to and types of migration, which show different trends, so that we cannot simply conclude that all Indonesians are becoming more mobile. Since most measures of migration vary in space, with gender, between age levels and between cultures, and fluctuate over time in ways that are place specific, a given context is more important than national statistics in establishing an understanding of the mobility of specific groups of people.

**Section 2** reviews the academic literature on the **effects** and **drivers** of migration. It conceptualizes the relationship between forests and migration

as part of a multidimensional interplay between social, economic, environmental, political and demographic factors. We find the literature on migration in Indonesia to be relatively comprehensive, in that all these types of factors have been investigated. Current evidence suggests that there is a correlation between in-migration intensity and deforestation. But when looking at the causal links, the type and context of migration are more important than the bare fact of migration, as are a range of intermediary factors, such as resource management systems, technological change, tenure systems and cultural norms. It is further shown that migration tends to bring economic benefits to migrant households. These benefits too are mediated by social structures and are unevenly spread across economic strata. The benefits of social remittances may be limited by the social isolation of migrants and the lack of applicability of new skills in the economic situation at their place of origin. Patterns of migration are highly responsive to economic change, and its relationships to family life and gender are variable and often dynamic. The human costs borne by the migrants and their families are often high, but social movements are drawing increasing political attention to these questions.

Despite this wealth of information on different factors of migration, the interconnections between them have not been sufficiently addressed. Existing research on migration still tends to ask about the relationship between migration and one specific factor, even if it is sometimes conceded that this relationship cannot be fully understood without reference to the other factors. For example, much research on the relationship between migration and forests in Indonesia is limited by its tendency to focus on the question of whether immigrants cause environmental degradation. The challenge ahead is to connect these various strands of inquiry into an integrated theory of the forest–migration nexus. One method of working towards such a theory would be through a series of careful case studies among communities affected by migration, considering the various possible links between

human–environment interactions and the whole range of factors identified in the literature as relevant to migration.

**Section 3** describes the different existing **sources of data** on migration in Indonesia, and the corresponding data gaps. Four types of data sources are distinguished: national surveys, nationally representative surveys, case study surveys and administrative sources. For each source, it is indicated whether it contains data on demographics, migration patterns, remittances and land use. The national surveys are the most authoritative and contain valuable and detailed data about internal migration and demographics, although they do not deal well with short-term circular migration, such as seasonal migration, and the reports tend to focus on interprovincial migration while largely neglecting intraprovincial migration. For international migration, there is much room for improvement of the data, as current records of migration outflow are incomplete and data on remittances appear to be based on rough estimations. There is little reliable quantitative data available for linking migration patterns to land use, although some recent case studies point the way forward.

Although data exist on all topics, this information is scattered across different sources, which complicates reliable analysis of the interlinkage between forests and migration. What is worse, at times there are contradictions between different sources, such as the structurally lower estimations of migration in the intercensal surveys compared with the national censuses. Data-collection efforts on international migration and remittances should be improved. Moreover, it would be useful if data on internal migration were presented with a higher level of detail in public reports. Since almost half of migrants are intraprovincial migrants, the exclusive focus of many reports on interprovincial migrants is unhelpful. Finally, various existing surveys could be exploited more fully, as they contain information on the forest–migration nexus that is yet to be analyzed as such.



# Introduction

The Center for International Forestry Research (CIFOR) is currently leading a research project aimed at understanding the links between migration, remittances and forests, in order to enable policy makers and other stakeholders to improve forest management practices and policies. The research looks at the interplay between migration and the land-use strategies of people living in or near forested areas, in different countries in Asia, Africa and South America. A mixed-methods approach is used to capture the various dynamics, which will be compared in a cross-country analysis. The present paper supports this project by describing the methods and results of previous and other ongoing research efforts concerning Indonesia, evaluating the insights that they provide, and identifying their shortcomings and the resulting knowledge gaps. Because CIFOR's activities in Indonesia focus on communities in the province of North Kalimantan, we have, where appropriate, zoomed in on data relating to this province, and literature relating to Kalimantan at large.

This paper aims to give an overview of the current state of knowledge about the relationship between migration and forests in Indonesia. We understand this relationship to be part of a multidimensional interplay between social, economic, environmental, political and demographic factors. The relevance, within this complex field, of migration to forests, can be initially gleaned from various angles (Hecht et al. 2015). For example, considering the importance of community-based approaches for conservation, the often high migration rates and long migration history of people living near forests in Indonesia are relevant for designing effective and equitable management interventions (e.g. Wadley 2002). Other relevant examples of links are the financial dependence of many people living near forests on remittances, the empirical correlation between in-migration and deforestation (Vayda and Sahur 1985; Darmawan et al. 2016) and the

political contestations concerning forest access and indigeneity (De Royer et al. 2015; Astuti and McGregor 2017). So far, the literature on forestry in Indonesia has been largely disconnected from the literature on migration, and existing studies of the relationship have been limited in scope and outlook, focusing on certain aspects of the forest–migration nexus instead of examining it as an interrelated whole. By introducing the issues at stake, this paper demonstrates why a more holistic interpretation is necessary, and contributes to a broader argument for taking migration seriously in forestry (Basnett 2013).

While aiming to integrate discussions about forests with discussions about migration, we assume that the reader already has a general understanding of forestry in Indonesia and we focus on introducing the relevant issues of migration. While we discuss trends and data sources of migration, it is beyond the scope of this paper to describe forest cover data and trends. The interested reader may consult, for example, Hansen et al. (2009), Broich et al. (2011) and Margono et al. (2014).

This paper consists of three main sections. In Section 1, we describe current patterns and recent trends of migration in Indonesia. For this description, we partly relied on existing overview papers. However, because these overviews tend to consider only a few of the aspects of migration that we are interested in, and do not yet describe the newest data sources, we added some analysis of more recent and/or comprehensive data sources.

In Section 2, we review the academic literature on the effects and drivers of migration, interpreting them using Black et al.'s (2011) conceptual framework on the relationship between migration and environmental change. For this review, we only included papers and book chapters that explicitly deal with Indonesia, so the results do

not apply directly to other places. We focused on the more recent literature, from the year 2000, although we sometimes found it useful to include older texts in order to sketch a historical trope of research that relates to current debates.

In Section 3, we provide an overview of the different existing sources of data on migration in Indonesia, and the corresponding data gaps. We looked for national surveys and databases, and international databases that included Indonesia. We also tracked other sources of data that were cited in the literature. We then looked at how the

data were collected, which topics and areas they covered, and how they had been analyzed.

Each section is written in a way that makes it possible to read them separately, according to the interests of the reader. Each of them, therefore, has its own introduction and conclusion. The conclusions reflect on the findings of the section, draw lessons and indicate future research directions. After the last section, a general conclusion highlights the most important findings of each section, attempts to connect them to each other and outlines some directions for future research.

# 1 Patterns, trends and background of migration

## 1.1 Introduction

This section summarizes data on current trends in the magnitude and direction of internal and international migration, and briefly provides each with some historical context. First, we look at general statistics on migration within Indonesia, providing evidence for an overall increase in migration intensity (on most counts), and considering the different motivations for migration. However, it will be shown that specific context is more important than national statistics in establishing an understanding of the mobility of specific groups of people, because there are substantial variations in internal mobility across space, gender and age, and fluctuations over time. We then break down our analysis by examining in turn migration to rural areas and migration to urban areas, connecting the current trends to historical patterns. Urbanization is shown to increase in importance, and affects the rural places that the rural–urban migrants leave behind. Subsequently, we will turn towards the increase in international migration and discuss the estimations of international remittance flows.

Our results are limited by the limitations of the available data and literature, the complexity of the phenomenon we are describing and the diversity of the vast area we are describing. The available data on internal migration do not capture short-term circular migration, such as those related to seasonal labor; flows of international labor migrants are in large part unrecorded or recorded in a fragmented manner; we know very little about internal remittance flows; and we have only rough estimations of international remittances. Although data collection has improved recently, the literature uses only a couple of the available data sources,<sup>1</sup>

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<sup>1</sup> See Section 3 on data sources. Overviews of trends are largely based on elements of sources A1, A2, B3, D1, D2 and D3 described in Section 3. Most of the other data sources have been used not to give overviews of trends and patterns, but to investigate the effects or characteristics of migration. Section 2, below, deals with those effects and characteristics.

and data about the past, essential to establishing long-term trends, are scarce. Moreover, the statistics cited in the literature are often not easily comparable because they use different measures of migration. Figure 1 shows various distinctions that are applied to migration.<sup>2</sup> Because these distinctions cut through the literature that describes trends in migration, and the different measures by which migration is expressed exhibit different trends, it is difficult to synthesize them into a single narrative.

Moreover, most measures of migration vary in space, with gender, between age levels and between cultures, and fluctuate over time. Considering the volatility of migration patterns, it is also regrettable that analyses of the newest sources of data are not available yet, such as analyses of the latest intercensal survey on population and housing (SUPAS 2015, see Section 3.3, data source [A3]) or the latest rounds of a large-scale longitudinal survey entitled Rural-Urban Migration in China and Indonesia (RUMiCI, data source [B2]). In our conclusion, we shall revisit these complexities and limitations and draw the implication that to understand the relationship between migration and forests for a specific place, the most recent and specific data should be looked for, evaluated critically and put into the local context.

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<sup>2</sup> These distinctions will become clear in the discussion on trends, but a brief elucidation of the less straightforward categories may be useful to some readers at this point.

*Government-sponsored* migration is movement that is financially or otherwise supported by the government, as part of its policy aims. The trans-migration program is a significant historical example of this. *Forced migration* is government-initiated migration that disregards whether the people themselves want to move, such as forced resettlement from nature areas or floodplains. *Spontaneous migration* occurs independently of government aid or force. The distinction between *formal* and *informal* migration refers mainly to international migration, in which the former conforms to the administrative requirements of international movement such as obtaining proper visas and registering at the relevant authorities in the host country, whereas the latter evades some of these requirements.

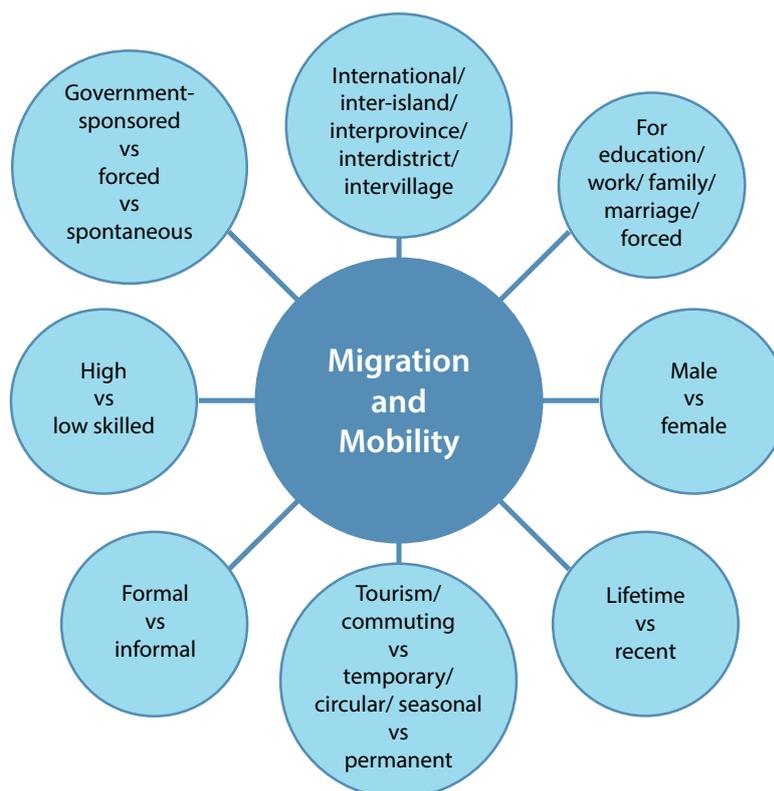


Figure 1. Different distinctions commonly applied to migration.

## 1.2 Internal mobility

### 1.2.1 Patterns of interprovincial migration

To get a sense of migration patterns, we start with the results from the national population census (*Sensus Penduduk*) and the intercensal population survey (*Survei Penduduk Antara Sensus*, or SUPAS for short) on interprovincial migration. These sources distinguish lifetime interprovincial migrants from recent interprovincial migrants. The first are people whose place of usual residence is in a different province than their place of birth. The second are people whose usual place of residence at time of measurement is in a different province than their place of residence 5 years previously.<sup>3</sup> Describing the 2010 Population Census, Statistics Indonesia (*Badan Pusat Statistik*, BPS) wrote that 11.4% of the population was classified as lifetime interprovincial migrants, amounting to 27.8 million individuals (BPS 2011, 7). The percentages of lifetime migrants as a proportion of the population were highest in Riau (47.7%), Jakarta (42.5%) and East Kalimantan

(36.8%). Almost half of all interprovincial lifetime migrants were living on the island of Java (46.5%), whereas those living in Kalimantan accounted for only 9.3% (BPS 2011, 8).

A total of 2.4% of the Indonesian population was classified as *recent* interprovincial migrants in 2010, or 5.1 million individuals (BPS 2011, 13). In absolute terms, recent migrants coming into and from Kalimantan were only small proportions of total population movement in Indonesia. For example, just 9.1% of recent interprovincial migrants were living in the combined provinces of Kalimantan (BPS 2011, 14) and only 4% of Indonesia's recent interprovincial migrant population came from Kalimantan (BPS 2011, 15). However, in relative terms, net in-migration to Central and East Kalimantan were the second and third highest of all Indonesian provinces, causing a population increase of, respectively, 4.5% and 4.3% between 2005 and 2010 (BPS 2011, 25).

Newer datasets, from the 2015 intercensal population survey (SUPAS), are available but analyses of these data have not yet been published. Additionally, as will become clear in Section 1.2.3, the results of the SUPAS differ consistently from

3 See Section 3 on data sources: sources A1 and A2.

those of the census. The differences between the two therefore cannot be compared to reveal a trend in time. For estimates of migration quantities at a given time and place, the census should perhaps be accorded a higher reliability, if only because it is based on information about the entire population instead of a representative sample.<sup>4</sup>

Nevertheless, the 2015 SUPAS data remain valuable for revealing broad patterns because the data are 5 years more recent – patterns change quickly – and they contain information about stated reasons for migration.<sup>5</sup> We have therefore used the published datasets to create Tables 1 (BPS 2016c, 1–11) and 2 (BPS 2016c, 12–20), concerning lifetime interprovincial migration<sup>6</sup> and recent interprovincial migration, respectively. The tables show the number of interprovincial in-migrants and out-migrants for each province, the associated male/female ratios, and the number of in and out-migrants expressed as a percentage of provincial population in 2010. For recent migration, we have also included a column showing migration intensity, crudely calculated as the sum of in-migration and out-migration rate (following Vidyattama (2016) and Randolph and Naik (2017)).

As shown in Table 1, it was estimated that 27 million Indonesians, 10% of the population, were lifetime interprovincial migrants. There were 7% more male than female migrants. Flows from and toward provinces on Java were largest: over 50% of interprovincial lifetime migrants were living on that island, and over 60% had come from one of the island's provinces. Of the people living in North Kalimantan, almost 189,000 (30%) had been born in a different province, 27% more men than women. The amount of interprovincial lifetime out-migrants from North Kalimantan<sup>7</sup> was over 4 times smaller: 43,000, and there were slightly more female than male lifetime out-migrants.

<sup>4</sup> See Section 3.3: A1 and A2.

<sup>5</sup> Moreover, with respect to CIFOR's research project in Malinau, North Kalimantan, it is worth noting that the 2015 SUPAS is the first population census to treat North Kalimantan as a separate province. North Kalimantan was established as a province in 2012. Until then, it had been part of East Kalimantan.

<sup>6</sup> Lifetime interprovincial migrants are people whose usual place of residence at time of measurement is in a different province than their place of birth.

<sup>7</sup> Interprovincial lifetime out-migrants from North Kalimantan are people born in North Kalimantan but currently living in a different province within Indonesia.

Table 2 presents data on recent interprovincial migration from the 2015 SUPAS, and Figures 2 and 3 show the data on migration intensity and net migration rates on the map of Indonesia (modeled on Vidyattama's (2016) distribution map of migration intensity). A total of 4.8 million residents, or 1.9% of the national population, were estimated to be recent interprovincial migrants, of whom 6% more were males than females, and 53% of whom came from the island of Java.

The data further indicate that there is great variation in migration intensity across space. The highest migration intensities were found in the Riau Islands, Jakarta, West Papua, North Kalimantan and Yogyakarta, in that order. North Kalimantan had the fourth highest migration intensity, and both out-migration from and in-migration to North Kalimantan were dominated by men (with male/female ratios of 144% and 126%, respectively). While Jakarta's net migration rate (–2.1%) is the lowest found in Indonesia, in the other four provinces, the high migration rates were due to strong in-migration flows. The net migration rate in North Kalimantan was the fourth highest in Indonesia, after the Riau Islands, West Papua and Yogyakarta, in that order.<sup>8</sup> Some of the lowest migration intensities were found in West Kalimantan, Riau and East Java.

These rates must be considered in relation to total population in the province. Thus, while the comparison between low and high migration intensity in West and North Kalimantan, which both have relatively low population densities, reveals a striking difference, one should be more careful when comparing low migration intensity in densely populated East Java with high migration intensity in North Kalimantan. The total number of provincial in- and out-migrants is higher for Javanese provinces than for any of the Kalimantan provinces, and has consistently been so for decades, as for example Muhidin (2002, 60) and Tirtosudarmo (2009, Table 3.2) have shown.

<sup>8</sup> It is interesting to note that three of the provinces with exceptionally high migration intensities and net migration rates have been established only recently: the Riau Islands in 2002, West Papua in 2003 and North Kalimantan in 2012.

**Table 1. Interprovincial lifetime migration, according to the 2015 SUPAS.**

Province	Number of interprovincial lifetime in-migrants	Male/female ratio (%)	In-migrants as % of population	Number of interprovincial lifetime out-migrants	Male/female ratio of out-migrants (%)	Out-migrants as % of population
Aceh	209,815	100	4.2	257,736	110	5.2
North Sumatra	519,843	101	3.7	2,207,072	103	15.9
West Sumatra	358,123	110	6.9	1,148,930	107	22.1
Riau	1,881,079	110	29.7	319,558	106	5.0
Jambi	710,428	112	20.9	197,263	122	5.8
South Sumatra	966,060	112	12.0	737,585	101	9.2
Bengkulu	337,041	111	18.0	110,837	102	5.9
Lampung	1,362,387	109	16.8	740,854	90	9.1
Bangka Belitung	192,729	118	14.1	106,125	89	7.7
Riau Islands	881,035	107	44.8	99,975	104	5.1
Jakarta	3,647,328	95	35.9	2,701,145	106	26.6
West Java	4,961,541	110	10.6	2,348,128	101	5.0
Central Java	1,015,615	100	3.0	6,551,768	107	19.4
Yogyakarta	571,948	91	15.6	912,407	107	24.8
East Java	924,152	96	2.4	3,821,692	115	9.8
Banten	2,491,589	107	20.9	579,790	99	4.9
Bali	428,511	106	10.3	264,702	109	6.4
West Nusa Tenggara	121,828	93	2.5	209,269	129	4.3
East Nusa Tenggara	176,608	90	3.5	253,712	165	5.0
West Kalimantan	293,992	132	6.1	185,924	96	3.9
Central Kalimantan	527,473	121	21.2	105,598	81	4.2
South Kalimantan	509,967	114	12.8	302,936	100	7.6
East Kalimantan	1,120,017	116	32.7	144,527	102	4.2
North Kalimantan	189,396	127	29.6	43,214	92	6.8
North Sulawesi	188,136	113	7.8	195,544	98	8.1
Central Sulawesi	465,614	111	16.2	121,928	96	4.2
South Sulawesi	346,168	111	4.1	1,415,688	116	16.6
Southeast Sulawesi	443,602	109	17.8	191,917	108	7.7
Gorontalo	64,448	101	5.7	103,892	108	9.2
West Sulawesi	175,283	105	13.7	108,643	108	8.5
Maluku	134,500	111	8.0	215,078	114	12.8
North Maluku	106,920	113	9.2	61,971	101	5.3
West Papua	272,151	119	31.3	51,759	90	6.0
Papua	491,656	124	15.6	89,261	118	2.8
<b>Total</b>	<b>27,086,983</b>	<b>107</b>	<b>10.6</b>			

Source: Data source A2, BPS 2016c, 1–11.

**Table 2. Recent interprovincial migration (2010–2015), according to SUPAS 2015.**

Province	In-migration	Male/female in-migrant ratio (%)	In-migration (%)	Out-migration	Male/female out-migrant ratio	Out-migration (%)	Migration intensity	Net migration
Aceh	40,616	116	0.8	39,649	106	0.8	1.6	0.00
North Sumatra	142,774	92	1.0	270,157	86	1.9	3.0	−0.90
West Sumatra	138,826	114	2.7	139,548	105	2.7	5.4	0.00
Riau	215,350	100	3.4	131,711	108	2.1	5.5	1.30
Jambi	67,574	120	2.0	66,794	128	2.0	4.0	0.00
South Sumatra	75,760	98	0.9	110,308	110	1.4	2.3	−0.50
Bengkulu	38,574	102	2.1	27,477	99	1.5	3.5	0.60
Lampung	81,200	93	1.0	124,478	86	1.5	2.5	−0.50
Bangka Belitung	32,417	97	2.4	21,554	152	1.6	3.9	0.80
Riau Islands	189,498	101	9.6	67,520	90	3.4	13.1	6.20
Jakarta	499,101	84	4.9	706,353	111	7.0	11.9	−2.10
West Java	750,999	103	1.6	506,573	90	1.1	2.7	0.50
Central Java	518,103	109	1.5	647,482	101	1.9	3.5	−0.40
Yogyakarta	208,257	92	5.7	84,915	107	2.3	8.0	3.40
East Java	315,543	109	0.8	421,349	115	1.1	1.9	−0.30
Banten	324,472	104	2.7	207,385	110	1.7	4.5	1.00
Bali	139,849	119	3.4	50,887	138	1.2	4.6	2.20
West Nusa Tenggara	105,470	235	2.2	46,504	111	1.0	3.1	1.20
East Nusa Tenggara	66,123	112	1.3	66,115	116	1.3	2.6	0.00
West Kalimantan	37,359	119	0.8	34,994	136	0.7	1.5	0.10
Central Kalimantan	78,396	121	3.1	52,463	110	2.1	5.3	1.00
South Kalimantan	86,621	119	2.2	55,117	134	1.4	3.6	0.80
East Kalimantan	120,005	119	3.5	101,169	135	3.0	6.5	0.50
North Kalimantan	34,691	126	5.4	18,478	144	2.9	8.3	2.50
North Sulawesi	33,559	108	1.4	35,851	111	1.5	2.9	−0.10
Central Sulawesi	62,862	93	2.2	37,416	116	1.3	3.5	0.90
South Sulawesi	136,430	116	1.6	177,336	112	2.1	3.7	−0.50
Southeast Sulawesi	57,523	105	2.3	46,234	130	1.9	4.2	0.40
Gorontalo	15,034	98	1.3	17,110	96	1.5	2.8	−0.20
West Sulawesi	33,941	112	2.7	27,439	103	2.1	4.8	0.60
Maluku	25,317	142	1.5	37,157	122	2.2	3.7	−0.70
North Maluku	20,173	105	1.7	14,617	100	1.3	3.0	0.40
West Papua	59,777	131	6.9	20,188	102	2.3	9.2	4.60
Papua	61,203	122	1.9	47,849	114	1.5	3.5	0.40
Indonesia	4,813,397	106	1.9					

Source: Data source A2; BPS 2016c.

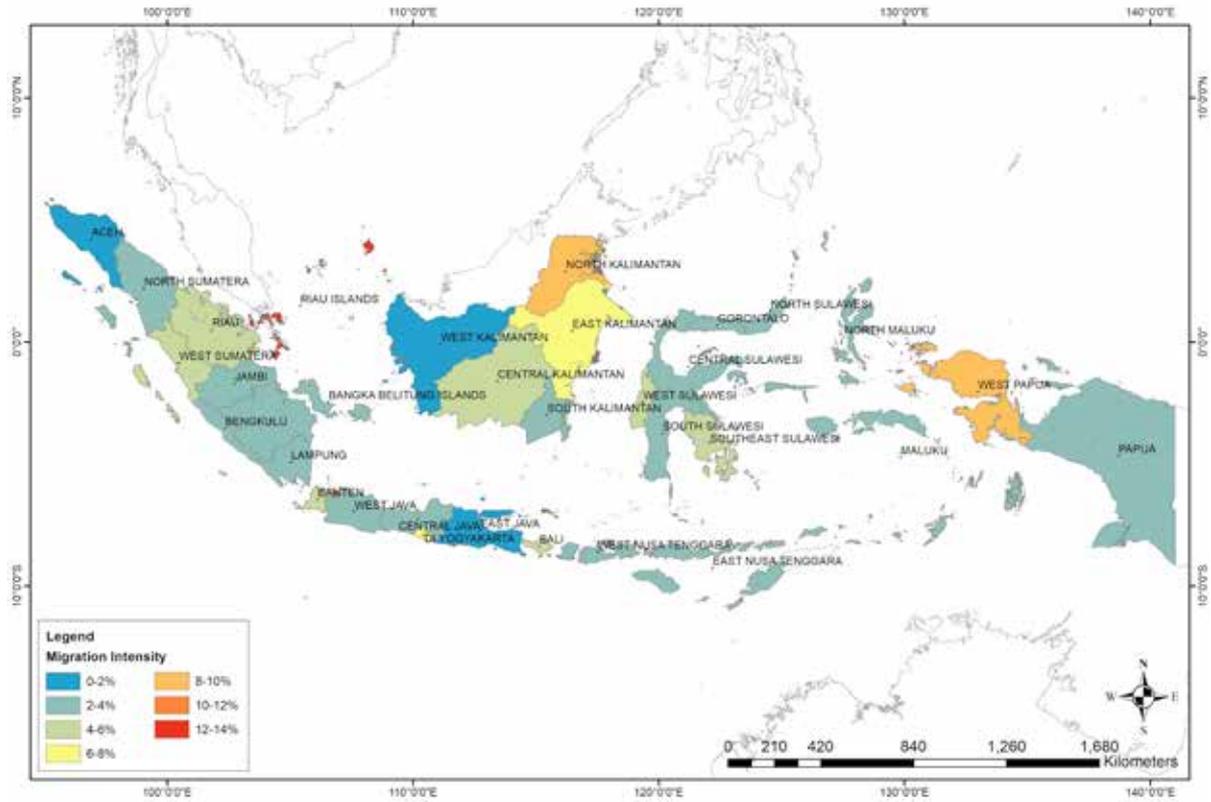


Figure 2. Map of interprovincial migration intensity per province, 2010–2015.

Based on data from SUPAS 2015 (as published in BPS 2016c).

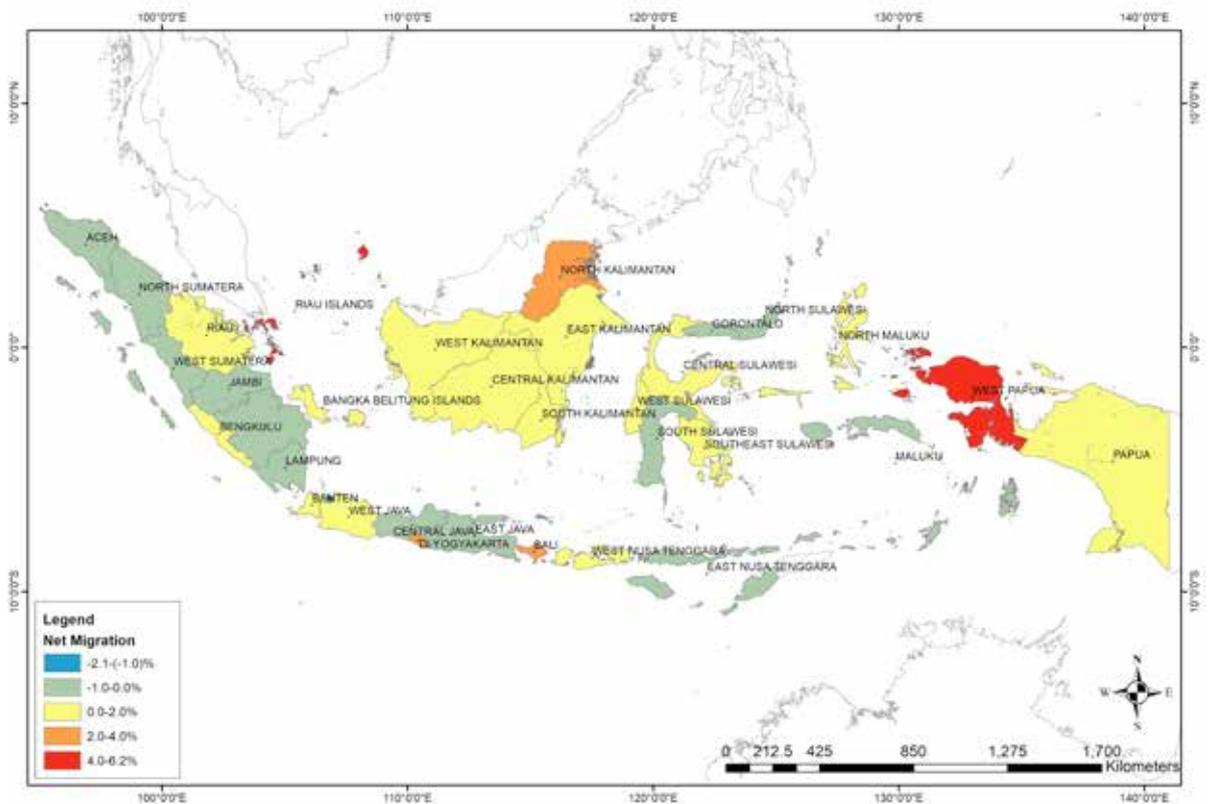


Figure 3. Map of interprovincial net migration rate (in-migration rate minus out-migration rate), 2010–2015.

Based on data from SUPAS 2015 (as published in BPS 2016c).

**Table 3. The distribution of recent and lifetime interprovincial migrants between cities and rural areas.**

Area	Lifetime migrants			Recent migrants		
	In cities (%)	In rural areas (%)	Total (%)	In cities (%)	In rural areas (%)	Total (%)
Central Kalimantan	40.1	59.9	100	32.3	67.7	100
West Kalimantan	41.4	58.6	100	48.1	51.9	100
South Kalimantan	51.3	48.7	100	59.2	40.8	100
East Kalimantan	66.8	33.2	100	65.2	34.8	100
Indonesia	72.7	27.3	100	74.9	25.1	100

Source: BPS 2011, 10, 17.

Muhidin (2014) discusses and explains such differences at length for different districts. Randolph and Naik (2017, 48–49) propose two general explanations for why some regions are experiencing much higher migration intensity. The first is that many such regions are centers of extractive industries, such that a rapid increase in wealth has indirectly attracted many migrants. The second is the emergence of provincial primate cities, which have high migration intensity because of their growing administrative and economic importance, as a result of decentralization and government investment.

Migration intensity also varies with age, gender and type of destination. In 2010, migration levels were highest for people aged 20–24 (Muhidin 2002, 63). It was reported that the majority of them were men, and most migration was rural to urban (Muhidin 2014, 338). As Table 3 shows, in 2010 migration to cities was three times as prevalent as migration to rural areas. This means that migration tends to increase the urbanization of Indonesia. The same could be said of East Kalimantan, which at the time included what is now the separate province of North Kalimantan. However, in Central and West Kalimantan more recent migrants were living in rural than in urban areas. The processes of rural and urban migration will be contextualized by a discussion of their historical patterns below.

Finally, it is possible to analyze the 2015 SUPAS dataset to create an overview of where interprovincial recent migrants in and from a specific province come from or go to. For North Kalimantan, we have created Figures 4 and 5, which represent the amount of in- and out-migrants, respectively, for each origin/destination province, as a proportion of the total number of in- and out-migrants into and out of North

Kalimantan. The most recent in-migrants to North Kalimantan came from South Sulawesi (13,900), while 6000 came from East Java, and 3700 came from East Kalimantan. South Sulawesi and East Kalimantan were the two most popular destination sites for interprovincial recent migrants from North Kalimantan, followed by East Java and Yogyakarta. The correlation between the most popular destination provinces and the most important provinces of origin may point to established networks of circular migration connecting North Kalimantan to South Sulawesi, East Java and East Kalimantan.

### 1.2.2 Reasons for interprovincial mobility

The 2015 SUPAS data provide information about the stated reasons for recent interprovincial migration. Figure 6 shows that, nationally, family-related reasons were the most prevalent (46%), followed closely by work-related reasons (40%), while the third-biggest reason, education, was much rarer (8%). The predominance of family-related reasons is not surprising as this measure captures all family members who migrate along with migrants who have different reasons. Muhidin (2014, 337) has shown that the main reasons for migration vary strongly with place of destination. For example, migrants to Yogyakarta were highly likely to migrate for educational reasons and highly unlikely to do so for economic reasons. This was the other way around for migrants to Papua or Riau. Nevertheless, the reasons for in-migration to North Kalimantan show a pattern similar to the national one. A total of 97% of recent in-migrants to North Kalimantan were motivated by work- and family-related reasons. Unfortunately, the publicly available data do not allow for the reconstruction of data about reasons for migrating *out* from North Kalimantan.

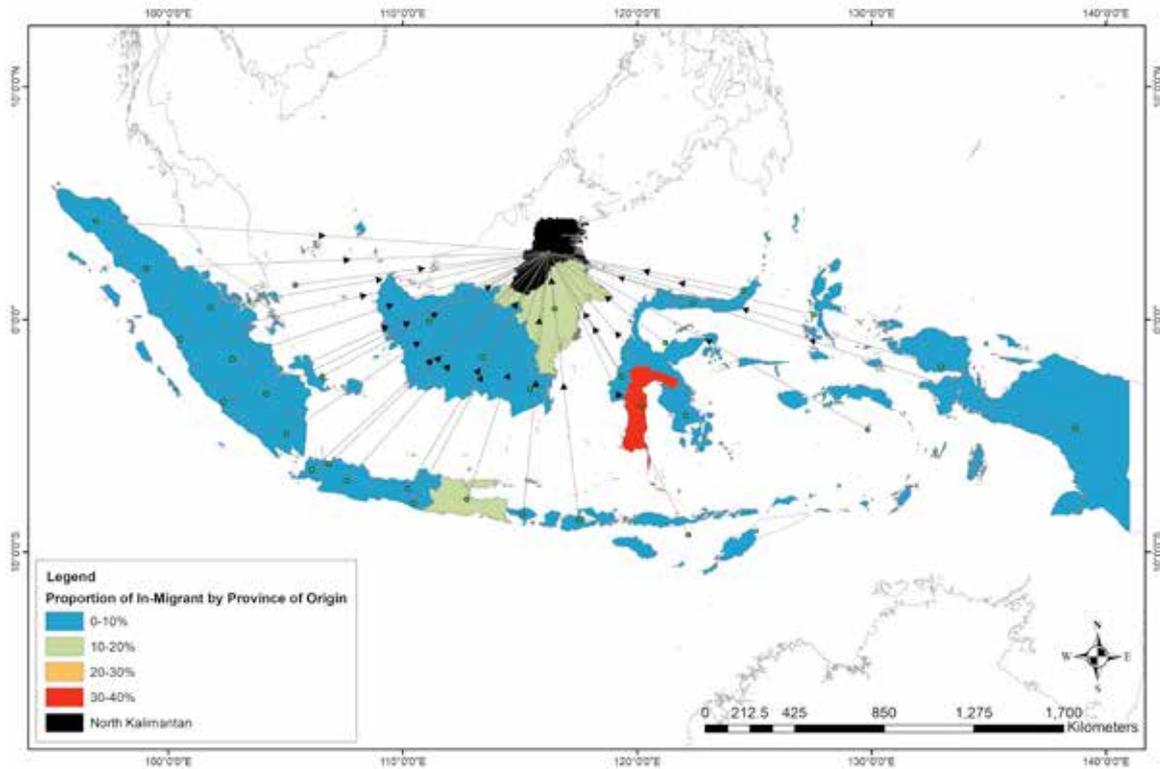


Figure 4. Map of immigration into North Kalimantan by province of origin as a proportion of the total number of in-migrants.

Based on 2015 SUPAS data as published by BPS (2016c).

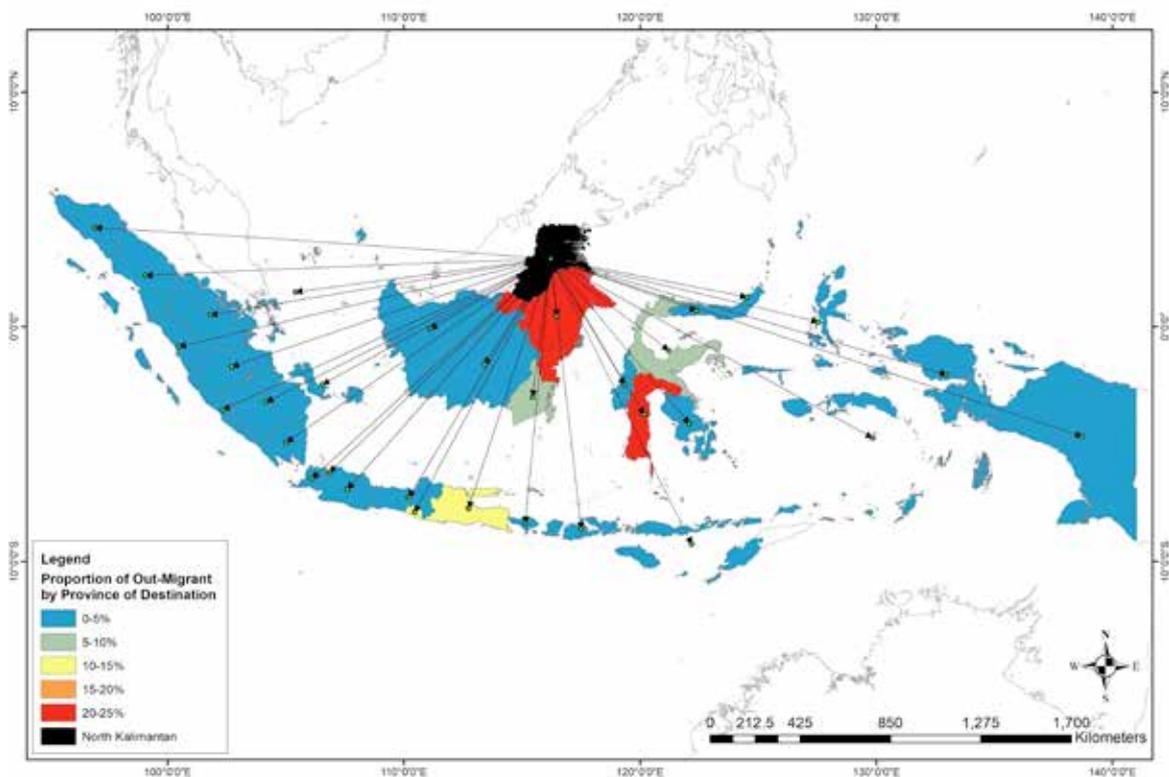
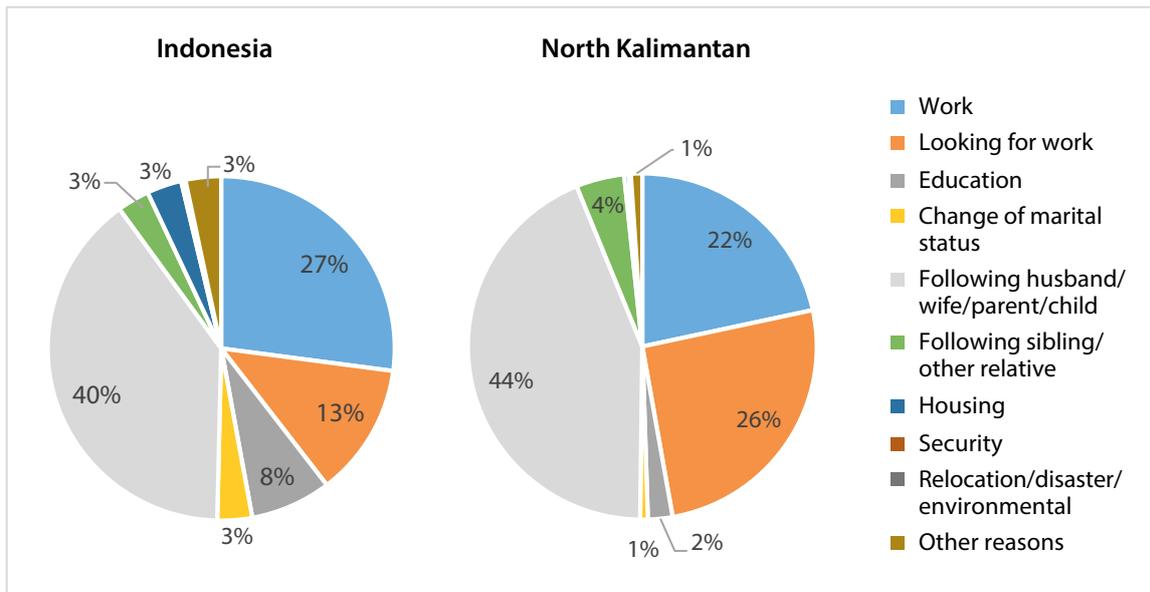


Figure 5. Map of out-migration from North Kalimantan by province of destination as a proportion of the total number of out-migrants.

Based on 2015 SUPAS data as published by BPS (2016c).



**Figure 6. Reasons for recent interprovincial migration throughout Indonesia (left) and recent interprovincial migration to North Kalimantan (right).**

Based on the 2015 Intercensal Survey.

### 1.2.3 Trends of internal mobility

Indonesia's changing mobility patterns are often interpreted as an increase in mobility, enabled by unidirectional changes, such as rising levels of income and education, and improved transportation and communication systems (Arifin and Ananta 2013). However, the numbers behind these assertions are not straightforward. A first complication is that we cannot compare the 2015 intercensal population survey (SUPAS) data with the 2010 census data to describe trends, because SUPAS estimates of interprovincial recent migration are consistently lower than the measurements of the census. This effect can be observed in Muhidin's Table 2.2 (2002) and in Tirtosudarmo's Table 3 (2009). Ananta and Arifin (2008, 15) also noted this effect in relation to SUPAS 2005. None of these authors have an explanation as to why SUPAS 2015 estimates of interprovincial migration are lower.<sup>9</sup> Nevertheless, it is possible to get an idea of trends by separately comparing SUPAS and census data over time. A second limitation is that the reports of Statistics Indonesia concern only interprovincial migration.

<sup>9</sup> In fact, Ananta and Arifin (2008, 15) express puzzlement in relation to it: "The unexpected trend [*sic*] might probably be attributable to the nature of the data; it is a survey, not a census. Further studies need to be done to explain this unexpected trend."

This is limiting when considering trends in recent migration, because Muhidin (2014) has shown that trends in migration intensity differ with the distance of migration.

According to census data, between 1980 and 2010, *interprovincial* migration intensity fluctuated around 2.4% (Muhidin 2014, 324–325),<sup>10</sup> while the proportion of *interisland* recent migrants in Indonesia's population even decreased from 1.2% to 0.9%. In contrast, recent interdistrict migration is increasing. Although the only two data points for interdistrict migration are 2000 and 2010, in these 10 years it increased from 4.0% to 5.8%, the latter of which equaled 12.4 million Indonesians. Muhidin (2014) attributes this pattern in general terms to rising

<sup>10</sup> Muhidin (2014), Tirtosudarmo (2009) and Ananta and Arifin (2008; 2013) all give slightly different percentages. For example, Tirtosudarmo says interprovincial migration was 2.82% in 2000, Arifin and Ananta (2013, 117) say 3.1% and Muhidin (2014, 325) says 2.1%. The numbers in the narrative report of the 2010 population census broadly agree with those of Muhidin, at least for 2010, because it says that interprovincial recent migration decreased between 1990 and 2010 from 3.2% to 2.4% (BPS 2011, 29). Whatever the causes of these differences, they all broadly comply with Vidyattama's (2014, S91) succinct statement that recent interprovincial migration has remained relatively stable between 1975 and 2005, at between 2% and 3%.

levels of circular migration, which tends to involve shorter distances.<sup>11</sup>

Trends for *lifetime* migration are again different from trends in recent migration. The proportion of lifetime migrants to the Indonesian population has increased for all distance levels of migration. Concerning lifetime interdistrict migrants, McNicoll (1968) notes that in 1930 there had been around 6.7 million (11.3%) and that there was a high proportion of lifetime interdistrict migrants in urban areas (34% in and 40% outside Java). Meanwhile, the rural population was much more stable. McNicoll further maintained that these numbers “[did] not differ radically” in 1960 (1968, 40). By 2010, the proportion of lifetime interdistrict migrants was 19.1%, considerably higher in both absolute and relative terms (Muhidin 2014). Lifetime migration also increased for interprovincial and interisland migration. For example, the proportion of lifetime interprovincial migrants (those living in a province other than their province of birth) in the total population was much higher in 2010 (12%) than in 1980 (7%) (Muhidin 2014). We also see this difference in trends between *lifetime* and *recent* migration in Kalimantan. If we look at the trends in Kalimantan, we see the same patterns. Between 1990 and 2010, recent interprovincial in-migration decreased in all provinces of Kalimantan, whereas the proportion of lifetime interprovincial in-migrants increased (BPS 2011, 27–31). Muhidin did not explain why the trend in *lifetime* interprovincial migration differed from the trend in *recent* migration, and nor did Statistics Indonesia.

Tirtosudarmo (2009, Table 3.2) shows that while interprovincial migration intensity on a national level is relatively stable, it *fluctuates over time* in many provinces. For example, in-migration into

11 However, when Muhidin (2014, 326) observes that levels of interdistrict migration are higher than levels of interprovincial migration and, based on that observation, writes of “[t]he dominance of inter-district migration”, one should remember that interdistrict migration levels are *by definition* higher than interprovincial levels. After all, interprovincial migration is always also interdistrict migration, but not all interdistrict migration is interprovincial migration. The proper comparison is between interprovincial and *intraprovincial* migration. Arifin and Ananta (2013, 118) compare recent interprovincial with intraprovincial migration in 2010 and show that there were more interprovincial than intraprovincial migrants in almost two-third of the provinces, adding up to over 5.3 million recent interprovincial and 4.3 million recent intraprovincial migrants nationally.

Central Kalimantan rose from 49,700 in 1975–1980 to 124,400 in 1995–2000, but plummeted to 31,500 in 2000–2005. Simultaneously, out-migration rose from 16,000 (1975–1980) to 47,300 (2000–2005). In West Kalimantan, in-migration dropped from 49,200 in 1995–2000 to 16,400 in 2000–2005, while in-migration to East Kalimantan remained stable at around 150,000 over this same period.

#### 1.2.4 Historical patterns of rural migration

By rural migration we mean the migration of people toward rural places, and we shall here describe the three patterns of rural migration that have historically been most significant: spontaneous agricultural migration, movement of plantation workers and transmigration. ‘Spontaneous agricultural colonization’ is one of the oldest forms of rural migration (Pohan and Izharivan 2017). The term denotes movements of groups of people toward new agricultural lands because of increasing population pressure on agricultural resources in sites of origin. Historians have recorded several instances of spontaneous agricultural colonization in what is now Indonesia, dating from pre-colonial times. These include the movement of Javanese wet-rice farmers to parts of Sundanese West Java since the 16th century and the movements of Minangkabau in Sumatra and Bugis in Sulawesi (Hugo 1980, 97). These movements have been especially associated with certain historically ‘highly mobile ethnic groups,’ such as the Bugis, the Minangkabau, the Banjarese, the Madurese, the Javanese and the Batak (Tirtosudarmo 2009, 39), who have established traditions of migration going back centuries. During colonization, spontaneous agricultural colonization continued mostly in the ‘Outer Islands’ – a term used to denote all Indonesian islands other than Java and Madura – where colonial influence was limited (Hugo 1980; Tirtosudarmo 2009, 3). ‘Highly mobile ethnic groups’ have continued to show high levels of mobility to this day, not only in terms of agricultural colonization but increasingly also other forms of (labor) migration. According to the 1961 population census, Bawean people were the most mobile ethnic group, when 31.6% of Bawean were lifetime migrants (meaning that they lived in a different place than their birth place). In 1971, the Minangkabau were possibly the most mobile group, with 44% migrants (Tirtosudarmo 2009, 5). The continuing high mobility of such ethnic groups may be explained by cultural–systemic

pressures which symbolically reward migration, the cultural identification of individuals with a history of migration, their observation of the economic success of other migrants and the availability of an information and support network in potential destinations; in addition, factors such as the desire for education, urban facilities and economic opportunities are also increasingly important (Lineton 1975; Naim 1979; Tirtosudarmo 2009, 5–6). While Tirtosudarmo does not mention it, we should also consider the possibility that these groups migrate because their areas of origin are poor in natural resources.<sup>12</sup>

Since spontaneous agricultural colonization tends to be directed towards forested areas, it continues to be a type of migration that is relevant for forest policy (Padoch 1982; Lucardie 1985; Vayda and Sahur 1985; Li 2007). Moreover, while spontaneous agricultural colonization is increasingly restricted by the closing of forest frontiers (Li 2014), illegal forest encroachment has been identified as one of the major threats to protected areas (Wibowo 2013 in Nawir et al. 2016, 56). Present-day forest migration, however, is not always simply ‘spontaneous’ – it can be part of a complex historical and political ecology involving not only poor farmers but also influential political and business actors (Levang et al. 2012). We were unable to find any quantitative assessments of the current importance of this pattern of migration.

The second important form of rural migration is the movement of plantation workers. Since the 17th century, the Dutch had been bringing in slaves from India, Burma and, later, Bali and South Sulawesi, to work on sugar plantations around Batavia (now Jakarta). From the 1870s, following a new regulation that permitted private Europeans and Chinese to obtain long-term leases over land, capital-intensive plantation agriculture greatly expanded (Hugo 1980, 106–8). The labor requirements of coffee, rubber, tobacco, tea and other plantations drew large amounts of both permanent and temporary migrants, first within Java and increasingly also toward the Outer Islands. Use of low-skilled, supervised contract labor became increasingly ‘normal,’ and a ‘coolie’ contract system emerged to recruit mostly Javanese, Sundanese and Chinese for work on plantations on the Outer Islands (Hugo 1980, 108; Tirtosudarmo 2009, 3).

After independence, the Indonesian Government promoted the development of plantations as part of its national reconstruction plan. In the late 1970s, the Nucleus-Estate Scheme was introduced, in which plantation workers were given some land and technical assistance to grow their own tree crops, such as rubber and oil palm (Budidarsono et al. 2013). In recent decades, large-scale oil palm plantations have expanded on a vast scale, particularly in Sumatra and Kalimantan, and the plantation work is typically done by incoming contract laborers and transmigrants (Potter 2011; 2012).

Transmigration is the third form of rural migration. It started under Dutch rule as a system of forced or government-sponsored migration with the aim of redistributing Indonesia’s population. To relieve population pressure from the densely populated islands of Java, Bali, Madura and Lombok, the Dutch Government relocated people to less densely populated islands, the Outer Islands, where additional labor could be used in new cash-crop plantations. Transmigration started in the 1900s as part of a so-called ‘ethical policy,’ which claimed to make colonial rule less harmful to the native population. In the 1930s, a drop in demand for plantation products led to a reduction in contract coolie labor moving out from Java, which increased the need to relieve population pressure. In response, the transmigration system began moving more people (Hugo 1980, 121–124). After independence, the transmigration system was copied and expanded by the Indonesian Government, which added the aims of modernizing the Outer Islands and “raising living standards [and] increasing national agricultural production, national security, and national integration” (MacAndrews 1978, 463). During the colonial period and up to 1969, around 80% of transmigrants went to Sumatra. Between 1969 and 1974, the distribution was slightly more even, with 17.0% going to Kalimantan and 22.3% to Sulawesi (MacAndrews 1978, 464). Between 1905 and 1941 more than 180,000 individuals were moved from Java to the Outer Islands (MacAndrews 1978). Originally, transmigrants were supposed to bring wet-rice cultivation to the Outer Islands, but these attempts largely failed (O’Connor 2004) and transmigrants were increasingly put to work on tree plantations, often under the Nucleus-Estate Scheme (Potter 2011).

12 As Moira Moeliono from Center for International Forestry Research (CIFOR) suggested in her review of this paper.

Despite its transformative effect on receiving areas, transmigration was not a significant factor in Indonesia's overall population distribution until the 1980s, as the program continually failed to meet its ambitious targets (MacAndrews 1978, 462; Adhiati and Bobsien 2001, 4). The program resettled almost 1 million people in the Outer Islands between 1905 and 1977, but in the same period the population of Java increased by 35 million, in large part due to spontaneous migration from the Outer Islands to Javanese cities (MacAndrews 1978, 465; Van der Wijst 1985; Van Lottum and Marks 2012; Pohan and Izharivan 2017, 149). At the peak of transmigration during the 1980s and early 1990s, however, transmigration did have a significant effect on population distribution. For example, between 1979 and 1989, 3.5 million people were resettled (Adhiati and Bobsien 2001, 4). This was enabled by increased funding from the World Bank, Asian Development Bank and through bilateral agreements (Adhiati and Bobsien 2001; Van Lottum and Marks 2012, 4489).

After the financial crisis of 1997 and the fall of Suharto a year later, the transmigration program was greatly reduced, due to: the government's lack of financial means; tight controls on government spending as part of the International Monetary Fund (IMF)'s structural adjustment program; a new policy of decentralization and regional autonomy (giving regions more authority to reject the program); and emerging, sometimes violent, expressions of indigenous opposition to transmigrants (Adhiati and Bobsien 2001). Although the transmigration program was officially terminated in 2001 (Potter 2006), government-sponsored migration of workers towards cash-crop plantations has continued, albeit on a much smaller scale (Potter 2012).

### 1.2.5 Historical patterns of urban migration

Like rural migration, migration to cities has been important since before colonization, when people, particularly traders and slaves, (were) moved to port cities and capitals of inland kingdoms (Hugo 1980; 2006). The colonial system ensured the rapid growth of port cities for collecting and transporting products, as well as the development of smaller towns for the collection of goods, administrative entities and military garrisons. Much of this growth was supported by in-migration. Much rural-urban migration was intraprovincial. Although the function of cities in the colonial system created

a demand for labor and services, urbanization was nonetheless limited due to the absence of widespread industrialization, since processing of raw materials tended to take place in the Netherlands (Hugo 1980, 116–117). Colonial activity in Java spurred urban development in Batavia (now Jakarta), Surabaya and Semarang, which attracted many in-migrants (Tirtosudarmo 2009, 3). Additionally, to satisfy the demand for administrative personnel, police officers and soldiers arising from the expanding colonial enterprise, the Dutch Government recruited indigenous people, often from ethnic groups on the Outer Islands who had been educated by Christian missionaries, to urban positions wherever the colonial system expanded. For example, as a result of Minahassans being recruited for administrative positions, in 1930 “only 87.5 per cent of ethnic Minahassans from north Sulawesi were living in the Minahassa heartland” (Hugo 1980, 111).

The attractiveness of cities is an important variable in explaining Indonesia's migration patterns (Van Lottum and Marks 2012). There are many reasons why cities are attractive. From an economic viewpoint, we may note the availability of services, low prices of consumer goods, national policies that protect the urban sector through trade and price interventions in favor of manufacturing industries, and national policies that tax primary production. Moreover, the concentration of wealth, as a result of the concentration of political power which extracts wealth from the hinterland, creates a demand for services (Van Lottum and Marks 2012, 4491). We may add that cities provide opportunities for education (e.g. Upton 2009). Cities have also functioned as safe havens for refugees. For example, in the tumultuous decades starting with the Japanese occupation and continuing during early independence, “lawless disturbances in the interior” drove people to the relative security of cities (Hugo 2006, 69). Particularly in West Java, refugees were a catalyst for unprecedented urban growth (Hugo 2006, 69). Similarly, people from interior West Kalimantan were resettled in cities downstream during the unrest of the 1960s (Eilenberg 2012).

Between 1960 and 1964, 74% of population movements were still to rural areas and only 26% to urban areas (McNicoll 1968, 37). But since the 1970s, the urbanization of the Indonesian population has risen dramatically, from 17.3% in 1971 to 43.1% in 2005 (Ananta and Arifin 2008, 17, 67). Between 2000 and 2010, the proportion of the urban population to the total population

increased from 42% to 50%, although the rate of urban population growth decreased from 4.4% to 3.3% (Firman 2016, 258). Between 2000 and 2010, the proportion of the population living in cities increased in all but two provinces, although there were still large differences between provinces (Firman 2016, 263). Urbanization was still strongest in Java (68% in 2010), but between 2000 and 2010, the annual rate of population growth in the small and medium cities in the Outer Islands was higher than in Java (Firman 2016, 266). Migration intensity in urban areas in 2010 was “two to three times higher than in rural areas” (Muhidin 2014, 326).

### 1.3 International migration

#### 1.3.1 In-migration

Indonesia is a net exporter of labor, as are the Philippines and Vietnam, while more developed countries such as Taiwan, Hong Kong, Japan, Singapore and Malaysia are net importers (Skeldon 2006). This may be attributed in part to the demographic characteristics of Indonesia, which feature large growth of the labor force coupled with high levels of unemployment, whereas receiving countries experienced a growth in demand for low-skilled labor (Hugo 2007). However, this has not always been the case.

In colonial times, in-migration occurred on a much bigger scale than out-migration. The presence of European colonial elites was correlated with the intensity of colonial activity in an area. Even more substantial was the influx of Chinese, and to a smaller extent Indians and Arabs, who tended to take up commercial positions as intermediaries between the colonial powers and the indigenous population, and were hence an important presence in small towns. Between 1860 and 1930, the indigenous population of Indonesia increased from 15 to 59 million, the European population increased from 43,876 to 240,417 and the Chinese population increased from 221,438 to 1,223,214 (Hugo 1980, 118). Thus, by 1930, the Chinese and other Asians would have made up around 2% of Indonesia’s total population.

The UN’s data on foreign-born residents in Indonesia, which in all likelihood is derived from Indonesia’s population censuses and intercensal surveys, show that the number of foreign-born

persons living in Indonesia decreased by 38% between 1990 and 2005 and then rebounded somewhat (+14%) to reach 328,846 in 2015<sup>13</sup> (see Table 4), which is more than 10 times less than the number of Indonesian out-migrants living abroad. The data also show that the major source of in-migrants is still China, despite there being more than three times fewer Chinese-born people in Indonesia in 2015 than in 1990 (Table 5).

Hugo (2007) characterizes recent in-migration as “an influx of skilled expatriates due to the inability of Indonesian training institutions to supply enough professionals (especially engineers, scientists, managers, accountants, etc.) [...] from Australia and other more developed countries, as well as the Philippines and India.” In addition, he mentions that there were many Asian migrants due to “high levels of investment in Indonesia by companies from Taiwan, Japan, South Korea, and Hong Kong prior to the crisis.” This characterization corresponds with the distribution of foreign workers recorded by the Ministry of Manpower as reproduced in Ananta and Arifin (2008, 63), which shows that more than half of foreign workers in 2006 were living in Jakarta, where most “engineers, scientists, managers, accountants, etc.” may be expected to be employed. The strong decline between 1995 and 2000 confirms Hugo’s (2007) suspicion that the number of foreign skilled professionals in Indonesia declined as a result of the financial crisis.

<sup>13</sup> These numbers are at odds with contentions such as those of Ananta and Arifin (2014, 37) who say that Indonesia has been “attracting an increasing number of foreign workers and investors to various parts of the country in recent years”. Ananta and Arifin base this on “data from the Ministry of Manpower,” which say that “the number of foreign workers in Indonesia rose significantly from just 18,138 in 2003 to 60,902 in 2006, and then more than tripled [*sic*] within three years to reach 102,288 in 2010 and further to 118,177 in 2011” (2014, 37). Since Ananta and Arifin do not cite the specific document or dataset they refer to, we do not know what methods are used in the production of these numbers and consequently we do not know what causes these numbers to show a sixfold increase, whereas the UN data for this period show relative stability. Perhaps it has to do with improvements in data collection methods, so that the proportion of migrants that was recorded increased over time. It seems safe to assume that the data from the Ministry of Manpower are not representative of the entire population of foreign workers in Indonesia. In any case, such characterizations are misleading because they fail to reflect the fact that the number of foreign workers had strongly declined after the financial crisis, and 2003 is therefore not a neutral reference point from which to understand the trend in the medium to long term.

**Table 4. In-migrant stocks in Indonesia.**

International in-migrants living in Indonesia at mid-year	1990	1995	2000	2005	2010	2015
Male in-migrant stock	229,885	191,600	153,315	165,493	174,864	189,800
Female in-migrant stock	235,727	187,360	138,992	124,075	130,552	139,046
<b>Total in-migrant stock</b>	<b>465,612</b>	<b>378,960</b>	<b>292,307</b>	<b>289,568</b>	<b>305,416</b>	<b>328,846</b>

Note: In-migrant stocks = number of people living there at mid-year, as opposed to flow: number of people moving there in a particular time frame.

Source: UN 2015b.

**Table 5. In-migrant stocks in Indonesia per country of birth, 1990–2015.**

Country of birth	1990	1995	2000	2005	2010	2015
China	258,310	170,906	83,502	72,094	65,307	70,319
Republic of Korea	10,866	7,189	3,513	15,679	28,850	31,064
United Kingdom of Great Britain and Northern Ireland	20,883	13,817	6,751	16,969	28,276	30,446
Singapore	4,346	2,875	1,405	10,537	20,346	21,907
Thailand	1,458	964	471	10,085	20,346	21,907
Timor-Leste	729	71,378	142,028	78,666	20,346	21,907
Japan	12,535	8,293	4,052	10,237	17,080	18,391
United States of America	8,745	5,786	2,827	6,654	10,909	11,746
India	7,818	5,172	2,527	6,465	10,818	11,648
Jordan	4,851	3,209	1,568	6,000	10,818	11,648

Note: The dataset appears to contain some errors as the migrant stocks for Singapore, Thailand and Timor-Leste are identical to each other in both 2010 and 2015; the same is observed for those of India and Jordan.

Source: UN 2015b.

### 1.3.2 Out-migration

The Dutch colonial Government of Indonesia was generally opposed to the out-migration of the labor force, but did not effectively prevent and occasionally actively facilitated the movement of ‘contract-coolies’ who went to work on plantations in Malaya, Surinam, New Caledonia and some other countries (Hugo 1980; Bachtiar 2011, 29). Spontaneous out-migration continued without government support after independence. Only since the 1970s has the Indonesian Government actively managed, and eventually encouraged, labor migration to other countries (Ananta and Arifin 2008, 21). More precisely, the Indonesian Government has, in collaboration with governments of certain receiving countries, employers and private recruitment agencies, managed the recruitment, training and settlement of low-skilled contract workers (Silvey 2007, 270; Bachtiar and Prasetyo 2017).

To sketch recent trends in international out-migration, authors have for the most part (e.g. Hugo 2007; Bachtiar 2011; Ananta and Arifin 2014) relied on data from the National Board for the Placement and Protection of Indonesian Overseas Workers (*Badan Nasional Penempatan dan Pelindungan Tenaga Kerja Indonesia*; BNP2TKI), which keeps records on the Indonesian migrant workers who are sent abroad under its coordination. According to the numbers cited by Bachtiar (2011, 33) the number of migrants *sent* abroad each year increased from 175,000 in 1994, to 295,000 in 2001, to 645,000 in 2008 and then decreased to 495,000 in 2012. However, the data that BNP2TKI keeps is unreliable<sup>14</sup> and at best covers only the low-skilled migrants who are employed through their schemes, to the exclusion of highly skilled

<sup>14</sup> See Section 3.3.

migrants and irregular/undocumented migrants, such as the undocumented workers from Kalimantan in Malaysia (e.g. Ishikawa 2012).

The UN dataset is at least in principle more complete in scope, as it attempts to cover all documented migrants in all countries, and not just those sent through the government's placement programs.<sup>15</sup> But it is not unproblematic either, since it combines different sorts of data collected by institutions from different countries. Nor does it say anything about undocumented migrants, of which the number is estimated by Tirtosudarmo (2009, 25) to be “two to four times higher than the [number of] documented migrants”. Another limitation is that this dataset only informs about the ‘stock’ rather than the ‘flows’ of migrants. Finally, the numbers from this dataset do not always match the numbers cited by other sources, and it is difficult to ascertain which are closer to the truth. For example, according to the UN dataset, there were 3.5 million Indonesians living abroad in 2010 and 3.9 million in 2015. But Tirtosudarmo wrote in 2009 (25) that “[it] is estimated that at present there are about four million documented migrant workers from Indonesia”; the World Bank estimated the stock of Indonesian migrants abroad in 2013 to have been 4.1 million, or 1.6% of Indonesia's population (World Bank 2016, 114); and in 2015, the International Federation of Red Cross and Red Crescent Societies (IFRC) wrote that there were approximately 6 million Indonesians working abroad (IFRC 2015).<sup>16</sup> Nevertheless, the UN dataset is certainly more accessible and legible than BNP2TKI's records, and allows for some interesting observations.

First, if we look at the total stock of Indonesian migrants living abroad as shown in Table 6, we see an increase from 1.6 million in 1990 to 3.9 million in 2015. Second, the number of male out-migrants was 48% higher than that of female out-migrants in 1990, 39% in 1995, and has been around 30% higher since. Then, looking at the major areas of destination as shown in Table 7, we see that the overwhelming majority of international migrants stay within Asia. Specifically, in 2015, 46.5% of out-migrants lived in Western Asia (Middle East)

and 32.4% in Southeast Asia. Migrant stocks in the second most important area, Western Europe, have decreased by 20%, while migrant stocks in Northern America and Oceania doubled between 1990 and 2015. In general, there are many more Indonesian out-migrants living in developing countries (3,461,340 in 2015) than in developed countries (415,399 in 2015; UN 2015b).

Among the top destination countries, shown in Table 8 and visualized on a world map in Figure 7, Saudi Arabia and Malaysia are clearly the most important. Saudi Arabia hosted 33% of all Indonesian out-migrants in 2015, Malaysia 28%. These results are in accordance with the data on numbers of workers being sent abroad (Ananta and Arifin 2008, 60; Bachtiar 2011, 33). Although the data on migrant flows naturally show more year-to-year variability than do the data on migrant stocks, they too reveal Malaysia and Saudi Arabia as the top destination countries. The availability and accessibility of job opportunities are probably an important determining factor for this distribution. In addition, the popularity of Malaysia can be attributed to its cultural similarity and geographic proximity, whereas Saudi Arabia is attractive for Muslim migrants who want to make a pilgrimage to Mecca. Hong Kong, Singapore and Taiwan are also popular, perhaps because the wages are relatively higher there, although it should be noted that this does not always result in the capacity to remit more money. Additionally, there are cultural differences that are perceived as ‘dangers’. For example, it may be difficult to pray five times a day and find halal food, and women may be ‘corrupted’ by untraditional norms (Balakrishnan 2013; Bach 2014; Bachtiar and Prasetyo 2017). Another part of the explanation for this pattern of migration is that the Indonesian Government has collaborated with all these governments to encourage these flows, although on the one hand illegal migration (which includes regular migrants overstaying their visits) and labor protests, and on the other reports of migrant abuse have at times led both Indonesia and receiving governments to temporarily restrict migration (Silvey 2004; Skeldon 2006). Notorious deportations from Malaysia in the early 2000s have at times resulted in human rights violations to the point of death of the deported migrants (Ford 2006a).

There is remarkable continuity in the destination countries. Nine of the top 10 destination countries in 1990 were still in the top 10 in

<sup>15</sup> See Section 3.3.

<sup>16</sup> This estimate may include undocumented migrant workers.

**Table 6. Indonesians living abroad, by gender, 1990–2015.**

Indonesians living abroad	1990	1995	2000	2005	2010	2015
Male out-migrant stock	975,619	1,134,306	1,323,638	1,527,726	1,981,814	2,179,458
Female out-migrant stock	659,884	815,033	1,011,014	1,186,526	1,510,642	1,697,281
Male/female ratio (%)	148	139	131	129	131	128
<b>Total out-migrant stock</b>	<b>1,635,503</b>	<b>1,949,339</b>	<b>2,334,652</b>	<b>2,714,252</b>	<b>3,492,456</b>	<b>3,876,739</b>

Source: UN 2015b.

**Table 7. Indonesians living abroad by major area of destination, 1990–2015.**

Major area of destination	1990	1995	2000	2005	2010	2015
Asia	1,315,257	1,613,070	1,969,375	2,332,528	3,091,353	3,456,635
Western Asia	839,039	913,746	984,664	1,122,871	1,539,080	1,803,604
Southeastern Asia	287,178	471,645	706,902	888,791	1,183,361	1,257,190
Eastern Asia	116,025	141,691	178,809	195,977	218,042	236,437
Southern Asia	73,015	85,988	99,000	124,889	150,870	159,404
Europe	207,671	199,865	198,602	195,830	190,888	186,037
Western Europe	202,833	191,153	185,687	179,684	169,961	163,113
Northern America	55,685	67,981	82,908	93,090	104,989	112,877
Oceania	48,340	57,006	68,997	75,622	85,487	98,843
Africa	8,035	10,794	14,016	16,010	18,102	20,408
Latin America and the Caribbean	515	623	754	1,172	1,637	1,939

Source: UN 2015b.

2015.<sup>17</sup> Furthermore, of the top 20 destination countries in 1990, 17 were still top 20 in 2015. The other three did not fall far in the rankings: Papua New Guinea fell to 22nd, Timor-Leste to 25th and France to 27th. This shows that the history of migration movement is another crucial determining factor for current migration flows: Indonesians migrate most to countries that have a history of hosting Indonesians and where, as a result, migrant networks have become established. Interesting exceptions are Jordan and South Korea – for example, in 1990, only 65 Indonesians were recorded as living in South Korea, compared with over 33,000 in 2015. However, this may also have to do with improvements in methods used or administrative capacities for recording migrants.

17 Between 1990 and 2015, Singapore ‘rose’ from 11th to 4th most popular destination country, and Qatar fell from 4th to 12th.

There are clear gender divisions among the types of occupation of international migrants. In general, most domestic workers and caregivers are women, and most construction, agriculture and manufacturing workers are men (Tirtosudarmo 2009, 26; Balakrishnan 2013, 152–153).<sup>18</sup> Official migration is dominated by women, whereas irregular migrants tend to be men (Hugo 2007). There are also clear differences in type of occupation taken up by migrants per receiving country: “Domestic helpers, around 80 percent of total Indonesian migrant workers, are exported to Hong Kong, Taiwan, Singapore, Malaysia and the Middle East. Construction and plantation workers [are] mostly employed in Malaysia, while manufacturing

18 “Approximately seventy two percent of Indonesian migrant workers are women, with almost ninety percent of them employed as domestic workers in the Middle East and South-East Asian countries.” (Tirtosudarmo 2009, 26).

**Table 8. Outmigrant stock from Indonesia living in the 23 countries that were among the top 20 most popular destination countries in 1990, 2015 or both, between 1990 and 2015.**

Ranking 2015 (1990)	Country	1990	1995	2000	2005	2010	2015
#1 (#1)	Saudi Arabia	635,007	650,793	668,666	825,998	1,070,951	1,294,035
#2 (#2)	Malaysia	252,710	421,423	634,380	775,648	1,024,344	1,070,433
#3 (#8)	United Arab Emirates	46,598	68,471	94,285	121,621	267,618	260,312
#4 (#11)	Singapore	21,520	34,241	50,277	91,090	136,979	163,237
#5 (#6)	Bangladesh	70,627	84,052	97,476	123,383	149,290	157,862
#6 (#5)	Hong Kong	90,186	100,652	111,117	121,316	131,809	134,593
#7 (#3)	Netherlands	186,717	173,584	166,679	155,822	141,028	132,159
#8 (#10)	Kuwait	38,147	34,017	43,100	52,859	75,801	99,485
#9 (#7)	United States of America	48,387	59,258	72,552	81,051	90,544	96,734
#10 (#9)	Australia	39,102	45,651	58,670	60,300	71,160	84,026
#11 (#17)	Oman	4,605	12,728	17,274	19,887	25,710	70,114
#12 (#4)	Qatar	108,178	130,606	133,562	64,612	48,072	43,049
#13 (#12)	China	21,305	24,962	28,619	31,573	34,528	39,736
#14 (#52)	Republic of Korea	65	8,121	18,763	18,483	25,526	33,340
#15 (#22)	Japan	3,624	7,052	19,347	23,481	24,895	27,354
#16 (#16)	Bahrain	6,151	7,640	9,152	14,859	23,845	22,513
#17 (#13)	Germany	8,819	9,827	10,834	14,910	18,985	19,639
#18 (#14)	Canada	7,298	8,723	10,356	12,039	14,445	16,143
#19 (#19)	Libya	4,228	6,863	9,612	10,591	11,587	13,064
#20 (#45)	Jordan	183	6,415	12,641	18,257	23,478	10,995
#22 (#15)	Papua New Guinea	7,118	7,293	5,460	9,667	8,218	8,343
#25 (#18)	Timor-Leste	4,485	4,893	5,337	5,666	5,501	5,426
#27 (#20)	France	3,852	3,977	4,101	4,242	4,572	4,946

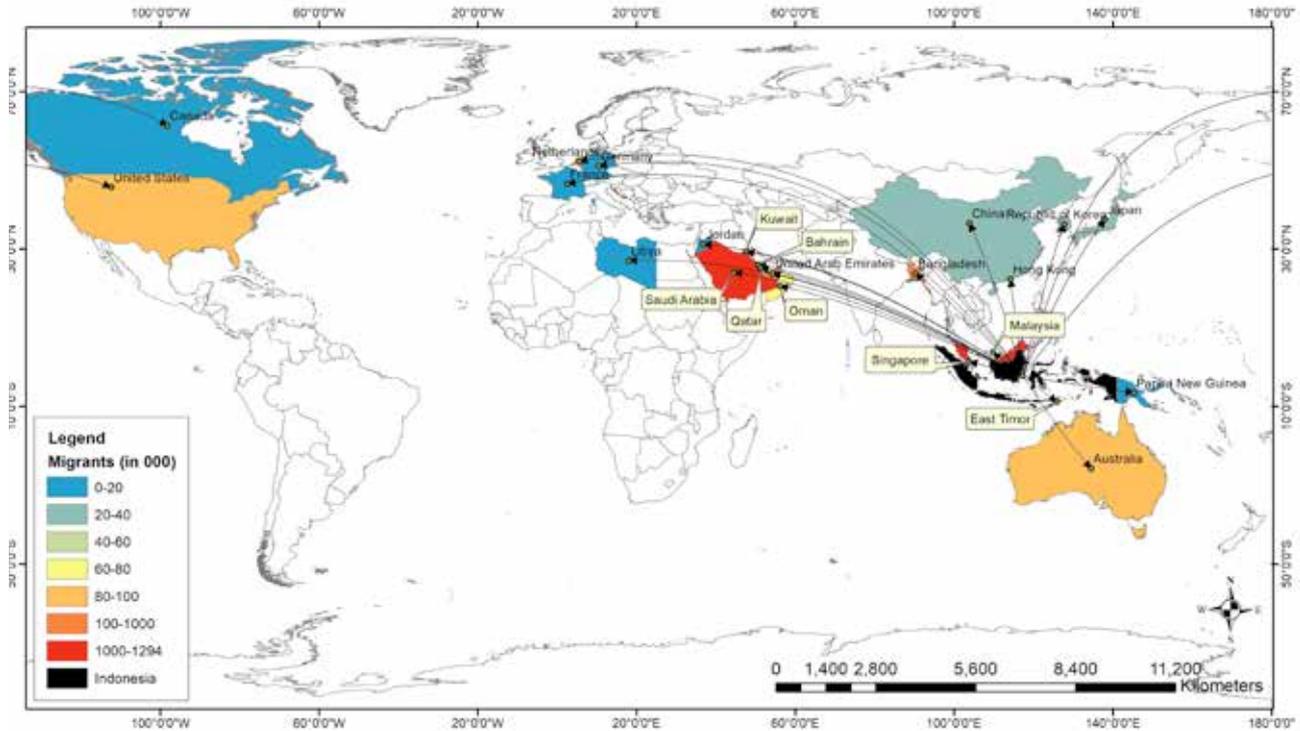
Based on UN 2015b.

laborers are employed in South Korea, Taiwan and Malaysia” (Tirtosudarmo 2009, 31). These patterns are reflected by the extremely gendered patterns of where migrant workers were sent in 2001 and 2005 as shown by Tirtosudarmo (2009, Table 4.2). Migrants to Europe, the United States, Japan and South Korea were almost exclusively men; migrants to Singapore, Hong Kong, Taiwan and the Middle East were almost exclusively female; and migration to Malaysia was mixed.

Furthermore, it is worth noting that most international low-skilled migrants seem to be circular migrants, who eventually return to Indonesia. In a 2009 survey of low-skilled

Indonesian migrant workers in Peninsular Malaysia, Balakrishnan (2013)<sup>19</sup> finds that three quarters intended to return to Indonesia. Such circular migrants have different characteristics from permanent migrants. Balakrishnan (2013, xii) finds that “circular migrants are more likely to be young single males, while permanent migrants are more likely to be females with a working spouse in the host country”. He reports that circular migrants were better educated, most likely working on plantations or doing domestic work, whereas permanent migrants were more

<sup>19</sup> See Section 3.3, [C5].



**Figure 7. Number of Indonesians living in the top 23 destination countries in 2015.**

Based on the United Nations Global Migration Database (UN 2015b).

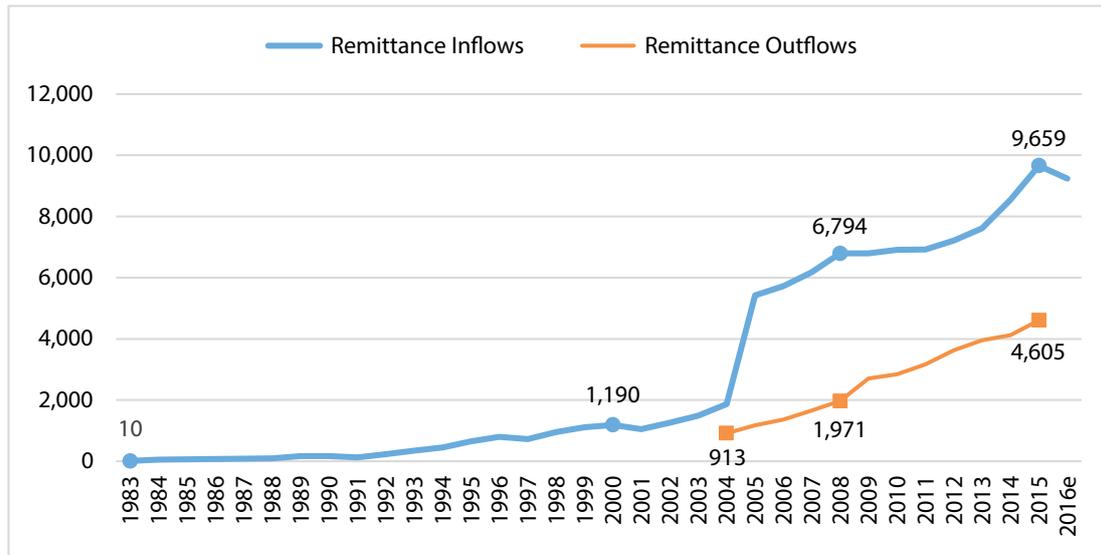
likely to have only primary or no education and worked in construction, services and other sectors (Balakrishnan 2013, 299). Adverse policy – such as Malaysia’s in-migration policy which limits the possibilities for legal, circular migration – was found to make things more difficult for circular migrants, who typically had poorer working conditions, faced larger constraints in visiting their home countries, and did not create human capital that could be transferred back home. But they did have stronger social commitment to the home country, send more remittances and have higher education (because they are younger).

Finally, there are several migration flows other than that of low-skilled labor. Indonesians moving to Organisation for Economic Co-operation and Development (OECD) countries tend to settle permanently and be highly skilled.<sup>20</sup> The largest group is in the Netherlands, which of course reflects its historical colonialist relation to Indonesia (137,485 Indonesian-born residents in 2002), but the communities in the United States and Australia are growing the quickest (respectively

<sup>20</sup> Of those Indonesians who migrated to OECD countries in 2011, 41.7% were tertiary educated (World Bank 2016, 144).

75,370 and 56,914 Indonesian-born residents in 2005; Hugo 2007). It is also not uncommon for women to marry men from other Asian countries and permanently settle there, which, for example, has created a significant community in Taiwan (Hugo 2007), with an estimated flow of over 10,000 Indonesians marrying and moving to Taiwan in 2003 (Ananta and Arifin 2014, 33). Jones (2012, 2) estimated that about 1% of Indonesian marriages were international marriages. It is said that Indonesians increasingly study abroad. Australia, Singapore and Malaysia are the main destinations, although the United States is particularly popular for postgraduate studies. Ananta and Arifin (2014, 32) report that there are no statistics of how many Indonesians study in Singapore and Malaysia. The number of Indonesians holding student visas in Australia rose slightly between 2005 and 2011, from 9,827 to 11,671 (Ananta and Arifin 2014, 32–33).<sup>21</sup>

<sup>21</sup> The magnitude of these numbers is at odds with the significantly higher numbers of the Australian Government Department of Immigration and Border Protection cited by Hugo (2007), according to which a steady 20,000 Indonesian students have *arrived* in Australia each academic year between 1998 and 2005.



**Figure 8. Remittance flows into and out of Indonesia in USD million.**

Based on numbers reported by Bank Indonesia, as compiled by the World Bank (2017a, 2017b), cf. World Bank (2016); inspired by a similar, but not up-to-date, figure by Ananta and Arifin (2014, 3).

### 1.3.3 Remittances

Labor migrants are seen by the Indonesian Government as “a promising non-oil export commodity” (Ananta and Arifin 2014, 34) because of the remittances they send and take back home. Bank Indonesia reported an inflow of remittances of USD 9,659 million for 2015, which was the 14th highest of all countries in the world (the top three were India: USD 69 billion; China: USD 64 billion; and the Philippines: USD 28 billion; World Bank 2017a). This was the equivalent of 1.1% of GDP, which is considerable but not spectacularly high, if we compare it with 1.4% in Peru, 9.8% in the Philippines and 28.8% in Tajikistan (World Bank 2017a).

The trend in Figure 8 shows a very marked increase in remittances sent to Indonesia, which is linked to the growth in international migrant workers sent abroad as intended and facilitated by the government. However, as can also be seen in Figure 8, remittances into Indonesia are estimated to have fallen in 2016 by 4.4% compared with 2015. This was part of a general slump in remittances to developing countries, which the World Bank attributed to “weak economic growth in Europe, the Russian Federation, and the Gulf Cooperation Council (GCC) countries (cyclical factors), and exchange controls, burdensome regulations, and anti-

migrant policies in many countries” (World Bank 2017c, 1). Remittances to Indonesia were most affected by the weak growth in Gulf countries, and were connected to low oil prices as well as to a ban on sending workers to the Middle East, which was part of the Indonesian government’s efforts to protect its labor force from reported abuse (World Bank 2017c, 21). With stabilizing oil prices, however, remittances are expected to “rebound modestly” in 2017 (2.2% growth; World Bank 2017c, 22).

When interpreting these numbers on remittances, it should be kept in mind that they are calculated simply by multiplying the average amount of money sent by remitters with the stock of migrants abroad, and that the latter are provided by BNP2TKI (BI 2009b, iii). As we have seen above, these numbers are at best an estimation of the number of migrants that have been processed by official recruitment agencies, and say nothing about migrants who moved through unofficial channels. Although Bank Indonesia (see data source [E1]) claims to make statistical adjustments for irregular migrants in its calculation of international remittances, it is not reported what assumptions they make about the number of irregular migrants or what these are based on. According to Hugo (2007), the official estimation could be a severe underestimation. He estimates that “official remittances probably represent less than a half of the total”.

Bank Indonesia's 2008 survey on remittance patterns among 2000 international migrant workers found that they tended to earn between USD 100 and 200 per month, with male workers and those in the formal sector (agriculture, manufacturing, construction) earning more than female workers and those in the informal sector (domestic workers and drivers; BI 2009a, 34–36). The proportion of income remitted back to Indonesia was found to vary greatly with country of residence and type of occupation (BI 2009a, 46). On average, informal workers remitted 44% and formal workers 36% of their wages. A total of 82% of remitters were found to use official banking services for sending the money. Finally, more than half of the households indicated they used the remittances to cover daily necessities such as food and transportation, almost 30% used remittances to build or renovate homes and 26% used them to cover school fees.

A survey by the International Organization for Migration (IOM) of 500 remittance beneficiaries (IOM 2010b) in six major migrant-sending provinces found that 45% of remittance-receiving households received remittances three or four times per year, and the average amount sent per transaction was IDR 3 million (USD 303). It further found that most migrants used official channels to send remittances: 52% used Bank Negara Indonesia (BNI), 20% used Bank Rakyat Indonesia (BRI) and 17% used Western Union, whereas only 3% hand-carried the money home (IOM 2010b, 43–49). Most households used remittances to pay for basic expenditures such as food, transportation and education. Furthermore, 45% used remittances to pay off debts, and 37% to deposit as savings (IOM 2010b, 50). A survey of 300 Indonesian remittance senders living in two provinces of Malaysia found that they sent an average of USD 168 per remittance (IOM 2010b, 80), with 33% of migrants sending money home monthly, and 24% every other month (IOM 2010b, 81).

Turning to the outflow of remittances, the data from World Bank (2017b) show a strongly increasing trend, with a fivefold increase in outward remittances between 2004 and 2015, reaching almost half the value of inward remittances by 2015 (USD 4.6 billion). Ananta and Arifin (2014, 37) remarked on this trend, that “if [it] continues, Indonesia will experience deficit remittances in the next 10 years”. However,

the idea that outflows of remittances are rapidly rising is questionable considering that these data are estimated based on unreliable data about the number of foreign workers in Indonesia, their wages and the proportion of their wages they send home (BI 2009b; see ‘IMF’ in Section 3.4). For example, we have seen that the Ministry of Manpower recorded a strong increase of foreign workers between 2003 and 2011 from 18,000 to 118,000 (Ananta and Arifin 2014, 37), whereas such an increase is not at all reflected in the UN's (2015b) data on migrant stocks in Indonesia. Moreover, it is unclear how the proportion of wages remitted home is estimated in the absence of a published survey on remittance patterns among foreign workers in Indonesia. Finally, the data on outflow of remittances only go back to 2004, a moment in time when the international migrant stock in Indonesia was temporarily decreased as a result of the 1998 political and economic crisis. The data are therefore not suitable for extrapolating long-term trends.

## 1.4 Conclusion

While we may reasonably conclude that migration is increasing in importance, it is not possible to simply state that internal population mobility has increased, because it is a dynamic, heterogeneous and multifaceted factor. We have seen that there are many options as to the scales, places, times, genders and ages for which trends may be described. We have also observed that migration intensity and trends in migration intensity vary between these options. For example, we have noted that despite an increasing trend in the proportion of interprovincial *lifetime* migrants, there was a nationally decreasing trend in the proportion of interprovincial *recent* migrants. We have not found an explanation for the discrepancy between lifetime and recent interprovincial migration. Moreover, several variables are not well measured or reported, such as internal remittances, the flow of international out-migration and migration trends on a subprovincial level. Nevertheless, some trends and patterns can be described based on the available evidence.

In 2010, 28.8 million individuals, or 11.4% of the population lived in a province different from their province of birth, which is a considerable increase when compared with 7% in 1980. In 2010, 19.1% of the population were interdistrict migrants. In East Kalimantan, as much as 36.8%

of the population came from a different province. Nationally, 72.7% of those classified as lifetime interprovincial migrants were living in cities, indicating that migration fuels urbanization. However, this effect tended to be lower or opposite in Kalimantan.

By comparison, 3.5 million Indonesians were found to be living abroad in 2010. Thus, as might have been expected, Indonesians migrate far more often to a place within Indonesia than abroad, even though this number probably does not include many of the undocumented migrants. Nevertheless, the significance of international migration as temporary labor migration is rapidly increasing. In 2015 there were almost 3.9 million Indonesians living abroad. International migration generates an increasing amount of remittances, an estimated USD 10 billion in 2015 (1.1% of GDP), which enhances the economic well-being of the recipients, might stimulate regional development and also fulfills a national function as a source of foreign exchange. This too might be a severe underestimation.

When we are interested in specific groups of people, it is important to be aware that migration rates vary and fluctuate to a large extent, which renders less meaningful statistics that are aggregated at the national level. Such aggregate statistics are useful for linking migration patterns to the national political–economic context and for comparing the Indonesian situation with that of other nations. But to understand migration patterns in a given place at a certain time, for a certain group of people, it is necessary to look at more specific statistics that are largely explained by specific contexts. The volatility (over time) and variability (over scale, space, age,

gender and type of destination) of migration variations cannot be explained by aggregate statistics at the national level. There are undoubtedly interesting context-specific explanations for these differences, but to examine their details is beyond the scope of this paper.

Furthermore, the fact that there is a large fluctuation over time, implies that we need recent data in order to accurately estimate current patterns of internal migration. Unfortunately, analyses of the data from the most recent intercensal population survey (SUPAS 2015) have, to our best knowledge, not yet been published. This points at a broader issue concerning the existence and accessibility of data, and analyses thereof, which will be discussed in Section 3. In that section, we will give an overview and assessment of data sources. We will identify questions and indicators on which there is currently insufficient data available. We will also indicate which sources of information could be analyzed and interpreted more deeply, particularly in order to investigate the relationship between migration-, forest- and land-use-related issues.

Besides the collection, analysis and description of data on migration patterns, their interpretation is a different matter again. How do we make sense of these patterns, in terms of their causes and effects? How and why do many young Indonesians move to cities and abroad, and how does that affect the places they leave behind? What happens to a province when over a third of its inhabitants were born elsewhere? Questions arise concerning economic development, well-being, family life, gender, environmental management and more. In the following section, we will look at research addressing such questions in Indonesia.

# 2 Drivers and effects of migration and their relation to forests

## 2.1 Introduction

This section gives an overview of research on the drivers and effects of migration in Indonesia, with special attention given to research relating migration to forests and research that is located in Kalimantan. It builds on Black et al.'s (2011) conceptual framework regarding the effects of environmental change on migration, which formalized a consensus among scholars of migration that migration can rarely be explained with reference to a single factor, because "migration is a multi-causal phenomenon in which a range of factors are inter-related" (Black et al. 2008, 7). Hence, instead of trying to identify and count "environmental migrants", Black et al. (2011, S4) proposed it was more useful to look for "the net effect of environmental change on migration in aggregate". This framework conceptualized migration as the result of "an assemblage of drivers of migration" (Black et al. 2011, S4) and distinguished five 'families' (S3) of migration drivers: (1) economic, (2) political, (3) social, (4) demographic, and (5) environmental. These families of drivers constitute the 'macro' context within which the decision to migrate takes place. Additionally, Black et al. (2011, S5) acknowledged that these drivers vary geographically and change over time. Finally, the decision to migrate is also influenced by characteristics of the household and by institutional, social, legal and political 'obstacles and facilitators'.

While Black et al.'s (2011) framework aids understanding of the effects of environmental change on migration, we also want to look at how migration in turn affects the environment. The limitations of Black et al.'s framework for this purpose are (1) that it takes environmental change to be an independent variable and (2) that it looks at migration only as an outcome and not as a factor that might in turn affect other factors. We therefore expand on their model by adding its reverse.

Where Black et al. advocated an understanding of migration as a multi-causal phenomenon, we shall also understand environmental change as a multi-causal phenomenon, influenced by migration as well as a range of other, interdependent factors. Accordingly, we will talk not of 'families of drivers,' but of *types of factors*, each of which function as both drivers and effects of each other.

In what follows, we will summarize and discuss the results of previous research on drivers and effects of migration in Indonesia. We find the literature on migration in Indonesia to be relatively comprehensive, in that all these types of factors have been discussed. We start with our primary focus of investigating the relationship between migration and the environment. Subsequently, we will consider economic, social and political factors. We have not included a separate section here on what Black et al. (2011) call "demographic" factors: structure and size of the population and the prevalence of disease. Many such factors have been addressed in Section 1. Moreover, as Black et al. (2011, S6) indicate: "The effect of demographic factors on migration is most likely to be seen through interaction with other drivers." Indeed, demographic factors are at play throughout the following discussions. In conclusion, we will draw some lessons and identify possible connections between different themes that could be profitably studied further.

## 2.2 Environmental factors

### 2.2.1 How much environmental degradation do immigrants cause?

Research on the relationship between migration and the environment has for decades focused on the question of whether internal migrants cause deforestation in their destination sites, and if they do, how much. For example, in 1985, Vayda and

Sahur wrote about “the actual or potential impact of migrant Bugis farmers on the East Kalimantan forest” (1985, 83). They found that spontaneous Bugis migrants, without requiring government assistance, can quickly transform forested environments into pepper farms. They also found that Bugis’ mobility was antithetical to sustainable farming practices. Bugis migrants did not invest in soil conservation, because they anticipated being able to move to and clear new forests once the soil they were currently farming had been degraded.

Although Vayda and Sahur (1985) looked at spontaneous Bugis migrants, much of the debate about environmentally destructive immigrants in the 1980s and 1990s was in fact centered on a critique of Indonesia’s transmigration program. Paradigmatic is Abdullah’s (1996) case study, which describes environmental degradation caused by transmigrants in South Kalimantan. Soil conservation measures were too expensive for the Javanese transmigrants. When the plots that transmigrants had been allocated stopped producing sufficient rice as a result of decreasing fertility, transmigrants cleared forest beyond the borders of the resettlement site, up to a total of 9 km<sup>2</sup> around the case study settlement site (Abdullah 1996, 330).

Despite the straightforwardness of such observations, case studies could not settle the debate that arose concerning the *extent* to which the government program should be held accountable for deforestation. The paradigm of the environmentally destructive immigrant has given rise to problems of quantification, starting with evaluations of Indonesia’s transmigration program and continuing to date. A 1986 article in *The Ecologist* is often cited as one of the first articles to blame transmigration for severe environmental impacts (Secrett 1986; Whitten 1987; Fearnside 1997; Barter and Côté 2015). In response, Whitten (1987, 284) seeks “to correct misconceptions caused by an influential article on transmigration (Secrett 1986)” by pointing at the lack of sound ecological data, the relatively small proportion of forests allocated to official transmigrants and the fact that the deforested areas had already been classified as ‘conversion forests’ by the government.<sup>22</sup> Whitten argued that

spontaneous migrants were a greater potential threat, as they were more numerous and harder to control, and indicated that measures should focus on better regulating spontaneous migration. Fearnside (1997) agrees that the estimates of deforestation vary, but, referring to the classification of transmigration sites as ‘conversion forests,’ “[found] it difficult to absolve transmigration of blame on the basis of a bureaucratic classification by the Department of Forestry” (Fearnside 1997, 562). He therefore maintains that “[t]ransmigration has been an important cause of forest loss in Indonesia” (Fearnside 1997, 553).

Although a lack of detailed, reliable data on deforestation before 2000 complicates the assessment of the extent of deforestation, a strong consensus exists about the fact that transmigration caused deforestation. Barter and Côté (2015), for example, while critical of the notion that transmigration caused violent conflict in Indonesia, take it for a fact that it caused environmental degradation, including deforestation. Potter (2012) describes how official transmigration continues to this day, on a smaller scale and through direct collaboration between sending and receiving districts rather than coordinated by the central government. She describes how the “new transmigration paradigm” is closely connected to the labor needs of expanding oil palm plantations, but fails to evaluate the social and environmental costs. Despite these costs not being analyzed in the paper, Potter is confident that new transmigration is “likely to have serious environmental implications” (Potter 2012, 283).

Since the decline of the transmigration program, attention has mostly shifted toward spontaneous migration. Better data on deforestation in Indonesia are available from 2000 onwards, and statistical analysis reveals a relationship between immigration and deforestation. Darmawan et al. (2016), comparing data on deforestation from satellite images between 2000 and 2008 with the results of the housing and population censuses of 2000 and 2010 and the intercensal survey of 2005, find a strong relation between migration and deforestation. Their results suggest that “8 migrants are associated with about 1 ha of deforestation in the subsequent five-year interval” (13). A longitudinal, multi-disciplinary case study of a rural area in Central Sulawesi has yielded a similar result. It found that “a 1% increase in population [which in the area is for a large part caused by immigration] leads to a

22 “Thus the focusing of ire upon the transmigration program misses the point that the fate of forests in almost all areas of Indonesia has been determined” (Whitten 1987, 242).

0.93% increase in area cultivated [which implies forest encroachment]" (Maertens et al. 2002, 16). Another case study, which concerned the relation between migration and coastal degradation, revealed a correlation between the proportion of households with one or two migrants and coral reef quality (Cassels et al. 2005).

### 2.2.2 Intermediary variables between migration and deforestation

However, correlations between immigration and environmental degradation do not necessarily imply causation and they stand in need of explanation. Interpreting such data is complex and requires a contextual, qualitative approach. Researchers consistently caution that the empirical correlation should be interpreted with care. Cassels et al. (2005, 365) find that, when it comes to environmental impact, "ecological as well as social context matter more than migrant status, yet the two are interconnected". Even though the migrants in North Sulawesi tend to live in villages with poorer quality coral reefs, the authors "cannot conclude that migration is directly connected with poor environmental quality via destructive fishing behavior" (Cassels et al. 2005, 358). Rather the impact of migrants is mediated by how they are incorporated into the villages. An important mediating variable is marriage. Migrants who are married to a non-migrant were found to behave less destructively than migrants who are married to migrants. An even more important variable is the fishing sector that the immigrant is incorporated into. Migrants who work in the industrial fishing sector have a greater environmental impact than migrants who work in the subsistence sector, yet within these sectors, migrants do not exhibit more destructive fishing behavior than non-migrants. Thus, Cassels et al. (2005, 356) assert that "it is not necessarily migrants per se or household behavior that is associated with degraded coral reefs or destructive resource extractive behaviors, but industrial fishing that relies on migrant labor to fulfil their contracts". The paper fails to explain why the industrial fishing sector relies more on migrant than on non-migrant labor.

Similarly, the correlation between population growth and agricultural expansion in Central Sulawesi does not imply, according to the researchers who found the correlation, that migrants cause deforestation. Instead, Maertens et al. (2002) consider the correlation to be an effect

of a combination of economic factors. Population increase is, for them, one factor, interacting with other factors that together influence agricultural expansion. Exogenous changes, such as agricultural technology improvement and lowering of transaction costs, have reduced agricultural expansion in the short run, but increased population pressure through in-migration in the long run. This could only lead to agricultural expansion because of the abundance of land and low rates of off-farm labor absorption in the study area.

Following Maertens et al. (2002), a series of papers has continued to add more nuance to the interpretation of the relationship between immigration and land use change in Central Sulawesi. Faust et al. (2003), interpreting the same data, find it similarly difficult to answer the question: "Does migration lead to destabilization of forest margins?" They argue for the relevance of a distinction between local and non-local migrants and find that migrant households from other provinces cultivate 35% more land than indigenous people or local migrants, and that they clear almost twice as much forest for agriculture, on average. They therefore conclude that in-migration "can have problematic effects with regard to the environment" (Faust et al. 2003, 25, emphasis added). However, the overall evidence is mixed. First, this is because the village-level data, which do not distinguish between local and non-local migrants, do not clearly reflect the impact of migrants on forest cover. On the contrary: "In migrant villages, the average total agricultural area per household was even lower than in the other village types" (Faust et al. 2003, 23).

The second reason is the ambiguity of technological innovation as a determinant of agricultural expansion. The techniques of cocoa cultivation that immigrants are credited with bringing to the area, reduces the amount of land needed to obtain a given level of income but simultaneously incentivizes further deforestation (by increasing the rewards). In the long run, extra complications in cocoa farming may arise as problems of fertility and pests emerge in mature plantations, and implications for deforestation are unpredictable.

In a third paper that addresses the relation between migration and land-use change in Central Sulawesi, Weber et al. (2007) argue that migration

is an important *cultural* factor in land-use change. Examining a shift from subsistence farming to cash-crop farming, they show that although the transition is largely driven by economic factors, such as demand for cocoa, the transition is faster in villages with more Bugis migrants. These variations are explained by the differences between the cultural orientation systems and information networks of Bugis immigrants and those of the local population. The cocoa trees are planted in fields that were previously used for subsistence farming, as well as in recently cleared forest.

A fourth paper on Central Sulawesi shows that in-migration may also have positive effects for the tropical forest (Grimm and Klasen 2015). Grimm and Klasen show that in-migration led to pressure on land, which motivated the development of a formal land tenure system, which has in turn attracted investment in land, spurring agricultural intensification. This may help relieve pressure from forests. In a similar manner, Klasen et al. (2010) argue that immigration is ambiguous because it is on the one hand a direct driver of deforestation and on the other a driver of economic development, which reduces deforestation.

In a case study in Jambi, Sumatra, Galudra et al. (2014) describe yet another mediating variable. In-migrants, through interaction with government, local communities and private concession holders, have become part of the processes through which land tenure arrangements change. Changes in land tenure arrangements can in turn lead to or prevent deforestation, depending on the type of behavior that it encourages. Unfortunately, the authors do not make explicit which is the case in Jambi. Instead, they make the general argument that the influence of in-migrants on the land tenure system needs to be considered when designing interventions aimed at reducing carbon emissions. In what follows, we will discuss some case studies that direct attention precisely to the institutional structure of resource management and its relation to migration.

### 2.2.3 Resource management institutions

Although the theme of immigration and deforestation dominates the literature, case studies have sporadically addressed the relation between migration and the forest from a different perspective in which forests are seen as a natural resource that is managed through institutional

structures, and migration as a process that influences resource management and competition.

Regarding the management of forests, Wadley (1997) examines male circular labor migration from West Kalimantan and how it impacts forest–fallow farming in the communities they leave behind. Although the absence of the men increases the workloads for women, this was effectively absorbed through the widespread use of chainsaws and a system of labor exchange.<sup>23</sup> As a result, the capacity of households to produce sufficient rice for subsistence was not diminished, and nor did households need to resort to (less labor-intensive but less-productive) short-fallow cultivation systems.

Wadley also demonstrated that for people who need to design forest management interventions, local histories of settlement and migration contain important practical insights. Looking at the history of settlement and displacement in Danau Sentarum National Park, Wadley (2002) provides insight into “how local people came to be where they are now, and how they view the local landscape [...] how reserve resources have been shaped by the people who have relied on them in the past; and [...] into present and future conditions, such as how resource competition between reserve residents is and might be structured and perceived” (Wadley 2002, 330). Based on this historical insight, Wadley outlines the critical challenges for the future of the park that interventions must deal with. Efforts by conservationists to implement co-management as an effective and equitable form of conservation would need to deal with the historical tensions between two groups of settlers: the Muslim *Melayu* and the Christian *Iban*. The settlement of both groups has been a long process, starting hundreds of years back, but both see the other as relative newcomers and have contested their claims to the resources, although there has also been peaceful relations of trading and kinship. The conservation manager would need to be aware of local divisions as well as shared interests to effectively create management institutions.

Abe (2006) describes how patterns of unsustainable land use can persist over multiple generations of migrant communities in Sumatra’s peat swamp forests. He observes that these communities fail to

<sup>23</sup> Additionally, we may note that the adoption of herbicides has also been observed to be an important factor in alleviating the workloads of women in swidden farming in Kalimantan (personal communication from Moira Moeliono, 2017).

mature but remain “frontier communities”, that is, “migrants who moved to these locations persist as migrants or strangers in the region that is now their home” (Abe 2006, 259). The reasons are a combination of local ecology and social, cultural, political and economic factors, such as the difficult biophysical properties of peat swamp forests and cultural differences with the local population. As a result, the migrant communities in peat swamp forests focus on the short-term cultivation of coconut without much regard for long-term sustainability.

Regarding access to the forest, circular migration has the capacity to undermine systems that regulate access, because to such systems, the multi-locality of circular migrants is often something ambiguous. In Sumatra, circular migration has been used as a multi-local livelihoods strategy, used by local transmigrants to access the forest without loss of the benefits of living in the places they had been officially allocated. As migrants since the 1970s increasingly came to be seen as ecological threats, it became necessary to position oneself as a settled farmer and demonstrate attachment to land. The Translok scheme, which resettled people out of forest protection zones, was a chance to regain legitimacy in the eyes of the government and reap benefits of entitlement to land and assistance. Meanwhile, income could be supplemented by circular migration for wage labor or planting coffee in the uplands (Elmhirst 2012).

In other cases, however, circular migration creates dilemmas for the migrants’ own communities. In Kalimantan, amidst a surge in *gaharu* (agarwood) collection, it became harder for the local people of Apo Kayan to maintain a sustainable resource management system with clear rules of access. Circular migrants were a problematic case, because they were simultaneously insiders with family relations and outsiders, as they had given up their traditional rights when they left. The expansiveness of the forested area, the economically superior position of outside traders, rising *gaharu* prices and increasing internal divisions further limited the potential for collaboration in allocating resources (Eghenter 2006). Such struggles over access to resources can take very serious forms, as exemplified by episodes of ethnic violence by both Dayaks and Malays against the immigrant minority of Madurese in West Kalimantan, which have been interpreted as part of strategies for political control over natural resources (Van Klinken 2008).

## 2.3 Economic factors

### 2.3.1 Economic drivers

Economic drivers of migration include spatial differences in employment opportunities, wages, well-being, and producer and consumer prices (Black et al. 2011, 55). Economic differentials can be seen to be the main driving force behind Indonesia’s increasing labor migration (Ananta and Arifin 2014). Additionally, Eilenberg and Wadley (2009) show how economic differences drive cross-border migration, in their account of how the Iban in West Kalimantan used circular migration to Malaysian Borneo as a flexible strategy to exploit better wage labor opportunities. Multiple factors – ties of kinship and ethnicity, established social networks and communication channels, and social valuation of migration – influenced this migration pattern. But economic factors were central. As the authors observed: “when lucrative wage-earning opportunities present themselves on the Indonesian side, West Kalimantan Iban forego cross-border migration, while some of their Malaysian cousins may cross into Indonesia” (Eilenberg and Wadley 2009, 58).

On internal migration, Elmhirst (2002) illustrates how structural economic change, spurred by public policy, can lead to new migration patterns, in this case an increase in factory labor migration by women in Lampung between 1994 and 1998, as a first step towards non-land-based livelihoods. Likewise, various papers address the effects of Indonesia’s economic crisis in 1997–1998 as a driver of changes in migration patterns. Internally, male rural–urban labor migrants and female industrial labor migrants from export processing zones were forced to return to their rural places of origin. Simultaneously, international migration became more necessary and rewarding, because of a lack of jobs at home and the increased value of foreign currencies. In particular, these drivers led to an increasing out-migration of female factory and domestic workers, who often faced unfair brokers and abuse (Silvey 2000; 2001; Breman and Wiradi 2002). The economic crisis also contributed to the forced internal displacement of over a million Indonesians (Hugo 2002a).

### 2.3.2 Economic effects

Migration is often praised for its potential to generate financial and social remittances, and

thus improve livelihoods and drive economic development. Research on Indonesia has both confirmed and given nuance to this idea.

Evidence confirms that the income of migrant-sending households in Indonesia has increased significantly, both as a result of internal (Hetler 1989; Meng and Manning 2010) and international migration (Hugo 1995; Parinduri and Thangavelu 2008). Hetler (1989), for example, finds that short-term circular migration has had a significant positive impact on household income in a Javanese village, and has pushed most households with at least one circular migrant into middle- or high-income status. However, these effects were not equal across economic differences: the wealthiest families did not rely on circular migration, and 24% of the village population was still very poor and had not been able to benefit from circular migration. Alisjahbana and Manning (2010) add the important caveat for rural–urban migration, that recent migrants’ income is lower than that of non-migrants, while longer-term migrants have the highest income levels of the three groups. This was partly because the migrants arrived in more economically favorable times, and partly because they have had more time to adapt. That recent migrants have lower income does not necessarily mean, however, that they are economically worse off, since, as Alisjahbana and Manning (2010, 218) also note, recent rural–urban migrants tend to be “much younger and mostly single”. Beyond income levels, Hasanah et al. (2017) show that migrant-sending households enjoy increased food security and a more diverse diet.

In line with these benefits, it is seen that households actively encourage, support and control migration as a strategy of family labor allocation that continually readjusts to physical, economic and familial circumstances (Hugo 1995; Leinbach and Watkins 1998; Kreager 2006; Kreager and Schröder-Butterfill 2015). Moreover, the migrants themselves actively develop legal and illegal strategies to increase their income and build up savings. For example, while Indonesian domestic workers in Singapore are not allowed by contract to earn money outside the household of their official employers, they do occasionally work in other households, either secretly or with the permission of their employers. There is even a black market for migrant work passes, fueled by people who apply to employ a domestic worker and then sell the work pass at a high price to a migrant worker.

These ‘freelance domestic workers’ service multiple households at an hourly wage. They are particularly useful to expat households, who “are usually only staying a limited time in Singapore, which means that it is not worth their hiring a domestic worker, as it involves a lot of red tape” (Bach 2014, 274). To maximize their savings, domestic workers have also been found to forego the days off and even the return visits home to which they are entitled. This way, they save not only on food and travel costs, but also on the gifts they would feel obliged to hand to relatives and friends, or even the nice things they would buy for themselves if they were not at work. Such economic frugality, however, has emotional and social costs: some domestic workers rarely get to see their families (Bach 2014, 275–278).

It has been noted that sending and using financial remittances are social processes, differentiated by gender and family dynamics. In a survey of Indonesian female domestic workers in Singapore, Malaysia and Hong Kong, only 12.5% of the respondents sent remittances to their husbands (Rahman and Fee 2009). About 50% were found to send the money to their parents. Accordingly, 66% of the surveyed female remittance senders indicated that they had the final say in determining what the remittances were spent on, whereas 25% said that their wishes had been ignored when disagreements arose (Rahman and Fee 2009, 114–115). This is in line with earlier studies of Javanese households that described Javanese women as often dominant in determining household expenditure, which was seen to prevent the husband from “squandering the family’s wealth” (Rahman and Fee 2009, 118). In Rahman and Fee’s survey, 56% of all remittance receivers were female. Rahman and Fee (2009, 113) also found that 50% of receivers of remittances from Singapore, and 70% of receivers of remittances from Hong Kong, were female. However, this result is at odds with that of an earlier survey by the Asian Development Bank (ADB 2006), according to which 74% of receivers of remittances from Hong Kong and 78% of receivers of remittances from Singapore were men.

Additionally, the potential for remittances to benefit households is limited by external factors and the capacity of households to finance migration. A report found that in Aceh, the tsunamis of 2004 and 2005 disrupted the flow of remittances for some people who relied on them, often because the remitter had problems locating the remittee, and this compounded their vulnerability (Wu 2006).

Financial structures can also be gendered. For example, one report found that financial services were often inaccessible for female international migrants (MICRA 2008).

Evidence of other positive impacts of migration is less clear. Parinduri and Thangavelu (2008) find no statistically significant increase in spending on education and health. Resosudarmo et al. (2010b, 189) find that the health of rural–urban migrants and their dependents is, in general, “the same as that of non-migrants”, while weak evidence indicates that the health of rural–urban migrants’ children is worse than that of children of non-migrants. Concerning education, Resosudarmo et al. (2010b, 190–193) find that the children of rural–urban migrants perform better at school. It was also found that these children completed three more years of education than their counterparts who remain in rural areas (Resosudarmo and Suryadarma 2014). On the other hand, Rizky et al. (2017) report that children who are left behind in rural areas by their poor migrant mothers on average score lower on cognitive ability tests, psychological tests and in terms of body height.

Benefits of social remittances also appear limited. Lumayag and Sail (2015), studying Indonesian migrants in Malaysia, observe that there is a mismatch between the skills migrants learn in plantation work and their daily activities of wet-rice cultivation in their home villages. They find, moreover, that the conditions for the diffusion of new ideas, skills and technologies are insufficiently present. These conditions pertain to social networks, legal status of the immigrants, the possibility of social interaction in Malaysia (often precluded by the isolation of oil palm plantations) and the availability of finance. Balakrishnan (2013, xii) also finds that circular migrants to Malaysia, although they send financial remittances and are well educated, do not create human capital that can be transferred back home. Silvey and Elmhirst (2003) added a gender perspective from Java and Sumatra on how social remittances can benefit migrants and their families. They argue that gendered power relations shape the social networks that women enter as a result of their factory labor migration. Consequently, the positions of women in these networks place a disproportionate burden on them, and allow them less capacity to gain from their labor. For example, in North Lampung, a social organization for supporting migrant factory workers from a particular village

was set up in 1996. Through this institution, the migrant workers could access relevant information, participate in a rotating credit scheme, share experiences and support each other in various other ways. However, the organization also offered a way for the parents in the village of origin to increase their control over the migrant workers, and so reinforce gender roles and inequalities. For one, it was seen that the workers were “less able in 1998 to ‘underreport’ their earnings to their parents and to maintain financial autonomy than they had been in 1995” (Silvey and Elmhirst 2003, 8) and the rotating credit scheme became a way to facilitate sending remittances to families. So, Silvey and Elmhirst (2003, 12) conclude that “what may be positive social capital for men (e.g. a household safety net), can be experienced as social constraint or a burden by women in the same network”. Nguyen and Purnamasari (2011) find that the effects of international labor migration on child outcomes and labor supply behavior also depend on the gender of the migrant.

Likewise, the overall impact of migration on economic development on a larger scale is subject to debate. Whereas Klasen et al. (2010) maintain that immigration drives economic development, Rachman et al. (2009) assert that ultimately migration does not alleviate poverty but merely moves it around. Vidyattama (2016) concludes from historical analysis that the impact of migration on economic growth and regional convergence depends on the policy setting.

## 2.4 Social and political factors

### 2.4.1 Family life

Migration influences and is influenced by the structures and experiences of family life. Hugo (1995, 283) writes about “the role of the family in deciding who moves, what type of movement they engage in, where they go, what they do at destination and the effects of the movement”. The family exercises control by providing or withdrawing approval, funds and a social network (Hugo 1995). For the elderly, it is important that the division of labor in the family is balanced in terms of migrants and non-migrants, because the elderly often rely for their economic well-being on the financial remittances of family members living far away while also depending on the physical care of family members living nearby (Kreager 2006;

Kreager and Schröder-Butterfill 2015). Surveys in Sumatra and Java found that there were very few cases of poor elderly people who were left alone by all of their children and did not receive any help from them (Kreager 2006). However, the support that elderly received correlated with their social status: wealthier elderly people were more likely to build up strong support networks, whereas those who were poorer were more likely to become vulnerable and reliant on charity. Therefore, migration was found to reinforce socioeconomic differences among elderly people (Kreager 2006). Relatedly, Yen et al. (2014) found that, in East Java, households with a higher dependency ratio (fewer adults to children and elderly) were less likely to have migrants, whereas migrant households reported a higher increase in quality of life over time than did non-migrant households.

Regarding the effects of international labor migration on the family, Hugo (2002b, 21) observes that it usually involves the temporary separation of husband and wife, although in his case study on migrants from East Flores, a small majority of the male and a large majority of the female migrants were young and unmarried. Hugo (2002b) finds that there are both positive and negative effects on the family. On the positive side, household income increases, thanks to remittances; beneficial behavioral patterns such as vaccination of children can increase as a result of increased contact with other cultures; and the position of women may improve because of the woman's role as breadwinner if she is a migrant, or her increased range of responsibilities at home if she stays behind. On the negative side, the separation of women from their husbands and/or families often puts strain on marriages, and can be disempowering for women. Raharto and Noveria (2005) reveal the problems of young rural–urban migrants who have come to live away from the social life of the villages in which they used to live. They have to be self-supporting and independent while also financially supporting their families in their villages. These migrants experience a lack of personal, financial and moral support from their family members.

### 2.4.2 Gender

Gender is relevant to many if not all aspects of migration. While it is mentioned throughout this overview, it also deserves a section of its own. Research in Indonesia has addressed how gender

norms and roles mediate and structure the decision making around who migrates and who stays (Silvey 2000), the sending and use of remittances (Rahman and Fee 2009), the structure of social networks (Silvey and Elmhirst 2003), the impacts of the monetary crisis on migrants (Silvey 2000; 2001), and the effects of international migration on child outcomes and labor supply behavior (Nguyen and Purnamasari 2011). Gender effects are also reflected in Yen et al.'s (2014) findings in East Java, that women were more likely to go overseas than migrate internally, and that they were even more likely to be an international migrant than men. Migration moreover has gendered effects on the livelihoods, social positions, and well-being of men and women within family life, as described in Section 2.4.1.

Simultaneously, gender norms may themselves evolve in response to migration. Colfer (1983) describes how in two West Kalimantan villages, male circular migration, which leads to temporary female headship, is an opportunity for the emancipation of women. Left behind in the forest, women take pride in dealing with the associated hardships, which they take as a sign of ability and competence and therefore form “important sources of the autonomy and independence that characterize Kenyah women” (Colfer 1983, 42). Elmhirst (2002) describes rapidly changing attitudes towards factory work between 1994 and 1998, from being a risky and non-feminine activity, to an important rite of passage that increases the value of the daughter. Williams (2004, 6) describes how for an increasing number of migrant women from East Nusa Tenggara, travel is constitutive of their identities, and how they experience a conflict with dominant images of femininity as a “a supportive wife and a good mother”. Elmhirst also finds that Javanese transmigrant women in Lampung “have begun to carve a new version of femininity through the kinds of practices in which they have been forced to engage in order to cope with the realities of migrant life where the absence of male relatives and neighbors to help out means there is little possibility of subscribing to a normative gender division of labour in which men are breadwinners and women their loyal supporters” (Elmhirst 2000, 497).

Yet, in later work, considering three phases of the livelihood trajectories of migrants in Lampung from roughly the 1960s to 2005, Elmhirst takes a less optimistic view of the effects of migration on gender norms. She found a surprising continuity of gender norms and concluded that “rather than

bringing about a disruption of gender, migrant practices associated with displacement and shifting livelihood possibilities have in effect led to its solidification” (Elmhirst 2008, 82). In the 1980s, spontaneous migrants to forested areas, who had come to be called ‘forest squatters’, were displaced and resettled in translocation sites. The rules and regulations imposed on these villages reflected ‘new order’ ideological gender roles of men as ‘farmer–breadwinners’ and women as ‘housewives or mothers of development’ (Elmhirst 2008, 77). Moreover, in reaction to the difficult relationship of residents of the resettlement site with their Lampung neighbors, norms of femininity were intensified as a marker of cultural identity. The expected behavior of women included “an unerring capacity to contribute responsibly to their families” (Elmhirst 2008, 78). Then, in the phase of multi-local livelihoods, which in Elmhirst’s account started with former President Suharto’s downfall in 1998, newly emerging migration practices challenged the formal order of the resettlement site; however, this only further inscribed gender patterns. While opportunities for plantation work became available to men, and opportunities for domestic work abroad to young women, many families regarded the resettlement sites that they had been occupying as important and relatively secure assets that should be guarded. That it was commonly older women who took up this task of guarding and cultivating the family’s land, for Elmhirst, reinforced gendered and heteronormative ideologies of conjugality and reinscribed the role of women as providers of care for the family (Elmhirst 2008, 81; 2011).

### 2.4.3 Ethnicity and politics of place

Ethnicity is an important sociopolitical variable that relates to migration. Research on this relation often focuses on the ethnic conflict that may arise when people of different ethnicities mix as a result of migration, for example, the violent ethnic conflict arising from spontaneous migration in Sumatra (Côté 2014; Barter and Côté 2015) and the violence of Dayak and Malay towards Madurese immigrants following Suharto’s fall (Van Klinken 2008). Such tensions can also be productive, for instance, of a Papuan national identity, which arose from the tensions between migrants and the indigenous population in Papua, who feel that their opportunities for development are limited by the immigration of people from other islands (Upton 2009). Moreover, it should be

noted that in many cases, migration does not lead to violence, and that tensions between groups are not just a function of ethnicity, since differences in class can be more important (Elmhirst 2001). On another note, Eilenberg and Wadley (2009) observe that ethnicity facilitated migration of Dayak Iban from West Kalimantan to Sarawak. The Iban from Kalimantan used their shared ethnicity with Iban in Sarawak as a factor to give them an advantage in competing for jobs with other immigrants.

### 2.4.4 Migrant hardship and protection of migrants

As a result of their relative social isolation and unfamiliarity with their new realities, migrants are often vulnerable to exploitation, abuse and other types of trouble. These problems are usually discussed in relation to international migration, particularly that of women. Various explanations have been given. Hugo (2003) attributes the problems to the limited availability of information to potential migrants, Silvey (2004) emphasizes the lack of government policies to protect migrants, the IOM (2010a, xi) mainly finds “a lack of cooperation amongst government agencies in the implementation” of existing laws and Surtees (2003, 99) sees “sites of vulnerability for trafficking and exploitation” in all stages of the migration process. Some of the responses to these problems have also been studied: international migrant labor advocacy by NGOs and labor unions (Ford 2006b), grassroots political organizing by domestic workers in Hong Kong (Rother 2017) and illegal migration as an act of protest towards the injustices of the official system (Killias 2010).

## 2.5 Conclusion

### 2.5.1 Limitations of the focus on immigration and deforestation

In conclusion, we may note that the tendency to focus on the question of whether immigrants cause environmental degradation limits research on the forest–migration nexus in Indonesia. First, this focus looks for a direct causal relationship between immigration and environmental degradation by singling out and comparing these two variables, whereas this relationship exists only in interaction with a host of other variables. Research that takes a qualitative approach to interpreting the

correlation between immigration and deforestation concluded that other factors are relatively more important than the bare fact of migration. We have seen that the time and type of incorporation, feedback loops of economic development and technological change, changing tenure systems and differences in cultural norms all play a role in determining outcomes for the forest. We have also seen examples of the importance of distinctions between types of migrants (local/non-local; married/unmarried). These observations bring us to Sunderlin and Resosudarmo's (1999, 164) dictum that "population is best viewed as an intermediate variable affected by others and not simply as an independent variable that acts alone in influencing the fate of forests". The relation between immigrants and forests is therefore better conceptualized as occurring within a complex web of interactions between immigrants, locals, ecology, economy, politics, culture and social structure.

Second, the focus on immigration misses many other, increasingly important types and aspects of migration. These studies tend to conflate the general term migration with a specific form of migration, namely the recent settlement of people in forested areas. Moreover, they only look at the effects of migrants on the places they migrate to, and ignore the effects of migrants on the places they come from. But phenomena such as international migration, rural–urban migration, temporary migration and circular migration also impact upon (and are impacted upon by) mediating variables, such as social, cultural, economic and political factors, that are in turn likely to impact on (and be impacted upon by) forest management – not only in their destinations but in their places of origin as well. The implications are not limited to the extent of deforestation, but also impact on forest-related livelihoods, access to and distribution of natural resources and the design of forest management interventions (Hecht et al. 2015; Rubinov 2016).

### 2.5.2 Lessons and questions

The existing literature provides many clues about the multi-faceted relationship between forests, migration and intermediary variables, which validate Black et al.'s (2011) multidimensional understanding of the relationship between migration and environmental change. We have seen that migration can impact the management of natural resources in many ways, dependent upon

the type and context of migration. Economic, environmental, social, political or demographic factors may determine the effects of in- and out-migrants on their environment. While migration tends to bring economic benefits to migrant households, these benefits are mediated by social structures. The benefits of social remittances may be limited by the social isolation of migrants and the lack of applicability of new skills in the economic situation at their place of origin. Patterns of migration are highly responsive to economic change, and their relationships to family life and gender are variable and often dynamic. The human costs borne by the migrants and their families are often high, but social movements are drawing increasing political attention to these questions. These are all interesting results that merit further investigation to uncover their effects on the forest.

A recurring pattern in the research discussed here, is that researchers start by asking about the relationship between migration and one specific factor, and conclude that other factors are relevant too. The challenge ahead will be to connect these various strands of inquiry into an overarching, encompassing theory of the relationship between migration and forest and broader landscape use, management and change. Black et al.'s (2011) conceptualization of the relationship between migration and environmental change appears to be a good starting point, although it needs to be adapted. We have also seen several case studies that demonstrated the useful insight that can be gained from a more open, context-specific question. A useful approach to studying the forest–migration nexus may therefore be to start with describing the human–environment interactions in a specific place, and then uncover how they relate to each of the different types of relevant factors: migration, environmental, economic, social, political and demographic. In describing these interactions, the literature we reviewed will constitute a useful body of data and hypotheses to engage and compare with. A collection of such integrated case studies would allow for an interesting synthesis.

In addition, some questions have received scant attention in the literature so far, and would merit separate in-depth exploration. As mentioned above, there is a lack of research on the impact of migration on the people and forests left behind. More needs to be known about the impacts of remittance flows (internal and international) and changes in household composition on land use

patterns. Who receives how many remittances, and how do they use them? And how do livelihood strategies adapt to a reduction in the available labor? Moreover, while much has been written about the effects of immigrants on environmental degradation, there is also the opposite question: What is the role of environmental change in influencing migration patterns? This question receives increasing attention internationally in connection with the rising concerns about climate change (cf. Black et al. 2011), but remains understudied in Indonesia (although see Thiede and Gray 2016). In addition, research on migrant hardship and protection has focused on international migrants, at least since Indonesia's transmigration program was largely dismantled, but what about the hardship and protection of internal migrants today? Furthermore, instead of just looking at ethnic conflict, another way to approach ethnic difference would be to see whether

it can also be something positive. Focusing on conflict misses the point that much of the time there is no violence and collaboration between ethnic groups is just as likely. What forms does such collaboration take? Under what conditions does it arise? With what effects? Such questions are of growing importance in the context of a global rise of ethnic identity politics combined with increasing interethnic mixing through migration.

Finally, to properly interpret the significance of the different drivers and effects of migration, they will need to be put in the context of larger patterns and trends. In Section 1, we described some patterns and trends, and noted the complexity of migration and limitations of the current data. In the next section, we will take a closer look at the sources of data, identifying the types of data that are lacking as well as the data sources that could be exploited more fully.

# 3 Sources of data on migration and their connection to forests

## 3.1 Introduction

This section assesses the availability of quantitative data related to the interlinkages between migration and forests, and provides short descriptions of the individual sources of data. First, the types of sources assessed and kinds of information sought are introduced. A general overview and assessment of the available data follows. Finally, the individual sources are briefly described.

We distinguish two types of sources of quantitative data on migration: surveys and administrative sources. A survey collects data by systematically posing a list of questions to selected representatives of a given population. When enough respondents have been selected in a representative manner and successfully interviewed, the survey results can be generalized for the population that is being researched. A census is a survey that covers all individuals in a population, not necessarily by interviewing them, but at least enumerating all individuals. For example, in the case of a household survey, a household head may provide information about multiple household members. The surveys discussed here can, based on their scope, be broadly classified into three categories (see Table 9). First, the Government of Indonesia commissions Statistics Indonesia (*Badan Pusat Statistik*, BPS) to implement national surveys on general themes of significance for development planning and monitoring. These are the largest, most comprehensive and most authoritative data collection efforts on relevant themes in Indonesia, covering all provinces of the country. We will consider the most important ones, which address demographics [A1, A2], socioeconomic issues [A3], public health [A4], employment [A5] and village development [A6]. For our assessment of BPS datasets, we have relied on their freely accessible publications, but their microdata may be bought by contacting them through their website. Second, several organizations coordinate large, medium-

term to long-term research efforts that attempt to be representative of Indonesia in scope, and thus to produce national data on specific issues. These issues are, respectively, changes in family well-being [B1], impacts of rural–urban migration [B2] and patterns of remittances [B3]. The third category of surveys are case studies that look at how specific themes play out in a single place, or sometimes several places. There are many examples of such case studies. The selection here includes two surveys in Kalimantan [C1, C2], and some surveys on especially relevant topics in other places [C3–C10].

Administrative sources of data are the records kept by institutions as part of their normal operation. Examples of activities that produce administrative data on migration are border controls, the issuing of passports, visas and work permits, implementing work placement programs and keeping population registers. In Indonesia, records on aspects of migration are kept and published by national and sub-national entities within the Ministry of Manpower [D1, D2] and the Ministry of Villages, Underdeveloped Regions and Transmigration [D3]. International databases that compile data from national sources of multiple countries will also be regarded as administrative sources, even though the national data themselves are sometimes based on surveys and censuses [E1–E3].

In describing and assessing the topics that these sources provide information about, four themes are considered: (1) demographics, (2) migration patterns, (3) remittances, and (4) land and forest management (see Figure 9). First, do the sources contain basic demographic information, on age, gender, employment and education level of the people? Second, what data do the sources contain about migration patterns? Third, what information do they contain about remittances, either in-kind or financial, and about how they are used? And fourth, do they enable analysis of linkages to forest management, through information about agricultural practices and presence and use of forests?

Finally, it is important to note that not all data that are *collected* about migration in the various sources described here, have been *analyzed* for what they tell us about migration trends and patterns in Indonesia. Often, the analysis of migration data is aimed at supporting specific arguments rather than giving an overview of migration patterns, and in other cases the data on migration are not discussed at all because the analysis is focused on other parts of the data. Where

appropriate, we shall conclude the description of the data source with a note on whether and how the data on migration have been analyzed. The content of these analyses often goes beyond the aims of this section, which is merely intended to give an overview of data availability and gaps. We have, where needed, moved the discussion of the content of these analyses to Section 1 and Section 2, and shall in those cases refer to the sections where this discussion can be found.

**Table 9. Overview of data sources per category.**

Survey sources		
<b>A: National surveys</b>		
A1	Sensus Penduduk	Population Census
A2	SUPAS	Population Survey
A3	SUSENAS	National Socio-Economic Survey
A4	DHS	Demographic and Health Survey
A5	SAKERNAS	National Labour Force Survey
A6	PODES	Potential Village (Census)
<b>B: Multi-provinces surveys</b>		
B1	IFLS	Indonesian Family Life Survey
B2	RUMiCI	Rural-Urban Migration in China and Indonesia
B3	BI	Bank Indonesia International Remittances Survey
<b>C: Case study surveys</b>		
C1	KFCP	Kalimantan Forest and Climate Change Partnership Impact Study
C2	FORCLIME	Malinau, Berau and Kapuas Hulu socioeconomic surveys
C3	IOM	Migrant Remitter Survey
C4	IOM	Remittance Receiver Survey
C5	Balakrishnan 2013	Low-skilled IMW's in Peninsular Malaysia
C6	STORMA Panel	Stability of Rainforest Margins Panel Study
C7	STORMA Survey	Stability of Rainforest Margins Household Survey
C8	Hetler 1989	Survey on circular migration in a Javanese village
C9	Oxford Institute of Ageing	Panel study on old-age support networks
C10	DFID	Migrating Out Of Poverty
<b>Administrative sources</b>		
<b>D: National records</b>		
D1	BNP2TKI	Indonesian migrant workers
D2	Kemnaker	Foreign workers in Indonesia
D3	Kemendesa	Transmigration
<b>E: International databases</b>		
E1	IMF	International remittances
E2	UN	International migrant stocks
E3	UN	International migrant flows

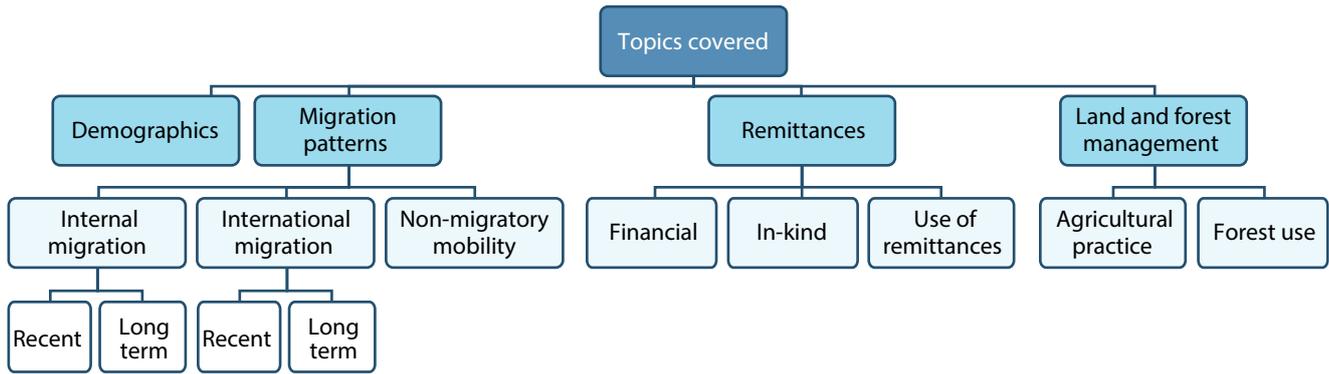


Figure 9. Overview of topics covered in the review of data sources.

### 3.2 Overview and assessment

Tables 10 and 11 give an overview of which sources contain information about which topics. Some general conclusions may be drawn about the availability of quantitative data on the interlinkages between migration and forests:

- Although each topic is covered in one or more of the data sources, no single source of information ticks all the boxes. Sources that inform about remittances tend to ignore the issue of land use, and vice versa. This implies that, with the currently available data, it will be difficult to properly analyze the interlinkages between these themes in Indonesia.
- The national censuses and surveys are valuable sources of information on migration and other demographic data, but not so for remittances and land use. They contain much and detailed information about internal migration, both long term and recent, although international migration has only recently started to be addressed in the latest SUPAS.<sup>24</sup> They do not collect information on agriculture and forestry, other than the rough estimations at the village level collected through PODES. They do not collect information on remittances, other than through imprecise questions in the National Socio-Economic Survey (SUSENAS), which can reveal remittance dependence but do not allow for an assessment of size or frequency. Another problem with these surveys is that there are systematic, unexplained differences between the results of the national censuses and those of the intercensal surveys, so

that it becomes problematic to compare the two datasets.

- Administrative sources provide useful but limited supplementary information about international migration. The UN database compiles age- and gender-specific information about the stock of Indonesians abroad available from reporting by host countries for several reference years, but not about flows. BNP2TKI keeps records of Documented Indonesian Migrant Workers, but cannot inform about undocumented migrant workers.
- There appears to be no real administration of remittances entering Indonesia from abroad, let alone on remittances within Indonesia. Data on international remittances are based on Bank Indonesia's seemingly rough estimates, which are partly based on a relatively small survey. There are some surveys that do allow for estimations of remittances, mostly for specific forms of migration, such as rural–urban migration or migration to Malaysia, or case studies of Javanese villages.
- There are few examples of reliable quantitative data available for linking migration patterns to land use. The Indonesian Family Life Survey (IFLS) does collect information about both, but the reliability of its information about land may not be guaranteed, because it is based, depending on the variable, either on local records, reporting by village leaders or direct observation by researchers, all of which are potentially vulnerable to bias and error. The Stability of Rainforest Margins (STORMA) research project is a notable exception, for it appears to have thoroughly investigated both themes for a case study in Sulawesi.
- The data that are available, however, could be exploited more fully. Analyses of PODES data on agriculture and forestry and their relation

<sup>24</sup> Even then, data on international out-migration was excluded from the report; see the description of data source A3 in Section 3.3.

to migration are not readily available, nor are analyses of SUSENAS data on remittances. The official reports of census and intercensal

survey data, on which most analyses are based, represent only a part of the collected data. In the words of the 2010 census report: “A deeper

**Table 10. Overview of surveys.**

Name	Geographic Focus	Sample Size (households; most recent)	Iterations	Internal migration	International migration
[A1] Sensus Penduduk	Indonesia	Entire population	1961; 1971; 1980; 1990; 2000; 2010	Yes	No
[A2] SUPAS	Indonesia	652,000	1976; 1985; 1995; 2005; 2015	Yes	Yes
[A3] SUSENAS	Indonesia	300,000	Annual since 1963;	Yes	No
[A4] DHS	Indonesia	43,852	1991; 1994; 1997; 2003; 2007; 2012	No	No
[A5] SAKERNAS	Indonesia	200,000	1986–2016	Yes	No
[A6] PODES	Indonesia	73,709 villages	1980; 1983; 1986; 1990; 1993; 1996; 2000; 2003; 2005; 2008; 2011; 2014	Yes	Yes
[B1] IFLS	13 provinces throughout Indonesia	16,204 households + 50,148 individuals	1993; 1997; (1998); 2000; 2007; 2014	Yes	No
[B2] RUMiCI	4 cities: Tangerang, Medan, Samarinda and Makassar	2,400	2008; 2009; 2010; 2011; 2012	Yes	No
[B3] BI Remittance Survey	Migrant source provinces throughout Indonesia	2,082 individuals	2006; 2008; ...? <sup>a</sup>	No	Yes
[C1] KFCP Household Survey	Kalimantan	250	2009; 2014	No	No
[C2] FMU Socio-economic Survey	Malinau, Berau, Kapuas Hulu	1,790	2013	?	No
[C3] IOM Migrant Remitter Survey	Malaysia	300	2009	No	Yes
[C4] IOM Remittance Receiver Survey	Java, Nusa Tenggara, Sulawesi	500	2009	No	Yes
[C5] Low-skilled IMW's in Peninsular Malaysia	Malaysia	858 individuals	2009	No	Yes
[C6] STORMA Panel	Sulawesi	256	2001; 2004; 2006	Yes	Yes
[C7] STORMA Census	Sulawesi	898	2004	Yes	Yes
[C8] Impact of Circular Migration	Wonogiri, Central Java	328	1984	Yes	No
[C9] Ageing in Indonesia	Java and Sumatra	206	2000; 2005	Yes	Yes
[C10] Migrating Out of Poverty	Java	1,203	2013	Yes	Yes

a The BI Remittance Survey is reportedly conducted every two years, but the latest published results are from 2008.

Note: All surveys asked about the basic demographic characteristics of respondents, these being: age, gender, education and employment. Not all questionnaires could be accessed. Consequently, for some surveys it is not known whether they cover certain topics.

study is very possible because there are many variables that can still be extracted from 2010 census results” (BPS 2011, 34). Nor have IFLS

data, which contain information on both forests and migration, been analyzed for what they have to say on the relationship between the two.

Long-term migration	Recent migration	Short-term mobility	Data on financial remittances	Data on in-kind remittances	Data on use of remittances	Data on agricultural practice	Data on forest cover	Data on forest use
Yes	Yes	No	No	No	No	No	No	No
Yes	Yes	Yes	No	No	No	No	No	No
Yes	Yes	Yes	Yes	Yes	No	No	No	No
No	No	No	No	No	No	No	No	No
No	Yes	Yes	No	No	No	No	No	No
No	Yes	No	No	No	No	Yes	Yes	No
Yes	Yes	No	No	No	No	Yes	Yes	No
Yes	Yes	No	Yes	Yes	Yes	No	No	No
Yes	Yes	No	Yes	Yes	Yes	no	No	No
No	No	No	No	No	No	Yes	?	?
No	No	No	Yes	?	No	Yes	Yes	Yes
Yes	Yes	No	Yes	Yes	Yes	No	No	No
Yes	Yes	No	Yes	Yes	Yes	No	No	No
Yes	Yes	No	Yes	No	Yes	No	No	No
Yes	Yes	No	Yes	Yes	No	Yes	No	No
Yes	Yes	No	No	No	No	Yes	Yes	Yes
No	Yes	No	Yes	?	?	?	?	?
Yes	Yes	?	Yes	Yes	?	Yes	No	No
Yes	Yes	No	Yes	Yes	Yes	No	No	No

**Table 11. Administrative sources of data.**

Institution	Description of main information	Source of information	Frequency of reporting	Age specific?	Gender specific?	Data on education
[D1] IMF	Estimates of international workers' remittances entering and leaving Indonesia	National reporting: Estimates by Bank Indonesia	Quarterly	No	No	No
[D2] UN	International migrant stock by country of origin and destination	National sources (probably SP and SUPAS)	Every 5 years	Yes	Yes	No
[D3] UN	International migrant flows by country of origin and destination	National sources	Yearly	No	No	No
[E1] BNP2TKI	Records of documented Indonesian migrant workers	Documentation of IMW placement process	Yearly	?	Yes	Yes
[E2] Kemnaker	Records of work permits issued to foreign nationals in Indonesia	Work permits	Yearly	?	?	?
[E3] Kemendesa	Amount of transmigration sites and transmigrants placed	Technical reports	Yearly	?	?	?

Note: None of these sources contained information about agriculture or forests. It could not always be verified from the available reports whether collected data included information on age, gender or education.

### 3.3 Description of the surveys

#### 3.3.1 National surveys (A)

##### [A1] Sensus Penduduk (SP)

In line with UN recommendations, every 10 years Statistics Indonesia conducts a population and housing census, the Sensus Penduduk (SP). The census uses face-to-face interviews to count all individuals living on Indonesian territory and collects basic information on health, living conditions, education, employment and internal migration. The most recent implementation of this very large undertaking was in 2010 and employed 700,000 field officers (BPS 2012, Ii). The census produces basic demographic information that can be disaggregated down to the village level, which otherwise would be lacking because routine population registration is still deficient (BPS 2012, I).

Information about migration is obtained through analysis of answers to questions about (1) the current place of residence, (2) place of residence 5 years ago, and (3) place of birth. A person is classified

as a recent migrant if (1) and (2) are in different provinces, and as a permanent migrant if (1) and (3) are in different provinces (BPS 2011, 5). It seems to follow from these definitions that a person who was born in Bandung and moved to Yogyakarta 3 years ago, will be simultaneously counted as a permanent and a recent migrant in Yogyakarta. The results have been described in a separate report called *Migrasi Internal Penduduk Indonesia – Hasil Sensus Penduduk 2010* (BPS 2011). This appears to have been the first time BPS produced a separate report on migration based on the national census.

The 2011 report describes the size and direction of recent and permanent migration flows, as well as the age and gender of migrants. For recent migrants, it additionally describes educational achievement and occupation. The report then comments on the impacts of migration on the demographics of areas in terms of age and gender distribution, and the difficulties of determining these effects in the absence of reliable data on international migration. In conclusion, the report lists some figures on migration patterns, without

Data on employment	Internal migration	International migration	Long-term migration	Recent migration	Short-term mobility	Data on financial remittances	Data on in-kind remittances	Data on use of remittances
No	No	No	No	No	No	Yes	No	No
No	No	Yes	Yes	No	No	No	No	No
No	No	Yes	No	Yes	No	No	No	No
Yes	No	Yes	Yes	Yes	No	No	No	No
Yes	No	Yes	Yes	Yes	No	No	No	No
Yes	Yes	No	Yes	Yes	No	No	No	No

however interpreting their meaning. These results are summarized in Section 1.2.1. The report asserts that the migration figures are influenced by government policy and that government policy will continue to influence migration patterns in the “era of regional autonomy”, although it is not specified what the past influence of policy was, nor what the future influence is expected to be (BPS 2011, 34).

#### [A2] Survey Penduduk Antar Sensus (SUPAS)

In the middle of the period between two subsequent censuses, so every 10 years, Statistics Indonesia conducts an intercensal survey (SUPAS) to update and correct the estimations based on the previous census. The 2015 SUPAS sampled 652,000 households, selected to be nationally representative. The questionnaire tends to be similar to but more elaborate than the questionnaire used in the census. Regarding migration, the 2005 SUPAS asked not only about patterns of recent and life-time migration, but also about the reasons for migrating. The 2005 questionnaire additionally contained

questions about commuting behavior: whether interviewees regularly traveled to other places for work, education or other purposes. It included questions about the distance and time traveled, and mode of transportation (BPS 2005, Q621–625; Handiyatmo 2009). Finally, the questionnaire also asked whether in-migrant household members regularly returned to their places of origin.

The latest, 2015 SUPAS featured similar questions on internal migration and mobility. Additionally, for the first time in any SP or SUPAS questionnaire, it contained questions about *international migration* (BPS 2016c). It asked household heads whether there are any ex-household members currently living abroad who had left after 1 January 2010, and whether any of the current household members had ever lived abroad. It followed up with questions about the name, gender, living place, year of departure, age at time of out-migration, reason for migrating and main activities of the current and returned migrants (BPS 2015, sections V.B. and VI.C.620–625).

Reports of the results regarding migration are freely available on the BPS website, but these reports present data that have undergone minimal processing, and provide no analysis or interpretation. Moreover, the data on international migration are missing from these reports. The national-level report for SUPAS 2015 consisted of 80 pages of tables with numbers on various aspects of migration, accompanied by definitions of concepts and a brief description of methods used (BPS 2016c). Additionally, separate documents with tables without analysis have been published for each of Indonesia's provinces. These documents present data disaggregated to the district level (e.g. BPS 2016e). We used analyses of earlier SUPAS in Sections 1.2.1–1.2.3. Such analyses are yet to be published for the 2015 SUPAS, although we have included some of our own preliminary analyses in these same sections.

### **[A3] Survei Sosial Ekonomi Nasional (SUSENAS)**

Statistics Indonesia has run the National Socio-Economic Survey (SUSENAS) since 1963. It provides a data source for development planning, monitoring and evaluation (BPS 2016i). SUSENAS collects data on “demography, health, fertility and family planning, housing, information and communication technology, crime, domestic travelling, and social protection” (BPS 2016h, iv). The regularity, scope and topics addressed have varied over the years. Since the early 1990s, core data were collected annually from a nationally representative sample and supplemented with three rotating modules. One was on household consumption and expenditure, a second on education and sociocultural variables, and a third on housing and health. Each was implemented every 3 years (BPS 2016i). Between 2011 and 2014, the regularity of the module on household income and expenditure was greatly increased from once every 3 years to four times a year. From 2015, data were collected twice a year. In March, core data and household income and expenditure data are collected from a sample of 300,000 households selected from 34 provinces. In September, a smaller sample of 75,000 households is surveyed, again on household income and expenditure, and additionally questions are asked from one of the modules, which now also included a module on social resilience (BPS 2016g; 2016i).

*The core questionnaire* collects basic household data, such as the sex, age, health, education and

employment of household members. It includes a question on mobility (amount, destination and purpose of travels over the last 6 months). It also records place of current residence, place of birth and place of residence 5 years ago, from which statistics on permanent and temporary migration can be derived. Finally, it includes a question on whether remittances are the household's main source of income and if yes, who sends these remittances. There are no follow-up questions on size, type or use of income from remittances (BPS 2016h).

*The income/expenditure module* collects detailed information on household expenditure but much less detailed information on income. It includes a question on the amount of income and expenditure from ‘transfers,’ a category that comprises not only remittances and money sending, but also pension payments, student allowances and insurance payments (BPS 2015b, 20). *The sociocultural and educational module* collects data on cultural activities, participation in organizations and detailed information on educational attainments. It includes a question on whether there are young family members who are living elsewhere and if so, where (BPS 2015c). *The social resilience module* was first implemented as part of the rotating modules (in lieu of the now-regular income/expenditure module) in 2014. This new module measures the capacities of communities to cope with (financial) crises and take care of themselves (BPS 2014c). It includes questions on water, energy and waste management, transportation, trust and tolerance, participation, security, coping with natural disasters (without linking it to migration), politics, intrahousehold attitudes and behavior, and criminality (BPS 2014d). It does not collect information on migration. Finally, the *health and housing module* collects detailed information on health and living conditions, but nothing on migration (BPS 2013).

Although much data on migration are collected under SUSENAS, the data from SUSENAS have tended to be used for economic analysis without much consideration for variables related to migration. For example, the two most important recent reports on the SUSENAS results published by BPS concerned a macro-analysis of poverty (BPS 2016a) and an overview of welfare statistics (BPS 2016b). Neither mentioned migration. However, two recent papers have used SUSENAS

data to examine the link between economic development and migration, demonstrating opportunities for further harnessing SUSENAS data to obtain insights on migration (Bazzi 2017; Bryan and Morten 2017).

#### [A4] Demographic and Health Survey (DHS)

The *Survei Demografi dan Kesehatan Indonesia* (SDKI), or in translation: Demographic and Health Survey (DHS), is a regular, national, large-scale survey, as part of an international comparative dataset, which collects detailed information on health issues, but no information whatsoever on migration, not even place of birth (BPS et al. 2013).

#### [A5] Survei Angkatan Kerja Nasional (SAKERNAS)

Since 1986, Statistics Indonesia has implemented a large national work-force survey annually or multiple times a year (biannually since 2015) to collect data on employment and unemployment. It focuses on the working age population and mainly asks questions about employment and employment conditions. It collects data on recent migration only by asking respondents about their place of residence 5 years ago. The most important addition of SAKERNAS to the SP, SUPAS and SUSENAS in terms of understanding mobility lies in understanding commuting behavior, since it includes questions on place of work, the distance from work to home, the frequency of travel from home to work and the means of transportation (BPS 2016f, Q33). Sadly, the statistics derived from these questions are not presented in the reports (e.g. BPS 2016d).

#### [A6] Potensi Desa (PODES)

The Village Potential (*Potensi Desa* – PODES) census is implemented three times per 10 years to support the implementation of, successively, the population and housing census, the agriculture census and the economic census. It does so by creating a sampling frame (which is used to ensure that a census does not miss parts of a population), by creating typologies of regions (such as whether they are urban or rural) and by creating basic information on the development potential of a village (infrastructure, facilities and other economic, social and cultural aspects; BPS 2014a). To this end, interviews were conducted with “relevant persons in the enumeration area” who “have knowledge of, authority over and responsibility towards” the area (BPS 2014b, 1).

Interviewees are asked about the village’s geography, administrative structure, proximity to and usage of the sea, relation to and status of forests, population, living and environmental conditions, natural disasters, education, health, social culture, leisure, transportation, communication, land use, economy and security. Concerning migration, interviewees are asked about number of immigrants and emigrants in and from the villages and about the number of villagers working abroad (BPS 2014a; 2014b).

A 2014 report (BPS 2014a) summarizes the results in the form of tables that show how many villages or sub-districts in each village had particular characteristics. Thus, one can see how many villages in each province are located on slopes or peaks, in valleys or on flat land (BPS 2014a, 16); how many are located inside, in the proximity of, or away from the forest<sup>25</sup> (BPS 2014a, 18), and so forth for each of the themes mentioned above. It should be noted that such a presentation is a simplification of the data: much richness gets lost in the process of lumping together villages into broad categories. For example, a table that describes in how many villages agriculture is the main source of income (BPS 2014a, 27), does not say anything about the secondary source of income in these villages. This is part of the reason there is little to be gleaned about migration from this report.

There is a table about villagers working abroad, but it only gives the number of villages/sub-districts from which it was reported that there were villagers working abroad.<sup>26</sup> Moreover, there are no tables corresponding to the question about the number of immigrants and emigrants in and from the village.<sup>27</sup>

25 Across Indonesia, 2037 villages/sub-districts were reported to be located inside forests, 19,247 in the proximity of, and 60,906 away from forest. For the combined villages of Kalimantan, this was 388, 2216 and 4587, respectively. Strikingly, Central and North Kalimantan were among the few provinces in Indonesia in which the number of villages reported to be located in or near forests exceeded the number of villages located away from the forests, a characteristic that was shared only with Kepulauan Bangka Belitung, Kepulauan Riau, North Maluku, Papua and West Papua (BPS 2014a, 18).

26 Almost half of all villages in Indonesia reported having migrant workers abroad, but only 1366 out of 5184 villages were in Kalimantan, of which 1225 were in West or South Kalimantan; BPS 2014a, 29)

27 Also in the PODES microdata, which are not freely accessible but which can be bought, variables concerning population and in- and out-migration are missing. This suggests that BPS judged these figures to be not reliable enough to be published.

### 3.3.2 Multi-provinces surveys (B)

#### [B1] Indonesian Family Life Survey (IFLS)

The Indonesian Family Life Survey is a longitudinal survey designed to measure the impact over time of social, economic, political and environmental change on the socioeconomic well-being and health of individuals and households. Funds for the latest wave were provided by the National Institute on Aging (US), the National Institute for Child Health and Human Development, World Bank Indonesia, GRM International (Australia) and the Department of Foreign Affairs and Trade (Australian Government). It was executed by RAND corporation in collaboration with its Indonesian partner institution Survey Meter (Strauss et al. 2016). The first wave, in 1993, surveyed individuals from 7224 households. These same individuals were revisited in follow-up waves. Because individuals leave households and form new households, the number of households involved in the study grew over the years, reaching over 16,000 in 2014 (Strauss et al. 2016, ii).

The survey collects data on “multiple indicators of economic and non-economic well-being: consumption, income, assets, education, migration, labor market outcomes, marriage, fertility, contraceptive use, health status, use of health care and health insurance, relationships among co-resident and non-resident family members, processes underlying household decision-making, transfers among family members and participation in community activities” (Strauss et al. 2016, 1). The survey collects detailed information on the migration histories of individuals, including information on place of birth, location at age 12 years and subsequent migrations. It asks about the destination of migration, the distance of from the previous place of living, and the purpose and consequences of migration (Strauss et al. 2016, 40).

The survey also collects information about the communities that the individuals live in, including information on forest cover and pollution (from statistical records in the village and direct observation), natural disasters and agricultural practices (from village leaders). This background information might allow for interesting analysis when combined with migration data. But the reliability of the background information may be

questioned, because it is collected from a small number of people, and from local records and direct observations that are hard to verify.

All raw data are available for download online, but RAND does not provide its own analysis or summary of the results (RAND 2018a). Strauss et al. (2016) only discuss methods. Many papers have relied on IFLS data to describe various aspects of Indonesian family life, although relatively few have used the data to study migration (RAND, 2018b). IFLS-based papers on migration tend to argue specific theses rather than give an overview of migration; for example, one paper argues that migrants have higher aspirations than non-migrants (Lim 2017), while others have used it to study the impacts on household income, food security or the well-being of children (Parinduri and Thangavelu 2008; Nguyen and Purnamasari 2011; Hasanah et al. 2017; see also Sections 2.3.2 and 2.4.1).

#### [B2] Rural–Urban Migration in China and Indonesia (RUMiCI)

To better understand the impacts of increasing rural–urban migration in Indonesia and China, researchers at the Australian National University led a large longitudinal survey of rural–urban migrants. The focus of the study was the Chinese case, as reflected in the fact that the Chinese survey covered 18,000 households, among which urban, rural and rural–urban migrant households were examined; it ran for 7 years. In Indonesia, the sample was seven times smaller – although, with 2400 panel households, it was still a sizeable survey. It did not include rural households and ran for (only) 5 years (2008–2012). The Indonesian case was seen to contrast nicely with the Chinese case in terms of government policy, because whereas the Chinese government strongly regulated and restricted rural–urban migration, the Indonesian government placed few such restrictions (Resosudarmo et al. 2010a; ANU 2014a).

The questionnaire addressed “migration status and household composition[...], basic socio-economic and demographic characteristics of all household members [...], labor market activities, migration history, migrants’ links with and activities in the village of origin, and labor protection and social security [...], household income, consumption, assets, liabilities and housing [...], dwelling in the

place of origin, the type of identity card held in the current residential municipality, and residents' social networks [...] [and] mental health" (Resosudarmo et al. 2010a, 14; ANU 2014c). In this way, the survey aimed to capture the effect of migration on income, health, education and nutrition of migrant, non-migrant urban and non-migrant rural households, and trace changes over time.

RUMiCI data may be requested from the Australian National University (ANU 2014b). Analyses of the results of the first round were collected in a full-length book (Meng et al. 2010). Since then, separate papers based on RUMiCI data have continued to appear (Manning and Pratomo 2013; Resosudarmo and Suryadarma 2014; Pratomo 2017), although the largest part concerns China, not Indonesia. These analyses tend to focus on a comparison between rural–urban migrants and non-migrant urban dwellers. Their contributions to understanding migration are used in Section 2.3.2.

### **[B3] Survey of Remittance Patterns of Indonesian Migrant Workers**

Bank Indonesia reports that it conducts the Survey on Remittance Patterns of Indonesian Migrant Workers on a 2-yearly basis (BI 2009a). Yet the 2009 report is the only report of such a survey available on BI's website. Moreover, no later reports could be found through Google searches.

For the 2008 survey, 2082 interviews were conducted in 11 regions (in 7 provinces) that were significant sources of international migrant workers according to data from the Ministry of Manpower and Transmigration (Kementerian Tenaga Kerja dan Transmigrasi Kemenakertrans) and the National Authority for Placement and Protection of Indonesian Migrant Workers (BNP2TKI). The randomly selected respondents were either active migrant workers who were on leave or vacation, returning migrant workers or family members of migrant workers who received remittances. In addition, interviews were conducted in Jakarta with private migrant workers placement companies (Pelaksana Penempatan Tenaga Kerja Indonesia Swasta – PPTKIS), Kemenakertrans and BNP2TKI.

The survey collected data on the profiles and remittance patterns of international migrant workers. Besides demographic information, data were collected on the motives of international migrant workers for migrating, their occupation

prior to migrating, their destinations and activities abroad, and the amount of time spent abroad. The survey also investigated where international migrants sourced their information about job opportunities abroad, what channels they used to arrange their departures (PPTKIS, a ministry, recruiters/brokers) and whether they went illegally or with proper documentation. Respondents were asked about the forms of transportation used to travel to their destinations and how they financed their move. They were asked about whether migrants ever experienced abusive treatment, either during work overseas or after their return to Indonesia. Regarding remittance patterns, information was collected about the level of income, the utilization of income, amount and frequency of remittances sent home, the channels used for remitting, the costs of remitting, motivations for sending money home and problems experienced relating to sending remittances. Respondents were also asked whether in-kind remittances were ever made, and what they were.

Then, they were asked about the social and economic impacts of migration: whether their quality of living had improved as a result of working abroad, and why, and how much they were able to save. Finally, migrant workers (or their families) were asked what policies they would suggest to the government for improving the well-being and productiveness of international migrant workers.

As the above summary testifies, the survey covers a broad and interesting range of topics. It is especially important because it also covers informal international migration. Hence, it usefully supplements statistics on formal remittances. However, there are several limitations to be overcome when working with these data. For one, it is not sufficiently explained how respondents were selected. The only explanation provided, that "[t]hey were derived from the master data published by BNP2TKI" (BI 2009a, 3) is not informative. For another, the questionnaire itself was not published, so that it is not possible to check the exact questions. Finally, as mentioned above, it is unclear whether the survey has been implemented since 2008, and with what results.

The results of the 2008 survey are discussed in Section 1.3.4.

### 3.3.3 Case study surveys (C)

#### [C1] The Kalimantan Forests and Climate Change Partnership (KFCP)

The Kalimantan Forests and Climate Change Partnership (KFCP) was a REDD+ demonstration activity encompassing 120,000 hectares in Central Kalimantan (Atmadja et al., 2014). KFCP offered livelihoods packages to communities to enable them to make a living from horticulture, agroforestry, rubber plantations or fish ponds, so that people would not need to engage in activities that would encroach on the forest (Milich et al. 2014). To measure the impacts of the project, a baseline survey was conducted in 2009 and an impact study was conducted in 2013–2014. For the baseline survey, 500 households were interviewed. For the impact study, 250 households were surveyed. The study looked at social impacts, economic impacts and impacts on knowledge and capacity building, and institutional development. Although the KFCP project area is located within a former transmigration area, migration does not seem to have been explicitly addressed in the study, since the report (Milich et al. 2014) only fleetingly mentions migration a couple of times. Concerning livelihoods, it is reported that the households relied mostly on “rubber plantations, fishing and fish farming, artisanal gold mining, traditional riverine harvesting, shifting agriculture and *inter alia*, some swidden agriculture” (Milich et al. 2014, ii).

#### [C2] FORCLIME Socioeconomic surveys Malinau, Berau and Kapuas Hulu

In 2013, the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) conducted a socioeconomic survey in 64 villages in Malinau, Berau and Kapuas Hulu, in West and East Kalimantan. The survey aimed to establish a baseline for FORCLIME development projects, and focused on the issue of socioeconomic vulnerability, specifically in relation to climate change. To this end, it collected information about demographics, sociocultural characteristics (ethnicity and language), livelihoods, indicators of poverty and access to infrastructure, markets and services. The questionnaire itself is not available online, but the report summarizes the topics covered in the questionnaire, thus: “The questionnaire included modules on household demography, income, education, health, housing, livelihood activities, household asset ownership, nutrition,

water, sanitation, and food security. Furthermore, it collected information on forestry, forest use and climate change” (Mackay and Marbyanto 2013a, 12–13). It seems then that the survey did not feature questions on migration other than perhaps a question about the place of birth. The only times the reports mention migration is when describing the ethnic composition of the communities (Mackay and Marbyanto 2013a, 2013b).

#### [C3 + C4] International Organization of Migration (IOM)

IOM conducted surveys related to remittances from Indonesian migrant workers (IOM 2010b). In a first survey, they collected data on the remittance management knowledge, attitudes and practices of 500 Indonesian families who received remittances from international migrant workers. The survey included questions on the demographic profiles of both the remittance receivers and the migrants who send these remittances, based on age, sex, religious backgrounds, country of destination, educational achievements and occupation. It also collected information on the reasons for migrating, the financial (initial) costs of migration and how these were funded, and on the amount and frequency of monetary and non-monetary remittances. Finally, the survey asked about remittance channels and how the remittances are used, about investment patterns and about philanthropic activity.

In a second survey, IOM collected data from 300 Indonesian migrant remitters in four Malaysian cities. They asked similar questions, although now focused on the remitters and not the receivers. Information was collected about: “demographic profiles, history of migration to Malaysia, remittance behaviour and usage, remittance channels used, and amounts allocated for saving, investing, [...] donations [...] level of skills, educational attainment, and financial literacy levels including cultural or socio-economic practices that may influence remittance and migrant spending behaviour” (IOM 2010b, 71).

The results of both surveys are discussed in Section 1.3.4.

#### [C5] Low-skilled Indonesian Migrant Workers Survey in Peninsular Malaysia

Balakrishnan (2013) conducted a field survey of 858 low-skilled Indonesian migrant workers in Peninsular

Malaysia in 2009, in which he compares circular migration to permanent migration, in the context of recent theoretical and policy arguments that circular migration could deliver more desirable results for migrants, host country and home country. The survey asked about demographic characteristics, family and social networks, living circumstances, health, migration histories and future intentions, reasons for migrating, employment, remittances, mobility patterns, human capital development, policies and laws (Balakrishnan 2013, 329–338).

The report argues for the usefulness of the intention of a migrant to either stay permanently or return home as a tool for distinguishing migrants. In the survey, three-quarters of migrants were found to be intending to return. This showed, according to Balakrishnan, that a policy to specifically facilitate circular migration would be well received among migrants (Balakrishnan 2013, 297–299).

Results of the survey are discussed in Section 1.3.2.

#### **[C6 + C7] Stability of Rainforest Margins (STORMA)**

A multidisciplinary research collaboration between Georg-August University Goettingen (Germany), the Indonesian Institute of Science (LIPI), Tadulako University (Palu, Sulawesi) and Bogor Agricultural University called Stability of Rainforest Margins in Indonesia has intensively researched Lore Lindu National Park (Sulawesi) and surrounding areas. The program attempted to identify climatic, ecological as well as socioeconomic processes that have either stabilizing or destabilizing effects on the rainforest. To investigate the socioeconomic dynamics, a panel study and census were conducted. Two hundred fifty-six households were interviewed in all three rounds of the panel study: 2001, 2004 and 2006 (Faust et al. 2003; Tscharrntke et al. 2007, 2010; Priebe et al. 2010). A 2004 census was conducted in three of the villages, covering 898 households (Weber et al. 2007).

The panel study used a village survey with key informants in each village to collect aggregate data on demographics. This village survey also included detailed questions on land use and its relation to the national park and conservation issues. For example, it asked questions on the hunting of animals, the collecting of forest products and the presence of agricultural activity within park boundaries.<sup>28</sup>

28 Personal communication from Stefan Schwarze, Georg-August University Goettingen.

In addition, the panel questionnaire collected very detailed, household-level information on land use, and also included some questions on remittances, out-migration and environmental change.

The census study collected detailed information about migration history by asking about the last five places of residence and related push and pull factors for each of these places. By also including questions on access to land, land use, extraction of forest products, decision making, as well as various cultural, social and political factors, the census data allow the drawing of connections between migration and land use. Although the census collected information on employment and income, the questionnaire failed to explicitly address remittances.<sup>29</sup>

The results of this study have added substance and nuance to the understanding of the relationship between migration and deforestation in Indonesia. They show on the one hand a clear correlation between the two, and on the other hand the importance of intermediary factors. We discuss this in Section 2.

#### **[C8] Impact of Circular Migration**

Carol Hetler of Development Alternatives Inc., Indonesia has conducted a village census and survey in a Javanese village, to analyze how increasing internal circular migration for economic opportunities in urban areas was affecting the rural economy. The author conducted a household census among the 908 households in the village, and a labor force survey among an unspecified number of households, collecting data on earnings, income sources (including a category ‘income from circular migration’), consumption, and food and travel expenses. The analysis is mainly an economic one, which concerns the effects on income levels and income disparities. No attention appears to have been paid to interlinkages between circular migration and environmental aspects (Hetler 1989). Results are discussed in Section 2.3.2.

#### **[C9] Ageing in Indonesia**

Philip Kreager of the Oxford Institute of Ageing has led a comparative longitudinal study on the impact of migration on old-age support networks in three Indonesian rural communities, on Java and Sumatra (Kreager 2006; Kreager and Schröder-Butterfill 2015). Two hundred five households were surveyed in 2000

29 Personal communication from Heiko Faust, Georg-August University Goettingen.

and 2005. Elderly respondents were asked, among other things, about the locations of their adult children and the amount of monetary support they received from them. The results were used to describe how patterns and effects of migration and social support networks vary according to the social status of respondents. Based on these results, the researchers argue that monetary remittances tend to benefit elderly people, but are insufficient by themselves to generate social change. Implications for land use and forest management were not explicitly considered in this study.

Results are discussed in Section 2.4.1.

### [C10] Migrating out of Poverty

The UK's Department for International Development (DFID) is funding a research program on the links between poverty and migration in Africa and Asia, coordinated by the University of Sussex. By better understanding these links, it is hoped the program can help "maximise the poverty reducing and developmental impacts of migration and minimise the costs and risks of migration for poor people" (DFID 2018; cf. Yen et al. 2014). To alleviate a persisting lack of data, the program has conducted household surveys in five countries. The Indonesian survey was implemented in 2013, focusing on Ponorogo Regency in East Java and covering 1203 households (DFID 2013a). The questionnaire features detailed questions on migration, including questions on migration history, social networks, employment, income, financing of migration and remittances. Additionally, it contains questions on poverty, living conditions and perceived impacts of migration on well-being (DFID 2013b).

Results are discussed in Sections 2.4.1 and 2.4.2.

## 3.4 Administrative data

### 3.4.1 National sources of administrative data (D)

#### [D1] Documented International Migrant Workers

There are official processes for sending Indonesians abroad for work opportunities. These processes are overseen by the Ministry for Manpower (*Kementerian Ketenagakerjaan*), and implemented by the National Board for the Placement and Protection of Indonesian Overseas Workers (*Badan*

*Nasional Penempatan dan Pelindungan Tenaga Kerja Indonesia*; BNP2TKI), in collaboration with sub-national counterparts, government-approved private recruitment agencies and local brokers. Intending migrant workers may apply to the local government agencies or private recruitment agencies, or to the national government for government-to-government (G2G) worker placement, to become a documented international migrant worker and be sent to countries with which the Indonesian Government has an agreement, such as Malaysia, Taiwan, Korea and Saudi Arabia (AMC 2016; BNP2TKI 2017).

BNP2TKI keeps statistics that are gathered by its sub-national representatives, but there is little clarity about the methods and reliability of record keeping and integration of data, which is especially problematic considering the variety and complexity of recruitment processes. Some migrants may not be recorded, especially those processed by private recruitment agencies, and others are counted more than once, for example, once in district post and once at the airport (Bachtiar 2011, 46–50). BNP2TKI occasionally publishes statistics of its records on documented migrant workers. From its mid-2017 report on data management (BNP2TKI 2017), it is clear that BNP2TKI keeps records of:

- the number, gender, province and city/area of origin, level of education, marital status, occupation, and destination of Indonesian migrant workers placed abroad each month
- returning migrant workers (together with the Directorate General of Immigration – *Ditjen Imigrasi*)
- complaints
- Indonesian migrant workers deceased abroad and returned to Indonesia
- remittances, but these are based on BI's estimations.

BNP2TKI data are used by BI to estimate remittances and, as we indicate in Section 1.3.2, by various authors to describe trends and patterns of out-migration, although we prefer to rely on the differently assembled UN dataset (E2).

#### [D2] Documented foreign workers in Indonesia

The Ministry of Manpower keeps records of work permits issued to foreign nationals in Indonesia, which are published on a yearly basis. These data are presented disaggregated per month, nationality and work position (Kemnaker 2015; 2017).

### [D3] Transmigration

The Ministry of Villages, the Development of Underdeveloped Regions and Transmigration (*Kementerian Desa, Pembangunan Daerah Tertinggal dan Transmigrasi-Kemendesa*) publishes information and data on the development of transmigration sites and placement of transmigrants on an annual basis (Kemendesa 2016). The reports present data on the different transmigration locations and on the number, origin and type of work of transmigrants who were placed each year.

### 3.4.2 International databases (E)

#### [E1] IMF Balance of Payments Database

The International Monetary Fund (IMF)'s Balance of Payments Database includes information on international remittances, which are reported by individual countries, ideally in accordance with the IMF manual entitled "Balance of Payments and International Investment Position" (IMF 2009). The manual defines international remittances as consisting of two components: "compensation of employees" (sent by an employer in one country to an employee in another) and "personal transfers" (sent from a household in one country to another household in another country) (IMF 2009, 272). The World Bank bases its Migration and Development Briefs and its online database on IMF's database. In Migration and Development Brief 27, the World Bank writes that data on "capital transfers between households" are "difficult to obtain and hence reported as missing for almost all countries" (World Bank 2017c, 17). The same brief indicates that different countries still use different methods to calculate remittances, and that some countries fail to report on aspects of remittances (cf. Reinke 2007; World Bank 2017c).

The Statistics Department of Bank Indonesia, which compiles Indonesia's balance of payments, claims that "Indonesia's BOP coverage is largely in accordance with the concepts set out in the of Payments and International Investment Position Manual, 6th edition" (BI 2014, 77). Data on remittances are *estimated* based partly on data from the Ministry of Manpower, namely: data on the stock of Indonesian international workers, on the average wages of Indonesian international migrant workers per type of occupation per host country, and estimations of the percentage of income sent back to Indonesia (BI 2009b, 39 [Table 6.1]; 37

[Table 5.1.]). BI makes "statistical adjustments" to the data "to cover professional workers, legal workers not reported to the Ministry of Manpower, and illegal workers" (BI 2016, 3.2–3.3). To this end, it uses the results from the Survey of Remittance Patterns of Indonesian Migrant Workers (BI 2009a; BI 2014, 82).

Data on the outflow of remittances are estimated in a similar way, by combining data on the number of foreign workers in Indonesia with data on their monthly wages and an estimation of the percentage of income they remit (BI 2009b, 39). There does not seem to be, however, a Survey on Remittance Patterns of Foreign Workers in Indonesia with which to calibrate this information, which makes it even less reliable than the data on inflow of remittances.

The content of these data is described in Section 1.3.4.

#### [E2] UN Global Migration Database: International Migrant Stock

The United Nations (UN) keeps a dataset with estimates of the international migrant stock (UN 2015a, b). It does so by collecting data from all countries on the international migrant stock in that country. The dataset uses information or estimates of the foreign-born population of a country where available. That is, it uses estimates that are available in the destination country, about the place of birth of its inhabitants, and those born abroad are counted as an international migrant. Where information on place of birth is not available, the dataset refers to foreign citizens. In those cases, it uses estimates that are available in the destination country, about the nationality of its inhabitants. Those whose nationality belongs to a different country than the one in which they live, are counted as international migrants. In most cases, the source of information is the national population census, but population registers and nationally representative surveys are also consulted. Where the number of refugees is considered to not be adequately represented in the reported statistics, for example in cases where large numbers of refugees are detained in camps and not included in surveys or censuses, the number of international refugees in a country as reported by the United Nations High Commissioner for Refugees (UNHCR)<sup>30</sup> is added to

30 UNHCR in turn bases its numbers on its own data collection, as well as data delivered by countries, such as data on refugee registration or censuses (UNHCR 2015).

that country's estimated international migrant stock (UN 2015a, 7). Finally, for countries for which no data source is available, a number is filled in through a statistical intervention called imputation, in which other countries with similar characteristics serve as a model for estimating the international migrant stock in the country with no available data sources (UN 2015a, 10).

For the Indonesian case, this means that the data on Indonesian migrant stock abroad are composed of the data on Indonesians available in all the different destination countries. The data on the international migrant stock living in Indonesia are based on information on the place of birth of Indonesian residents, combined with numbers from UNHCR on international refugees in Indonesia. The sources of the information on the place of birth are most likely the population census (SP) and the intercensal survey (SUPAS). Since the dates of the reference years used in the database do not (necessarily) coincide with the survey dates, migrant stocks in the reference years are estimated through interpolation and extrapolation from the

data points (UN 2015a, 9). We will in large part rely on this dataset in Sections 1.3.1 and 1.3.2.

### **[E3] UN Global Migration Database: International migration flows to and from selected countries**

In contrast to the dataset on the international migrant stock, the dataset on international migration *flows* contains fewer estimations and tends to be based on (relatively) comprehensive administration of migration inflows and outflows. The dataset is therefore restricted to those countries that keep relatively detailed and reliable records of international migrant flows: 15 countries in 2005, 29 countries in 2009 and 45 countries in 2015 (UN 2015c). These data are collected from multiple sources, depending on what is available per country, such as population registers, border controls and residence permits. Despite the increasing number of countries with such data, Indonesia is not yet included in this dataset, from which we may infer that, Indonesia does not “gather this information [on the inflows and outflows of international migrants] systematically” (UN 2015c, iii), or at least not according to UN standards.

## 4 Lessons, limitations and directions for future research

Overall, mobility in Indonesia has been increasing over recent decades. However, there are ambiguities, variability across space and demographic groups, and fluctuations over time in internal migration. That international out-migration to certain countries is increasing seems indisputable, although out-migration too is characterized by regional variation, since out-migration to South America appears to be extremely low and that to Europe is decreasing. The main streams of international labor migrants are young, male, manual laborers in agriculture or construction, young, female domestic workers and young, male and female international students. The remittances international labor migrants send back to their families in Indonesia are considerable, totaling 1.1% of GDP in 2015, according to estimations by Bank Indonesia.

The existing information on patterns and trends needs to be interpreted with care. The variability and fluctuations in internal migration intensity across time, space and demographic groups makes it important to have specific and recent data. Reliability also remains an issue. National data on international migration are incomplete, and the reliability of international data is hard to estimate, since it combines national records of destination countries to estimate stocks of Indonesian migrants.

In the literature review, we have found evidence that when it comes to understanding the relationship between these migration patterns and forest management and land-use strategies, a multitude of intermediary factors – economic, environmental, political, social and demographic – should be considered, because they are often more important in determining forest outcomes than the bare fact of migration. To study such a broad conception of the forest–migration nexus, however, may require a methodological challenge. A series of careful case studies considering the

various possible links between on the one hand human–environment interactions, and on the other hand the whole range of factors identified in the literature as relevant to migration and/or its effects on the environment, could yield interesting material for synthesis. Not every type of factor will be equally decisive everywhere and the synthesis should analyze which factors matter most in which places, and how they determine outcomes for people and forests.

To assess the importance and representativeness of such case studies, it would be useful to have more reliable data on international migration and remittances, and more specific data on internal migration. For better data on international migration, data-collection efforts will have to be improved. The inclusion of a question on international out-migration in the latest SUPAS is a step in the right direction, although the results of this innovation are not available for unknown reasons. On internal migration, it appears that the national surveys collect a large amount of detailed information. Even though the unexplained differences in outcomes between the national censuses and the intercensal surveys makes it problematic to compare their results and may put the overall reliability of this data into question, it should certainly be possible to acquire much more detailed information on internal migration than is reflected in currently available reports. For example, since almost half of all migrants are intraprovincial migrants (Arifin and Ananta 2013, 118), the exclusive focus of much literature on interprovincial migrants is unhelpful. Other data sources could also be exploited more fully, such as the Indonesian Family Life Survey and the survey on Rural–Urban Migration in China and Indonesia. The Indonesian Family Life Survey data on land use and forests should also be interpreted in combination with their results on migration

histories and family well-being. Additionally, it would be useful to see what the SUSENAS data have to say about the importance of remittances for households. Case studies, as for example, the STORMA project, have proven their potential to get a deeper sense of the interconnections between migration and forests by combining questions on

both within one survey. Methodological insights about the study of these interconnections could be derived from them to improve future data collection activities. Finally, the Village Potential census (PODES), which addresses a wide range of topics, could provide crude baselines with which to compare future results.

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*CIFOR Occasional Papers* contain research results that are significant to tropical forest issues. This content has been peer reviewed internally and externally.

This paper provides an overview of the current state of knowledge about migration and its relation to forests in Indonesia.

An evaluation of current patterns and trends of migration finds that while mobility is increasing nationally and internationally, there are strong variations across regions, age and gender. National-level findings do not offer much insight on regional- and local-level dynamics. An evaluation of data sources (subnational, national and international) on migration and remittances, shows that detailed data are collected on internal migration patterns. However, this does not capture short-term circular migration and internal remittances. Data collection efforts on international migration and remittances also leave room for improvement.

A review of the existing literature finds there is a large body of work on the drivers and effects of migration in Indonesia. However, much of this has focused on certain dimensions of migration (such as social or political or economic) in isolation, thereby preventing a multidimensional understanding of the relations between migration, forests and land-use change. Furthermore, there is a disproportionate focus on the effects of in-migration. While this is understandable in light of Indonesia's history of state-sponsored transmigration and global concerns over deforestation in Indonesia's forest frontiers, there is a dearth of research on the effects of migration on the people and forests left behind. As a result, critical questions remain unaddressed about land-use decisions, labor allocation and remittance investment.

This paper is a part of CIFOR's Migration and Forests research program to identify the role of migration and remittances in the changing context of forested landscapes.



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