

Collaborative consumption in Southeast Asian cities: Prospects and challenges for environmental sustainability

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**Australian
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Declaration by author

This thesis contains no material that has been accepted for the award of any other degree or diploma in any university. To the best of the author's knowledge and belief it contains no material previously published or written by another person, except where reference is made in the text or chapter statements of contribution.

Monique Retamal

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Papers forming the thesis by compilation

This thesis by compilation contains five research papers, which are listed below, along with a statement of authorship contributions. This is in keeping with ANU guidelines regarding Theses-by-Compilation.

Paper I

Retamal, Monique. submitted. “Characterizing Collaborative Consumption in Southeast Asian Cities: Exploring the Possibilities for “Lifestyle Leapfrogging.”

Paper II

Retamal, Monique. 2017. “Product-Service Systems in Southeast Asia: Business Practices and Factors Influencing Environmental Sustainability.” *Journal of Cleaner Production* 143 (February):894–903. <https://doi.org/10.1016/j.jclepro.2016.12.032>.

Paper III

Retamal, Monique, and Heinz Schandl. 2017. “Dirty Laundry in Manila: Comparing Resource Consumption Practices for Individual and Shared Laundering.” *Journal of Industrial Ecology* In press. <https://doi.org/10.1111/jiec.12696>.

Contributions:

MR undertook data collection, chose the framework for analysis, undertook the quantitative and qualitative analyses and wrote the paper (80%)

HS provided guidance, suggested the paper be interdisciplinary and consider social dimensions such as gendered work. **HS** also provided multiple critical reviews and contributed references (20%)

Paper IV

Retamal, Monique, and Karen Hussey. submitted. “Transitions to sharing? Barriers and Enablers for Collaborative Consumption in Southeast Asian cities.”

Contributions:

MR undertook data collection, analysis and wrote the paper (80%)

KH suggested the socio-technical regimes framework, provided multiple critical reviews, and edited the text (20%)

Paper V

Retamal, Monique. Submitted. "Collaborative consumption in Southeast Asian cities: A synthesis of prospects and challenges for environmental sustainability"

Abstract

The rise of collaborative consumption and the sharing economy suggests a growing acceptability of ownerless consumption, which could enable more resource efficient use of goods. These phenomena have largely been studied in high income countries, however, businesses enabling shared-access to goods or services have been emerging around the world. In Asia, rapid economic growth is enabling vast numbers of ‘new consumers’ to access a middle-class lifestyle. In this context, it is important to examine the potential for nascent movements such as collaborative consumption to offer more sustainable alternatives to mass consumption. This thesis examines the use of collaborative consumption businesses in emerging economies in Southeast Asia, focusing on the cities of Hanoi, Bangkok and Manila. The aim is to understand the prospects and challenges for these businesses to offer more environmentally sustainable modes of consuming.

Using an interdisciplinary approach, I investigate the prospects for collaborative consumption (CC) businesses in terms of environmental sustainability and with regard to the institutional and personal dimensions of their use. I examine the broader cultural, social, legal, political and economic contexts for CC businesses in these three cities as well as specific case study businesses. I primarily use qualitative research methods, but also develop some quantitative estimates of resource use. The scope is limited to product-service systems for households that enable shared-access to goods, or offer services to replace products. I undertook over forty interviews with businesses, consumers, academics, policymakers and other stakeholders in Bangkok and Hanoi. CC businesses interviewed included rideshare, taxishare, bikeshare, laundry services and rental for tools, toys, clothing and designer bags. In Manila, I undertook nineteen interviews for a case study focused on comparing individual and shared laundering methods.

Four distinct journal articles were developed for this thesis. In these articles, I have: characterized the current business types and users in these cities; examined CC business sustainability practices; explored consumer practices and resource use with regard to shared and individual laundering; and identified the socio-cultural and institutional

barriers and enablers for CC businesses. I have drawn on different theories for each article, including: adaptive theory, social practice theory and multi-level perspective. I use a social practice theory framework to integrate the findings of the four articles and to develop the conclusions.

Collaborative consumption (CC) businesses in our study appear to be used by niche groups: university students, young families, people living in densely populated areas, and emerging and upper middle-class people keen to access better quality and more diverse goods. CC businesses in our study were inclined to use durable, quality goods, to undertake maintenance, and sell their goods for second hand use and potential remanufacturing. These businesses may be more likely to achieve environmentally sustainable outcomes in high density environments, where home storage is limited and where transport needs can be reduced. Our detailed case study on laundering found that social changes and the nature of housing is likely to influence the choice of individual or shared laundering methods. The socio-cultural and commercial regimes in Bangkok and Hanoi present major barriers to further adoption of CC, with regards to “ownership cultures” and resistance from incumbent industries. However, attitudes are changing and many of the physical drivers for CC, such as high-density living, are prominent in Southeast Asia. Many of the barriers to CC can be addressed through supportive policies and institutional arrangements such as: appropriate legal definitions and frameworks, business permits, and programs to facilitate financing for CC businesses. In all cases, positive social and environmental outcomes will need to be encouraged or incentivised by governments.

Key words

product-service systems; access-based consumption; sharing economy; household consumption; emerging economies; sustainable consumption and production; sustainable lifestyles

Glossary of Terms

| Term | Definition |
|--|--|
| Access-based consumption | Consumers gain access to products, but no transfer of ownership takes place (Bardhi and Eckhardt, 2012) |
| Business model | “Defines the manner by which the business enterprise responds to and delivers value to customers, entices customers to pay for value, and converts those payments to profit” (Teece, 2010, p. 179) |
| Business movement | A shift in business models, value propositions |
| Business to business (B2B) | Where exchanges occur between businesses |
| Business to consumer (B2C) | Where exchanges occur between businesses and consumers |
| Collaborative consumption (CC) | “People coordinating the acquisition and distribution of a resource for a fee or other compensation” (Belk, 2014, p. 1597). In this thesis, it specifically refers to businesses offering “shared-access” and “services to replace products” |
| Collaborative consumption (CC) businesses | Businesses offering collaborative consumption options to consumers |
| Collaborative consumption business practices | Everyday practices conducted by business operators in the course of offering collaborative consumption |
| Consumer to consumer (C2C) | Where exchanges occur between regular, independent consumers, rather than between businesses and consumers |
| Consumption movement | A collective shift in consumption patterns or modes of consumption |
| Peer to peer (P2P) | The same as “consumer to consumer (C2C)” above |
| Prospects | The probability for advancement and success in the future |
| Product-service systems (PSS) | “A mix of tangible products and intangible services designed and combined so that they are jointly capable of fulfilling final customer needs” (Tukker and Tischner, 2006) |
| Service-ability | The characteristics of a physical product that enable it to be offered as a service, or “servicised” |
| Services to replace products | Where a product can be offered as a service and effectively replace consumption of the physical product |
| Share-ability | The characteristics of a physical product that enable it to be offered for shared-access |
| Shared-access | The same as “access-based consumption” above |
| Shared consumption | Where consumers share in the use of tangible goods, usually non-simultaneously. Simultaneous sharing can occur with carpooling. |

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PART I

INTRODUCTION, LITERATURE AND RESEARCH DESIGN

CHAPTER ONE:

Introduction

The development of consumer culture has historically been intertwined with the process of industrialisation (Slater, 1997). Major social and economic changes accompany the industrialisation process, which influences employment, housing, family systems and consumption (Cowan, 1983; Slater, 1997; Vente and Chen, 1980). During industrialisation in the West, new employment opportunities in factories shifted economic activity away from the home, and provided income for households to purchase newly proliferating consumer goods (Cowan, 1983; Slater, 1997). While factories initially produced heavy capital goods, over time, the focus increasingly shifted toward manufacturing consumer goods (Slater, 1997). The development of mechanized and electrified equipment for undertaking household tasks provided an increasing range of consumer goods for households to purchase to ease their household burden (Cowan, 1983). In Asia, similar changes occurred, with industrialisation separating economic activities from the household; and leading to smaller family structures, greater employment for women, and, among those that could afford it, greater use of domestic help (Vente and Chen, 1980). Industrialisation in Asia also accelerated the process of urbanization, with a major shift in housing styles towards more high-rise living, which in turn has changed community relationships (Vente and Chen, 1980).

As industrialisation progressed in the West, production shifted focus from collective and social provision of goods towards serving the individual consumer (Slater, 1997). For example, during the post-war period there was a significant shift away from public or commercial services such as “domestic servants, laundries, theatre, cinema and public transport”, towards home appliances such as “washing machines, television/video, private cars and personal computers” (Roy, 2000, p. 292). Considering the historical trajectory of ever more individualized consumption, the recent emergence of collaborative consumption and the sharing economy represents a globally significant

socio-economic development (Frenken, 2017). With offerings of collective and shared provision, and the re-integration of production into the home (Ritzer and Jurgenson, 2010), these popular movements have the potential to dramatically shift systems of production and consumption.

The need for change in consumption systems

While ownership of mass produced consumer goods has proliferated, product lifespans have been decreasing, particularly for electrical and electronic goods (Babbitt et al., 2009; Huisman et al., 2012). Increasingly individualised consumption and shorter product lifespans combined with growing populations and greater wealth has intensified global consumption of material goods. This massive growth in consumption has led to exponential increases in the extraction of natural resources and the generation of waste (Schandl and West, 2010; UNEP, 2011a, 2011b). Natural resource extraction and its dispersal as waste products has significant impacts on earth's systems, with planetary boundaries being exceeded for: climate change, biosphere integrity and biochemical flows, amongst others (Rockström et al., 2009; Steffen et al., 2015). These environmental pressures are intensified in the Asia-Pacific region, which is currently dominating global economic growth and resource consumption (Schandl and West, 2010). In tandem, waste volumes are increasing rapidly in the region (Hoornweg and Bhada-Tata, 2012), with discarded electrical and electronic goods one of the fastest growing waste streams (UNEP, 2011b; Yu et al., 2010b).

With rapid economic growth in Asia, vast numbers of new consumers are emerging (Kharas, 2010), and are seeking to improve their lifestyles with greater access to consumer goods and opportunities to travel by car and air (Zhao and Schroeder, 2010). However, despite the scale of change, a large proportion of the population of Asia remains poor, so that further growth will be needed to improve their livelihoods in the future (Jackson, 2009; Zhao and Schroeder, 2010). In addition, economic growth remains an important facet of development agendas (Schroeder and Anantharaman, 2017). However, as a new consumer class emerges in Asia, there may be potential to adopt less resource intensive consumption patterns.

Economic growth is strongly coupled with environmental pressures arising from resource extraction and the generation of pollution and waste (UNEP, 2011a). In order

to break this link, and decouple economic growth from environmental degradation, production and consumption must become less materially intensive. Certain business models, such as product-service systems (PSS) offer the potential to lower the environmental impacts of consumption (Mont, 2002). The PSS business model has been conceived as a combination of products and services that can deliver functionality with less resource use (Baines et al., 2007). This concept relates to Stahel's (1997a) service economy, where a shift from products to services can enable major reductions in material use. Historically, product-service systems have been considered more successful in business to business (B2B) applications (e.g. leasing photocopiers or jet engines); with a lack of business to consumer (B2C) examples apparently due to a lack of customer acceptance (Tukker, 2015). However, in recent years, product-service system business models have appeared as part of popular movements of collaborative consumption and the sharing economy. This suggests that PSS business models have started to become more acceptable to individual consumers.

New business movements

The emergence of collaborative consumption and the sharing economy suggests growing acceptability of ownerless consumption. Businesses such as car-share, bike-share and clothing rental have been emerging under the banner of collaborative consumption and the sharing economy (Botsman and Rogers, 2010; Owyang et al., 2014), and represent popular manifestations of business to consumer (B2C) product-service systems. Collaborative consumption and the sharing economy came to prominence in industrialised countries as new ways of consuming, by sharing idle assets, often through the use of internet platforms (Botsman and Rogers, 2010; Owyang et al., 2014). While the sharing economy has come to refer to peer to peer sharing exchanges (Codagnone and Martens, 2016; Frenken and Schor, 2017), collaborative consumption may be broader, incorporating product-service systems, resale markets and sharing of intangible goods and services (Botsman and Rogers, 2010). Collaborative consumption is expected to enable a shift from individual ownership to consuming by accessing goods as needed (access-based consumption) (Botsman and Rogers, 2010) and is typically observed in advanced economies. However, in emerging economies these business types could offer an opportunity to shift directly to access-based consumption. Schroeder & Anantharaman (2017) refer to this as "lifestyle

leapfrogging”, where they propose that new consumers in emerging economies can improve their lifestyles while avoiding a high impact western consumer lifestyle. This presents an opportunity before new consumers are “locked in” to wasteful consumption patterns through infrastructure and societal expectations (Schroeder and Anantharaman, 2017).

There are many claims that collaborative consumption offers more sustainable modes of consuming, and more equitable economic opportunities (Botsman and Rogers, 2010; Martin, 2016). However, so far there is a lack of evidence to support these claims (Codagnone and Martens, 2016; Heinrichs, 2013; Roxas, 2016). Similarly, for product-service systems, there are indications from the literature that some sustainability improvements are likely, however, this depends on the nature of the business model and the context in which it operates (Tukker, 2015; Vezzoli et al., 2015). Substantially more research is needed to identify business models and contexts that contribute to sustainable consumption. The literature has primarily focused on collaborative consumption and PSS in industrialised countries, and there is a lack of research investigating the use of these business models in emerging economies. These research gaps are discussed further in Chapter 2. While the process of industrialization and the development of consumer culture is still underway in emerging economies, there may be unique conditions and opportunities for collaborative consumption to become established.

This thesis

In this thesis, I set out to examine the prospects for collaborative consumption (CC) to contribute to sustainable consumption in emerging economies. I chose Southeast Asia as a focal point for this study as it includes multiple emerging economies, in one of the most rapidly developing regions in the world. Within Southeast Asia, I chose three capital cities, Hanoi, Metro Manila and Bangkok, as case studies to examine collaborative consumption businesses in the region. Using an interdisciplinary approach, I conducted four distinct studies within the three cities, to investigate: the characteristics of CC offerings in these three cities and their potential to meet material needs; the sustainability of CC business practices and the conditions which enable more sustainable practices; the resource consumption of shared vs individual consumption (in a case study of laundering); and the socio-cultural and institutional contexts in which

CC businesses operate in the three cities. In the following sections, I set out the research questions, summarise the methods, explain the thesis structure, its originality, and the background for the case study cities.

Aim and research questions

The aim of this thesis is to investigate the potential for collaborative consumption business models to contribute to sustainable consumption in Southeast Asia. Therefore, the primary research question is:

What are the prospects for environmentally sustainable collaborative consumption practices in Southeast Asian cities?

“Prospects” refer to the potential for CC practices to prosper and become more widely adopted, by considering the range of barriers and enablers that businesses and consumers encounter. The primary research question draws “sustainability” and “prospects” together, because I am only interested in the prospects for collaborative consumption when it has sustainability potential. As this is a broad research question, I have developed a number of sub-research questions:

1. *In which sectors is collaborative consumption (CC) currently emerging in these cities, and who are the users? In which sectors do CC businesses have the potential to replace the purchase of goods?*
2. *How are CC businesses currently operating in these cities with regard to sustainability practices? What factors enable or inhibit them from achieving environmentally sustainable outcomes?*
3. *How does resource use compare for individual and shared consumption in the case of laundering in Manila? What conditions facilitate collaborative consumption?*
4. *What are the barriers and enablers for CC business in Bangkok and Hanoi in terms of the relevant socio-technical regimes? What are the key levers for change?*

These sub-research questions are displayed visually in Figure 1 with regard to each of the papers that form this thesis, and the themes of “environmental sustainability” and

“prospects and challenges”. At the end, Paper V integrates the results of the previous four papers and addresses the primary research question.

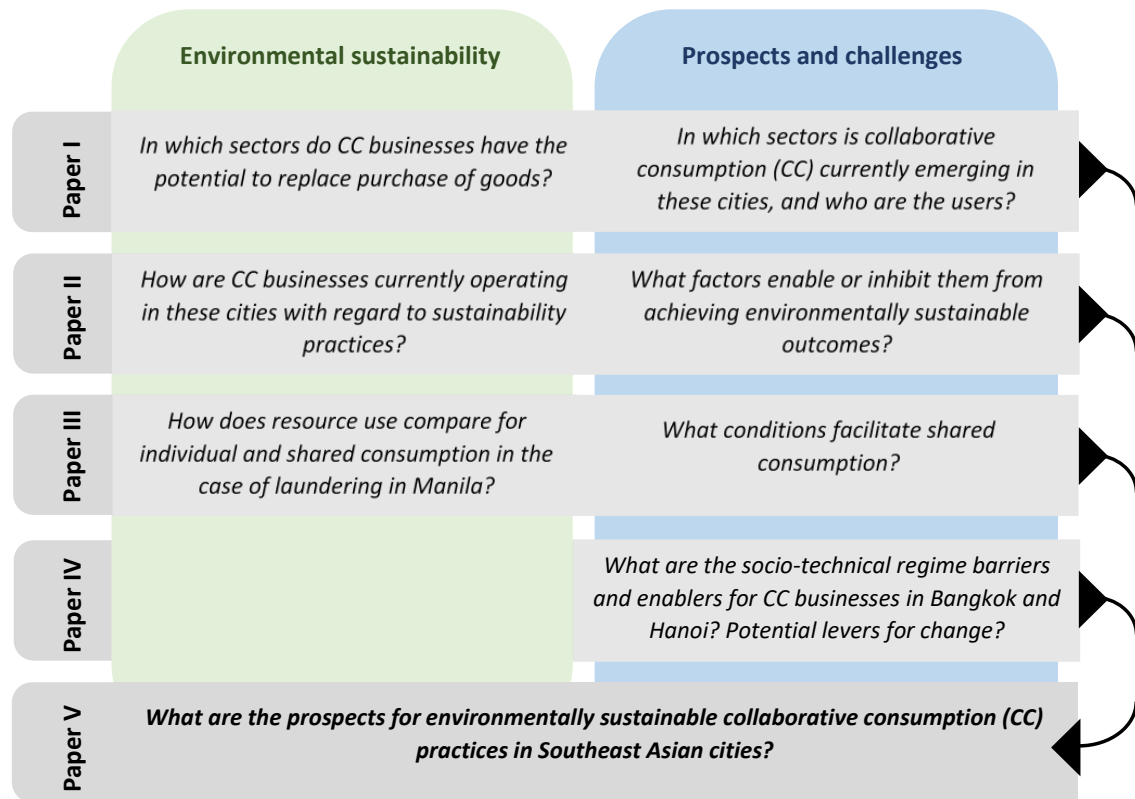


Figure 1: Research questions as they relate to thesis themes and papers

Figure 1 illustrates that most of the research papers in this thesis span the two themes. “Environmental sustainability” is examined by initially scoping the sectors in which collaborative consumption is most likely to replace purchases, understanding whether business practices support sustainability and by comparing resource consumption within a specific case study in Manila. The theme “Prospects and challenges” is investigated by initially identifying the likely sectors and users of CC, understanding factors or contexts which enable or inhibit CC to prosper and achieve environmentally sustainable outcomes. Paper IV additionally examines potential levers for change.

A note on thesis by compilation

This thesis has been prepared as a “Thesis by compilation” according to ANU guidelines. In Chapters 1 to 3, I provide an introduction, review of the literature and overview of methods in order to preface the entire body of work. This is followed by

five chapters which have been prepared as stand-alone journal articles. As such, there is some inevitable repetition with regards to introductions and methods.

Research design and methods

The research questions were conceived as a means of exploring the potential for collaborative consumption businesses in emerging economy cities. The three cities in Southeast Asia were chosen as case studies, with the aim of considering the broader potential for CC in the region and potentially in other emerging economies. The research questions posed in this study lead to an interdisciplinary approach, where each paper addressed a different sub-question and drew from theories and data that were appropriate to the situation. The first two papers used an adaptive theory approach, the third and fifth papers applied social practice theory and the fourth paper drew on multi-level perspective. I primarily used qualitative research methods, but also developed some quantitative estimates of resource use.

Collaborative consumption, where businesses offer product sharing to consumers, is a relatively new phenomenon, and its presence in Southeast Asia had barely been examined at the commencement of this research. Accordingly, the research conducted for this thesis was exploratory and required significant field work to find relevant businesses and stakeholders. I lived in each of the three cities for two months, based at local universities while undertaking my field research. In order to find collaborative consumption businesses, I developed a framework of business types, and with the help of local assistants, searched for each business type online both in English and in the local language. This process helped us to develop an initial database of CC businesses in each city. We recruited business owners for interviews using this database. At the same time, I began interviewing stakeholders and knowledgeable individuals, such as academics, practitioners, NGOs and donors working in the field of sustainable consumption and production, policymakers and major businesses. The interviews with CC businesses and stakeholders were predominantly semi-structured and qualitative. However, in Metro Manila, for the case study of resource use in laundering businesses I conducted structured interviews with laundry businesses and individuals in order to collect quantitative data regarding resource use. While interviewing CC businesses I also collected observational data about their shopfronts and workspaces.

Overall, I undertook sixty-one interviews with a combination of CC businesses, consumers, academics, policymakers and other stakeholders, with approximately twenty undertaken in each of the three cities. These interviews were analysed qualitatively and according to the framework set up in each paper. The research design and methods are explained in the latter part of Chapter 3. The papers drew on a combination of data sources including the business database, the semi-structured and structured interviews, observational data and official documents such as government statistics, policies, strategies and laws. The methods are also described within each of the papers.

A note on authorship

In this thesis, I primarily use the pronoun “I” where I have been the sole author of the chapter. In chapters that have been co-authored, I use the pronoun “we”. One exception is Chapter 5: Paper II, which has been published using the pronoun “we” despite being a sole authored paper.

Thesis structure

This thesis is structured in three parts. Part I sets out the introduction, literature review, theoretical framework and methods. Part II presents the main body of the research results in the form of four journal articles. Part III provides a synthesis of results, and relates these studies back to the overarching research question. Part III also comprises a synthesis paper and the conclusions. In Table 1, I provide an overview of the thesis structure and the contents of each chapter.

Table 1: Thesis structure

| | |
|--|--|
| Part I – Introduction, literature and research design | |
| Chapter 1 | <i>Introduction</i> Chapter 1 provides the introduction, research questions, overview of methods, academic contributions and background for the case study cities. |
| Chapter 2 | <i>Resource depletion, growth and consumption: Issues and interventions</i> Chapter 2 sets the context for this thesis and ‘defines the problem’, with analysis of global environmental issues and interventions, and reviews research regarding new business models including collaborative consumption. |
| Chapter 3 | <i>Key concepts, theories and methods</i> Chapter 3 explains the theoretical foundations of the thesis, the research design and methods. |
| Part II – Research | |
| Chapter 4 | <i>Paper I: Characterising collaborative consumption in Southeast Asian cities: exploring the potential for “lifestyle leapfrogging”</i> Paper I characterises the nature of the collaborative consumption businesses in three southeast Asian cities – Metro Manila, Hanoi and Bangkok. |
| Chapter 5 | <i>Paper II: Product-service systems in Southeast Asia: Business practices and factors influencing environmental sustainability</i> Paper II examines the environmental sustainability of collaborative consumption business practices in Southeast Asia, based on interviews with business owners. |
| Chapter 6 | <i>Paper III: Dirty Laundry in Manila: Comparing resource consumption practices for individual and shared laundering</i> Paper III is a detailed case study of shared and individual laundering methods in Metro Manila, the Philippines, and examines the differences in social practices and resource consumption. |
| Chapter 7 | <i>Paper IV: Transitions to sharing? Barriers and enablers for collaborative consumption in Southeast Asian cities</i> Paper IV examines the formal and informal institutional environment for collaborative consumption businesses in Bangkok and Hanoi. |
| Part III - Synthesis | |
| Chapter 8 | <i>Paper V: Collaborative consumption in Southeast Asian cities: A synthesis of prospects and challenges for environmental sustainability</i> Paper V draws together the four papers in Part II to understand the prospects for environmentally sustainable collaborative consumption businesses in Southeast Asia. |
| Chapter 9 | <i>Conclusions and future research</i> Chapter 9 summarises the major findings and future directions for research. |

Originality and innovation

This thesis addresses a significant research gap where there has been little investigation of collaborative consumption (CC) in emerging economies. Here, collaborative consumption refers specifically to product service systems that offer “shared access” or “services to replace products” from a business to a consumer. This thesis provides several unique contributions to the academic literature, by examining CC in emerging economies in Southeast Asia, and using an interdisciplinary approach that draws on industrial ecology and social science. Industrial ecology

The thesis:

- Provides insights into the nature and use of collaborative consumption and product service system businesses in emerging Southeast Asian cities, and explores the potential for leapfrogging consumption through use of CC. It examines the potential with regard to socioeconomic data and current ownership rates of goods, and contributes to theory development regarding the characteristics of products that lend themselves to shared-access or the ability to be serviced (Chapter 4: Paper I)
- Develops a framework of key sustainability issues in order to examine the sustainability of practices within collaborative consumption businesses, and uses this framework to assess businesses in the Southeast Asian setting (Chapter 5: Paper II)
- Compares actual resource consumption for individual and shared laundering practices in Metro Manila, drawing on empirical data, with the first examples of this comparison undertaken in an emerging economy setting. It also illuminates the social dimensions of various laundering practices and the complexity associated with technological transitions (Chapter 6: Paper III)
- Presents a comprehensive examination of socio-technical regime barriers and enablers for collaborative consumption in Hanoi and Bangkok, with key insights for policy makers and SCP practitioners (Chapter 7: Paper IV)
- Presents a unique synthesis of findings using social practice theory to identify the key factors from the social, personal and material aspects of consumption

that influence the prospects for environmentally sustainable collaborative consumption. (Chapter 8: Paper V).

- The use of social practice theory as a unifying meta theory is innovative, as I incorporate both quantitative and qualitative findings and consider consumption influences at a meta scale (Chapter 8: Paper V).

Case study background

Bangkok, Hanoi and Metro Manila are the capital cities of three rapidly growing Southeast Asian economies, each with different political and economic histories. They were chosen as case studies for this research due to their emerging economy status and due to their diversity. The city locations are indicated on the map in Figure 2: Map of Southeast Asia, and key statistics for the three cities are shown in Table 2. The Philippines and Thailand were part of the original five countries forming the Association of Southeast Asian Nations (ASEAN) (Tongzon, 1998). They are both capitalist countries with market and export-oriented economies, and fairly liberal policies for foreign investment (Raquiza, 2012; Tongzon, 1998). The Philippines was the first ASEAN country to industrialize starting in the 1950s, and Thailand followed in the early 1960s (Tongzon, 1998). In contrast, Vietnam adopted a communist development strategy in the mid 1950s to undertake state-led industrialization, particularly in the north of the country (McGregor, 2008). However, in 1986, Vietnam adopted policy reforms known as “Doi Moi”, which gradually opened their economy to the international market (Mc Gregor, 2008). Vietnam began industrializing later than Thailand and the Philippines, and eventually joined ASEAN in 1995, which means they are now a member of the Asian Free Trade Agreement (AFTA) (Tongzon, 1998). As such, Vietnam is considered a reforming centrally planned economy (Van Arkadie and Mallon, 2004).

While the Philippines was the first to industrialize, its economic trajectory differed from Thailand’s, as political and economic problems plagued the country in the 1980s and led to stagnation (Tongzon, 1998). At the same time, Thailand’s economy was surging with high economic growth during the 1980s and early 1990s (Tongzon, 1998). Vietnam achieved high economic growth rates slightly later, by the mid 1990s (Bui et al., 2005). More recently, the Philippine economy has been undergoing recovery (Tongzon, 1998), and both Vietnam and the Philippines are expected to grow relatively

faster than other countries in ASEAN (HKTDC Research, 2017). Thailand has attained upper-middle income status in the World Bank classifications and has a much higher Gross National Income (GNI) (see Table 2), than the Philippines and Vietnam, which are both considered lower-middle income countries (World Bank, 2018). While Thailand has the highest income, the city of Bangkok also suffers from the highest level of inequality amongst the three cities. Available data on inequality (from 2006) shows that Bangkok has a GINI coefficient of 0.48, followed by Metro Manila with 0.40 and Hanoi with 0.28 (UN-Habitat, 2013). Gini coefficients greater than 0.4 are considered to indicate high income inequality; therefore, Hanoi is significantly more equal than the other two cities.

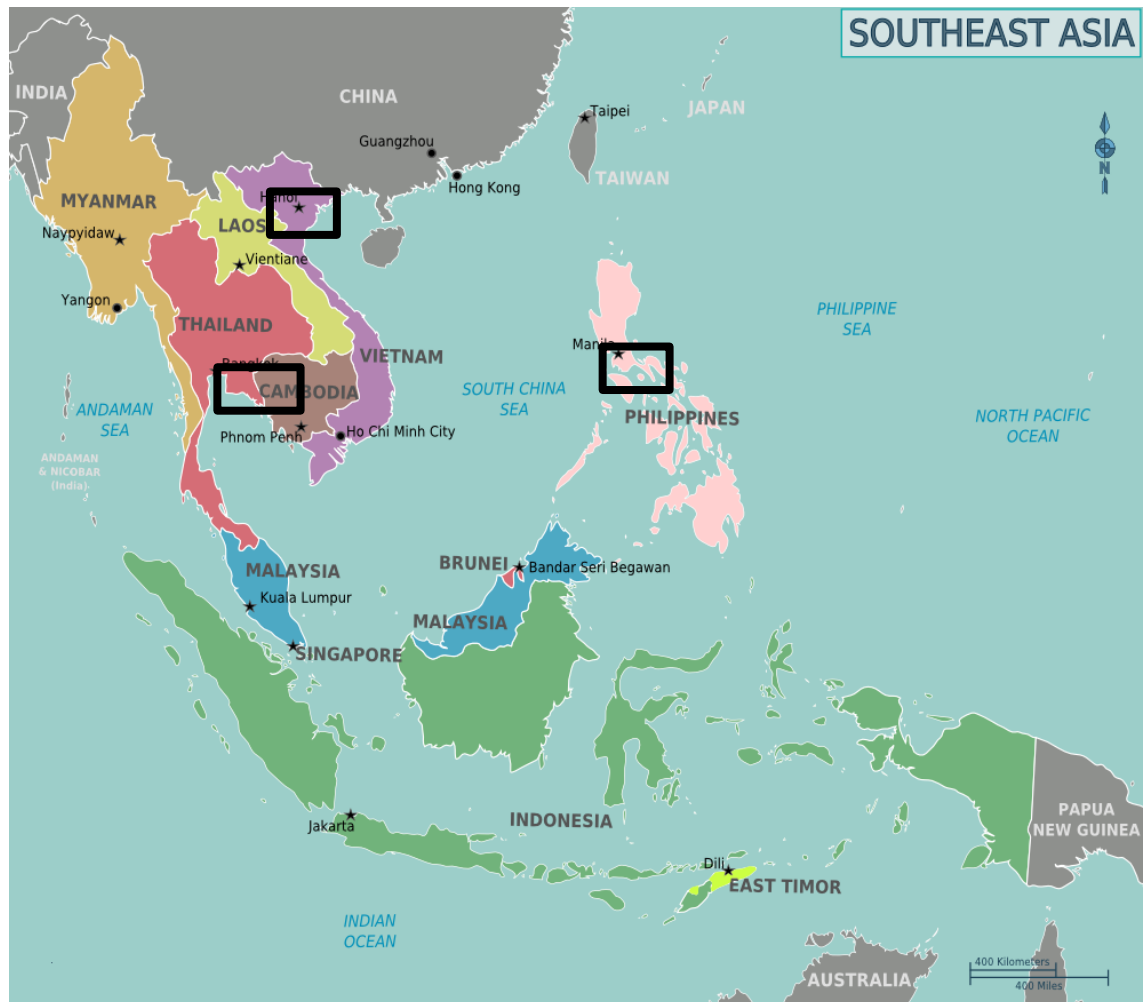


Figure 2: Map of Southeast Asia.

Southeast Asian countries are shown in colour, while surrounding countries are in grey. Black outline boxes indicate the location of the three case study cities – Bangkok, Hanoi and Manila. Image by Cacahuete et al. (2008) reused under creative commons license.

Income inequality is also reflected in the housing styles in the three cities, as Mc Gregor (2008) notes that housing is most diverse in the market-led economies of Bangkok and Manila with a spectrum from high to low rise dwellings and informal settlements. Housing styles are more consistent in Hanoi with medium rise dwellings, however, diversity is growing in the city (McGregor, 2008). Both Bangkok and Metro Manila have experienced major rural to urban migration and rapidly expanding city boundaries, including expansion of informal settlements (Murakami et al., 2005). Of the three cities, Metro Manila is expected to have the highest population, and the highest population density, as well as the largest family size (see Table 2). Bangkok has the smallest family size, and is the most spread out, with the lowest population density and the greatest land area (see Table 2). Hanoi is by far the smallest city considering land area, but maintains a reasonably high population density (see Table 2). Aside from their economic and political differences, cultural backgrounds also differ. Thailand is a majority Buddhist country, the Philippines is majority Christian, while Vietnam is predominantly without religion (CIA, 2017; HKTDC Research, 2016).

In Table 3, I have summarized some key differences between the three cities to highlight their economic, political and physical diversity. While it is not possible to test the impact of all of these differences on consumption in these cities, their diversity means that this research on collaborative consumption in these cities covers a spectrum of different circumstances.

Greater detail regarding the physical nature of the cities, their culture and consumer culture is provided at the end of Chapter 3. In the next chapter, Chapter 2, I review and interrogate the literature regarding global environmental issues and the political approaches and interventions undertaken hitherto to improve sustainability.

Table 2: Key statistics for Metro Manila, Hanoi and Bangkok

| City data | Metro Manila | Year (source) | Hanoi | Year (source) | Bangkok | Year (source) |
|---|------------------------------------|---------------|------------------------------------|---------------|-------------------------------------|---------------|
| Population | 11,953,140 | 2013 (1) | 7,087,700 | 2014 (2) | 8,581,549 | 2014 (3) |
| Area (km ²) | 1580 | 2016 (4) | 466 | 2016 (4) | 2590 | 2016 (4) |
| Population density (persons/km ²) | 15,300 | 2016 (4) | 8000 | 2016 (4) | 5800 | 2016 (4) |
| Urban household occupancy | 4.3 | 2010 (5) | 3.7 | 2009 (6) | 2.7 | 2010 (7) |
| City inequality (GINI) | 40 | 2006 (8) | 28 | 2006 (8) | 48 | 2006 (8) |
| Country level | Philippines | | Vietnam | | Thailand | |
| National GNI - PPP (USD/pp/year) | 9400 | 2016 (9) | 6050 | 2016 (9) | 16070 | 2016 (9) |
| Urban slum population | 18.3 million | 2009 (8) | 9.2 million | 2009 (8) | 6.1 million | 2009 (8) |
| World bank classification | lower middle income, \$1,036–3,955 | 2018 (10) | lower middle income, \$1,036–3,956 | 2018 (10) | upper middle income, \$3,956–12,235 | 2018 (10) |

Sources: 1) (PSA, 2015), 2) (GSOV, 2014), 3) (NESDB, 2014), 4) (Demographia, 2015), 5) (PSA, 2012a), 6) (Nguyen, 2011), 7) (NSO, 2010), 8) (UN-Habitat, 2013), 9) (World Bank, 2016), 10) (World Bank, 2018)

Table 3: Summary of differences between the three cities

| Bangkok | Metro Manila | Hanoi |
|--|--|--|
| Capitalist | Capitalist | Socialist |
| Open market economy | Open market economy | Formerly planned, transitioning economy |
| Early industrialisation and rapid growth | Early industrialisation and slow growth | Later industrialisation and rapid growth |
| Wealthier with high income inequality | Growing wealth with high income inequality | Less wealthy with low income inequality |
| Small family size | Large family size | Medium family size |
| Diverse housing styles | Diverse housing styles | Relatively consistent housing styles |
| Large city with low density | Large city with high density | Small city with high density |
| Primarily Buddhist | Primarily Christian | Primarily non-religious |

City character, culture and consumer culture

In this section, I provide an overview of the three cities in terms of their infrastructure and landscapes, consumer culture and national culture.

The city of Metro Manila

Metro Manila consists of eight connected cities and nine other municipalities, and sits to the east of Manila Bay (Murakami et al., 2005). It spans an area of 1580 km² (Demographia, 2015), and is one of the most densely populated urban areas in the world (Saloma and Akpedonu, 2016). The city scape is characterised by high-rise condominiums, office towers, highways and malls (Connell, 1999), as well as significant informal settlements. An estimated 41% of Metro Manila's inhabitants live in informal settlements (UN-Habitat, 2013). During the 1920s, high rise apartment buildings were initially built along Manila Bay, starting with 5-8 storeys, however, building heights steadily increased to forty storeys by the 1990s (Saloma and Akpedonu, 2016). Condominiums are the domain of the middle and upper classes as it allows people to live closer to work and leisure places (Saloma and Akpedonu, 2016). However, in the past decade, there has been a slight trend for middle income families to move to single dwellings rather than living in multi-unit condominiums (Virola et al.,

2013). Gated residential estates are also common further from the city centre (Connell, 1999). Condominiums are often integrated with malls and offices, which enables people to avoid the traffic (Saloma and Akpedonu, 2016). Units sizes in condominiums typically range from 20-50 m² (Saloma and Akpedonu, 2016). Malls are important leisure spaces in the city, as Manila has a lack of public parks and spaces; they offer airconditioning and respite from noise and congestion on the streets (Connell, 1999; Saloma and Akpedonu, 2016). Metro Manila and Bangkok have some of the largest malls in the world (Lee, 2015).

Consumer culture in Metro Manila

Filipinos typically shop at small local grocery stores, called “sari-sari”, however, these are slowly being replaced with modern convenience stores (HKTDC Research, 2017). Visiting shopping malls is a common weekend leisure activity in Metro Manila (HKTDC Research, 2017), and tends to replace parks, markets and places of worship (Connell, 1999). Many malls contain chapels (HKTDC Research, 2017), as 81% of people are Roman catholic (Stanton, 2012). The tide of urbanisation is driving a shift to modern retail stores and consumer lifestyles (HKTDC Research, 2017). The Philippines has a youthful population, with a median age of just 23 years old (HKTDC Research, 2017), and are the greatest social media users in the world, averaging 4.3 hours per day (Camus, 2017). Online shopping in Metro Manila faces difficulties with logistics as traffic congestion means that delivery times are unreliable (HKTDC Research, 2017).

Filipino culture

Filipino culture is influenced by its history of foreign settlers, from Chinese merchants, to three hundred years of Spanish colonisation, followed by 50 years of U.S colonisation (Celoza et al., 2005). The English language and U.S culture have maintained a cultural influence long after U.S. colonisation ended (Celoza et al., 2005). The Philippines is one of the largest exporters of labour (Celoza et al., 2005), and the Filipino economy is very reliant on remittances from overseas workers (CSCP & ECHOsi, 2013). Middle income families tend to work as government officials, executives, managers, supervisors, farmers, fishermen, forestry, professionals, service workers in that order (Virola et al., 2013).

The city of Hanoi

Hanoi celebrated its 1000th year in 2010, however, archaeology suggests it is significantly older (van Horen, 2005). Housing in the city can be narrow and cramped, due to old buildings or soviet era apartments that were designed for small nuclear families, however, extended families often live together (van Horen, 2005). The outskirts of the city are expanding and agricultural land is being converted to residential areas, with buildings of 3-5 storeys (van Horen, 2005), which is a typical height for buildings across the city. The character of the city is changing, with new high-rise buildings funded by foreign investment, in addition to small scale construction extending the city boundaries (Van Arkadie and Mallon, 2004). In terms of development, Hanoi is second to Ho Chi Minh City in the south, however, urban and industrial growth in the capital has been accelerating since the 1990s (Van Arkadie and Mallon, 2004).

Consumer culture in Hanoi

Business analysts estimate that the number of middle class and affluent people in Vietnam will rise from 12 million in 2012 to 33 million in 2020, making it one of the fastest growing middle-class segments in the Asian region (Bharadwaj et al., 2013). Shopping has now become a pastime in Vietnam and approximately half of the consumer class's leisure time is spent going to cafes, markets and supermarkets (Shultz et al., 2005). Vietnam has greater internet connectivity than other Southeast Asian nations, with 43% of the population connected, compared to 41% in Thailand, however, just 16% of the consuming class shop online (Bharadwaj et al., 2013). As consumers, Hanoians are said to be more serious, scrutinizing and value conscious than consumers in Ho Chi Minh City who are considered to be more relaxed and more likely to be trend-setters (Pecotich and Shultz, 2005). Aspirations for luxuries have emerged, for example more than 50% of under 30s would like to own a car and travel overseas on vacation (Shultz et al., 2005).

Vietnamese culture

There is a strong entrepreneurial spirit amongst the Vietnamese, which has been facilitated by market reforms which began in the 1980s with Doi Moi (Shultz et al., 2005). This can be seen in the multitude of family owned businesses and small

handicrafts industries (Shultz et al., 2005). Many of the younger generations from wealthy families have also studied or worked overseas and returned to Vietnam to start businesses (Shultz et al., 2005). Vietnamese people still maintain many traditional values. Young Vietnamese generally live at home until they are married and extended family groups often live together in one house. This tendency to live together often means that incomes are pooled, so that as a family group they may be able to afford some luxury items (Shultz et al., 2005). In a survey of the consumer class, two-thirds indicated that traditional Vietnamese values are important, in particular “respecting the elderly and being humble and altruistic”, “health consciousness, thrift and financial savings and working hard to benefit the next generation” (Shultz et al., 2005, p. 672). Sixty-nine percent of Vietnamese consumers responding to a survey indicated that they would meet their family’s needs before spending money on themselves, which suggests that Vietnamese culture may be one of the most traditional, family oriented cultures in Asia (Bharadwaj et al., 2013). Vietnam was colonized by the French during the 19th century (van Horen, 2005), and this has influenced their food and architectural styles.

The city of Bangkok

Bangkok is located in the lower central plains of Thailand on the Chao Phraya delta (Murakami et al., 2005). The city was established as new capital on the Chao Praya river in 1782 (Navapan, 2014). It is the administrative, financial, industrial and commercial centre of the country (Wongtada et al., 2005). Bangkok is a primate city which dominates the economy of Thailand, and consists of a mega-urban region which has sprawled to encapsulate once separate towns (McGregor, 2008). Bangkok is characterized by a mix of high and low-rise dwellings, gated communities and squatter settlements (McGregor, 2008). Approximately 27% of the city’s residents live in informal settlements (UN-Habitat, 2013). The rapid growth in vehicle ownership over the last 40 years has caused chronic traffic jams, and people in Bangkok have suffered respiratory issues due to pollution problems (Wongtada et al., 2005).

Consumer culture in Bangkok

Spending leisure time at shopping malls and large movie complexes has become a part of the modern lifestyle in Bangkok and Thai people are increasingly using credit cards (Wongtada et al., 2005). Materialism is a part of Thai culture, as social status depends

on perceived status with regards to appearances, and first impressions may last (Wongtada et al., 2005). Surveys of Thai society and culture showed that social networking amongst Thai teenagers was already at 50% in 2011 (National Statistical Office of Thailand, 2011). Thai elites have a similar lifestyle to elites in other Asian countries, in that they own many consumer durables and are able to travel internationally (Wongtada et al., 2005). A boom in the early 1990s led to a labour shortage and meant that many middle class households found it difficult to find domestic helpers; this in turn led to an increase in sales of electric kitchenware or convenience goods (Wongtada et al., 2005). According to a survey of Thai people, spending on luxury goods and activities more than doubled between 2008 (1.4%) and 2011 (3.4%) (National Statistical Office of Thailand, 2011). Marketing for “green” products was popular during the 1990s, but became less popular after the economic slowdown in the late 1990s. (Wongtada et al., 2005). Following the downturn in the late 1990s, many SMEs went out of business and larger modern retailers (often multinationals) took their place. Consequently the Thai government has had programs in place to assist SMEs to develop (Wongtada et al., 2005).

Thai culture

Thailand only country in southeast Asia not colonised by the west, however, has long been influenced by western culture (Navapan, 2014). Thai society is quite hierarchical and based on factors such as class, age, education and position (Wongtada et al., 2005). People are often judged according to their wealth and status (Watchravesringkan and Dyer, no date). Thailand became mostly middle class in the 2000s (Brandi and Büge, 2014). Despite the adoption of consumer lifestyles, Thai people retain traditional values. For example, a very high proportion of people believe the elderly play an important role in society (National Statistical Office of Thailand, 2011). Ninety-five percent of Thai people are Buddhist and around 40% practice meditation (National Statistical Office of Thailand, 2011). Thai behaviour is influenced by Buddhist values, such as “the middle way”, which encourages people not to be greedy (Watchravesringkan and Dyer, no date). Thailand is a constitutional monarchy, and the king is the head of state (Wongtada et al., 2005).

CHAPTER TWO:

Resource depletion, growth and consumption: Issues and interventions

“In little over two generations – or a single lifetime – humanity... has become a planetary-scale geological force” (Steffen et al., 2015, p. 94)

Global resource depletion and waste

Human population, economic growth and global consumption of major resources have all increased rapidly since the 1950s (Steffen et al., 2015). Between 1900 and 2005, total extraction of key resources (ores, fossil fuels, construction minerals and biomass) increased by eight-fold (UNEP, 2011a). This dramatic rise in consumption was historically due to growth in OECD countries, however, recent analyses have shown that emerging economies such as the BRIICS (Brazil, Russia, India, Indonesia, China and South Africa) are becoming major contributors, as the middle classes in these nations grow (Steffen et al., 2015). In the future the greatest demand for natural resources is expected to come from the BRIICS countries (Bleischwitz et al., 2009).

While much of resource extraction is driven by the demand for construction materials, a wide variety of metals are mined for consumer electronics and vehicles. Metals with critical roles in the electronics, automobile, chemical and pharmaceutical industries are expected to have entered a depletion phase by 2040; these include antimony, copper, gallium, indium, lead, platinum, silver, tantalum and zinc (Bleischwitz et al., 2009). In a

report to the European Parliament, Bleischwitz et al (2009), warned that rising prices and the decreasing availability of these critical natural resources will have major economic impacts and may lead to conflicts. If all developing countries were to increase their metal consumption to the same level as that of developed countries, metal demand would increase by 3-9 times (UNEP, 2011a). As extraction becomes more difficult in the future, more machinery, energy and transport will be required, further driving up costs (Bleischwitz et al., 2009).

Ecological footprinting has found that global consumption of resources likely exceeded the earth's regenerative capacity by the 1980s (Wackernagel et al., 2002). The extraction of resources and dispersal of waste products has had profound effects on earth systems. Planetary boundaries for biochemical flows, biosphere integrity, climate change and land-system change are currently being exceeded and threaten to destabilise the current earth system (Rockström et al., 2009; Steffen et al., 2015). To bring resource consumption to within sustainable limits, a report from the UNEP proposes that global resource consumption per capita would need to reduce from the current 14 tons per person per year, to an average 5-6 tons per year (UNEP, 2011a). By all accounts, our rapidly increasing consumption of resources and waste generation is placing significant stress on earth systems and is currently unsustainable.

Global municipal waste production is predicted to rise from 1.3 billion tonnes per year in 2012 to 2.2 billion tonnes per year by 2025 (Hoornweg and Bhada-Tata, 2012). South and East Asia produces about 33% of the world's total solid waste (Hoornweg and Bhada-Tata, 2012). Urbanisation and increasing incomes typically lead to greater quantities of waste and the addition of new waste streams such as broken toys and electrical and electronic equipment (Hoornweg et al., 2013). Electrical and electronic waste (e-waste) presents significant challenges for waste management as goods are highly heterogeneous and contain complex hazardous substances (UNEP, 2011b). E-waste contains valuable materials which can be extracted and recycled; however, unless the process of extraction is undertaken in a safe way, hazardous substances can be released that pose a toxic risk to human health and to the environment (Perkins et al., 2014; Yu et al., 2010a). In developed and emerging economies, e-waste is the fastest growing stream within municipal waste and is expected to increase significantly during the coming decade (UNEP, 2011b). In addition to increased product sales, the swift

increase in e-waste generation is also due to faster obsolescence, rapid introduction of newer models of EE items and low levels of recycling (Perkins et al., 2014). By 2030, the total number of computers disposed of in developing countries is expected to double the total number disposed of from developed countries (Yu et al., 2010b).

The problem of growth

The World Bank report “What a Waste” suggests that the fastest method of reducing waste quantities would be to slow economic growth (Hoornweg and Bhada-Tata, 2012). Such an approach remains politically unpalatable as economic growth is believed to be necessary for ongoing prosperity and development (Daly, 2008a). For ecological economist Herman Daly, the problem comes down to fundamental physics,

“Continuous growth would only make sense if the economy were not a subsystem of a larger finite ecosystem, the economy were growing in a nonphysical dimension, or the laws of thermodynamics were negated.” (Daly, 2009, p. 252).

Once resources such as metals, ores and construction minerals are consumed and dispersed back into the environment by disposal, they become much more difficult and more expensive to obtain (Georgescu-Roegen, 1975). In addition, this process of extraction, use and disposal causes environmental degradation (UNEP, 2011a; World Bank, 2012a).

Critically, as environmental pressures rise in the form of pollution and resource depletion, the benefits we gain from economic growth are likely to be outweighed by rising economic and social costs (Daly, 2008b; UNWCED, 1987). This has enormous implications for equity, as resources become less available to the poor both now and in the future (UNWCED, 1987). Costanza et al. (1997) maintain that improving equity in the present generation is critical to future sustainability, as current patterns of consumption are likely to pass to the next generation. That is, overconsumption amongst the wealthy is likely to continue and resource exploitation amongst the poor will continue to be necessary in order to survive (Costanza and International Society for Ecological Economics, 1997). According to Jackson,

“there is as yet no credible, socially just, ecologically sustainable scenario of continually growing incomes for a world of 9 billion people” (Jackson, 2009, p. 86).

Which suggests that continuous economic growth cannot be equitable nor ecologically sustainable. The tension between the biophysical limits to economic growth and the ongoing political determination to pursue economic growth remains a critical issue at the core of sustainable development and sustainable consumption.

Daly (2009) suggests that overcoming poverty would require redistribution or sharing of resources, and that solving environmental issues would require everyone to consume less. Max-Neef (1995) developed an idea called the “Threshold Hypothesis” which posited that economic growth improves quality of life up until a “threshold point” which is then followed by a decrease in quality of life, if the economy continues to grow. Using an ‘Index of Sustainable Economic Welfare’ (ISEW), Max-Neef (1995) compared welfare with economic growth curves for several countries and found, for example, that welfare began to peak in the 1970s for both the United States and United Kingdom (Max-Neef, 1995). This idea is also supported by recent studies using happiness indices, which found that satisfaction and happiness increase only up to income levels of USD 15,000 PPP per capita (Jackson, 2009). These results present compelling arguments for sufficiency, and potentially an argument for degrowth. However, the World Bank (2012b) points out that this argument only applies to high income countries and that even if total global wealth was redistributed, each person on earth would still only have an income of USD 8,000 PPP (World Bank, 2012b). If income alone is considered as a reference for happiness and satisfaction, then it would appear that more growth is needed globally to lift everyone out of poverty. However, without redistribution of resources there is no guarantee that further growth will lead to poverty alleviation.

Over and under consumption in Asia

Over the past 30 years, growth in the Asia-Pacific has been strongly influenced by urbanisation, the rise of new consumers and major expenditure on infrastructure (Myers and Kent, 2003). Calculations undertaken by Schandl & West (2010) found that 80% of the global growth in materials consumption since 1990 could be attributed to growth in

the Asia-Pacific. Growth in domestic material consumption in the Asia-Pacific outstripped material consumption in the rest of the world by the early 2000s and has continued to rise. Between 1970 and 2005, growth in domestic materials consumption increased by a factor of 4 from 7.6 billion tonnes to 31.9 billion tonnes (Schandl and West, 2010). Growth in global energy consumption over the next 40 years is likely to be focused on urban areas of developing regions due to population growth in Asia, Africa and Latin America (UNEP, 2011b). The demand for water and energy is high and pollution and waste volumes are increasingly difficult to manage (UNESCAP, 2008).

Future growth in consumption in Asia is likely to be driven by the rise of new middle-class consumers. The global middle class is expected to multiply from 1.8 billion to 4.9 billion people in 2030, with 85% of this increase attributable to new consumers in Asia (Kharas, 2010). Rapid economic growth in the Asia-Pacific has enabled these new consumers to access a much wider range of goods and services (Zhao and Schroeder, 2010). These new consumers are likely to have a growing desire for household appliances, electronics and air-conditioners (Myers and Kent, 2003), and will travel more by car and air (Zhao and Schroeder, 2010). New consumers in Asia now have lifestyles similar to those in industrialised countries (Akenji et al., 2012). The rapidly increasing demand for consumer goods and for energy associated with their production and use has major environmental implications with regard to resource use and carbon emissions (Myers and Kent, 2003). Previously, population growth was the major driver of increasing material consumption globally, but since the 1990s, consumption expenditure per capita has become the dominant driver (UNEP, 2012).

Despite the emergence of the new consumer class in Asia, which have much greater access to modern technology and consumer goods, there are still significant portions of the population that are poor and are likely to need to increase their consumption in order to improve their standard of living (Zhao and Schroeder, 2010). Many of the poorer sectors of Asian society are still struggling to meet basic needs such as shelter, food, medical care and education. Around 22% of people in the region are categorised as the “extreme poor” living on less than \$1.25 a day (UNEP, 2012). The modern consumer life of wealthy urban Asians contrasts dramatically with the life of the rural poor which follow more traditional ways of living (Zhao and Schroeder, 2010). According to Zhao & Schroeder (2010), the traditional ways of living in Asia tend to have a much lower

impact on the environment. For example, consuming locally produced food, living in homes with higher occupant density and less private vehicle ownership.

For countries that are currently investing in major new infrastructure, the choices made now will affect future sustainability, as infrastructure can lead to technology lock-in. Addressing sustainable consumption and production issues in emerging economies is therefore crucial to avoid “locking-in” unsustainable lifestyles, but also due to the impacts of *unsustainable* lifestyles on the poor. Often poor people are the most affected by environmental degradation, and resource constraints in the future are also likely to disproportionately affect them (Ekins and Lemaire, 2012).

Current political approaches and interventions for sustainability

Since the “Limits to growth” report was published (Meadows et al., 1972), the interrelated nature of economic development and environmental degradation has been widely recognised. “Limits to growth” first suggested intertwining the issues of environment and development; and this notion was further developed in the 1980s, culminating in the release of “Our Common Future” in 1987 from the United Nations World Commission on Environment and Development, with its conception of “Sustainable Development” (Hajer, 1995). International organisations such as the OECD and United Nations have continued to play an important role in developing policies to address environment and development and in calling for multilateral co-operation (Hajer, 1995). In this section, we review some of the key interventions for sustainability, such as sustainable development, green growth, and sustainable consumption and production; and identify some of the issues associated with these approaches. This helps to contextualize more recent approaches to sustainable consumption and production.

Sustainable Development

From its conception, sustainable development was intended to highlight a path for development in the ‘global south’ and for alleviating poverty (Bebbington, 2001). In *Our Common Future*,

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own

needs”, where 'needs' refer to, “in particular the essential needs of the world's poor, to which overriding priority should be given” (UNWCED, 1987, p. 41).

The report further describes the problems of poverty and environmental damage as intertwined, as “A world in which poverty and inequity are endemic will always be prone to ecological and other crises” (UNWCED, 1987, pp. 41–42). The term sustainable development has been so widely used that it now often refers more generally to ‘good environmental management’, rather than the broader goal of meeting needs in a socially equitable and ecologically sustainable way (Bebbington, 2001). Further hindering the advancement of sustainable development is the simplification of ‘development’ as ‘economic growth’ (Drexhage and Murphy, 2010), which ignores the intended focus on development which meets human needs equitably.

Indeed, the aims of sustainable development have been co-opted by economic growth agendas along the way, with much less focus on the original intention for poverty alleviation. Developed more recently, the sustainable development goals (SDGs) aim to bring these issues together more explicitly by building on the former millennium development goals (MDGs) and providing additional focus on environmental and economic issues. The first SDG is “no poverty” which highlights the original focus on human wellbeing, however, “decent work and economic growth” (SDG 8), appears before “sustainable cities and communities” (SDG 11) and “responsible consumption and production” (SDG 12) (United Nations, 2016), suggesting that the tension between economic growth and the environment remains and there is no clear solution to achieving these goals simultaneously.

The role of ecological modernisation

Political responses to the problems of unsustainable resource consumption and environmental degradation have been characterised by an ecological modernisation philosophy (Hajer, 1995). The concepts of “green growth”, the “green economy” and indeed sustainable development all relate to this approach. Ecological modernist approaches are typified by eco-efficiency and technological innovation (Barry, 2007; Hajer, 1995), and the promise of win-win outcomes for the environment and the economy (Hobson, 2013). Ecological modernisation has been criticised for its emphasis on efficiency and the production side, rather than on consumption, and for its focus on

the relationship between the environment and technology, which excludes the social element of sustainability (Barry, 2007; Carolan, 2004). This imbalance is evident in reports promoting green growth and the green economy.

The terms “green economy” and “green growth” came to prominence in the lead up to the Rio+20 United Nations Conference on Sustainable Development in 2012. They emerged as the favoured re-conceptions of sustainable development put forward by global institutions such as the OECD, World Bank and the United Nations in light of the Global Financial Crisis which began in 2008 (OECD, 2011; UNESCAP, 2012; World Bank, 2012b). While ‘green growth’ has been variously billed as an ‘implementing strategy’, ‘set of tools’ or ‘pathway’ to sustainable development (UNESCAP, 2008; World Bank, 2012b), it presents a narrower target than sustainable development and makes economic growth a clear priority.

Central to ecological modernisation is the notion that the tensions between the environment and the economy can be reconciled within existing social, political and economic institutions (Hajer, 1995). As such, existing systems of production and consumption remain unquestioned. Carolan (2004) argues that consumption is not problematized within ecological modernisation, as it actually calls for more and different production. This can enable relative reductions in environmental impact through eco-efficiency, however with absolute increases in resource consumption and environmental impacts. Various scholars suggest that a much greater focus on consumption is needed (Barry, 2007; Carolan, 2004; Jackson, 2005) and that policymakers need to consider the possibility of addressing overconsumption (Carolan, 2004). Jackson (2005) proposes that a deeper analysis of the “*social and institutional context of consumer action*” will provide greater opportunities to develop policy to target overconsumption (Jackson, 2005, p. 133). Barry (2007) proposes that ecological modernisation needs to shift away from the economic growth paradigm to one which focuses on ‘economic security and quality of life’.

The idea that economic growth can be achieved while minimizing material use and environmental impacts is a fundamental premise underlying the sustainable product-service system (PSS) concept. This relates strongly to the concept of dematerialization, which is an important assumption within ecological modernisation (Carolan, 2004).

Dematerialisation will be discussed in more detail in the theory section of Chapter 3 in this thesis.

Sustainable Consumption and Production (SCP)

Five years after the conception of sustainable development, at the Rio Earth Summit in 1992, the need to change consumption patterns was highlighted as “the major cause of the continued deterioration of the global environment” (UNCED, 1992, p. 4.3). At that time, the objectives for sustainable consumption were focused on understanding how to change patterns of consumption and production and promote more sustainable patterns (UNCED, 1992). The Oslo Roundtable on Sustainable Consumption and Production held two years later yielded a definition of sustainable consumption and production (SCP) as,

“the use of goods and services that respond to basic needs and bring a better quality of life, while minimising the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardise the needs of future generations” (Norwegian Ministry of the Environment, 1994, p. 1.2).

This definition has been used widely and is the main definition of SCP featured on the UN's Knowledge Platform for Sustainable Development (UNDESA, 2015), and is remarkably similar to the definition for sustainable development.

Since Oslo, the concept of SCP has been primarily developed by the United Nations, with a 10 year plan of action developed in Johannesburg in 2002 leading to the Marrakech process which supported capacity building and policy development for SCP (UNDESA, 2010). SCP initiatives typically feature programs for consumer awareness and education, improving eco-efficiency in production, voluntary ecolabelling and green procurement (UNEP, 2015). The series of meetings undertaken between 2002 and the Rio+20 conference in 2012 led to the development of a 10 year framework of programmes (10 YFP) to be undertaken by the UN agencies focusing on “1) Consumer information; 2) Sustainable lifestyles and education; 3) Sustainable public procurement; 4) Sustainable buildings and construction; and 5) Sustainable tourism, including ecotourism” (United Nations, 2012, p. 9). These programmes notably focus on consumer activities and developing greener choices for consumers. The topic of

sustainable lifestyles is particularly pertinent to this thesis and will be discussed later in this chapter.

The sustainable development goal (SDG) number 12 “ensure sustainable consumption and production patterns” and several of its targets relate directly to this thesis. The first target is to implement the 10 year framework of programmes (10YFP), which includes sustainable lifestyles, others aim to “achieve the sustainable management and efficient use of natural resources” and “substantially reduce waste generation” by 2030 (United Nations, 2016). Other targets aim to “encourage companies... to adopt sustainable practices” and “support developing countries...to move towards more sustainable patterns of consumption and production (United Nations, 2016).

Sustainable consumption and production in Asia

Given the rapid growth in consumption and resource use in Asia, it has become an important global focus for sustainable consumption and production. According to the chief of SCP within the United Nations Environment Programme, “Asia is ground zero for tackling sustainable consumption and production” (Hoballah, 2014). However, SCP programs in Asia tend to be more focused on production and are much more advanced than programs oriented towards consumption (Chiu, 2011). The most established SCP programs in the Asian region relate to cleaner production, with a focus on eco-efficiency and pollution control (Chiu, 2011; SWITCH-Asia, 2012; Tseng et al., 2013). Innovation and policy development often centre around the national cleaner production centres (Chiu, 2011; SWITCH-Asia, 2012), which furthers the production side focus. This situation is similar for China; however, it is one of the first countries to promote the circular economy, which is focused on resource efficiency and recycling (Schroeder, 2014; SWITCH-Asia, 2012). In Asia, there is also a strong focus on solid waste management, as this is where countries more immediate environmental impacts are felt; however, more preventative action needs to be taken (Akenji et al., 2012). Economic growth is the dominant policy goal in Asia and the Pacific, such that SCP policies have been integrated into economic growth strategies (Akenji et al., 2012). Development agendas often focus on building a strong consumer base domestically to boost economic growth (Schroeder and Anantharaman, 2017).

Priorities arising from the first ten year framework of programs (10 YFP) and the Asia Pacific Roundtable on Sustainable Consumption and Production (APRSCP) include: the development of national SCP action plans; financial and economic frameworks for SCP; consumer education on SCP and lifestyles; developing sustainable products and services; and sustainable procurement in addition to the goals of development and poverty alleviation (Chiu, 2011). UNEP and SWITCH-Asia (a European funded project for SCP policy) have also been promoting ecolabelling, green marketing, green technologies, sustainable tourism and product standards (Hobson, 2013; UNEP, 2012). Green public procurement is frequently mentioned as focal point for shifting the market in favour of greener products (Akenji et al., 2012; Chiu, 2011).

While policies in the region have tended to focus on the production side and green consumerism, this also appears to be the case for academic efforts. A special issue regarding SCP in Asia in 2013 included topics such as: advanced green technology; green innovations; sustainable business models; green consumerism; and green and lean supply chain management (Tseng et al., 2013). A subsequent special issue on SCP in Asia in 2016 showed a continued orientation towards the production side with two key topics “technology for cleaner production” and “assessment of cleaner production options” (Charmondusit et al., 2016). Other popular topics within this issue involved life cycle assessment, carbon footprinting, sustainable business and green growth (Charmondusit et al., 2016). These initiatives are examples of ecological modernization, and highlight the same critiques, where ecological modernisation is overly focused on production and furthering economic growth agendas. Lebel (2005) notes that in Asia, there is very little if any focus on reducing consumption.

In SWITCH-Asia report on SCP policy in Asia, the authors highlight the difficulty of developing public policy for consumption in the region,

“Consumption is much harder to address by public policy because of the common belief that consumers are free to make their own purchase decisions according to their taste and means. The policy context is further complicated by the co-existence of over- and under-consumption that exists in many countries in the region. (SWITCH-Asia, 2012).

A report on green growth in Asia contends that sustainability is embedded in traditional ways of living in Asia and that these traditional values and practices should be supported by public policy (UNESCAP, 2008). Importantly, Hobson (2013) highlights that despite the influence of European approaches to SCP, we do not yet know if these will work in the Asian setting due to the differences in markets, social norms, governance and institutions – it is this gap in knowledge that has been a key driver behind this thesis.

In the case study countries, government led initiatives follow the key SCP trends in Asia. Government initiatives in Vietnam that relate to SCP are focused on cleaner production, sustainable development, green growth, extended producer responsibility and green public procurement. In Thailand, relevant government initiatives focus on green growth, greening industry, green public procurement, ecolabelling and extended producer responsibility. These initiatives are discussed in relation to collaborative consumption in Paper IV.

Strong sustainable consumption

In general, the types of SCP initiatives that have been adopted by governments and promoted by the UN agencies revolve around the notion that consumer choice is the critical driver for a shift towards sustainable consumption (UNESCAP, 2008). With this assumption, many initiatives have focused on educating the consumer to make better choices (and to raise demand for greener products), so that companies will respond by improving their products (Maniates, 2014). This consumer-led, market based approach is behind initiatives such as ecolabelling, green public procurement and public awareness campaigns (Akenji, 2014; Røpke, 2005). However, these approaches have been criticized for relying too heavily on consumers, as it places an expectation that consumers alone can generate the societal shift needed to enable sustainable consumption (Akenji, 2014). Akenji (2014) refers to this approach as ‘consumer scapegoatism’, as it shifts responsibility away from producers and governments. Consumer awareness initiatives and ecolabelling programs encourage consumers to buy more eco-efficient products, but rarely touch the sensitive issue of how much is being consumed (Røpke, 2005). In fact, reports from the UN explicitly state that the aim is to “*reduce the ecological impact of consumer patterns... to improve the quality of*

consumption, rather than reduce the quantity of consumption” (UNESCAP, 2008, p. 58).

The desire to ‘leave it up to the market’, means that programs are voluntary and focus on creating demand for greener products, rather than regulating and increasing controls on producers or discouraging consumption in any way (Røpke, 2005). Akenji (2014) sees ‘green consumer’ approaches as a distraction from the task of addressing sustainable consumption, as they offer marginal improvements while continuing to support ongoing economic growth. Others contend that these approaches are needed, but that they are currently insufficient and can be referred to as ‘weak sustainable consumption’ as they do not address the problems of overconsumption and the distribution of resources (the equity component of sustainable development) (Lorek and Fuchs, 2013). A ‘strong’ sustainable consumption (SC) approach recognises that consumption patterns are socially embedded, rather than subject to individual choice; and proposes that changes to consumption patterns and lifestyles are needed in addition to a reduction (or change) in consumption levels (Lorek and Fuchs, 2013). As such, there is a focus in strong SC on reconfiguring social practices (Schroeder and Anantharaman, 2017). “Sufficiency” is an important concept in strong SC, which needs to replace “efficiency” as the primary goal of SC initiatives (Lorek and Fuchs, 2013; Røpke, 2005). Sufficiency highlights the need for the wealthier sectors of society to reconsider their consumption of natural resources, in order to make ‘environmental space’ for the poorer sectors to develop (Røpke, 2005).

One of the responses to ‘weak sustainable consumption’ is the concept of ‘degrowth’, which is a major topic within strong sustainable consumption literatures (Lorek and Fuchs, 2013). Sustainable degrowth proposes a democratic and equitable transition to an economy with downscaled production and consumption; this has been proposed as a gentler transition than environmental collapse (Martínez-Alier et al., 2010). However, Hobson (2013) highlights the origin of this concept in industrialised nations of the global north, and the problematic nature of considering degrowth in countries where poverty is still significant. A major challenge for strong sustainable consumption is that its’ proposition for sufficiency and reducing consumption in some sectors of society clashes with the dominant worldview that economic growth should continue and be the vehicle of environmental change (Lorek and Fuchs, 2013).

“Consuming less may be the single biggest thing you can do to save carbon emissions, and yet no one dares to mention it. Because if we did, it would threaten economic growth, the very thing that is causing the problem in the first place.” (Jackson, 2008, p. 43)

As SCP programs run by the UN are voluntary for member nations (United Nations, 2012), the political sensitivity regarding ‘consuming less’ likely limits their engagement to focus on the ‘weak’ approaches to SCP which focus on eco-efficiency, technology improvements and consumer awareness (Lorek and Fuchs, 2013). The embedded nature of consumption means that SCP must consider structural changes, which are more usefully driven by governments rather than individuals (Lorek and Fuchs, 2013). Policy approaches for strong sustainable consumption put forward by Akenji (2014) include choice editing (regulating so that poor performers are excluded from the market), setting limits for resource extraction, changing the means of accounting for progress/development (i.e. considering alternatives to economic growth), and building community and grassroots innovation (Akenji, 2014). Collaborative consumption and the sharing economy, particularly when conducted amongst peers, are considered to be amongst “community and grassroots innovations”, they could represent a shift towards stronger sustainable consumption.

Sustainable lifestyles

The topic of sustainable lifestyles has emerged from within the field of sustainable consumption and production, as a potentially stronger approach to sustainable consumption. To define:

“A “sustainable lifestyle” is a cluster of habits and patterns of behaviour embedded in a society and facilitated by institutions, norms and infrastructures that frame individual choice, in order to minimize the use of natural resources and generation of wastes, while supporting fairness and prosperity for all.”
(Akenji and Chen, 2016, p. 3)

This definition suggests a shift away from programs that target individual choice, as it recognises the socially embedded nature of consumption and aims to incorporate a social justice element. Spangenberg (2014) suggests that sustainable lifestyles exist in the environmental space between the limits of overconsumption – “planetary

boundaries” (environmental sustainability) and the “social protection floor” (enabling social sustainability). Akenji & Chen (2016) suggest that Social Practice Theory can be used as an aid to understand lifestyles as everyday activities influenced by the broader social context and physical environment.

Within the 10-year framework of programmes for SCP, “sustainable lifestyles and education” is one of the five key programmes (United Nations, 2012), and its objectives suggest that sustainable lifestyles may still be interpreted using the frame of individual choice. The objectives of the sustainable lifestyles programme are to:

- “1) build a shared vision of sustainable lifestyles, achieve a common framework of understanding through multi-disciplinary approaches;*
- 2) integrate sustainable lifestyles principles and practices across all sectors of society;*
- 3) develop tools and incentives, provide capacity-building;*
- 4) empower individuals to adopt sustainable lifestyles through education, awareness-raising and participation;*
- 5) measure the benefits of action targeting lifestyles.” (UNEP, 2017, p. 2).*

The key sectors for examining sustainable lifestyles, are those that have the highest environmental impacts and include: food, housing and mobility as the highest priorities, followed by consumer goods and leisure (Akenji and Chen, 2016; Schroeder and Anantharaman, 2017; Spangenberg and Lorek, 2002).

To address lifestyles, we need to recognise and address the myriad influences on people’s choices, including institutions, infrastructure, environmental conditions (Mont et al., 2014), individual cognitive abilities, psychological, social, and economic settings (UNEP, 2016a). This means that while people may understand their lifestyles are unsustainable, they may lack other options (Akenji and Chen, 2016) and may be locked-in to existing patterns, particularly in wealthy countries (UNEP, 2016a). Addressing lifestyles is likely to require both technological and social innovations (Mont et al., 2014). Mont et al (2014) suggest practice strategies for shifting to sustainable lifestyles, such as: wasting less, using better quality goods and services, reducing overall material

consumption, collaborative consumption and transition towns amongst other ideas. Akenji and Chen (2016) suggest a multi-faceted policy approach which involves fostering positive lifestyle practices, targeting high impact practices, and seeking multiplier effects by changing community behaviour. Collaborative consumption is one example of a multiplier approach, for example, where communities carpool, use communal washing areas and share other spaces (Akenji and Chen, 2016).

While some aspects of sustainable lifestyles relate to highly developed countries, many aspects can relate to emerging economies also. Sustainable consumption in emerging economies “has not yet received systematic attention” (Schroeder and Anantharaman, 2017). This may be due to complexity, where there are many new consumers aspiring to improve their lifestyles and potentially adopt more consuming practices, while others are struggling to meet basic needs (UNEP, 2016a). For new consumers starting to change their lifestyles, Schroeder and Anantharaman (2017) propose that “lifestyle leapfrogging” is possible, where for example new consumers in India and China can improve their lifestyles while avoiding a high impact western lifestyle. Instead of “downshifting or simplifying”, new consumers and emerging economies can maintain a level of moderation and avoid the worst excesses of consumer culture, such as the use of private cars, and the accumulation of electronic gadgets and appliances (Schroeder and Anantharaman, 2017). There is potential for new consumers to adopt different practices before they become locked-in to western style consumerism (Schroeder and Anantharaman, 2017). Akenji & Chen (2016) highlight that sustainable lifestyles do not necessarily involve new things or new practices, and can involve old technology and traditional practices.

The circular economy

While many of the political approaches to addressing sustainability have been promulgated by the United Nations, in recent years the concept of a ‘circular economy’ has been promoted by a variety of sources. In Europe, the Ellen Macarthur Foundation has played an influential role, and separately, national governments in China and Japan have adopted circular economy policies (McDowall et al., 2017). China adopted a circular economy strategy in 2002 as it was proposed to offer an opportunity for China to ‘leapfrog’ from traditional environmental management towards a more integrated sustainable development approach (Su et al., 2013). China’s strategy promotes resource

efficiency throughout the production and consumption lifecycle in addition to recycling (Su et al., 2013). McDowall et al (2017) argue that the Chinese approach is broader, drawing in waste and pollution concerns in dealing with rapid industrialisation. In Europe, the circular economy appears to have a stronger focus on opportunities for businesses (McDowall et al., 2017). The European Union (EU) developed an action plan for the circular economy in 2015, which has been pitched as a way for the EU to remain competitive and for business to plan for future resource scarcity (European Commission, 2015). The EU plan also proposes that the circular economy will bring benefits in the form of more labour-intensive work (through reuse and repair) and reductions in carbon emissions (European Commission, 2015). Moves to develop circular economy policies in Europe, China and Japan demonstrate the global momentum of the concept.

According to the Ellen Macarthur Foundation (2015), the circular economy refers to the intentional design of products to eliminate waste and enable reuse and recycling. The circular economy concept draws on ideas proposed by Walter Stahel, such as the 'lake economy' to replace the 'river economy' in (Stahel, 1997a), and on the 'Cradle to Cradle' concept authored by William McDonough and Michael Braungart (2002). Stahel (1997a) argued that our linear industrial economy is strongly coupled with resource flows in a 'river' style economy, and that to decouple economic growth from resource use would require a shift to a service economy, where customers pay per unit of service and products are leased rather than owned. In this way, people are paying for 'performance' rather than ownership. Amongst the environmental benefits that Stahel anticipates, he predicts that a circular or performance economy with a tight loop would be labour intensive and create more regional employment (Stahel, 1997a).

Both the original conception from Stahel and the more recent development of the circular economy concept highlight the importance of business models and the potential for: product-service systems or access- and performance- based business models to enable a circular economy (Bocken et al., 2016; Geissdoerfer et al., 2017). This highlights a direct link between the circular economy concept and business and consumption innovations such as product-services systems (PSS), the sharing economy (SE) and collaborative consumption (CC). In the Ellen Macarthur Foundation's conception of the circular economy, sharing and reusing are key circular economy

activities, that can enable recirculation of resources at their highest utility (Ellen MacArthur Foundation, 2017). This points to PSS, CC and the sharing economy being important business models or business movements that can help to implement the circular economy concept.

Collaborative consumption is indirectly referred to in the EU circular economy plan, where “sharing products or infrastructure” and “consuming services rather than products” are referred to as “innovative forms of consumption” that can also contribute to the circular economy (European Commission, 2015, p. 7).

A focus on new business models

As the engine of economic activity, business plays a critical role in the future of sustainable development and sustainable consumption and production (Bebbington, 2001; UNEP, 2012). According to the United Nations,

“The needed systemic changes will require a revolution in the way the world does business. This will have an impact on lifestyles and consumption patterns—especially so in developed countries, but also for the growing middle class in developing countries” (Drexhage and Murphy, 2010, p. 3)

New business models are frequently discussed as an important focus for sustainability and the circular economy and sustainability (Lane and Gumley, 2017; Lewandowski, 2016), and product-service systems and collaborative forms of consumption are often mentioned as key examples of innovative approaches (Allwood et al., 2011; Bocken et al., 2014). These business types are the focal point of this thesis, and some introduction is given here. The concepts of collaborative consumption and product-service systems are explored more within each of the research papers in Chapters 4-8. I begin by reviewing some of the key challenges faced by this field more broadly, in terms of eco- and social innovations.

Eco-innovation

The terms eco-, green-, or environmental- innovation refer to a broad field of business innovations that may reduce: pollution, resource use, energy or environmental risks (Díaz-García et al., 2015). The motivations for businesses to undertake eco-innovations is a key topic for eco-innovation research. A major review of the eco-innovation

literature identified the primary external drivers for businesses as: regulatory pressures, normative pressures (or company legitimacy), cooperation in the supply chain, expanding market share, technological development and the role of governments (Bossle et al., 2016). Internal drivers for eco-innovation happening within firms include: efficiency, the adoption of certifications, managerial concerns, environmental leadership, environmental culture, capability and human resources (Bossle et al., 2016). These broadly align with a major study of eco-innovation across Chinese firms, which found that the drivers for eco-innovation there were: technological abilities, organizational environmental capabilities, market-based instruments, competitive pressures, and demand for green products (Cai and Li, 2018). That study also found a positive feedback loop with the adoption of eco-innovation leading to better environmental performance, followed by an indirect better outcome on economic performance (Cai and Li, 2018).

These understandings of the context for eco-innovation are useful, however, they tend to relate to large mature businesses; and the drivers for eco-innovations in small and medium sized enterprises (SMEs) are generally under-researched (Díaz-García et al., 2015). There are some indications in the literature that SMEs can respond to environmental challenges more readily when relatively new (Díaz-García et al., 2015). In their broad review of the field, Diaz-Garcia et al (2015) found that eco-innovators in firms face difficulties gaining access to capital, and that the need for high technology and highly trained staff are often barriers. Mele & Russo-Spena (2015) have examined eco-innovation using a practice theory approach. They argue that innovations are social processes incorporating actors, actions and resources and therefore should be understood as integrated practices. They identify three types of eco-innovation practices, which embody motivations as well as their context, such as: (1) “cleaning up the landscape”, including changing habits and harmonising resource infrastructure; (2) “connecting life and work” through virtualising the working environment; and (3) “boosting efficiency”, related to efficient logistics and monitoring resource use (Mele and Russo-Spena, 2015).

Transition economies are expected to face several challenges with regard to eco-innovation including the fact that competitive advantages are often based on low labour costs, a lack of consumer awareness and a lack of domestic environmental and

industrial policies (Díaz-García et al., 2015). These reviews suggest that more eco-innovation research is needed for smaller businesses and in newly industrialised and developing countries (Díaz-García et al., 2015).

Social Innovation

Social innovation is a broad field that can be related to eco-innovations. Nicholls et al (2015) consider social innovation to be satisfying needs that are presently not met by the market or other institutions. These innovations include incremental improvements in goods and services for social purposes, institutional innovations that set out to provide social value (e.g. fair trade) or disruptive social innovations, which set out to achieve systemic change, which is often political (Nicholls et al., 2015). Nicholls et al (2015) conceptualise social innovation on a triangular spectrum, with the three corners represented by civil society, the private sector and the public sector. Social enterprises sit between civil society and the private sector, and between the public sector and civil society there is “the shadow state” such as charities that provide welfare where the public sector fails. Public-private partnerships sit along the third axis (Nicholls et al). Social innovations are highly context dependent, and different political-economic contexts typically lead to different types of innovations (Nicholls et al., 2015).

Both the sharing economy and collaborative consumption refer to a diverse field of social innovation (Martin et al., 2015), and may vary from social enterprises to charities to traditional businesses depending on the business model. Schor (2014) envisions these movements as seeking to address inequalities or unsustainability in the market. This aligns with Nicholls et al (2015) perception of the rise in social innovation being attributed to a lack of trust in established systems, and increasing social and environmental problems. Martin et al. (2015) examines grassroots, peer to peer collaborative consumption as a social innovation, and finds that grassroots innovations tend to become more commercial over time. He notes that social innovation research often draws on socio-technical transitions theory (Martin et al., 2015).

Collaborative Consumption and the Sharing Economy

Interest in the concepts of the sharing economy or collaborative consumption have been rising since the release of Botsman & Roger's (2010) book, “What's mine is yours: The rise of collaborative consumption” and Gansky's (2010) book “The Mesh: Why the

Future of Business Is Sharing.” Since then, many names have been given to the popular movement of businesses and community groups engaging in non-conventional means of consumption, often enabled by the internet, including: sharing or swapping goods without monetary exchange; sharing goods through periodic rental; and providing services and goods peer to peer. There have been multiple overlapping terms for this phenomenon, including the sharing economy, collaborative consumption, the collaborative economy, the gig economy (Martin, 2016), the on-demand economy, the rental economy (Huber, 2017), and access-based consumption (Bardhi and Eckhardt, 2012). This new wave of consumption types represent a shift in conventional consumption patterns. Barnes & Mattson (2016) portend that collaborative consumption will have a major disruptive impact on many industries due to its global reach and growth potential. The emergence of these new modes of business and consumption warrant investigation, as “The rise of the sharing economy is arguably one of the most significant global socio-economic developments over the past decade” (Frenken, 2017, p. 1).

These new business types have attracted significant attention from the business world, academics, the media and policymakers, due to the potential for a variety of impacts (Martin, 2016). Sharing goods potentially enables environmental and social benefits (Frenken and Schor, 2017; Heinrichs, 2013; Huber, 2017); due to fewer goods needing to be produced (Botsman and Rogers, 2010); enabling greater access to goods by the poor (Demailly and Novel, 2014); and by enabling more democratic business models (Schor, 2014). The use of internet platforms enables sharing of underutilized goods, cutting down on transaction costs by easily sharing data about goods, services and locations (The Economist, 2013). It is also billed as an opportunity to shift towards access rather than ownership (Botsman and Rogers, 2010). Martin (2016) has classified the various claims around the sharing economy, as “an economic opportunity; a more sustainable form of consumption; and a pathway to a decentralised, equitable and sustainable economy” (Martin, 2016, p. 158). In addition to these positive claims in the literature, the sharing economy is increasingly being criticized (Schor, 2014; Voytenko Palgan et al., 2017), due to concern about a lack of regulation, labor issues and the potential to reinforce the negative aspects of capitalism (Martin, 2016). There is also concern about rebound effects arising due to the lower cost of access to goods (Frenken, 2017). Given these concerns,

“there is a considerable need for research exploring how the sharing economy niche could be steered toward a pathway aligned with a transition to sustainability.” (Martin, 2016, p. 159)

Considering the potential for sustainability outcomes, there is a lack of empirical research to confirm environmental benefits (Codagnone and Martens, 2016; Heinrichs, 2013; Roxas, 2016), and to analyse the nature of the sharing and collaborative economies (Martin, 2016). Codagnone & Martens (2016) find that research in this field is mainly conceptual / theoretical or it offers only normative responses. Frenken & Schor (2017), suggest that the lack of empirical studies is due to a lack of access to data from sharing platforms. Heinrichs (2013) proposes a number of key areas for research into the sharing economy, including empirical analysis of: drivers and barriers; social, environmental and economic impacts; and the development of policies and programs for policy makers to foster the sharing economy; amongst other ideas (Heinrichs, 2013).

Daunoriene et al. (2015) have assessed the sustainability of a peer to peer company that buys, sells and swaps clothes, using a framework called “Circles of sustainability”, which is a qualitative rating scheme that is carried out by experts. Their results are presented on a spider web chart, which considers materials, energy, water and air, emissions & waste, and built form & transport. The company scores well on all factors, with a lower rating for water and air. Overall, the peer to peer clothing company almost achieves a score of 7 – highly satisfactory sustainability (Daunorienè et al., 2015). This approach could allow some comparison between businesses with regards to the final diagram, however, all scores are necessarily subjective.

Voytenko et al (2017) have taken an alternative approach and assess the sustainability framings of three types of accommodation sharing platforms. They find that sharing economy (SE) proponents propose that it offers a sustainable alternative, and ignore opponents of the sharing economy that position SE as a risk to the environment, economy and society. However, sharing economy accommodation options were much more likely to be framed with regards to social and economic benefits, rather than environmental benefits. They found differentiation between the different types of sharing economy platforms, such as rental, free and reciprocal. They highlight that the sharing economy is not widely accessible, despite being framed as such, as users need to have sufficient assets and finances to participate (Voytenko Palgan et al., 2017).

Cohen and Kietzman (2014) highlight a significant lack of research explaining sharing economy business models and their sustainability impacts. They identified a range of ridesharing business models for sustainability, including: traditional carpooling; flexible carpooling with regular meeting places; non-profit and cooperative carpooling organisations (which can be social enterprises); vanpooling – often corporate sponsored or private; and peer to peer carpooling enabled through online platforms. Bikesharing business models for sustainability included: street furniture contracts, where bike providers gain value from advertising; publicly owned and subsidized bikesharing; sponsorship based bikesharing; and non-profit offerings. They conclude that shared mobility business models are a promising means of enabling a transition to sustainable mobility systems (Cohen and Kietzmann, 2014).

Definitions for the sharing economy and other new “economies” are still being debated. Botsman & Rogers (2010) defined the collaborative consumption movement as consisting of three elements: 1) Product service systems – paying for access to goods; 2) Redistribution markets - re-selling pre-owned goods; 3) Collaborative lifestyles – exchanging space, skills and money (less tangible goods) (Botsman and Rogers, 2010). This original definition incorporated a wide range of exchanges, including second-hand sales, renting and sharing of tangible and intangible resources, potentially with or without monetary exchange. Belk also defines collaborative consumption (CC) in broad terms as “people coordinating the acquisition and distribution of a resource for a fee or other compensation” (Belk, 2014, p. 1597). Belk (2014) further explains that CC has elements of sharing and elements of marketplace exchange and operates in the middle ground between the two. In this thesis, we follow Belk (2014) and Botsman & Rogers (2010) conceptions of collaborative consumption, where we include product-service systems and sharing goods with monetary exchange within the umbrella of collaborative consumption. However, we focus on a narrower set of business types, which we explain later in this chapter. It is also worth mentioning that during the course of this research, the debate about definitions has advanced and some narrower definitions have been set out for both collaborative consumption and the sharing economy.

Recent definitions for the sharing economy and collaborative consumption vary over several issues: whether the resource being shared is physical or intangible; whether

there is temporary or permanent transfer of ownership; whether exchanges happen between peers (consumers) or between consumers and businesses; whether compensation is given; whether sharing happens online or offline; and whether the sharing exchange makes use of existing idle resources. Several writers suggest that the sharing economy should exclusively refer to peer to peer exchanges (Codagnone and Martens, 2016; Frenken and Schor, 2017). For Frenken & Schor (2017), the sharing economy is characterised by temporary access to the use of physical goods, arranged between peers; and they also emphasise the importance of sharing idle capacity. Martin (2016) suggests the two terms can be used interchangeably, and argues that ‘the sharing economy’ has dominated over ‘collaborative consumption’ in recent years. However, the emerging definition of the sharing economy as peer-to-peer only excludes new business types that enable sharing of goods through a business provider, such as car sharing and bike sharing businesses. These business types are occasionally referred to as access-based consumption (Bardhi and Eckhardt, 2012), or the product-service economy (Frenken and Schor, 2017), but are also referred to as collaborative consumption (see (Möhlmann, 2015)). Clearly, these terms are emergent and still contested.

Defining the sharing economy and its other related ‘economies’ seems to depend on the purpose and interest of the writer or researcher. For example, Codagnone & Martens (2016) suggest that the sharing economy should be limited to peer to peer exchanges as that is where the key policy challenges and regulatory difficulties lie. Researchers examining the environmental impacts may take a broader interest in all types of reuse, second-hand sales and sharing, regardless of the means of exchange. Online “sharing economy” platforms that provide on-demand services to consumers are also referred to as the “gig economy” (Dugan, 2016). Businesses that provide a service instead of a product are also known in the academic literature as product-service systems, which I will elaborate on in the next section.

In Table 4, I have attempted to draw distinctions between these business movements, for the purposes of this research. While the different movements have many overlapping characteristics, there are some important points of difference. Product-service systems are more business oriented and therefore do not offer non-monetary exchange and do not involve sharing between peers. Recent conceptions of the sharing economy narrow

its definition to peer to peer exchanges using existing idle assets. Definitions of collaborative consumption may be broader incorporating both peer to peer (P2P) and business to consumer (B2C) exchanges as well as sharing new, purpose bought goods. The gig economy is narrower still, representing services and the sharing of intangible goods. In this thesis, I am interested in the potential for consumption to be more resource efficient, as consumers can share the same assets and potentially achieve a similar level of utility. I am therefore interested in the temporary transfer of tangible goods. In addition, this research is primarily focused on business to consumer (B2C) exchanges, to align with prevailing narratives for ecological modernization, and green growth development agendas in Asia. This thesis therefore focuses on collaborative consumption as a more encompassing term, which includes some overlaps with product-service systems.

Table 4: Author’s interpretation of distinctions between product-service systems, collaborative consumption, and the sharing economy.

| Characteristics | Product-service systems | Collaborative consumption | Sharing economy | Gig economy |
|-------------------------------|-------------------------|---------------------------|-----------------|-------------|
| Sharing tangible goods | | | | |
| Sharing intangibles | | | | |
| Temporary transfer | | | | |
| Permanent change of ownership | | | | |
| Monetary exchange | | | | |
| Non-monetary exchange | | | | |
| Available online | | | | |
| Available offline | | | | |
| Sharing idle / existing goods | | | | |
| Sharing purpose bought goods | | | | |
| Business to business (B2B) | | | | |
| Business to consumer (B2C) | | | | |
| Peer to peer (P2P or C2C) | | | | |

Note: The lighter shading represents characteristics that are debated in the literature.

Product service systems

Product-service systems are frequently mentioned within discussions regarding the sharing economy, collaborative consumption and the circular economy (Botsman and Rogers, 2010; Ellen Macarthur Foundation, 2013; Frenken and Schor, 2017). Product-service systems (PSS) are business models designed to meet customer needs with a

combination of products and services (Ceschin, 2013). Mont (2002) and Goedkoop et al (1999) initially developed the concept as a business model that could reduce the environmental impacts of traditional consumption. The idea is that shifting the focus from selling a product to selling a desired outcome gives the producer more flexibility to meet needs or to provide an outcome in a more cost-effective and less materially intensive manner. As such, PSS were conceptualised as a possible win-win for business and the environment, where businesses could enhance their competitiveness and improve the sustainability of their business simultaneously (Tukker, 2004). From the customer's perspective, product service systems are a means of deriving the benefits of goods and services through leasing or sharing without purchasing a product. According to Baines et al. (2007), customers then benefit from a “restructuring of risks, responsibilities and costs associated with ownership” (Baines et al., 2007, p. 1).

Product service systems include businesses that: sell or lease a product with a maintenance service; enable periodic rental or simultaneous use of goods; or sell an outcome or particular level of performance. The idea is that businesses renting products can enable more intensive use and extend product lifetimes as they are incentivised to maintain and repair their stock (Kang and Wimmer, 2008; Roy, 2000).

"in addition to yielding economic gain, the PSS solutions are assumed to aid in reducing environmental impact and providing a better social balance, because a greater number of people can use the same product while paying less for it"
(Beuren et al., 2013, p. 4)

However, Tukker and Tischner (2006a) highlight the fact that not all PSS lead to resource efficiency improvements as they must be intentionally factored into the design. Tukker & Tischner (2006a) have identified eight different categories of PSS business models, along a spectrum from product-based to service-based. In this typology, there are three main categories: product-oriented, use-oriented and result-oriented. For each category, Tukker & Tischner (2006a) have qualitatively assessed the potential for resource efficiency improvements. In Figure 3, the eight categories are described and displayed along a spectrum. The expected improvements are indicated by the vertical arrows. The business categories with the greatest potential for reducing energy and resource consumption are (4) Product renting / sharing, (5) Product pooling, (6) Pay per unit use, and (8) Functional result.

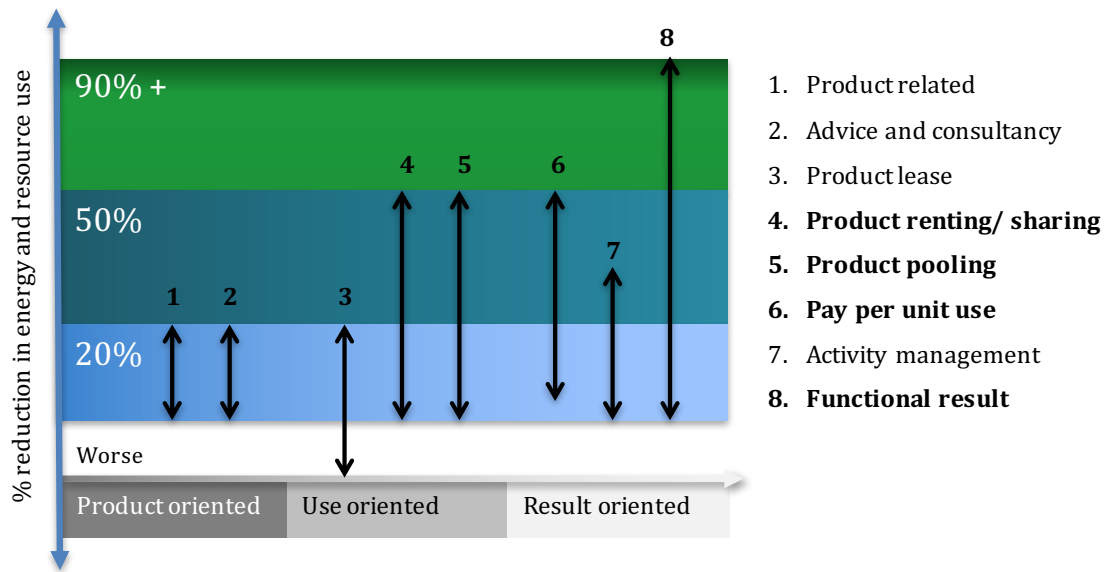


Figure 3: Categories of PSS business models on a spectrum from product to service orientation. *Graphic: Author, adapted from (Tukker et al., 2006).*

Several authors have highlighted the need for intentional sustainability design and that the PSS business model does not automatically lead to sustainable outcomes (Ceschin, 2013; Tukker and Tischner, 2006b). The success of a PSS business model depends on the socio-technical regime, and enabling radical shifts in consumption will invariably require societal and contextual changes (Tukker and Tischner, 2006b). Both Baines et al., (2007) and Beuren et al., (2013) highlight the importance of cultural context and see this as one of the main barriers to PSS success.

The vast majority of research examining PSS is focused on developed countries (Tukker, 2015). Three systematic reviews of product service systems have been conducted in recent years, namely by Baines et al. (2007), Beuren et al. (2013) and Boehm & Thomas (2013). In the review by Boehm & Thomas (2013), 65% of all articles found regarding PSS are conceptual and speculative with theoretical methods or critical analyses of the literature only featuring in 5% of the literature. Boehm & Thomas (2013) comment that there were no field experiments in any of 265 articles that they reviewed. Tukker & Tischner (2006b) highlight the fact that very little theory development has been undertaken for PSS. A review of the field conducted in 2006 noted that there have been “surprisingly few attempts to link different case studies and to do rigorous cross-case analyses” (Mont and Tukker, 2006, p. 1454). The lack of rigorous evaluations of businesses was also noted by Baines et al., (2007), who found

that most case studies in the literature were qualitative, with insufficient information to do comparisons between case studies. Beuren et al., (2013) point out that most of the PSS examples in the literature focus strictly on economic gains, despite the broader potential. They suggest that future studies should focus on the environmental and social aspects of the field.

Very limited research has been undertaken into the use of PSS in developing countries. Stahel (Stahel, 1997b, 1997a) describes the potential for development of an advanced service economy or a functional economy, where value is derived from the function of a product or service received, and would significantly reduce resource consumption. This contrasts with the industrial economy, where value is derived from the exchange of products and economic growth is strongly linked to increased material consumption (Ceschin, 2013; Manzini and Vezzoli, 2002; Stahel, 1997a). The potential for this theoretical shift from industrial to functional economy to occur and minimize resource consumption has not been confirmed in either developed or developing countries.

The product-service system literature typically focuses on business to business examples (B2B), due to a lack of uptake of business to consumer (B2C) options in the past. However, many collaborative consumption and sharing economy businesses appear to represent the popular manifestation of product-service systems as B2C options. In this thesis, we focus on product-service systems that have the greatest potential for sustainability benefits. From Tukker and Tischner's (2006a) typology, these are: product renting / sharing; product pooling; pay per unit use; and functional result. We consider these in light of the recent popular movement for collaborative consumption and with regard to established or traditional PSS.

Summary

Resource depletion is being driven by rising consumption of natural resources, which in turn leads to waste generation, pollution and dispersal of important resources. E-waste is a particularly problematic waste stream that is increasing globally. The tight coupling of economic growth with material consumption and environmental degradation creates a tension between the goals of sustainable development and political determination to pursue economic growth. Growth and increased material consumption may be required to alleviate poverty, but growth alone does not guarantee poverty alleviation.

Consumption in Asia is contrasted by the rising wealth of the 'new consumers' and the

poor that still lack access to basic goods. The rising demand for consumer goods in emerging economies of Asia will have major implications for resource use, pollution and emissions.

Political interventions for sustainability in Asia and elsewhere have been characterised by an ecological modernisation approach, which typically focuses on the production side and eco-efficiency aspects of sustainability at the expense of the consumption side. Sustainable consumption approaches tend to focus on consumer education and fostering green consumerism. The topics of sufficiency and reducing wasteful consumption are rarely addressed. A strong sustainable consumption approach recognises that consumption patterns are socially embedded and influenced by societal norms, institutions and infrastructure. Reports promoting sustainable lifestyles appear to reflect this strong SC approach. In emerging economies, it may be possible to leapfrog resource intensive western lifestyles and avoid the worst excesses of consumer culture. The circular economy movement is gaining momentum globally, and new business types such as collaborative consumption and product-service systems are frequently cited as innovative ways to implement a circular economy.

The popularity of collaborative consumption and the sharing economy has risen in the last decade. These new business types offer alternative consumption options, such as periodic rental of goods and sharing goods between consumers. These business types offer a major shift away from individual consumption, towards a more sufficient approach, where consumers can share resources when they are needed. Many of these popular new business types reflect a product-service system business model, which has historically been more popular for business to business (B2B) exchanges. Collaborative consumption may represent the popularisation of PSS business models for use in households (B2C), which could be an important leverage point for driving more sustainable consumption.

There are numerous claims that PSS and collaborative consumption businesses offer lower impact consumption options; however, sustainability outcomes are influenced by context and culture. There is a lack of empirical literature addressing questions of sustainability for CC and PSS and a lack of literature examining the use of these businesses in emerging economies. In this thesis, I investigate the use of collaborative consumption business models for households in Southeast Asian cities. The aim is to

identify the prospects and challenges for CC to contribute to lower impact consumption, bearing in mind the importance of social, cultural and institutional contexts to their uptake and success.

In the next chapter, I review the theoretical foundations of interventions for both sustainable production and consumption, and explain the theoretical framing for this thesis. Following this, I describe the research design and methods I have used for this research.

CHAPTER THREE:

Key concepts, theories and methods

In Chapter 2, I reviewed the sustainability interventions targeting global environmental issues arising from production and consumption. Interventions have tended to focus on technological or efficiency improvements in the production of goods. However, the literature in Chapter 2 highlighted the importance of addressing the consumption side, where social and institutional settings play a critical role in influencing consumption practices, in addition to individual choices. In this Chapter, I review the theoretical rationale of both production and consumption side interventions and explain the theoretical framework that we have used for this research. Finally, I explain the research design and methods used in this thesis.

The need for interdisciplinary research

Collaborative consumption (CC) proposes a major shift in the way goods and services are provided and consumed, therefore in order to understand its potential, and requirements for success, both provision and consumption need to be examined. Systems of production and provision are typically examined by technical disciplines. For example, product service system (PSS) research has been taken up by several disciplines, such as information systems, business management, and engineering and design (Boehm and Thomas, 2013). However, Boehm & Thomas (2013) highlight that PSS studies often lack disciplinary cross-over. Tukker & Tischner (2006b) suggest that PSS research needs to incorporate these production side approaches with consumer acceptance studies and greater engagement across disciplines. Mylan (2015) also found that research into sustainable product service systems (SPSS) has tended to focus on the production side with questions of design and management, while the consumption aspects remain under-developed. This thesis has primarily draws on the social sciences to address the consumption side of collaborative consumption.

As a popular manifestation of sharing and service businesses, the sharing economy has seen research contributions from finance, economics, business administration, consumer research, sociology, anthropological research, environmental engineering, applied science and law, geography and design (Plewnia and Guenther, 2017). The diverse and disruptive nature of the sharing economy and its potential impacts on business, the environment and communities mean that policy advice needs to come from a wide range of disciplines (Plewnia and Guenther, 2017). This is reiterated by Heinrichs, who suggests that

“Given its potential for contributing to sustainable economy and society, inter- and transdisciplinary sustainability sciences should begin researching the sharing economy systematically.” (Heinrichs, 2013, p. 230)

Studies in sustainable consumption are often problem oriented, and directed to more than one discipline (Røpke, 2005). Maniates (2014) sees the field of sustainable consumption as a set of questions and approaches that needs to be addressed by the disciplines that can best answer them. Recognising the need to use disciplinary approaches that are appropriate to the research question, this study has drawn on different disciplines, primarily bringing together sociological perspectives regarding consumption and industrial ecology or sustainability science approaches regarding material use and environmental impact. In Table 5, I have explained which disciplines, theories and concepts have influenced each paper in this thesis.

While multidisciplinary studies combine separate pieces of disciplinary research (Max-Neef, 2005), interdisciplinary research seeks to integrate and synthesise disciplinary work at a higher level to enable a systemic outcome (Lawrence and Després, 2004; Max-Neef, 2005). Transdisciplinary research suggests transgressing disciplinary boundaries and fusing them, while interdisciplinary research is akin to mixing disciplines (Lawrence and Després, 2004). In addition, transdisciplinary research has a number of special features such as focusing on a problem, having an evolving methodology, collaborating with others, and integrating epistemologies (Wickson et al., 2006). In contrast, interdisciplinary research develops a common framework, through which different epistemological approaches can be used to investigate different aspects of a research question (Wickson et al., 2006). The approach used in this thesis is interdisciplinary as it draws on different disciplines and epistemologies and presents

them under common theoretical frameworks. For example, Paper III draws quantitative analyses of resource use into a social practice theory framework from sociology. Similarly, Paper IV draws sociological and environmental governance aspects together under the framework of multi-level perspective.

Table 5: Disciplines and theories used in each paper in this thesis

| | Disciplinary inputs | Theories and influential concepts |
|------------------|---|--|
| <i>Paper I</i> | <ul style="list-style-type: none"> • Sociology (including social demography) | <ul style="list-style-type: none"> • Adaptive theory • Sustainable development • Decoupling, green growth • Environmental Kuznets Curve and “lifestyle leapfrogging” |
| <i>Paper II</i> | <ul style="list-style-type: none"> • Sociology • Sustainability science | <ul style="list-style-type: none"> • Adaptive theory • Product-service systems • Eco-innovation • Rebound effect |
| <i>Paper III</i> | <ul style="list-style-type: none"> • Sociology • Industrial ecology (or sustainability science) | <ul style="list-style-type: none"> • Social practice theory • Product-service systems • Decoupling, green growth • Rebound effect |
| <i>Paper IV</i> | <ul style="list-style-type: none"> • Sociology • Environmental governance | <ul style="list-style-type: none"> • Multi-level perspective • Institutional theory |
| <i>Paper V</i> | <ul style="list-style-type: none"> • Sociology | <ul style="list-style-type: none"> • Social practice theory |

Within industrial ecology, theories regarding decoupling, the environmental Kuznets curve and the rebound effect underpin perspectives on reducing resource use, and I discuss these next under “the production side”. Following that section, I discuss perspectives on “the consumption side” from economics and sociology, including social practice theory. I explain these concepts briefly here as influential concepts for this thesis. Other influential concepts listed in Table 5, such as: sustainable development, green growth, product-service systems, and eco-innovation have been discussed in Chapter 2. Adaptive theory is a methodological approach that is discussed in the methods section of this chapter, and also in Papers I and II. Multi-level perspective and institutional theory are explained in Paper IV.

The production side: key concepts for reducing resource consumption

Decoupling

Decoupling refers to the potential de-linking of economic growth from environmental degradation and resource use (UNEP, 2011a). The concept of decoupling reflects an ecological modernist (or technological optimist) perspective, as it proposes that economic growth can continue by advancing eco-efficiencies and progressively dematerialising the economy (Carolan, 2004). According to Ekins & Lemaire,

“It is only through decoupling that continuing economic growth in the context of finite material, energy and ecosystem resources can be sustained.” (Ekins and Lemaire, 2012, p. 5)

As such, this is a central concept within industrial ecology, which underpins efforts to clean production processes and reduce consumption impacts through product-service systems and the like.

In the 1990s, scientists in Germany and the U.S. proposed that global resource efficiency would need to be improved by a factor of 4 in order to achieve a sustainable level of consumption (Weizsäcker et al., 1997). Building on this concept, it was determined that developed countries would need to reduce their resource consumption by a factor of 10 in one generation in order to allow developing countries to develop and use their fair share of resources (Schmidt-Bleek, 2000). Nearly a generation later, resource consumption is still rising steadily. Analyses of global resource use against GDP have shown some evidence of relative decoupling occurring for particular materials or pollutants (Jackson, 2009; UNEP, 2011a). ‘Relative decoupling’ is where the relationship between material use and GDP growth has been reduced, however, resource use still grows with economic growth over time (UNEP, 2011a).

Krausmann et al., (2008), have observed that dematerialisation is occurring at the rate of 1-2% annually globally, however this is particularly the case in industrialised countries. According to Jackson (2009), there is almost no evidence to suggest that absolute decoupling has occurred. ‘Absolute decoupling’ refers to the complete de-linking of material consumption and economic growth, such that GDP grows without the use of raw materials, and resource consumption declines over time (UNEP, 2011a). Global

energy intensity has decreased 33% since 1970 and global carbon intensity has decreased from 1kg CO₂ per USD in 1980 to 770g CO₂ in 2006; however, the growth rate of carbon emissions has been increasing since 2000 (Jackson, 2009). Whilst there appears to be some evidence of relative decoupling in OECD countries, the trends in developing and emerging economies are less consistent (Jackson, 2009). Global production of cement has doubled since 1990 and the extraction of key metals exceeded GDP growth rates in recent years (Jackson, 2009).

Based on the literature, there is very little evidence of any 'natural' decoupling occurring through improvements in efficiency and absolute decoupling is not being achieved. Subsidies for fossil fuels, outsourcing polluting industries to developing countries and increasing levels of household consumption are among the reasons for this (Zhao and Schroeder, 2010). Carolan (2004) argues that dematerialisation is an impossible dream, as consumption will always have a material nature (at least partly). Jackson (2009) concludes that decoupling is unlikely to achieve ecological targets, but believes that it is 'vital', and that we have not yet really tried to achieve it. To enable decoupling, there needs to be major changes to public policies, corporate activity and consumption behaviour or a significant technological shift (Jackson, 2009; UNEP, 2011a).

The Environmental Kuznets Curve

The notion of 'natural' decoupling is linked to the concept of the Environmental Kuznets Curve (EKC), which is a theory that claims that resource use and environmental degradation increases during the process of industrialisation, but will decline once a certain level of prosperity is reached and there is a shift towards different types of economies (Panayotou, 2003). In this model, it is assumed that technological changes will bring about efficiencies and reduce environmental impacts. This concept has influenced approaches to sustainable development, where it is anticipated that economic development will also bring lower environmental impacts. This idea is illustrated in Figure 4.

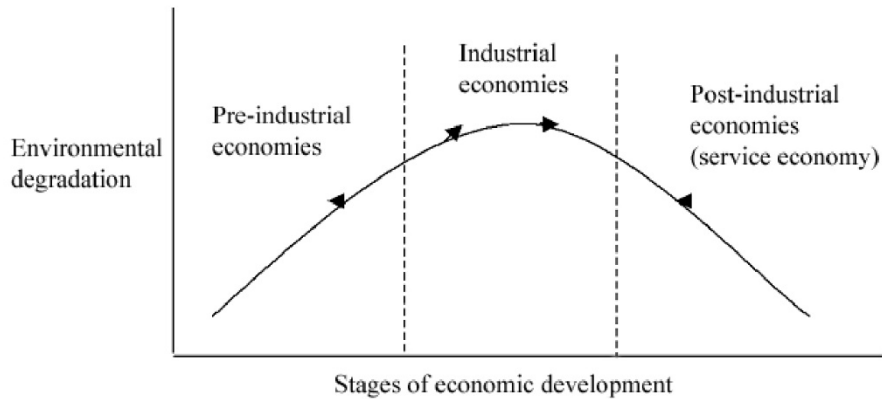


Figure 4: Environmental Kuznets Curve

Source: (Panayotou, 2003)

This model has been assumed to apply to environmental problems in general, however, studies have shown that the Kuznets curve type pattern only exists for certain pollutants, such as sulfur dioxide, carbon monoxide and suspended particulates in air pollution and these refer primarily to local, rather than national issues (Jackson, 2009; Max-Neef, 1995). A study examining greenhouse gas emissions versus gross domestic product (GDP) for countries party to the Kyoto protocol found that for the group of countries known as 'economies in transition', the curves exhibited a hockey stick shape, and for the twenty one more developed countries, only seven countries had curves that supported the EKC theory (Huang et al., 2008). The World Bank's report on Inclusive Green Growth (2012b) also concedes that there does not appear to be a Kuznets curve, as environmental outcomes do not improve with income. Apparent decoupling that has been observed in post-industrial economies is not necessarily from technological efficiencies. As Schandl & West (2010) and Zhao & Schroeder (2010) have pointed out, this may be largely due to wealthy nations shifting their polluting industries to developing countries.

In the literature, there are suggestions that developing countries may be able to 'tunnel through' the EKC by adopting technologies or initiatives from the industrialised world to avoid the peak of the EKC curve and move to a higher income with lower environmental impacts (Brajer et al., 2008; Culas, 2012; Munasinghe, 1999). However, 'tunnelling through' may only be possible for a select few pollutants, as the EKC does not appear to exist for most issues of environmental degradation. Despite this,

developing countries are considered to have opportunities to take an alternative development path. Existing infrastructure in developed countries can create lock-in, whereas developing countries have the opportunity to innovate with infrastructure that will be built in the future (UNEP, 2011a). Schroeder and Anantharaman (2017) argue that “leapfrogging” resource intensive western lifestyles is both possible and necessary in emerging economies. However, creating an alternative development path is expected to require significant government involvement (UNEP, 2011a), and a reconfiguration of social practices (Schroeder and Anantharaman, 2017). The possibility of “tunneling through” or “leapfrogging” a period of major environmental degradation is key premise within this thesis and is explored with regard to collaborative consumption in Paper I.

The rebound effect

While the decoupling literature claims that improving the resource efficiency of production will help to reduce the link between resource use and economic growth, a counter argument suggests that improvements in resource efficiency will simply inspire more production and more consumption, effectively negating the efficiencies gained. Recognition of the rebound effect dates back to 1865 when neoclassical economist William Jevons raised the possibility that improvements in energy efficiency would result in more production and consumption (Gillingham et al., 2013).

In the literature, four types of rebound effects have been identified:

1. Direct rebound effects – assumes that increased efficiency will make a product cheaper and will make people buy more of it.
2. Indirect rebound effects – assumes that efficiency will make products cheaper, so you have more available income to spend on buying other things
3. Economy wide effects – proposes that efficiencies will make products cheaper, leading to readjustments of prices elsewhere in the economy. This is also known as the general equilibrium effect
4. Transformational effects – proposes that technological changes will shift consumer preferences and organisation of production, resulting in changed behaviours (Gillingham et al., 2013; Maxwell et al., 2011).

Rebound effects 1 to 3 all assume that more efficient / environmentally improved goods will be less expensive. If there is no shift in price, then these effects are unlikely to

occur, additionally, if there is an increase in price, the opposite effect can occur, where the use of a good is further reduced. Transformational effects might apply in the case of service based businesses, where for example, the leasing of goods, rather than owning them could result in significantly more transport of those goods between users.

An extension of the rebound effect is the claim that efficiencies could cause 'backfire' where the rebound is so large it actually results in a greater environmental impact than initially was the case (Gillingham et al., 2013). A report for the European commission titled "Addressing the rebound effect" found that on currently available evidence, the rebound effect does exist, however it is not sufficient to create a 'backfire' (Maxwell et al., 2011). The report found that the clearest evidence for direct rebound effects were for household energy efficiency for appliances: heating, cooling, personal transport and so on. The rebound effect was found to be between 10-30% in developed countries. Larger direct rebound effects were found for commercial road transport, at 30-80% as a result of fuel efficiencies (Maxwell et al., 2011). Others quote rebound effects of between 5-30% for energy efficiencies (Gillingham et al., 2013).

In a situation where the price of a good increased due to environmental improvements, such as in the EU meat and dairy industry, a reduction in consumption of 10-100% was observed, highlighting the difference in outcomes when the efficiency/improvement results in higher prices (Maxwell et al., 2011). All of the previous examples relate to direct rebound effects. With regard to indirect and economy wide rebound effects, the EU study found that there were few estimates in the literature and these only related to energy. These estimates however found that economy wide effects for energy efficiency were smaller than direct effects and were estimated at around 10% (Maxwell et al., 2011). The dynamics of macroeconomic rebound effects are hard to predict. An example of a macroeconomic effect could be where national fuel economy standards result in reduced demand for oil, which could drive down the global oil price, and in turn lead to people driving more. However, if demand goes down and the product gets cheaper there may be less incentive to produce it (Gillingham et al., 2013).

The EU report highlights the fact that rebound effect influences vary depending on the product or industry and are not generalizable across different industries. The report also notes that the four types of rebound effects are not additive, as for example a direct rebound (using more of the same thing) means that less money is available to create an

indirect rebound (using more of something else) (Maxwell et al., 2011). Importantly, there is little evidence for rebound effects with other resources and there remains a gap in knowledge regarding any economy wide effects that may occur for sustainable consumption and production policies (Maxwell et al., 2011). As some authors point out, "rebound effects are small and are therefore no excuse for inaction" (Gillingham et al., 2013, p. 476). Considering the lack of knowledge regarding the existence of the rebound effect for other resources, it is hardly an excuse not to pursue improvements in resource efficiency and environmental impacts. Potential rebound effects are examined with regard to collaborative consumption business practices in Paper II.

How to approach decoupling?

As has been highlighted by the literature on decoupling and the Environmental Kuznets Curve, there is no convincing evidence to suggest that progressive improvements in technology as a result of economic development will lead to environmental improvements organically (Jackson, 2009; Schandl and West, 2010). Schandl & West (2010) used the IPAT framework (Impact = Population x Affluence x Technology) to examine the influence of each of these factors on domestic material consumption in the Asia-Pacific region. They found that affluence was overwhelmingly the biggest contributor to resource consumption; technology had a very minor mitigating role in reducing resource use; and at times has actually contributed to growth in resource consumption (Schandl and West, 2010). Rather than technological improvements, Schandl & West (2010) propose that far more radical changes would be required to reduce environmental and resource impacts; such as major shifts to the organization of the energy, transport and housing sectors to counter the impacts of affluence and rapidly growing populations. In sum,

"There is no reason to believe that rapid change on this scale will arise spontaneously out of market processes. It will instead require conscious effort on the part of citizens and policy makers, to harness and guide market forces towards achieving sustainable development" (Schandl and West, 2010, p. 646)

The UNEP report on decoupling suggests that three types of innovations will be required to achieve a major shift from business as usual, these are: technological innovations; institutional innovations (e.g. incentive policies, rents); and relational

innovations (e.g. changes to co-operation, social learning, social cohesions etc.) (UNEP, 2011a). Recognising that decoupling and the Kuznets curve are unlikely to occur organically, and unlikely to be achieved through technology change alone, this study is oriented towards policy interventions and understanding the contextual and consumption side aspects that are likely to influence resource use. I now move on to the consumption related theories.

The consumption side: key concepts regarding consumer uptake and prospects

Perspectives on consumption have traditionally been dominated by neoclassical economics; but other perspectives are increasingly being adopted. In this section, I review various perspectives on consumption from economics and sociology to explain the theoretical stance taken in this study.

Utility, choice & sovereignty

In neoclassical economics, the usefulness of things is defined as 'utility' and can be measured by a person's willingness to pay (Slater, 1997; Stilwell, 2006). Neoclassical utilitarian Jeremy Bentham described utility as "that property in any object, whereby it tends to produce, benefit, advantage, pleasure, good or happiness, or reduce pain" (Ryan, 1987, p. 66). Consumers are expected to self-regulate their consumption due to a concept known as 'diminishing marginal utility', which explains that the usefulness or satisfaction gained from acquiring something diminishes with each extra unit that is acquired (Stilwell, 2006). With utility diminishing, a rational consumer is expected to shift their spending towards something else which offers greater utility, rather than 'overconsume' (Stilwell, 2006). Accordingly, overconsumption is not recognised within conventional economics. This characterisation of consumers as 'rational' and 'utility maximising' is highly contested and excludes the range of social or other external pressures that might influence consumption (Slater, 1997).

With consumers making choices between products to maximise their utility, these preferences are assumed to drive production and supply, making consumers powerful and 'sovereign' in the marketplace (Stilwell, 2006). However, this assumption of consumer sovereignty ignores the role of firms and advertising in shaping desires (Slater, 1997). Institutional economists Veblen and Galbraith countered the notion of

consumer sovereignty, by highlighting the social nature of consumption and the power of producers. Veblen's "Theory of the Leisure Class" (1899) presented a theory of consumption in cultural terms, and rejected the notion that wants are based purely on individual choices (Hamilton, 1987). Veblen (1899) observed that consumption by the wealthy "leisure class" of the late 19th century was primarily driven by a need to exhibit success and social standing, which he coined "conspicuous consumption".

Galbraith famously questioned the sovereignty of consumers and observed that an economy based on continual improvements to technology necessarily had to be a planned economy, as major firms need to plan for major capital investments and avoid risk and uncertainty (Stilwell, 2006). To enable this, firms need to control the demand for their products and they do this by investing heavily in advertising, marketing and brand loyalty (Slater, 1997). In recognition of this, Galbraith proposed a 'revised sequence', where it is not consumers driving supply, but producers driving demand; so that the concept of 'consumer sovereignty' is actually replaced by 'producer sovereignty' (Slater, 1997; Stilwell, 2006). Consequently,

"One cannot define productions as satisfying wants if that production creates the wants" (Galbraith, 1969, p. 147)

Others suggest that along the chain, the consumer and the producer each influence the other (Spaargaren, 1997). Despite these early contributions, the notion of consumer sovereignty is still pervasive (Vergragt et al., 2014). More recent research proposes that consumption is shaped by the broader "social-technical-cultural-institutional system that... normalizes prevailing consumption patterns" (Maniates, 2014, p. 202). Consequently, studies of consumption need to look at broader systemic drivers and examine social patterns, rather than narrowly focusing on individual choice.

The social nature of consumption

Duesenberry (1962) built on the work of Veblen in explaining the social and cultural aspects of consumption and arguing that individual preferences are not independent and rational. Duesenberry highlighted some key issues to support this, including:

- the influence of habit formation;
- "demonstration effects" – where people are influenced by their friends or family,

- interdependent preferences – where consumption is based on income relative to others;
- the social emulation behaviour described by Veblen (Mason, 2000).

These consumption phenomena can be reinforcing, through a continual process of demonstration and emulation (Duesenberry, 1962). This work also highlighted the impact of culture on consumption, "consumption behaviour follows from our culture.... we should not expect it to apply to other cultures" (Duesenberry, 1962, p. 112).

While collaborative consumption is now related to the sharing economy (Botsman and Rogers, 2010), the term was originally used by Felson & Spaeth (1978) to highlight the shared nature of much of household consumption, to contest the conventional ideas of the time, which asserted that all consumption was individually driven. Felson and Spaeth (1978) highlighted the shared nature of many household activities, from the household washing machine, dishwasher or even sharing meals and drinks, and focused on 'the structure of daily activities' and how that leads to collaborative consumption. They argued that everyday consumption is systematically organized and that much of it is shared and interdependent (Felson and Spaeth, 1978). Polanyi (1944) also explains that consumption (or 'human provisioning') are embedded in social institutions, such as 'social reciprocity' and familial relationships. These concepts further highlight social influences on consumption and the collaborative or shared nature of much of household consumption.

While recognizing that their concept of collaborative consumption is different to the current popular conception, Felson & Spaeth (1978) make interesting points regarding shared consumption activities. For example, "community structure tends to generate circumstances under which particular types of collaborative consumption occur" (Felson and Spaeth, 1978, p. 617). This is illustrative when considering the emerging online market of collaborative consumption, as it appears the internet and social media are now providing part of the necessary community structure. They also suggest that "the spatio-temporal structure of community activities will have an important impact on the extent of collaborative consumption" (Felson and Spaeth, 1978, p. 617), which highlights the importance of space and time as drivers.

Defining consumption

The notion of 'consumption' is sometimes reduced to a simple market exchange (Warde, 2005), however, the process of consumption usually occurs over a much longer time period and involves several phases. A useful explanation from Spaargaren (2011) considers consumption as those practices that occur downstream of production and provision, for example: purchasing, storing, consuming, reusing and recycling. Røpke defines consumption more holistically, as "the appropriation and transformation of resources in relation to domestic practices" (Røpke, 2009, p. 2495). Warde (2005) further adds that appropriation can be for various purposes, such as expression, contemplation or utility and that resources may be acquired or used without purchasing. Patterns of consumption can therefore be described as the combination of consumption activities that occur across the range of an individual's practices (Warde, 2005).

Social Practice Theory

Social practice theory (SPT) is a sociological conceptualisation of everyday human practices that is increasingly used to understand consumption and possible transitions to 'sustainable consumption practices' (Anantharaman, 2016; Hargreaves, 2011; Sahakian and Steinberger, 2011; Shove, 2014; Warde, 2014). In social practice theory, consumption is framed as a component of every day practices, which include things such as cooking, sleeping, recreation, working, eating, travelling and so on. In turn, these practices incorporate consumption of resources in some way, for example, by using: a bed, sheets, cooking utensils, food, energy, clothes, equipment, tools and transport (Røpke, 2009). In addition to resources, practices require know-how and competence in undertaking the practice. The routine nature of many practices brings into focus the importance of habit and tradition (Warde, 2005). As such, daily practices and the consumption of resources are socially embedded (Jaeger-Erben and Offenberger, 2014).

SPT represents an important shift in thinking regarding sustainable consumption research and policy initiatives, as it points to 'practices' as the key focal point for change, rather than the 'consumer' or individual (Spaargaren, 2011; Warde, 2005). Previously, the focus has been on shifting individual consumer choice; however, social practice theory highlights the importance of social conventions, 'shared routines' and

habitual activities (Spaargaren, 2011; Warde, 2005). The habitual nature of some practices means that people are not necessarily making a conscious choice to 'consume' or may not acknowledge their consumption, and as such may not be aware of the associated environmental impacts (Røpke, 2009). The SPT approach acknowledges that consumption decisions are subject to a large number of factors, many of which are systemic and beyond the control of the consumer. Considering their limited power, consumers cannot be expected to drive the change needed for sustainable consumption (Akenji, 2014). Programs that target individual agency are overestimating the impact of ideology, rather than habitual behaviour, and are neglecting the influence of social structure (Sahakian and Wilhite, 2014).

Social practice theory also highlights the importance of the action or activity which is the purpose of the practice, rather than the material objects which are used or acquired in the process (Røpke, 2009). Considering the collective and societally embedded nature of practices and consumption, scholars suggest that researchers and policymakers should investigate opportunities for collective approaches to behaviour change (Røpke, 2009; Warde, 2005). Warde (2005) also notes that producers play a role in shaping practices through advertising.

“Social practice theory... raises a series of radically different questions about how to create more sustainable patterns of consumption. The focus is no longer on individuals' attitudes, behaviours and choices, but instead on how practices form, how they are reproduced, maintained, stabilized, challenged and ultimately killed-off” (Hargreaves, 2011, p. 84).

SPT builds upon Giddens' (1984) theory of structuration and Bourdieu's (1990) theory of practice. Giddens (1984) proposed social practices as a mediating concept in arguments regarding structure and agency; where social practices constitute social life, and enable the interplay between structure and agency (Kaspersen, 2000). Giddens (1984) emphasized that individuals are knowledgeable and have the power to change; however, many of their actions are reproduced unconsciously as part of routines and habits. As such, actors and social structures are constantly interacting and being produced and reproduced (Kaspersen, 2000). Bourdieu's theory of practice set out to explain societal change and the 'trajectories' of individuals (Grenfell, 2012). He proposed that people's practices might be understood by examining the social landscape

that they inhabit in addition to the 'habitus' that they bring to that landscape (Grenfell, 2012). 'Habitus' refers to the unconscious knowledge and skills that individuals act out habitually, which can be understood as a person's "embodied history" (Bourdieu, 1990).

Operationalising Giddens' structuration theory can entail two types of studies: (1) institutional analysis which examines the social structures that help to reproduce practices, and (2) analysis of strategic conduct, which focuses on the individuals interactions with those structures (Kaspersen, 2000). In operationalising SPT, social practice theorists tend to propose three interacting dimensions as foci for analysis, typically incorporating material, personal and social dimensions. The personal dimension can represent skilful know-how, bodily activities or "teleoaffectivity" (desires, beliefs, expectations) (Galvin and Sunikka-Blank, 2016; Reckwitz, 2002; Schatzki, 1996) while the social dimension refers to social meanings and rules or institutions (Reckwitz, 2002; Schatzki, 1996; Shove, 2014).

In this thesis, I adapt the conception of SPT proposed by Sahakian and Wilhite, with the three dimensions consisting of "the body – including cognitive processes and physical dispositions; the material world – including technology and infrastructure; and the social world – including settings, norms, values and institutions" (Sahakian and Wilhite, 2014, p. 28). My interpretation of these dimensions is illustrated in Figure 5.

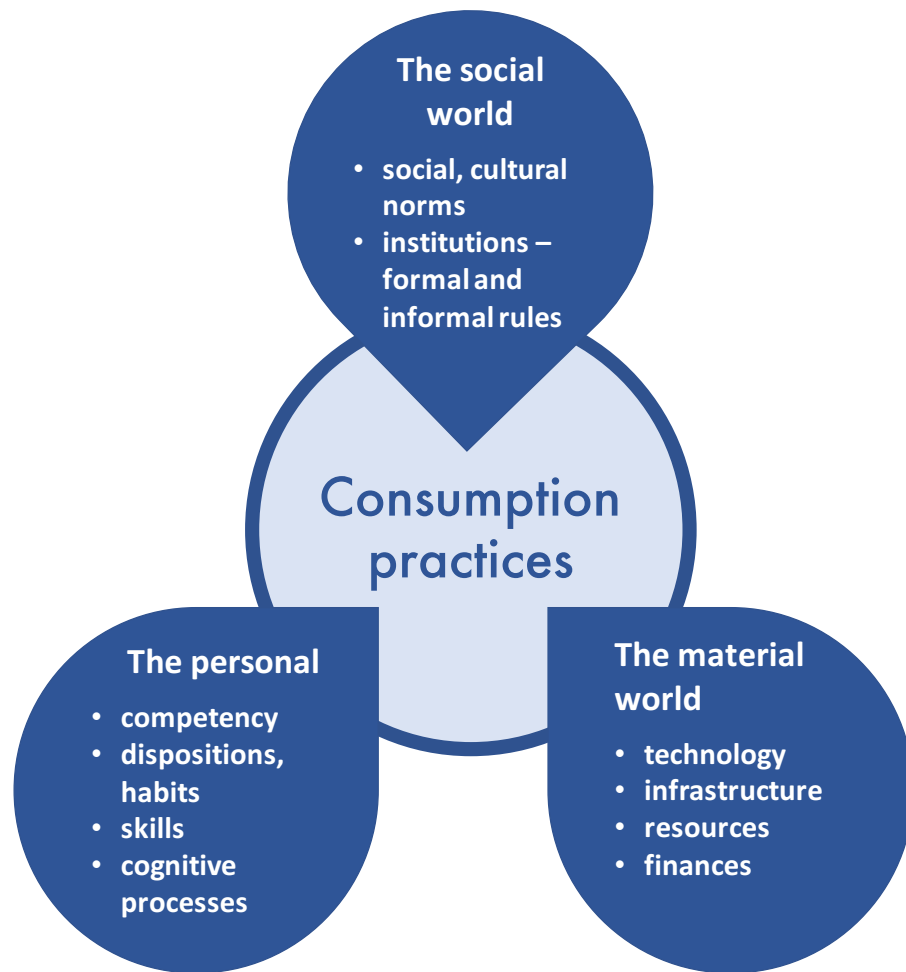


Figure 5: Dimensions of social practice theory. Terminology adapted from Sahakian and Wilhite (2014).

In order to use social practice theory to create change for sustainable consumption, Sahakian and Wilhite (2014) propose that we need to examine all three dimensions to identify the agentive aspects of a practice and understand how durable they are. This information can be used in policy making if we can determine what aspects of practice might be targeted by interventions and have the greatest impact (Sahakian and Wilhite, 2014).

Research design

Ontological and epistemological assumptions

My approach to this thesis is framed by a ‘depth realist’ ontology, which considers that reality is stratified, with an observable, empirical domain; a reality independent of observers; and a domain of underlying structures, which are difficult to observe (Blaikie, 2009). However, alongside this, I also draw on an ‘idealist’ ontology, where social realities are constructed by the human mind and through shared interpretations of reality (Blaikie, 2009). Drawing on two different ontologies is necessary to accommodate the interdisciplinary nature of this study. The depth realist positioning is useful for encompassing the environmental sustainability dimensions of this thesis, where I consider the resource use implications of collaborative consumption (Papers II and III). It also helps to situate the use of multi-level perspective (MLP) (Paper IV), which examines a range of underlying structures influencing collaborative consumption uptake. I interpret the idealist ontology as operating at a micro or meso level, taking account of the social constructions that facilitate or constrain use of collaborative consumption offerings. This is relevant to the use of social practice theory in Papers III and V. The idealist ontology used here considers that there are external realities that constrain or create opportunity for these social constructions of reality (Blaikie, 2009), which draws some connection to the depth realist ontology.

Due to the breadth of approaches, this thesis is epistemologically plural, drawing on conventionalism and constructionism. Conventionalism draws on scientific theories as convenient tools for examining the world, and involves the collection of data on characteristics or patterns to produce descriptions that can be related to research questions (Blaikie, 2009). This approach has been used alongside constructionism, which recognizes that social realities arise from human sense-making, and the researcher is an integral part of the research, interpreting meaning from lay concepts (Blaikie, 2009). Conventionalism aligns with the depth realist ontology, while constructionism aligns with the idealist ontology. There are also elements of critical approaches in various parts of the thesis, where I am interested in social structures and inequality and consider the social, political, cultural, economic and gender history (Denzin and Lincoln, 2011).

In Table 6, I have aligned the relevant ontological and epistemological background for each paper in this thesis, as this influences the use of theories. Adaptive theory is a methodological approach and is thus ontologically and epistemologically open (Layder, 1998). Social practice theory aligns primarily with a constructionist approach, but has elements of structuralism (Geels, 2010; Orlikowski, 1991), as human interactions are embedded in socially structured institutions (Warde, 2005). Both social practice theory and multi-level perspective can align with constructionism, as they both focus on recursive processes (McMeekin and Southerton, 2012), where there is ongoing change as meaning is produced and reproduced incrementally (Geels, 2010). Details of each theoretical approach is provided within each paper.

Table 6: Alignment of ontology, epistemology, theory and strategy for papers in this thesis

| Paper | I and II | Quantitative part of III | Qualitative part of III and V | IV |
|---------------------------|----------------------------------|---------------------------------|--------------------------------------|----------------------------------|
| Ontology | Depth realist | Depth realist | Idealist | Depth realist |
| Epistemology | Conventionalism, constructionism | Conventionalism | Constructionism | Conventionalism, constructionism |
| Theory | Adaptive theory | (Material flows) | Social practice theory | Multi-level perspective |
| Reasoning strategy | Abductive | Inductive | Abductive | Abductive |

This research is largely exploratory, and primarily employed an abductive research strategy to answer both “what” and “why” questions. An abductive strategy incorporates both inductive and deductive reasoning and is grounded in everyday activities (Blaikie, 2009). As such, an abductive strategy uses a bottom up approach by firstly collecting data, developing descriptions, and then deriving categories to develop understanding and aid in constructing theory. An abductive approach aligns with constructionism as social realities are determined by perceptions of those who are experiencing it (Blaikie, 2009). Part of Paper III incorporates an inductive approach, which draws on quantitative data to compare the resource use of different laundering methods. This approach attempts to identify a pattern based on observations, which aligns with an inductive strategy, a depth realist ontology and a conventionalist epistemology (Blaikie, 2009).

Case study approach

The abductive research strategy fits well with a case study approach, which is useful for exploratory research questions (Yin, 2009). A case study can be defined as:

"an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 2009, p. 18).

Collaborative consumption can readily be identified as a contemporary phenomenon, and embedded within a certain context, in this case, in Southeast Asian cities.

Yin (2009) discusses four basic types of case study designs, with either single or multiple cases and either holistic or embedded units of analysis. This thesis consists of three case study cities with multiple embedded units of analysis. The approach to the case studies in Hanoi and Bangkok were very similar, with an initial search for CC businesses, followed by interviews with a variety of CC businesses and then with a range of other stakeholders including policy makers. The case study in Metro Manila was different, it also involved an initial search for CC businesses, and then focused specifically on laundering practices in Metro Manila, comparing individuals laundering by hand, individuals laundering by machine and CC laundry services. The alignment of case study elements across the three case studies is highlighted in Table 7, the roman numerals indicate the paper in which the data was used.

Table 7: Alignment of case study elements across the three cities

| | Bangkok | Hanoi | Metro Manila |
|---|----------------|--------------|---------------------|
| Database of CC businesses | I | I | I |
| Interviews with businesses | II | II | II, III |
| Interviews with individuals | | | III |
| Interviews with experts, stakeholders and policymakers | IV | IV | |

Note: The colours indicate where the research approach was undertaken, the roman numerals indicate the paper in which the data was used. Interviews with businesses in Metro Manila were limited to laundry services (hence are shaded differently).

The intention with adopting three case study cities was to enable a broad overview across the cities, to reflect broadly on the region, and to also provide some depth on specific aspects. The case study approach taken in Bangkok and Hanoi was readily comparable, and while the case study in Metro Manila was different, data from that case study could also be used to deepen the picture of CC in Southeast Asia. In Table 8, the research design for each paper is explained in more detail. Paper I provides an initial exploration of the topic, and sets out the broad context to all of the case studies. Paper II contributes to an understanding of the business side of practices and sustainability, primarily for Hanoi and Bangkok. The laundering case study features in Paper III, and the details help to provide more regional examples to the other papers. Paper IV focuses exclusively on the case study context in Bangkok and Hanoi. Paper V synthesises these four papers as a case study of CC in Southeast Asia. Each paper focuses on a different aspect of collaborative consumption practices.

Table 8: Research design for each paper

| | Paper I | Paper II | Paper III | Paper IV | Paper V |
|----------------------------|--|---|--|---|---|
| Research question | In which sectors is collaborative consumption (CC) currently emerging in these cities, and who are the users? In which sectors do CC businesses have the potential to replace purchase of goods? | How are CC businesses currently operating in these cities with regard to sustainability practices? What factors enable or inhibit them from achieving environmentally sustainable outcomes? | How does resource use compare for individual and shared consumption in the case of laundering in Manila? What conditions facilitate collaborative consumption? | What are the dominant socio-technical regime barriers and enablers for CC businesses in Bangkok and Hanoi? How durable are the barriers and what are the key levers for change? | What are the prospects for environmentally sustainable collaborative consumption practices in Southeast Asia? |
| Unit of analysis | Context for CC practices | CC business practices | Laundering practices (as a specific type of CC practice) | Context for CC practices | CC practices |
| Geographical scope | Hanoi, Bangkok and Metro Manila | Hanoi, Bangkok and Metro Manila | Metro Manila | Hanoi and Bangkok | Hanoi, Bangkok, Metro Manila |
| Sectoral scope | Transport, food, housing, recreation, laundering and clothing | Transport, housing, recreation, laundering and clothing | Laundering | All sectors | Transport, food, housing, recreation, laundering and clothing |
| Theoretical framing | Adaptive theory | Adaptive theory | Social practice theory | Multi-level perspective, institutional theory | Social practice theory |
| Data / Methods | Database of businesses Semi-structured interviews | Semi-structured interviews | Structured interviews (quantitative) Semi-structured interviews (qualitative), participant observation | Semi-structured interviews Document analysis | Synthesis |

Methodology and Methods

The data collection and analysis methods have been described in each of the papers that make up the body of the thesis; therefore, in this section I provide an overview of those methods.

I initially travelled to Hanoi and Bangkok for three weeks in late 2013 to identify key contacts and research institutions, and to undertake some initial interviews. This visit enabled me to develop a more informed research plan and to refine my approach to interviews. Then, as a recipient of the Australian Government Endeavour Fellowship in 2014, I spent six months living in Southeast Asia and sitting with local research institutions. I was fortunate to be hosted by academics at De La Salle University in Manila; the Hanoi University of Science and Technology in Hanoi; and Chulalongkorn University in Bangkok. I spent close to two months in each city, identifying businesses and individuals, collecting documents and undertaking interviews. This time also enabled me to observe lifestyles, businesses and services commonly used within each city. This experience provided me with important grounding and context for this research project.

In order to examine the prospects for collaborative consumption in these cities, I set out to understand the nature of businesses and their customers, the practices of businesses, their resource use, and their socio-cultural and institutional context. The research questions reflect the socially embedded nature of consumption, and consequently this research employed a primarily qualitative approach. In Paper III I have dealt with some of the quantitative aspects of resource consumption, however, the data collection and sampling was carried out within a qualitative research framework. In this section I explain the research process and rationale.

Establishing a business database

This research began as an exploratory work, with initially needing to identify the presence of collaborative consumption businesses in each of the three cities. Part of the difficulty in this early phase lay in identifying a category of businesses which may be new or established, vary across sectors and may not be recognised as “collaborative consumption” by local experts or even the users. Therefore, in order to identify

businesses, I developed a framework for collaborative consumption business types, based on consumption clusters proposed by Spangenberg & Lorek (2002)(See Table 9). Using literature that was available at the time (2014), I populated this framework with examples of shared-access and service businesses (aligning with my definition of collaborative consumption). This became the template for searching for CC businesses. In each city, with the help of local assistants, we searched for these business types online in both in English and the local language – either Vietnamese, Thai or Tagalog. The result was a basic database listing business types under each consumption cluster for each city, with some characteristics and contact details. During the process of searching, I added new business types as they emerged, and also added businesses that were not online, but commonly observed in the street, such as laundry services. This process drew on the local knowledge provided by each assistant. The assistants were all university educated and had a strong command of English as well as their native language.

Table 9: Framework of household consumption clusters with potential shared-access and service business types.

| Consumption cluster | Business types | |
|---|---|---|
| | 'Shared access' | 'Service to replace product' |
| Transport/mobility <ul style="list-style-type: none"> - Commuting for work, study and local recreation - Excludes vacation travel | Car share (club membership), car or motorbike rental (for recreation), bike share, renting personal car to car rental business, person-to-person car rental | public transport, car-pooling/ride-sharing, shared taxi, private vehicle taxi, regular taxi, motorcycle taxi |
| Food <ul style="list-style-type: none"> - Food acquisition, storage, preparation and cooking - Use and cleaning of eating utensils | Shared kitchen: appliances shared between a group of residents* | restaurants/street food meal delivery, fresh/refrigerated food delivery (daily), catering for parties/events |
| Housing <ul style="list-style-type: none"> - Shelter (Construction and maintenance) - Light, energy for cooking and appliances - Comfort (heating, cooling, furnishings) | Tool renting: power tools, hand tools, large equipment etc. Utilities: solar panel sharing | Building & maintenance: building, gardening, plumbing, electrical, other repair (services to replace do-it-yourself options) |
| Recreation <ul style="list-style-type: none"> - Home entertainment - Sports - Music/arts & other hobbies - Excludes tourist recreation and accommodation | Rental of leisure items: books, games, movies, television, DVD, computers, tablets, gaming equipment, other electronics, sports & outdoor equipment, equipment for music, art, hobbies, children's toys & equipment, furniture and equipment for events (used at home) Shared facilities: Internet/games cafes, subscription to sports and leisure facilities (also music/ arts), children's play facilities | Virtual games, books and music |
| Laundry and cleaning <ul style="list-style-type: none"> - Textile and home cleaning | Self-service coin laundry, other shared laundries | laundry wash and dry service, dry cleaning, home cleaning services |
| Clothing <ul style="list-style-type: none"> - All types of wearables - Regular and special occasion | Rental of costumes & formal wear, Rental of fashion or designer clothes, shoes, handbags, accessories | clothing subscription service (with delivery) |
| Healthcare <ul style="list-style-type: none"> - Medical equipment and mobility - Within the home, excludes healthcare in institutions | Rental of wheelchairs, walking frames, other medical equipment | Mobility service, Other home health service |

*note that shared kitchens were not investigated as part of this study

Selecting interviewees

In qualitative research, a research sample is chosen with respect to relevance rather than representativeness (Neuman, 2006). In line with this, the sampling strategy in this study was targeted to relevant businesses and knowledgeable individuals. Using the database developed in each city, and with the help of local assistants, we contacted a number of businesses and invited them to participate in interviews. I aimed to interview a diversity of business types in Bangkok and Hanoi, but was also limited by the business types that were available. In Metro Manila, fewer examples of collaborative consumption businesses were available at the time, so our research there focused on a more in-depth case study of laundering and laundry services. In Bangkok and Hanoi, we set out to interview a range of stakeholders and knowledgeable individuals/ organisations to gain their perspectives on the use of collaborative consumption in their city. These participants included policymakers, multilateral organisations, academics, consultants, NGOs, a donor agency and other industry associations. Participants were recruited through a snowballing process, where I began by interviewing academics or business people known to my academic contacts in each city. Each set of interviewees then provided contacts or connections to other relevant people, and so on. Snowballing is a useful sampling method for a difficult to identify population (Blaikie, 2009). Approximately twenty interviews were undertaken in each of the three cities, with a total of sixty-one being used in this thesis.

Semi-structured interviews

Interviews were semi-structured and in depth to allow some consistency of questioning, while also allowing interviewees the opportunity to tell their own stories and raise other relevant topics. According to Layder,

"a semi-structured interview schedule and in-depth probing to some extent restrain the researcher from imposing his or her own prior assumptions about what is relevant" (Layder, 1998, p. 52).

In addition, I began interviews with a “grand tour” question (Spradley, 1979), which is designed to be open ended, make the interviewee feel comfortable, and to encourage them to give their account in their own words before being directed by the interviewee.

An example of a grand tour question in this study was “tell me about your business and how it works?”, which depending on the interviewee could elicit a detailed or concise description, which could then be followed by more specific questions.

Interviews were conducted in person, usually in the interviewee’s place of work, with the exception of one interview that was held over the phone. Interviews were in-depth and typically lasted around an hour. In general, interviews with small businesses were usually conducted with the help of a translator, however, many people spoke some English. Interviews with stakeholders were commonly undertaken in English. Early in the process, I received advice from other researchers that it would not be culturally appropriate to record interviews, particularly with government employees in Asia. For this reason, and to ensure interviewees felt as comfortable as possible, I took written notes during interviews. I typed up these notes within a few days of the interview and emailed them back to each interviewee to enable them to check my account of our discussion and make any modifications. This aligns with the “member checking” approach to validity in ethnographic research (Blaikie, 2009). With interviews that were conducted in the local language, I completed my interview notes and sent them with any queries to the translator, who then checked my notes against their own and where necessary, contacted the interviewees with points of clarification.

Statements made in interviews with regard to formal laws and plans were cross-checked with the relevant documents. Language tended not to be a barrier, however there was one interview where I felt that the translator struggled to convey exactly what the interviewee meant on some technical issues of regulation. To solve this problem, both the translator and I researched the regulation afterwards and returned to the interviewee with some follow up questions to ensure we had captured the issue. Interview guides are provided in Appendix One. Table 10 displays the number and type of interviews conducted in each city.

Table 10: Number and type of interviews in each city

| | Bangkok | Hanoi | Metro Manila |
|---------------------------------|---|--|----------------------------------|
| Business types | Bike share Tool rental Baby equipment rental Fashion rental Designer handbag rental | Ride-share & taxi-share (planned) Bikeshare Toy rental Laundry services (x 5) | Laundry services (x 8) |
| Experts and policymakers | Policymakers (x 3) Multilateral organisations (x 2) Academics (x 3) Consultants (x 2) Donor agency Other associations (x 3) Large business owners (x 2) | Policymakers (x 6) Multilateral organisation NGO Academics / consultants (x 5) | |
| Individuals | | | People laundering at home (x 11) |
| Total no. | 21 | 21 | 19 |

Structured interviews and participant observation

For the case study of laundering that I conducted in Metro Manila, I also conducted structured interviews to gather data about resource use in laundry service businesses, and for individuals laundering at home. The structured part of the interview was necessary to enable consistent data collection across businesses and individuals. Laundry businesses were recruited through doorknocking, and individuals were recruited through snowballing. While interviewing laundry businesses and individuals, I also undertook some participant observation, where I was primarily an observer noting: their working or laundering environment (e.g. small or spacious, other people around); their equipment (e.g. machines, dryers, buckets, boards, lines, sink or drain), and any other details of resources consumed (e.g. detergent brands). This was particularly the case for individuals washing at home. Participant observation requires some immersion in the life of what is being studied and can vary from intensive participation to just observation (Blaikie, 2009). The observational data I collected was incorporated into the thick descriptions of laundering practices. More details about the methods for the laundry study are provided in Chapter 6: Paper III.

Layder (1998) proposes that multiple data sources lead to a greater potential to develop concepts, by using approaches such as participant observation and in depth interviewing in conjunction with official statistics and other data. As such, the study draws together data collected through: semi-structured interviews with a range of different stakeholders; observational notes written along with interviews; and, information from websites and official documents.

Document analysis

Official documents were primarily used in the analysis for Paper IV, which examined the context for CC in Hanoi and Bangkok. Documents can be used to help identify phenomena and to develop connections with other data (Blaikie, 2009). I examined official policy documents and program strategies from Vietnam and Thailand that related to sustainable development, cleaner production, green growth, sustainable consumption and production, ecolabelling and green public procurement. I also examined environmental protection laws, draft laws relating to waste management and public passenger transport laws. In all cases I was searching for formal institutional influences on small businesses with regard to sustainability and any impacts on businesses offering rental or service options.

Ethics

All interviews were subject to the Australian National University's human ethics approval processes and policies. Each study participant was presented with an information sheet and consent form, often before the interview via email and translated into their own language where necessary. Interviewees were required to read and sign the consent form in order to participate in the study. As part of this consent, it was agreed with interviewees that they would not be identified by name, only by the general nature of their role, and their organization name would only appear in the final thesis. The information sheet and consent form are provided in Appendix Two. The list of organisations interviewed is provided in Appendix Three. The ANU ethics reference number is 2013/528. The ANU ethics process requires that raw data is kept for five years after publishing.

Analysis and use of Adaptive Theory

Interviews were analysed with the aid of the qualitative software tool “Dedoose”. Interviews were coded according to emergent themes for the initial pre-coding step, which were then revised during subsequent re-analysis of the data. This aligns with Layder’s (1998) approach to open and flexible coding to allow refinements as the research progresses. Interviews were initially analysed in groups, such that all business interviews were coded at once, followed by policymakers and so on, in order to grasp a sense of perspective. Interviews were examined to highlight both similarities and differences between the diverse perspectives. The emergent themes, key similarities and differences are presented within the results of each paper.

Following the initial pre-coding, I wrote memos to develop typologies and assist in refining the codes. Layder (1998) suggests that memo writing aids in the process of analysis to develop concepts and ideas and suggest connections. In this thesis, the analysis of interviews is presented with many quotes, incorporating the diversity of responses as much as possible, and staying close to interviewee accounts. This type of “thick” description is intended to provide a rich account of interview data, with enough information for other researchers to understand the context and relevance (Blaikie, 2009; Neuman, 2006). In Paper IV, the analysis of formal and informal institutions required review of various legal documents, government strategies and plans. In that paper, document analysis complemented interview data.

Yin (2009) emphasises that case studies are not generalizable to populations, but are generalizable with regard to theoretical propositions. However, other social science approaches such as Grounded Theory (Corbin and Strauss, 2008) and Adaptive Theory (Layder, 1998), emphasise the generation of theory from empirical data during the process of analysis. Grounded theory (GT) aims to build theory through the process of gathering and analyzing data in a general field of study, without having a pre-conceived theory in mind (Corbin and Strauss, 2008). This is similar to Adaptive Theory (AT), however, it recognises that researchers are typically influenced by theory in some way, and that the generation and adaptation of theory happens in an iterative fashion, so that the researcher typically starts with some pre-identified ‘orienting concepts’ (Layder, 1998). A key difference is that AT gives theory and data equal weight in the process of

developing new theory, while GT emphasizes the primary importance of data (Layder, 1998). Two of the papers (I and II) in this study use an Adaptive Theory approach, where the research process was informed by orienting concepts within the literature, and theoretical concepts were developed through an iterative process of coding, memoing, and re-coding, drawing on multiple types of data.

The other three papers relate more specifically to established theories, such as social practice theory, multi-level perspective and institutional theory.

Approaches to research authenticity

Approaches to ensuring research rigour and authenticity vary between disciplines and particularly between quantitative and qualitative research. In discussing case study research as a social science approach, Yin (2009) proposes some principles to ensure validity and reliability, such as using: multiple sources of evidence – to enable some triangulation of accounts; documented chain of evidence – to enable replication of the study; and, informants to review summaries – to check the researcher’s account. All of these steps were undertaken in this study. However, other social science researchers reject the concepts of validity and reliability, as being appropriate to quantitative, rather than qualitative research (Blaikie, 2009). Blaikie explains that validity and reliability are really about corroboration and replication, and the nature of qualitative data makes it very difficult to ensure this, as the researcher is the “measuring instrument, and no two instruments are the same” (Blaikie, 2009, p. 216). Opinions differ on ensuring authenticity in social research, and approaches can range from using a professional, well documented approach which is basically replicable to an approach where every interview must be corroborated (Blaikie, 2009). In this study, I adopt a combination of measures to ensure authenticity, following these principles outlined by Neuman (2006) and Blaikie (2009). The qualitative researcher is concerned with:

- authenticity in order to give a fair and balanced account;
- ensuring the richness of data in order to develop insights;
- undertaking a consistent approach;
- using a range of different data sources; and
- developing insights and generalisations (Neuman, 2006). In addition,

- using a flexible approach and describing results “thickly” (Blaikie, 2009).

Reflections

Self-awareness and reflection in social research is essential, as the researcher is situated within the research (Blaikie, 2009; Neuman, 2006). It is therefore important to acknowledge and be explicit about one’s own values, experience and position (Neuman, 2006) and to consider how this might influence the research.

I am originally an Environmental Engineer, with a Masters in Water Resources Management and a Graduate Certificate in Political Economy. I came to this research project with ten years of experience conducting urban sustainability research. While my work primarily dealt with quantitative research, I had some practical experience undertaking qualitative research. Working in sustainability research, I am accustomed to multi, inter- and trans-disciplinary research and approached this topic with an openness to use different disciplines. My background could have meant this research would be primarily quantitative, however, the exploratory nature of the research, and the lack of literature with regard to the social dimensions of consumption led me to use more sociological approaches. This research is driven by a normative interest in searching for ways to enable sustainable development.

During fieldwork, I was privileged to have excellent contacts in Southeast Asia, facilitated by my supervisors, and this combined with my foreigner status likely helped me to obtain interviews with key people, particularly senior policymakers. In Asia, personal networks and status are highly important, and being on the inside of a professional network was very beneficial to enabling this research. Being a foreigner may have helped in interviews, as I was able to ask fundamental questions about culture or governance and they were mostly willing to explain these things to me in their own terms.

Coming from an Australian university, I brought quite formalised approaches to research ethics, which were intimidating for my initial interviewees. However, during the early phases of research I modified these documents to make them less formal and more approachable. I was conscious of trying to make interviewees feel as comfortable as possible. In some cases, interviewees were polite and co-operative, others seemed to

enjoy talking or were taking the opportunity to share the difficulties they experienced in their jobs. One or two academics were challenging and wanted to ask me questions. Speaking English may have made some of the professional interviewees a bit nervous initially, but almost all interviewees relaxed into the interview after some time.

This research was limited by the number of collaborative consumption businesses that were available in each city. It was also limited to a degree by the need for translation, or the fact that many interviewees were speaking English as a second language. In interviews, I found most of the stakeholders to be quite competent in speaking English and I was satisfied that they were able to express themselves adequately. The process of sending notes back to interviewees also helped to mitigate the potential for misunderstandings.

In Part II, I present four papers comprising the body of this thesis. The first paper investigates the availability of collaborative consumption businesses in each of the three cities, their customer base and their potential to offer leapfrogging opportunities for new consumers.

PART II

RESEARCH PAPERS

CHAPTER FOUR:

PAPER I

Characterising collaborative consumption in Southeast Asian cities: exploring the possibilities for “lifestyle leapfrogging”

The paper in this chapter has been submitted to a journal for publication and has the following citation.

Retamal, Monique. submitted. “Characterizing Collaborative Consumption in Southeast Asian Cities: Exploring the Possibilities for “Lifestyle Leapfrogging.”

Abstract

Collaborative consumption (CC) is a new business and consumption phenomenon, which is primarily being studied in developed rather than developing or emerging economies. With the potential to enable greater access to goods at a lower cost, and to reduce the number of goods required to meet consumer demands, CC offers an interesting prospect for sustainable development. In Southeast Asia, economies are growing rapidly along with the consumption of material goods as middle-class lifestyles become more common. This study examines the potential for CC to enable “lifestyle leapfrogging” where consumers may skip ownership of goods and instead gain shared-access to goods, or opt for a service rather than a product. Situated in three emerging economy cities – Bangkok, Hanoi and Manila, this study investigates both the supply and potential demand for CC businesses through development of a business database, qualitative analysis of interviews with business operators and analyses of socioeconomic data. This study reveals emerging CC businesses in these cities, including: rideshare, bikeshare, tool, toy and clothing rental, and concludes that CC has the most potential to replace individual ownership of cars, washing machines and dryers. However, CC businesses are currently serving niche groups such as students, young professionals, tourists, people transitioning lifestyles, and the upper middle class. These niches do not appear to include lower socio-economic groups or the bulk of middle class families. According to business operators, key motivations for use include: a lack of space or facilities at home; short-term needs; less expensive access to goods; and access to variety. This research also offers theoretical concepts regarding the situations which make consumer goods shareable or serviceable.

Introduction

Collaborative consumption and the sharing economy have attracted considerable interest in recent years, as a major economic disruption (Barnes and Mattsson, 2016), with the potential to enable social and environmental benefits (Frenken and Schor, 2017; Heinrichs, 2013; Martin, 2016). Sharing is expected to reduce the number of goods needing to be produced (Botsman and Rogers, 2010), and potentially enable greater access to the poor (Demailly and Novel, 2014; Hira and Reilly, 2017). As a “significant global socio-economic development” (Frenken, 2017, p. 1), there is also an

emerging interest in how sharing economy businesses could assist consumers in developing economies (Hira, 2017; Hira and Reilly, 2017). While there are hopes that sharing may be a pathway to a more sustainable economy (Martin, 2016), there is a lack of research to support the environmental claims (Codagnone and Martens, 2016; Heinrichs, 2013; Roxas, 2016). There is also very little research examining the existing nature or potential impacts of sharing-based businesses in a developing country setting (Hira and Reilly, 2017; Retamal, 2017). In this paper, I am interested in the potential for collaborative consumption businesses to contribute to sustainable development in emerging economy cities. While this is a complex question, I take some initial steps in this paper by exploring the practical potential to substitute goods ownership with shared-access or service businesses.

In addition to the expected environmental benefits, in developing countries, the sharing economy is anticipated to help decentralize economic activity, facilitate micro-entrepreneurs and create mobility and access (Hira and Reilly, 2017). However, there are a lack of studies examining the reality of these potential benefits, and significantly more research is needed to understand their best application in developing countries (Hira and Reilly, 2017). In this study, I investigate the use of collaborative consumption businesses in Asia, where rapid economic growth has led to the emergence of a new consumer class (Kharas, 2010; Myers and Kent, 2003), who are increasing their consumption of discretionary goods and starting to travel by air and car (Zhao and Schroeder, 2010). This swift rise in consumption of material goods and motorized transport has major implications for energy use, carbon emissions and material consumption (Myers and Kent, 2003). This period of socio-economic transition may be an opportunity for new consumers to adopt less resource-intensive consumption practices and avoid wasteful consumer lifestyles, in what Schroeder and Anantharaman (2017) refer to as “lifestyle leapfrogging”. This is the idea is that new consumers have the opportunity to adopt different consumption practices before they are ‘locked in’ to western style consumerism (Schroeder and Anantharaman, 2017). In this study, I recognize that transitions to more sustainable practices are highly complex and typically involve major changes to socio-technical regimes and institutions (Markard et al., 2012; Rock et al., 2009). However, in this study I investigate the practical potential for replacing product purchases with collaborative consumption offerings. Akenji and Chen

(2016) and Mont et al (2014) both suggest collaborative consumption as one of a suite of potential options for enabling more sustainable lifestyles.

In this paper, I investigate the nature of collaborative consumption (CC) businesses in three Southeast Asian cities to explore the potential use and impacts of CC in an emerging economy setting. Bangkok, Hanoi and Metro Manila have been chosen as examples of major cities in emerging economies, with different histories as either open or planned economies, and with different levels of economic development. To understand the nature of businesses and their likely users, I examine the availability or supply of CC businesses and the potential demand from consumers. This paper starts with an analysis of the size of the middle class in these three cities, and an assessment of their likely demands for durable goods in the future. Drawing on field research, including a database of CC businesses in each city and interviews with businesses, I then characterize business types and users to compare CC offerings with future demands. Akenji and Chen (2016) highlight that sustainable lifestyles do not necessarily involve new technology and can involve traditional practices. As such, in this study, I include businesses that operate both on- and offline, and may already be established, rather than new business types. Finally, drawing on the interviews, business database and observational data, I develop theoretical concepts from where we might consider the future potential of sharing and servicing.

Defining concepts

Roxas (2016) examined the sharing economy in Metro Manila in 2015 and found that sharing economy businesses do not always contribute to environmental sustainability, often due to a lack of explicit environmental objectives. However, the sharing economy is often defined very broadly, and can include sharing intangible goods, or services such as financing, education and employment platforms. Broad conceptions of the sharing economy are at least part of the problem in generalizing about its benefits or problems. The “sharing economy” is often used interchangeably with the term “collaborative consumption” (Botsman and Rogers, 2010; Martin, 2016). Botsman (2015) suggests that these terms overlap and proposes three subgroups within CC: businesses enabling the exchange of intangibles, such as skills, are ‘collaborative lifestyles’, businesses reselling and gifting products are considered ‘redistribution markets’, and where customers pay for accessing rather than owning products, these are ‘product-service

systems' (PSS). This definition incorporates a wide range of tangible and intangible sharing, with and without the exchange of money, between peers or between a business and customer.

The "sharing economy" has had a similarly broad definition, however, recent work suggests it should refer more explicitly to peer to peer exchanges (Codagnone and Martens, 2016), where people share their idle capacity enabling others to have temporary access (Frenken and Schor, 2017). This definition of the sharing economy excludes businesses that facilitate sharing from business to consumer, such as bike share and car share. Belk (2014) offers a more concise definition of collaborative consumption as "people coordinating the acquisition and distribution of a resource for a fee or other compensation" (Belk, 2014, p. 1597), which would include both peer to peer and business to consumer exchanges. In this study, we are interested in businesses that enable sharing of material goods, either between peers (C2C) or between businesses and consumers (B2C). While this overlaps significantly with product-service systems, PSS literature has tended to focus on business to business (B2B) applications (Tukker, 2015). I therefore use the broader term of collaborative consumption, as it relates more readily to household consumption.

The PSS literature is more developed than that of "collaborative consumption" or "the sharing economy", and is helpful in identifying business types that can reduce the resource and environmental impacts of consumption. Tukker and Tischner (2006a) qualitatively assessed the potential for various PSS business types to reduce resource consumption. The business types with the greatest potential for environmental benefits were those that enable shared-access to goods (through simultaneous or non-simultaneous use) and businesses that provide a functional outcome through a service (Tukker and Tischner, 2006a). As this study is oriented towards sustainability, I focus on these business types, collectively referred to as "shared-access" or "services to replace products", as they are expected to enable reductions in energy and resource use of 50% or higher (Tukker and Tischner, 2006a), noting however, that such outcomes depend on the business model and context (Demailly and Novel, 2014; Tukker, 2015). Research regarding product-service systems has found reductions in resource use and greenhouse gas emissions associated with car sharing (Martin et al., 2010; Shaheen and Cohen, 2013); and lower resource use associated with tool rental (Behrendt and Behr,

2000; BMBF, 1998); and shared laundries or laundry services (Haapala et al., 2008; Komoto et al., 2005). Tukker & Tischner (2006b) note a lack of theorisation within the PSS literature.

Methods

This study draws on qualitative and quantitative research methods to examine the nature of collaborative consumption businesses in three Southeast Asian cities - Bangkok, Metro Manila and Hanoi, and considers their potential to contribute to “lifestyle leapfrogging”. I draw on Layder’s (1998) Adaptive Theory which, emphasizes the generation of theoretical concepts from empirical data during the process of analysis. Adaptive Theory recognizes the importance of prior knowledge; where ‘orienting concepts’ identified in the literature help to inform the research design (Layder, 1998). The concepts of “lifestyle leapfrogging” (Schroeder and Anantharaman, 2017), examples of CC businesses elsewhere in the world, and characterisations of sharing economy/CC users elsewhere are important ‘orienting concepts’, which are discussed further in the results and discussion sections.

Layder (1998) recommends the use of multiple data sources to facilitate conceptual development. Accordingly, I draw on different sources of primary and secondary data, including: semi-structured interviews, observational data, socio-economic data from national statistics, and online information. I collected the data during 2014, while spending two months in each of the three cities (six months total). There were four steps in the methodology, firstly, I estimated the proportion of middle class consumers in each city, and examined their likely future demands for durable goods using national statistics (see Appendix Four for more details). Secondly, I investigated which of these goods might be plausibly replaced by collaborative consumption (CC) (either through shared-access or services), based on currently available business types. Thirdly, I led interviews and visits to businesses to understand some of the drivers for their use; and finally, I synthesised the information gathered to develop some mid-range theories regarding the combinations of drivers that lead to CC use.

For the second step, I developed a framework to help identify business types (see the table in Appendix Five). The framework is organized according to the consumption clusters proposed by Spangenberg and Lorek (2002), and is populated with a list of

possible collaborative consumption business types identified in the literature. Using this framework, and the help of local assistants, we searched for each of these business types online in both English and the local language –Thai, Vietnamese or Tagalog – in each city. This process enabled us to develop a database of existing businesses from which, we subsequently recruited a variety of business owners to participate in interviews. In the third step, we conducted semi-structured interviews with business owners/ managers from a diverse range of CC businesses across the three cities, either in English or with the help of a translator. We asked businesses to characterize their customers, and their perspectives on customer motivations. Eighteen out of twenty interviews were conducted within the business itself (the remainder were by phone), at which time we also collected observational data about business operations. Where a translator was used, both the translator and interviewer took notes and we confirmed our written account of each interview by comparing these notes.

The list of business types interviewed in each city is shown in Table 11. In Bangkok and Hanoi, the intention was to gain perspectives from diverse business types, while in Manila we interviewed more laundry services as part of a focused case study. The bikeshare business in Bangkok and the rideshare business in Hanoi additionally provided results from customer surveys. I analysed the interviews qualitatively according to emergent themes in two rounds, initially with pre-coding and memos, and then through a second round to refine and confirm the emerging themes. In the final discussion section, I have used the business listing database, socio-economic analysis, interviews, analytical memos and observational data to develop some theoretical concepts regarding the situations that make goods shareable or serviceable in this context. In the conclusions, I identify specific sectors where lifestyle leapfrogging might be possible, now and in the future.

Table 11: Business types interviewed in each city¹

| Case study | City (and number of interviews) | Business model |
|---------------------------------|---------------------------------|-------------------------------------|
| Bikeshare | Bangkok (1) | B2C, facilitated by city government |
| Rideshare and Taxi-share | Hanoi (1) | C2C and B2C |
| Tool rental | Bangkok (1) | B2C and B2B (some C2C) |
| Laundry services | Manila (8) and Hanoi (5) | B2C |
| Designer bag rental | Bangkok (1) | B2C |
| Toy rental | Hanoi (1) | B2C |
| Baby equipment rental | Bangkok (1) | B2C |
| Fashion rental | Bangkok (1) | B2C |

Results

What proportion of households are living a middle-class lifestyle?

The size of a country's middle class can serve as an indicator of the size of the "consumer class" that are willing to pay more for quality, and can also represent those that have sufficient income to contribute savings and human capital to support entrepreneurial activity (Banerjee and Duflo, 2008). The proportion of middle class consumers are therefore relevant to understanding the potential users of collaborative consumption businesses. Definitions of what constitutes the 'middle class' differ, and range from the middle three quintiles of a population (Easterly, 2001), to statistical analysis of consumption which suggest a threshold of increased discretionary spending (Bharadwaj et al., 2013; Virola et al., 2013). Individual country analyses identify different middle class thresholds for different countries (Bharadwaj et al., 2013; Virola et al., 2013), indicating that income-based definitions need to be locally specific. In this section, I estimate the size of the middle 'consuming' classes in Metro Manila, Hanoi and Bangkok, as well as the emerging middle classes that may be on the cusp of pursuing a middle-class lifestyle. Figure 6 illustrates the daily per capita income in the three cities in U.S. dollars at purchasing power parity (PPP), according to income quintiles. Estimates of the lower threshold for the middle class are shown across this

¹ In the interviews it was agreed that specific business names would not be used in research outputs; therefore each business is referred to by its generic function e.g. "bikeshare".

chart (solid line) and for the emerging middle class (dotted line). These thresholds are drawn from the literature, which is detailed in Appendix Four.

Figure 6 highlights that Bangkok residents on average are much wealthier compared to the residents of Hanoi or Manila. In Bangkok, 80% of the population sits above the middle-class threshold and it is the only city with a sizeable affluent class. In particular the wealthiest quintile in Bangkok has three times the spending power of the wealthiest quintile in Manila or Hanoi, earning an average \$109 USD PPP/day, compared to \$27 to 29 USD PPP/day. In Hanoi, only the top quintile is likely to be living a middle-class lifestyle (20%) and in Manila, 50% may be middle-class. Note that this analysis is based on official population and income figures from each country's official agencies. Other sources suggest that city populations may be up to 50% higher, for example in Demographia (2015). In this case, the populations in the poorer groups may be significantly underrepresented in Figure 6. However, this analysis provides an initial estimate, which indicates that the majority of the population in Metro Manila and Hanoi are yet to adopt a middle-class lifestyle. As such, a significant proportion are yet to adopt the habits of consumerism and there may be potential for these future consumers to adopt different lifestyles and consumption patterns. In the next section, we discuss the current ownership rates of durable goods, to understand the likely future demand for major appliances.

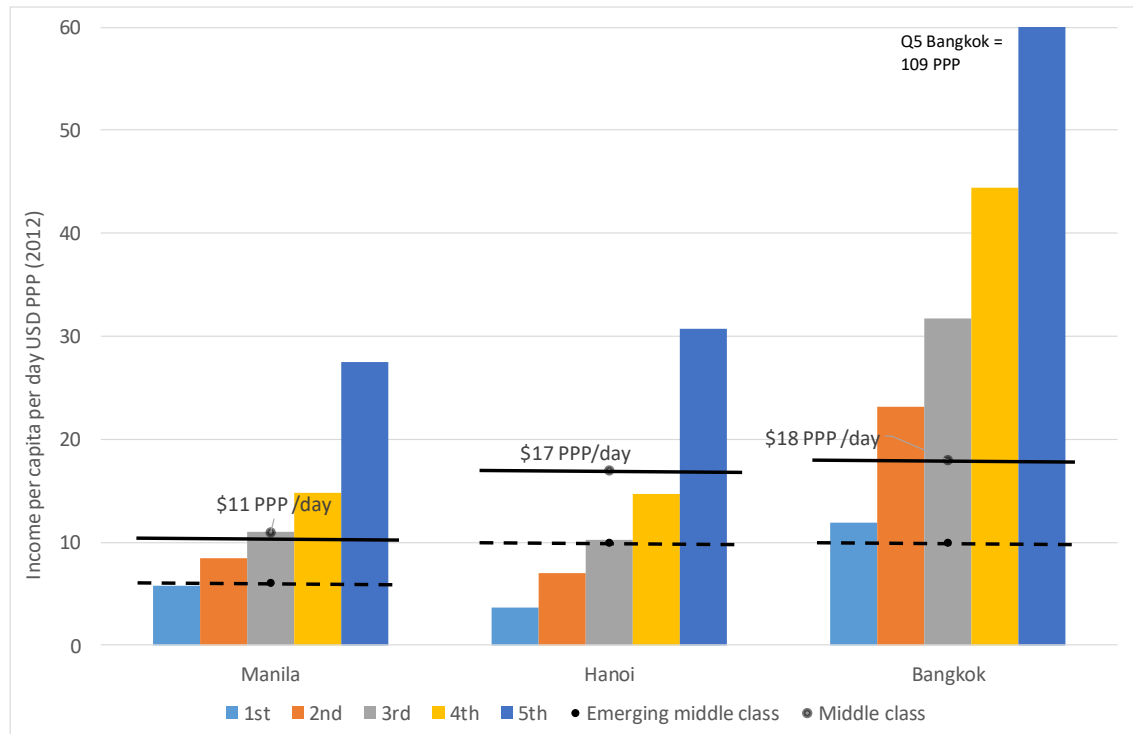


Figure 6: Comparing daily per capita income according to quintiles for Metro Manila, Hanoi and Bangkok.

Figures are for 2012 in USD PPP, with thresholds for the middle class and emerging middle class (note that Q5 for Bangkok extends off the chart). Income data sources: (GSOV, 2012a; NSO, 2013; PSA, 2013).

Future material demands

The current ownership of consumer goods or the lack thereof indicates the extent to which households already own major appliances and in which sectors, or for which appliances, there is likely to be demand in the future. In this study, I use ownership rates of durable goods as a proxy for the consumer demand gap over the next few decades. In Table 12, the percentage ownership for a range of durable goods in each city is shown side by side. The highlighted cells show where ownership of goods sits at less than 50%. From this table, it is apparent that a minority of people own cars, computers and air-conditioners across the three cities. However, these figures are aggregates across different income levels.

Table 12: Ownership of durable goods in Metro Manila, Hanoi and Bangkok

| | Metro Manila (National Capital Region, 2012) | Hanoi (Urban Vietnam, 2012) | Bangkok (Urban Thailand, 2010) |
|------------------------------------|--|---|--|
| car | 12% | 3% | 42% |
| motorbike | 11% | 89% | 65% |
| radio | 49% | 29% | 85% |
| colour TV | 93% | 95% | 95% |
| computer | 34% | 37% | 40% |
| CD/VCD/DVD player | 73% | 58% | 76% |
| air conditioner | 19% | 24% | 31% |
| washing machine / dryer | 61% | 48% | 60% |
| Refrigerator / freezer | 58% | 75% | 83% |
| mobile phone | 91%# | 87%* | 92% |
| electric or gas cooker | - | 84%* | 76% |

*Main data sources: (GSOV, 2012b; NSO, 2010; PSA, 2012b), also #(PSA and ICF International, 2014), *(UNDP, 2010)*

In the Philippines and Vietnam, data regarding goods ownership was available according to income quintiles, however at the national, rather than city level. Figure 7 displays the ownership of durable goods in the Philippines according to income quintiles and Figure 8 sets out the equivalent data for Vietnam. Note that the quintiles in these figures do not exactly correlate to Figure 6 (due to the national scale) and the fact that urban areas are typically wealthier. However, the charts in Figure 7 and Figure 8 are useful to see how ownership of goods differs in these two countries according to income level. It is apparent from these charts that goods ownership is strongly correlated with income, suggesting that rising incomes in the future will increase demand for these goods.

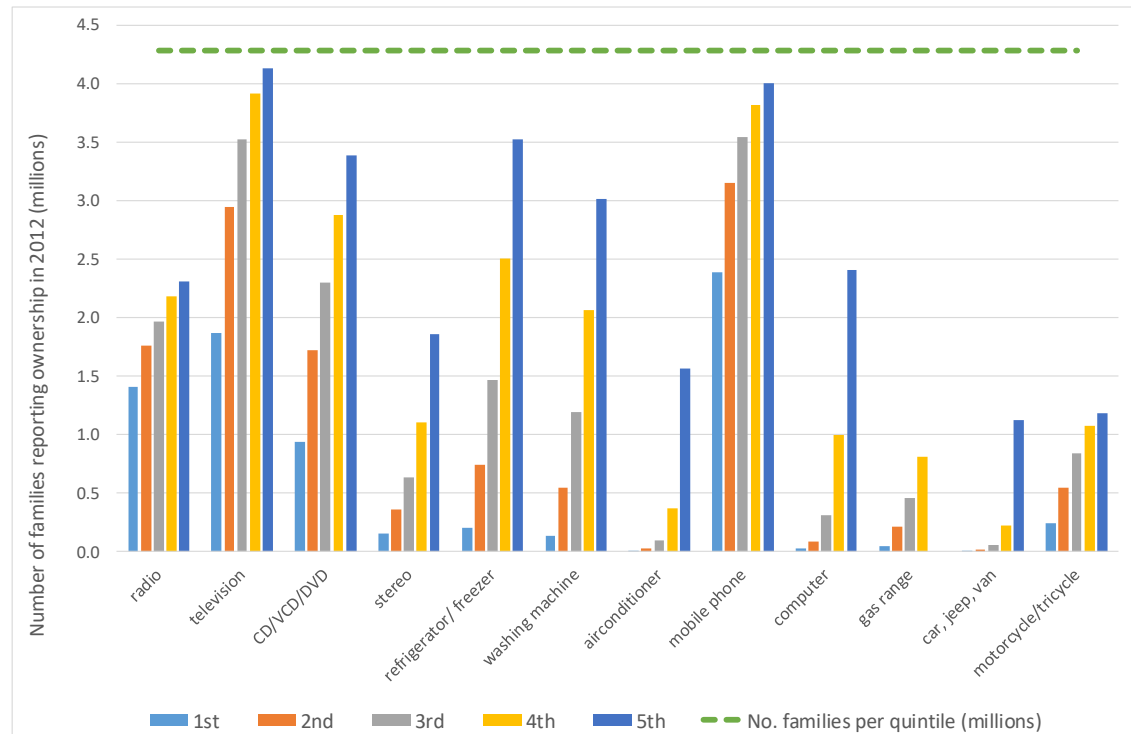


Figure 7: Ownership of durable goods according to income quintiles - Philippines 2012.

Data source: (PSA, 2012b) The horizontal line indicates the total number of families in each quintile (saturation level).

In the Philippines, it appears that televisions and mobile phones are close to saturation for the wealthiest families. In the wealthiest quintiles in Vietnam, there appears to be saturation of televisions, mobile phones and motorcycles. To consider the needs of the future middle classes, we observe the three bottom quintiles in each country. In the Philippines, in the bottom three quintiles, a small minority own a **stereo, refrigerator/freezer, washing machine, air-conditioner, computer, gas cooking range, car or a motorcycle**. In Vietnam, in the bottom three quintiles, a minority of people own a **stereo, refrigerator, washing machine, air-conditioner, computer or a car**. This comparison suggests that future consumers in these two countries will seek a similar range of durable goods. Now that we have considered the likely demands for future consumers, we next examine what access or services can be provided by collaborative consumption businesses, and discuss whether these are likely to serve the demands of the emerging middle classes.

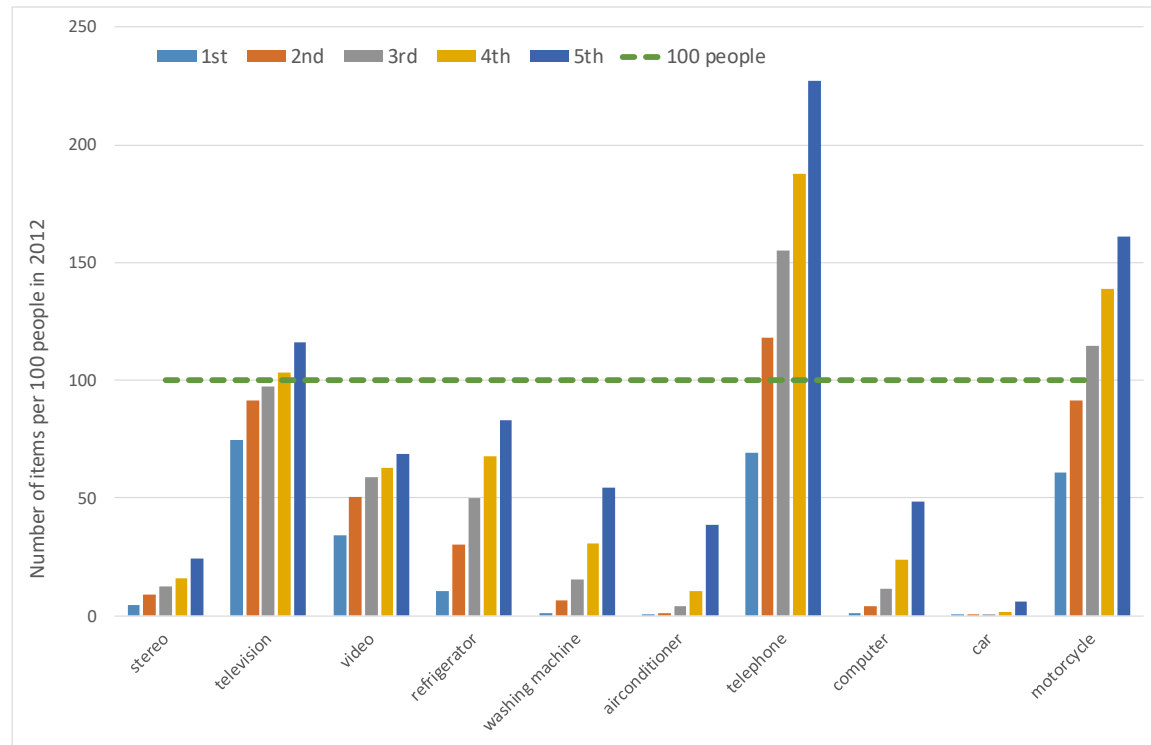


Figure 8: Ownership of durable goods per 100 people according to income quintiles - Vietnam 2012.

Data source: (GSOV, 2012b). The horizontal line at 100 people indicates the saturation level.

What collaborative consumption businesses are currently available?

To compare the demand for durable goods with potential supply through CC, this section details the types of collaborative consumption businesses that are currently available in these three cities. In the database of businesses that we developed for Hanoi, Manila and Bangkok, we found examples of traditional shop front businesses (such as laundry services and internet/games cafes) as well as internet-based businesses (such as ride-share and rental of tools, toys and fashion items). The key findings from the business database are discussed here and shown in Table 13, which lists the alternatives to goods ownership and whether they include goods (shared-access) or goods and labour (services). Within each consumption cluster, service options appeared more widely available than shared-access of goods. For example, there were: more rideshare/collective taxis than carshare; more household repair services than equipment rental; and more laundry services than coin-operated laundries. Business types that were unavailable across the three cities included: carshare, person to person car rental (at least not formally), and clothing subscription services. Businesses that were difficult to find included: tool rental, rental of computers and electronics, self-service laundries,

and clothing and accessory rental for regular use. The only examples of formalised customer-to-customer (C2C) sharing found were car-pooling / ride-sharing schemes, although a tool rental business in Bangkok had tried to enable C2C tool rental without success.

Table 13: Collaborative consumption business types found in Metro Manila, Hanoi and Bangkok in 2014-2015.

Includes businesses that provide shared-access to goods, and services to replace products. Services businesses are highlighted in blue.

| Consumption cluster | Goods or labour avoided | Collaborative consumption business types | Found in Bangkok? | Found in Metro Manila? | Found in Hanoi? |
|------------------------|--------------------------------------|---|-------------------|------------------------|-----------------|
| transport | car, van, motorbike + labour | carpooling | ✓ | ✓ | ✓ |
| | | collective taxis (sedan or SUV) | planned | ✓ | ✓ |
| | | collective taxis (minibuses) | ✓ | ✓ | |
| | | private taxi/motorbike taxi | ✓ | ✓ | ✓ |
| | car, van, motorbike | car or motorbike rental | ✓ | ✓ | ✓ |
| | | carshare (club membership) | | | |
| | | renting personal car for car rental business | | ✓ | ✓ |
| | | person to person car rental | | | |
| Bicycle | bikeshare | ✓ | ✓ | planned | |
| food | cooking equipment + labour | meal delivery services | ✓ | ✓ | ✓ |
| | | catering for parties/events | ✓ | ✓ | ✓ |
| | refrigerator + labour | fresh food daily delivery | ✓ | ✓ | ✓ |
| housing & construction | Tools | rent power tools - drill, sander etc. | ✓ | | |
| | tools + labour | plumbing, electrical, other household repairs | ✓ | ✓ | ✓ |
| | gardening equipment | rent large equipment - ladder, lawnmower etc. | ✓ | ✓ | ✓ |
| | gardening equipment + labour | gardening services | ✓ | ✓ | ✓ |
| recreation | books, games, movies | rent books, games, movies | ✓ | ✓ | ✓ |
| | computers, TVs, personal electronics | computer, internet, gaming cafes | ✓ | ✓ | ✓ |
| | | rent computers, TVs, DVD players, tablets, gaming equipment, other electronics etc. | | ✓ | |

| Consumption cluster | Goods or labour avoided | Collaborative consumption business types | Found in Bangkok? | Found in Metro Manila? | Found in Hanoi? |
|---------------------|---------------------------------|---|-------------------|------------------------|-----------------|
| | sports & outdoor equipment | rent sports & outdoor equipment (include camping equipment) | ✓ | | ✓ |
| | | subscription to leisure/sports facilities | ✓ | ✓ | ✓ |
| | Miscellaneous | rent equipment for music and art | ✓ | ✓ | ✓ |
| | | rent equipment for other hobbies | ✓ | ✓ | ✓ |
| | children's toys | rent toys & equipment for children | ✓ | ✓ | ✓ |
| | | children's play facilities | ✓ | ✓ | |
| | equipment for events | rent furniture / equipment for parties/events | ✓ | ✓ | ✓ |
| laundry & cleaning | washing machine, dryer + labour | wash and dry laundry service | ✓ | ✓ | ✓ |
| | washing machine, dryer | coin laundry (self service) | ✓ | rare | rare |
| | | other shared laundries (e.g in apartment buildings) | ✓ | ✓ In literature | |
| | cleaning equipment + labour | home cleaning services | ✓ | ✓ | ✓ |
| clothing | clothes and accessories | rent clothes and shoes (fashion) | ✓ | | |
| | | rent clothes (special occasion, costumes) | ✓ | ✓ | ✓ |
| | | rent accessories (e.g. handbags) | ✓ | | |
| | | clothing subscription service | | | |
| healthcare | wheelchairs, walking frames etc | rent wheelchairs, walking frames (mechanical) | ✓ | ✓ | ✓ |
| | e-medical equipment | rent other medical equipment (for short term use) | | | ✓ |
| | accessible vehicle + labour | wheelchair taxi | ✓ | ✓ | ✓ |
| | equipment + labour | home health service | ✓ | ✓ | ✓ |

Transport and mobility appears to be the main growth sector (DI-Marketing, 2016), with various ride-hailing and ride-sharing apps emerging from 2014 onwards, such as GrabTaxi, Grabbike and Uber now available in all three cities (Do, 2014; Habito, 2015; Tanakasempipat and Thepgumpanat, 2017). In Metro Manila, there is also a new app for motorbike taxis – Angkas; and new apps for ridesharing with multiple passengers such as Grabshare, UberPOOL and UberHOP, where the latter operates via regular stops (De La Cruz, 2017). The new Wunder app also provides peer to peer ridesharing at minimal cost in Metro Manila (Jusay, 2016). Grabshare and Uberpool were also introduced in Hanoi, but have been banned due to transportation laws which do not allow multiple passengers (Le, 2017). These developments suggest that collaborative consumption has had most success in the area of transport and mobility, however, there may be businesses emerging in other sectors at a smaller scale.

What are the opportunities for current CC businesses to offer alternative consumption options for future new consumers?

With regard to the consumer goods that will be in demand across the three cities (cars, computers and air-conditioners), and based on our database of available CC businesses, the greatest opportunities for replacing ownership are currently in transport, with the greatest number and diversity of business types found on offer in this sector. Rental of personal electronics was typically only available for business to business (B2B) arrangements (not for personal use). Internet and gaming cafes were found, but these businesses appear to be less common than in the past. Hence it appears difficult presently to replace personal electronics such as computers, tablets, cameras, or gaming equipment with services or shared-access. Air-conditioning units are less shareable, and this is a concept I will discuss later in this paper.

For future new consumers in Hanoi and Metro Manila, in addition to computers, cars and air-conditioners, the likely material demands include: stereos, refrigerator/freezer, washing machine, and gas cookers. Of these, there are alternatives to owning washing machines and dryers through laundry services, however, self-service options were difficult to find. Various meal services and street food options were available in all three cities and due to their ubiquitous nature could serve as an alternative to cooking equipment. In Hanoi, it is common practice to purchase fresh food from local street vendors on a daily basis, which can avoid the need for refrigeration. Similarly, other

fresh and cooked food delivery services could help avoid the need for refrigerators. However, there is no certainty that such food services negate the need for any kitchen appliances. Of the demands for new consumer goods, currently available collaborative consumption businesses appear most likely to replace private vehicles and washing machines.

Aside from the major durable goods listed in national statistics, other goods that are currently available as a service or for shared-access, and which have the potential to replace purchases, include: new bikeshare schemes, however only available in limited areas; rental of children's toys, for which there are options in each city; and clothing rental, while currently only available in Bangkok, there were multiple options suggesting it could grow in popularity. In terms of sustainability, key sectors that are foci for sustainable lifestyles are those that have the highest environmental impacts, such as: mobility, housing, and food, followed by consumer goods and leisure (Akenji and Chen, 2016; Schroeder and Anantharaman, 2017; Spangenberg and Lorek, 2002). In terms of these key sectors, there appear to be a variety of options emerging in the mobility sector, with other options in the consumer goods and leisure sectors. In Table 13, these are transport/mobility, laundry & cleaning, clothing and recreation (for children's clothing).

Characterising CC business users and their motivations

To obtain a clearer view of when these business types might be used, and by what sections of society, we asked collaborative consumption businesses to describe their customers and explain their motivations for using their service. As owners/operators of primarily small businesses, the interviewees had daily contact and a fairly close understanding of their customers. Considering the large knowledge gaps in this area, this study provides an initial characterization of CC use in Southeast Asian cities.

CC business types were few in number (except for laundry services) and were typically small businesses serving niche groups. Despite the diversity of business types, there are some emerging themes regarding the types of customers and their likely motivations for using shared-access or services. The majority of the businesses interviewed described their customers as young people, including the toy rental, fashion rental, rideshare, bikeshare and several of the laundry services. More specifically, business owners of the

bikeshare, rideshare, fashion rental and many of the laundry services described their primary customers as students and office workers. The toy rental business in Hanoi described their customers as “young parents... often renting a house and want(ing) to save some money”. In customer surveys, the rideshare business in Hanoi found that 50% of their customers were under 30, and the bikeshare business in Bangkok found that 66% of bikeshare users were under 35. The target market for the bikeshare scheme in Bangkok was “first jobbers”, office workers and students. The tool renters in Bangkok tended to be men aged between 30 and 40, and the fashion renters in Bangkok were usually females aged between 20 and 40.

Business owners thought that less expensive access to goods was a key motivation for customers of the toy rental, designer bag rental, fashion rental, ride share and bike share schemes. Both the toy rental company in Hanoi and the designer bag rental company in Bangkok described a 50:50 split of customers, where half cannot afford to buy the product so they rent it, and the other half can afford the product but recognize the need for greater variety, as children get bored of toys quickly and adults also get bored with fashion items. There also appears to be a niche for people who are transitioning between lifestyles, where rental services are “only used for a short period of time”, such as for families before they can afford their own house.

A fraction of CC businesses were oriented towards people with one-off and short-term needs, including 20% of the toy rental customers, and the majority of the clothing rental customers, who are “normally local people and others who have to go to parties or work and don’t want to buy”. After young professionals and students, the secondary market for bikeshare in Bangkok is tourists. The Bangkok baby equipment rental business was also primarily for tourists; however, the operator noted that Thai customers had been increasing during the previous 3-4 years. Designer bag rental was used for daily life as well as for special events. The tool rental business noted a lack of space as a motivation to rent – “We all live in condos and apartments, and we don’t want to carry stuff”. The toy rental business highlighted that children are only interested in toys for a short time and then “it is complicated to store toys”. Some of the laundry service shops in Manila commented that laundry services were only for people living in condominiums in the city, where there is a lack of space and a lack of internal laundry facilities.

Only the bikeshare and rideshare businesses mentioned concern for the environment as a reason that people may choose to use their services. However, overall, environmental or social concerns seem to have minimal influence on users. The rideshare business in Hanoi had conducted a customer survey which showed that their customers' primary motivation for ride-sharing was to "save travel cost", secondly because "I need a vehicle and/or driver" and thirdly to "act for environment and traffic".

Sharing for the elite?

In Bangkok, there were more 'shared-access' type businesses, such as rental of tools, fashion, baby equipment and children's toys as well as shared facilities such as coin-operated and shared laundries. There were also businesses in Bangkok that facilitate a more luxurious lifestyle, such as rental of designer brand handbags and rental of winter coats or baby equipment for overseas travel. The greater number and diversity of shared-access businesses may reflect the relatively greater wealth in Bangkok, which suggests that shared-access businesses are not necessarily catering to lower socio-economic groups and may be oriented towards an affluent class.

While toy rental was found in all three cities, there were more available in Bangkok and several of these were marketed towards western expatriates and the Thai upper class. For example one toy rental business was called 'HiSo baby', in Bangkok HiSo means 'high society' and refers to the "young, wealthy, elite" (Burdett, 2005). The fashion rental business in Bangkok explained that "the customers that are high class have to go to a party every week, they pay for hairstyles and makeup as well so that's why they choose to rent". Surveys show that the percentage of Thais who regularly spend money on luxury goods and activities in Thailand more than doubled between 2008 (1.4%) and 2011 (3.4%) (NSO, 2011), which suggests that aspirations for luxuries are rising, but can still only be afforded by an elite few.

The shared-access businesses in Hanoi and Manila were less luxurious than those found in Bangkok and tended to focus more on practical considerations such as saving money, or time and convenience. According to a customer survey for ride sharing in Hanoi, the main motivations for users of ride and taxi sharing were cost saving and gaining access to a vehicle. At laundry businesses in Manila, opinions differed on whether using a

laundry service was cheap or expensive for the average family, but most business owners said their customers lack time, facilities or space.

For most types of shared-access businesses, customer motivations centered on saving money. However, there is a difference between saving money on basic needs such as transport and saving money on access to luxury goods, as in the case of designer handbag rental. The business examples in Hanoi and Manila show that shared-access businesses can also provide access to goods for more basic needs.

Internet currently not a limiting factor

The interviews highlighted that internet and online payments were not essential for all businesses; some businesses operated partly online and partly as a shopfront. The toy and tool rental businesses noted that they receive about 50-60% of their customers from the web and the remainder from recommendations. The fashion and designer bag rental companies particularly mentioned the importance of social media for their advertising. This suggests some flexibility amongst businesses with regards to the mode of consumption. This is important, as a lack of online payment methods may limit the expansion of internet-based sharing applications to the upper middle and affluent classes. However, payment systems can also be adapted for local conditions. Officials planning the bikeshare scheme for Hanoi indicated they would enable cash and card payment methods. Uber's ride- and taxi-share service in Vietnam also accepts cash payments (Hoang, 2015).

Discussion

In summary, it appears that while CC businesses can be used by a range of people for different purposes, certain customer groups are more likely, such as: young people; people transitioning to a consumer lifestyle; tourists; the upper middle class, aspiring elite; and by anyone for events. User motivations may include: gaining access to goods at a lower cost; gaining access to variety; gaining access despite space constraints at home; to fulfill a short-term need; or to facilitate a luxury (or socialite) lifestyle. At this stage, there are a lack of businesses targeting lower socio-economic or middle-class families, and there remains an open question as to whether CC businesses can serve the bulk of middle class families in the future, rather than specific niches.

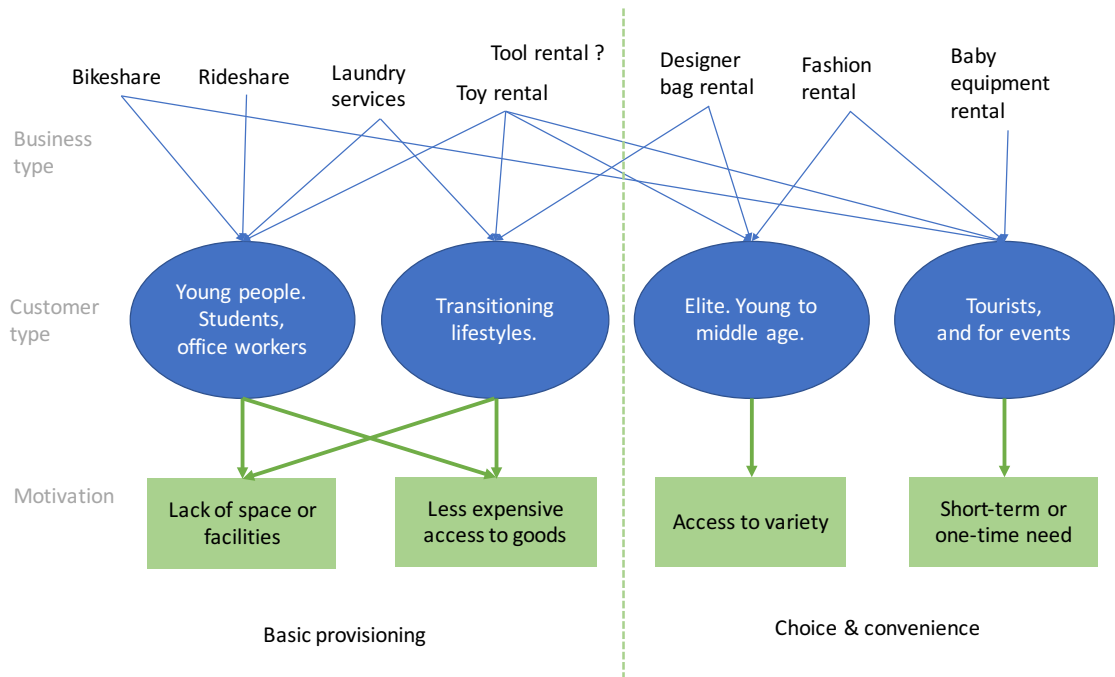


Figure 9: Visualisation of business types, customer types and their likely motivations

Figure 9, illustrates a typology of businesses, customers and their motivations, based on our interviews. Drawing from this diagram, I propose that there are two main types of collaborative consumption (PSS) style businesses. The first one relates to basic provisioning, where businesses provide key necessities and are perhaps more likely to replace ownership of goods. The literature suggests that businesses on this side are likely to reduce environmental impacts, e.g. bikeshare, rideshare, laundry services and tool rental. In the second category, we find that CC businesses can enable lifestyle choices and conveniences, such as one-time access to goods for events, or access to a variety of goods such as clothes, accessories and children’s items. These CC options may reduce the impact of consumer lifestyles, but this depends on how the businesses operate and how they are used. The second category is more likely to be used by the upper-middle classes.

This categorisation of customers aligns somewhat with studies examining sharing economy users in western countries, which have found that they are typically young (18–40), middle class or affluent, and university-educated (Havas Worldwide, 2014; Martin et al., 2010; Owyang et al., 2014). In the U.S., authorities have attempted to engage lower socio-economic groups to participate in bikeshare schemes, but have struggled to increase participation, despite lowering payment and paperwork barriers

(Lazo, 2014). Business owners in this study reported that users in Southeast Asia are often university students or people working in offices, which suggests that lower-socioeconomic groups may not be participating.

Common factors influencing the use of CC in industrialised countries include: affordability, interest in creating new income streams, interest in sustainability and alternatives to consumerism, and the widespread use of mobile internet, social networks and new payment systems (Cohen and Kietzmann, 2014; Olson and Kemp, 2015; Owyang et al., 2014; Rinne, 2013). Motivations identified in a survey of 90,000 sharing economy users in the U.S., U.K. and Canada, found the most common reasons for use were (in order): convenience, better price, quality, unavailability of product elsewhere, recommendations, desire for a sustainable lifestyle, connecting with people online, curiosity (Owyang et al., 2014). Another survey of sharing economy businesses in Europe, U.S. and Latin America found customers were mainly motivated by price sensitivity and social concern (81%), then environmental concern (61%) (Wagner et al., 2015). Several of these motivations align with this study, such as: convenience, and gaining a better price, however our results differed with regard to social and environmental concerns, as this was only a minor consideration for transport sharing users. Social networks and new payment systems also appeared less important amongst businesses in the Southeast Asian cities. I note the limitations of this study as covering just three cities, twenty businesses and eight business types, however, I consider this sufficient to begin to make some preliminary comparisons.

Understanding shareability and serviceability

Benkler (2004) offers some theoretical concepts for “shareability” of goods, and identifies goods that by nature have excess capacity, such as cars with spare seats, and “lumpy” goods that can only be bought in discrete bundles. Other shareable goods include completely renewable resources that can keep offering the same utility, and rapidly decaying resources, that need to be shared immediately or they are lost (Benkler, 2004). This is a useful conceptualization for peer-to-peer sharing, however, business-to-consumer (B2C) sharing businesses have slightly different characteristics. To build on these concepts of shareability and serviceability for B2C, I draw on the four key motivations identified for users of CC, and identify some characteristics of goods available through CC businesses in Table 14.

Table 14: Characteristics of goods available through collaborative consumption (both shared-access and services)

| Motivations for use of CC | Characteristics of goods shared | Examples of goods shared |
|---------------------------------------|---------------------------------|---|
| Lack of space or facilities | Large, space consuming | Bikes, cars, washing machines, toys |
| Less expensive access to goods | Relatively expensive | Quality toys, designer bags |
| Access to variety | Collectible | Toys, clothes, designer bags |
| Short-term or one-time need | Infrequently used | Special occasion clothing, equipment for holidays |

To complement this, Figure 10 illustrates the goods that were less available for shared (unsupervised) access in our business database and offers potential reasons for their lack of shareability. In general, services in the three cities were typically more available than the shared-access equivalent. For example, rideshare/collective taxis were more available than carshare; laundry services were more prevalent than coin-operated laundries; repair or trades services were much more prevalent than tool rental. The availability of services rather than shared-access options may be due to differences in income: the prevalence of low-waged labour makes services economic for wealthier people, and or, people who want to use these services are seeking to save time or their own labour, rather than seeking access to the equipment.

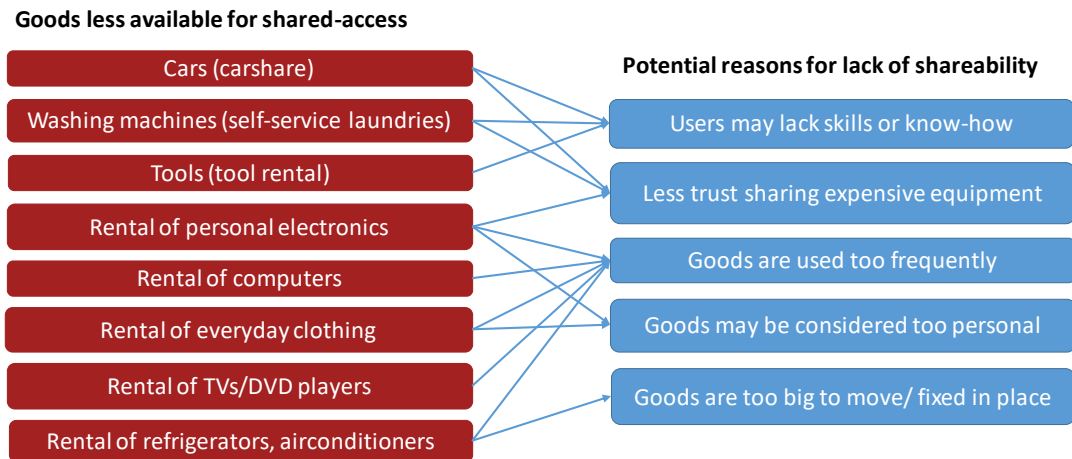


Figure 10: Less shareable goods and potential reasons

Dynamics of shareability and serviceability

The factors influencing shareability or serviceability are likely to change over time, particularly with rising incomes, and may differ in more industrialised countries. For example, carshare is available in industrialised countries where driving skills are widespread; there is greater societal trust; incomes are higher; and taxi services are relatively expensive. In order to consider the potential dynamism of these factors, in Figure 11 I consider two of the important factors for shareability, the value of the asset and the frequency of use. I consider the same set of material goods listed in Table 13 and plot them on axes according to their relative cost and likely frequency of use. For fashion clothes, children's toys, books and movies the vertical axis represents duration of use (rather than frequency). I have made estimates as to how frequently these goods might be used, however, recognizing that individual use patterns may vary significantly. Nevertheless, this chart allows us to identify some patterns, where for example, commonly rented items appear in the bottom right-hand corner, gradating to more commonly purchased items in the top left-hand corner. Many CC and 'sharing economy' business models are considered innovative because they provide options to rent where people normally purchase assets, thereby pushing the boundaries of shareability from the bottom right towards the top left corner.

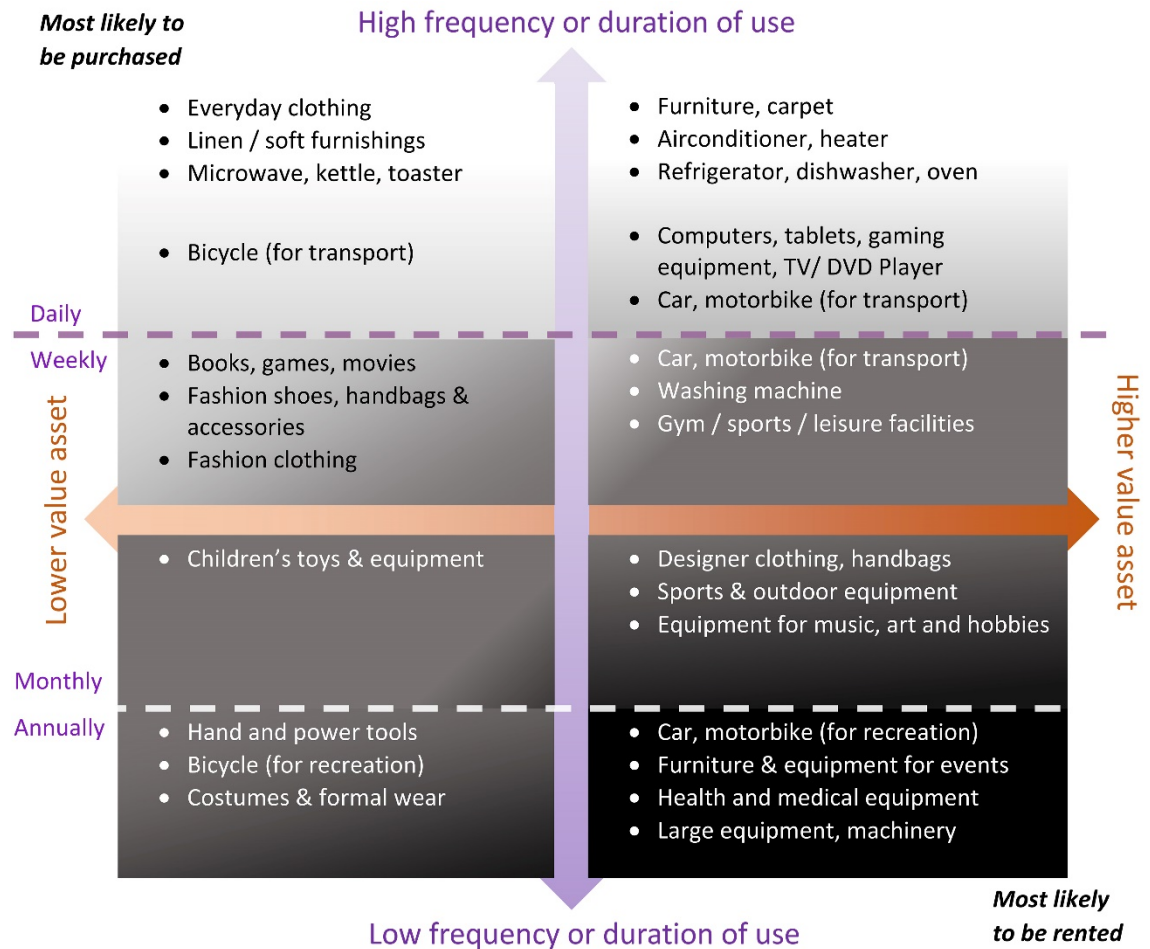


Figure 11: Household goods classified according to asset value and frequency or duration of use to examine share-ability (or rent-ability). (Source: Author)

In Bangkok and in many cities in advanced economies, the breadth of household goods that can now be shared /rented has recently expanded to include both low and high value assets as well as goods that are used more frequently in the upper half of the chart (e.g. fashion rental, bikeshare, shared-access laundries)². In Manila and Hanoi, the shared-access businesses that are available are primarily for goods listed in the lower half of the chart. This suggests that the trend of renting rather than owning is more developed in Bangkok than the other cities, and that this trend may continue in Manila and Hanoi as incomes rise. The advance of shared-access businesses for items that are relatively inexpensive or frequently used may point to drivers other than cost, for example constraints on physical space.

² Note however that carshare was not available in any of the three cities.

In Figure 12, I consider the service options on the same axes of asset value and frequency/duration of use. Services involving higher value assets are classified as “asset intensive”, and services that involve the use of low value assets are “labour intensive”. Using this categorization, we can deduce the situations that may lead to servicing these household goods and activities in each quadrant.

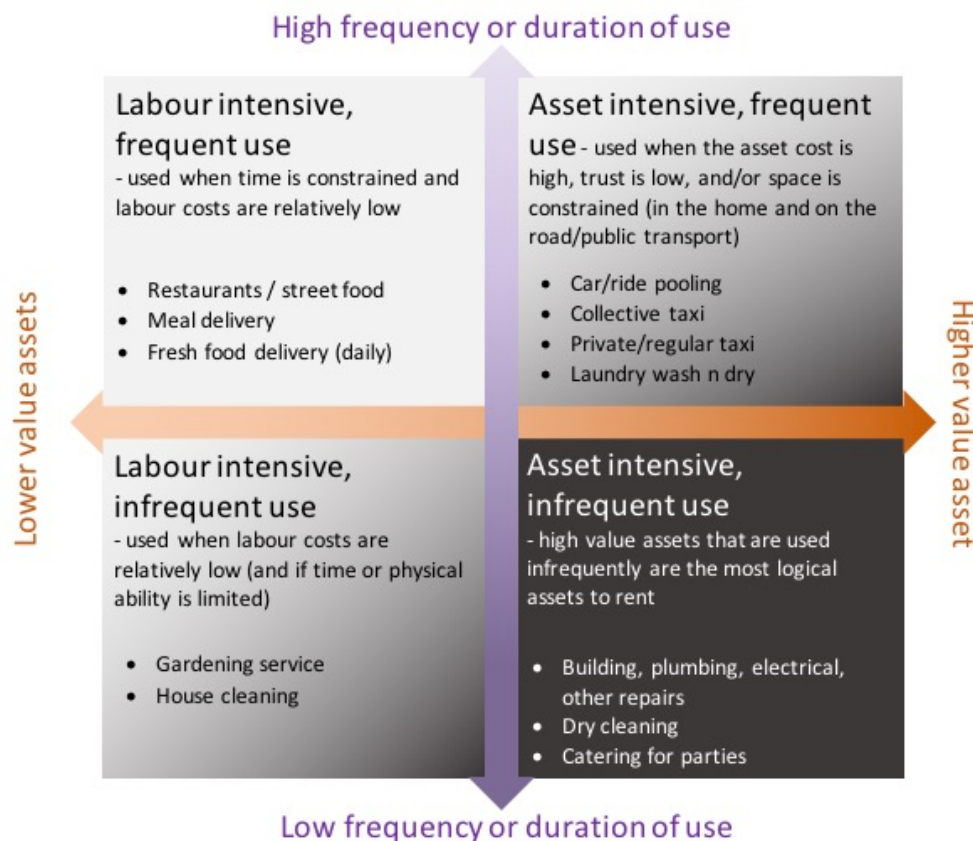


Figure 12: 'Services to replace products' for households. Classified according to asset value and frequency or duration of use, where lower-value assets indicate the service is labor-intensive or focused on time saving. (Source: Author).

While the availability of relatively low-wage labor enables more services, greater equality in wages may encourage a shift from services to shared-access. In Bangkok, there were examples of do-it-yourself (DIY) type businesses that were rare or non-existent in the other cities, such as tool rental (for individuals) and coin-operated laundries. The presence of DIY options in Bangkok may indicate that a transition is occurring away from services, where a larger middle class means that wages are relatively higher across the population and some middle-class consumers cannot afford services. The labour intensive household services rely on a degree of inequality, where

some people can afford to pay others to do their household chores (e.g. cooking and gardening). This is an embedded problem in proposing ‘service’ business models for sustainable development, as they may not be socially inclusive. From a social sustainability perspective, better sustainability outcomes might be achieved with shared-access business models or asset-intensive services.

Conclusions

There are new types of collaborative consumption businesses emerging in Hanoi, Bangkok and Metro Manila, such as bikeshare, rideshare, tool and toy rental. Traditional examples tended to be services such as laundry services, meal deliveries and collective taxis. Based on this review of likely future demands for durable goods and the availability of collaborative consumption businesses, it may be possible for the emerging consumer classes to substitute the purchase of cars, washing machines and dryers, effectively leapfrogging ownership of those goods, however, potentially only for niche consumer groups. Outside of durable items, there appear to be increasing numbers of businesses offering clothing rental, toy rental and bikeshare, which may also offer opportunities to avoid ownership. Amongst the eight business types I interviewed, I identified four likely customer types. The most common appeared to be young people such as students and office workers. The remaining three types were: people transitioning to consumer lifestyles or to a wealthier lifestyle; upper middle class people renting to access more diversity; tourists and people renting for events. Along with these customer types, business owners identified four likely reasons for use, due to: a lack of space or facilities at home, less expensive access to goods, access to variety or due to a short-term need.

Based on the businesses that I identified and interviewed, it appears there may be two types of collaborative consumption businesses. The first business type I refer to as basic provisioning, which provides essential services such as transport or laundering and may be more likely to replace purchase of major goods. The second business type is more likely to be used by wealthy people to enable choice and convenience. These businesses may serve to mitigate the consumption impacts of a middle class lifestyle, however this needs to be studied further. In all three cities, CC businesses do not appear to be accessible to lower socioeconomic groups, in fact most of the users may be middle class already. At present, these businesses are serving middle class niches, rather than the

bulk of middle class families. Without serving this significant portion of the population, it will be very difficult for CC businesses to enable any major impact from “lifestyle leapfrogging”.

Drawing on the theoretical concepts for shareability and serviceability, I anticipate that as wealth and societal trust increases, more self-service shared-access businesses may appear, and more shared-access for collectible items will also appear e.g. fashion and toy rental. With regards to services, I propose that asset intensive services are more available where asset costs are high and space is constrained. In contrast, labour intensive services are used when labour costs are relatively low or where time is constrained. There is an embedded issue of inequality associated with labour intensive services. Shared-access or asset-intensive services may be more socially inclusive, as labour-intensive services may only be accessible to the middle and upper classes. Further research is needed to determine the social impacts of CC in this context, and to determine the environmental impacts of a wider range of CC businesses.

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CHAPTER FIVE:

PAPER II

Product-service systems in Southeast Asia: business practices and factors influencing environmental sustainability

The paper presented in this chapter has been published and has the following citation.

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Abstract

Product-service system (PSS) business models are now more widely used for business to consumer exchanges due to the popularity of the ‘sharing economy’ or ‘collaborative consumption’. While there are claims that PSS offer more sustainable consumption alternatives, there is a shortage of literature regarding PSS business practices and the factors that may influence their environmental performance. In addition, few studies have investigated PSS in emerging economies. In this paper, we examine PSS business practices in relation to environmental sustainability for twenty businesses in Hanoi, Manila and Bangkok. Our aim is to understand business practices in this emerging economy context, and to determine the factors that enable or inhibit PSS businesses from achieving environmentally sustainable outcomes. We identified six sustainability criteria from the literature as the basis for analysing business practices: 1) using durable, quality goods; 2) intensifying use of goods; 3) enabling repair, take back and recycling of goods; 4) ensuring rental replaces purchase; 5) minimising transport and disposable packaging of goods; and for transport – 6) reducing private vehicle kilometres travelled. Through qualitative analysis of interviews we found that business participants generally performed well in criteria 1-2, but performance across the remaining criteria depended on the context such as: market conditions, public infrastructure, housing form, customer behaviour and the nature of the product. Our findings highlight the need for policy interventions to facilitate more sustainable outcomes, including: guidelines and green accreditation; planning regulations / incentives to provide space for PSS businesses; and policies to encourage multiple passengers for transport sharing.

Key words: collaborative consumption; access-based consumption; sharing economy; sustainable development; emerging economy, sustainable consumption and production

Introduction

Product-service system (PSS) business models are becoming more common for business to consumer exchanges, due to the popularity of concepts such as ‘collaborative consumption’ and the ‘sharing economy’, which frequently involve the use of PSS (Botsman and Rogers, 2010). Shared use of goods is expected to enable environmental benefits by intensifying the use of existing products and consequently reducing the need to manufacture new products (Heiskanen and Jalas, 2003).

Preliminary research into the sustainability of PSS style businesses finds that there is significant potential for environmental benefits, however, these benefits can be negated by unintended impacts and depend on the business model used (Demailly and Novel, 2014; Tukker et al., 2006). There is a shortage of empirical research examining the sustainability performance of PSS, particularly in business to consumer (B2C) exchanges (Boehm and Thomas, 2013; Tukker, 2015). The emerging literature on collaborative consumption / the sharing economy is more oriented to B2C, however it is primarily focused on developed economies (Hamari et al., 2016; Möhlmann, 2015; Schor, 2014).

In developed economies, sharing and renting businesses are described as opportunities to make use of “idle assets” or shift to “access over ownership” (Botsman and Rogers, 2010), and refer to a consumer base that is already saturated with consumer goods. However, in developing or emerging economies these business models present a different opportunity, where “new consumers” may choose to pay for access in the first instance, rather than purchasing goods. As such, PSS business models are important to examine in an emerging economy context, where there may be potential to contribute to sustainable consumption and production (SCP) goals. As the majority of future growth in consumption and resource use is projected to occur in Asia (Kawazu, 2013; Schandl and West, 2010), the region is an important focus for sustainable consumption research. In this study, we examine PSS for households in three Southeast Asian cities – Hanoi, Manila and Bangkok. Southeast Asian cities are in the midst of major change with growing middle classes, high urbanization rates and intensifying environmental challenges (UN-Habitat and UNESCAP, 2015). Bangkok and Manila are among the world’s largest cities (Jones, 2013) and are also some of the most congested cities in Asia (Dissanayake and Morikawa, 2010). These emerging city pressures may provide distinctive challenges or opportunities for PSS businesses.

In this study, we examine PSS business practices in Southeast Asia and determine the factors that enable or inhibit PSS businesses from achieving environmentally sustainable outcomes. Following this, we identify policy measures that can support sustainable outcomes and help to mitigate potential rebound effects. Our three objectives are to: 1) identify key criteria for environmental sustainability in PSS; 2) examine current PSS business practices in three Southeast Asian cities with regard to

the sustainability criteria; and 3) identify measures that can support businesses to meet sustainability criteria in this context. We begin this paper with a literature review of PSS impacts and sustainability issues that provide the analytical framework for the study. We take a qualitative approach and use web searches and interviews to identify and examine business practices. We then draw on this empirical research to describe the range of factors influencing business practices and conclude with recommendations for policy and future research.

Background and analytical framework

Product-service systems and environmental impacts: theory and research

The PSS concept can be defined as where “the customer pays for using an asset, rather than its purchase, and so benefits from a restructuring of the risks, responsibilities and costs traditionally associated with ownership” (Baines et al., 2007, p. 1543). The theory regarding PSS suggests that when the focus of profit shifts from the number of products sold to the service being offered, businesses have an incentive to reduce their costs, which leads to those businesses choosing quality goods, using them as intensively as possible, buying fewer goods and repairing and reusing parts (Roy, 2000; Tukker, 2015). For customers, PSS usually enable less expensive access to goods (Tukker, 2015) and greater flexibility to rent the exact equipment that they need (Heiskanen and Jalas, 2003). However, customers may find that they have less control over that equipment and how they can use it, as they need to plan their usage in advance (Tukker, 2015). Considering the large body of literature on PSS, and the potential benefits for sustainability, there are relatively few studies that assess their environmental impacts to examine whether theory meets with reality (Tukker, 2015).

Part of the challenge in discussing the sustainability claims for PSS (and CC / SE), is that the concepts represent a broad range of business types that vary in nature (Heiskanen and Jalas, 2003). This study is focused on PSS, but even within the field of PSS there is great variation between business models. Tukker et al., (2006) classified PSS into eight business models types according to their materiality and potential for reducing environmental impact. Of these, only four types had the potential to reduce energy and resource use by 50% or more. These include (1) “Product renting/sharing” (non-simultaneous use), (2) “Product pooling” (simultaneous use), (3) “Pay per unit of

use”, and (4)“Functional result”. We therefore focus on these four PSS types, as those with the greatest potential to reduce environmental impacts. They are subsequently referred to as “shared-access”(1-3) or “service to replace a product”(4). Some detailed studies have examined the environmental impacts of these business types in household applications, including: car-share, bike-share, ride-sourcing, shared laundries, laundry services, and tool and equipment rental. While the studies relating to transport are based on outcomes from actual schemes, results for other PSS types tend to be based on theoretical calculations. Nevertheless, we summarise the findings from available studies here.

In Europe, studies found that households using a car-share scheme reduced their greenhouse gas emissions by 39-54% (Shaheen and Cohen, 2013) and households using car-share in the U.S. reduced their vehicle kilometres travelled (VKT) by 27% (Martin and Shaheen, 2011). Each car-sharing vehicle in the U.S. has been found to result in 9 to 13 vehicles being removed from the road, and many of these are older, less efficient vehicles (Martin et al., 2010). A study examining app-based on-demand ride services (e.g. Uber and Lyft) in San Francisco found that its environmental impacts are ambiguous, as these on-demand services are similar to taxis and tend to replace taxi or public transport use; however, they can complement public transport (Rayle et al., 2014). Note that the ‘ride-sharing’ services did not involve sharing with other passengers and are elsewhere referred to as ‘ride-sourcing’. In a study of bike-sharing impacts in the U.S., around 50% of bike-share users reported reducing their personal car usage (Shaheen et al., 2014).

Analyses of shared laundries and laundry services estimate reductions in resource use of between 33% (Haapala et al., 2008) and 90% (Komoto et al., 2005) compared to individual laundering; authors noted that this result could vary depending on transportation and washing machine quality. There are few studies available examining the impacts of sharing general non-electrical goods. Hirschl (2003) found that ski rental uses 50% less resources compared to individual ownership. Several studies have examined the impacts of tool rental: a Wuppertal study (BMBF, 1998) found a 90% reduction in the material intensity of ‘drilled holes’ in a group of 150 households that shared 2 drills. Behrendt and Behr (2000) found that tool rental saves resources in manufacturing and waste production; however, resource savings during the operational

phase depend on the baseline, that is, whether the ‘maximum useful life’ of the tool is increased by shared use. Electric tools are typically used for only a fraction of their useful life, and it is with rarely used equipment that the greatest savings can be achieved – Behrendt and Behr (2000) calculated an 87.5% reduction in material flows for electric tools.

Potential adverse impacts on sustainability from PSS

These studies appear to highlight significant potential for PSS to reduce resource consumption and environmental impacts, however, a number of researchers warn of potential adverse impacts. Demailly and Novel (2014) propose that the environmental balance of sharing economy businesses is positive if, “rental replaces purchase”, the “lender provides a higher quality good that is more resistant to intensive usage”, and “the repeated rental occurs at a local scale, minimising transport, which is often non-motorised” (Demailly and Novel, 2014, p. 20). Leismann et al., (2013), also suggest that ‘use rather than own’ schemes tend to lead to more efficient consumption, provided that certain ‘framework conditions’ are met, such as “using durable products or enhancing device utilisation” (2013, p. 189). The latter refers to goods sitting unused or discarded before they have reached their maximum useful life. For example a drill is likely to be used for 15% of its useful life, a lawnmower for 62%, a whipper snipper for 12% (Leismann et al., 2013).

Leismann et al., (2013), raise other possible drawbacks for PSS, such as an increase in the use of packaging and transportation of goods and the potential for impacts on overall consumption, where gaining access to a product leads to a later purchase of that product. Gottberg et al., (2010) also warn that PSS benefits may be reversed when periodic renting leads to greater transport of goods, or where cost savings lead to greater consumption elsewhere, creating a rebound effect. Demailly & Novel (2014) raise the possibility that access to a greater diversity of goods may encourage ‘hyperconsumption’, offsetting the benefits of sharing goods. If producers take back and recycle goods at the end of their useful life far better environmental outcomes can be achieved, particularly if there are incentives to reuse or remanufacture those goods (Heiskanen and Jalas, 2003).

To gauge the impacts of shared motorised transport, the key metrics used are a reduction in private motor vehicle kilometres travelled (VKT), vehicle usage and vehicle ownership rates (Shaheen and Chan, 2015). The impact of bike-share schemes is typically determined by the change in transport mode (Fishman et al., 2013). Transport planners argue that these can be condensed to a single indicator – reducing private VKT (Stanley, 2014). Private VKT can be reduced through travellers: changing the mode of transport they use (for example from a car to a train or bike); reducing the length of their journeys; eliminating journeys; or sharing vehicles, amongst other measures (Stanley and Loader, 2008). The impacts of shared transport are also interdependent, as ride-sharing, ride-sourcing and bike-sharing can all complement public transport and alleviate “the last mile problem”, however, if public transport is insufficient, these options could be less effective (Murray et al., 2012). This points to potential pitfalls if schemes do not connect with public transport, if users switch from less to more polluting transport modes, if users lengthen or create new car trips and do not share trips with others.

Due to the range of potential pitfalls, Tukker et al., (2006) suggest that the sustainability of PSS businesses need to be analysed on a case by case basis. However, this is very difficult for governments to undertake. For decision makers seeking to regulate or support these business types, it is currently difficult to gauge their environmental credentials. Current approaches to sustainability assessment of PSS typically involve life cycle assessment (LCA) or multi-criteria analysis (Tukker and Tischner, 2006a). For example Chou et al., (2015) use 74 criteria, Allen Hu et al., (2012) use 32 criteria and these require significant data inputs. Considering the increasing use of PSS business models, there is a need for relatively simple ways to assess and guide businesses towards better environmental outcomes; particularly for policymakers.

In this paper, we propose that the potential adverse impacts of PSS described in the literature can be summarised as ‘key sustainability criteria’ (see Table 15), which can be used to mitigate the potential for environmental pitfalls in PSS. These differ from other ‘criteria for sustainability’ in the PSS literature, which focus on tools that can be used to *design* sustainable PSS and to evaluate each aspect of a PSS before it is implemented (Allen Hu et al., 2012; Chou et al., 2015; Tukker and Tischner, 2006a). In this study, we take a retrospective view and focus on PSS-style businesses that are already operating,

that were not necessarily designed for sustainability. We also consider the perspective of policymakers looking to foster more sustainable business activity, particularly as PSS relate to the popular trends of the sharing economy and collaborative consumption. Policymakers cannot be as prescriptive as designers in encouraging sustainable PSS, and are more likely to address key problems. Consequently, we have taken the approach of using potential pitfalls as ‘key environmental sustainability criteria’, which could be used as focal points to mitigate and enable more sustainable outcomes. These criteria focus only on environmental aspects, but could be expanded to other aspects of sustainability. We use these criteria as the analytical framework for understanding sustainability in our business case studies in three Southeast Asian cities.

Table 15: Key criteria for environmental sustainability of PSS businesses

| | Criteria | Purpose | Reference |
|------|--|---|---|
| 1 | Use durable, quality goods | To extend product life and reduce production and waste | Leismann et al., 2013; Demailly & Novel, 2014 |
| 2 | Intensify use of goods | As above | Leismann et al., (2013) |
| 3 | Enable repair, take back and recycling | As above, and to recover valuable resources for reuse | (Heiskanen and Jalas, 2003) |
| 4 | Ensure rental replaces product purchase | To ensure that the overall benefits of PSS are achieved and do not lead to an increase in | Demailly & Novel (2014) |
| | (mitigate hyper-consumption) | resource use and pollution | (Demailly & Novel, 2014) |
| | (mitigate inducement of purchase – where gaining access to a product can lead to later purchase) | | (Leismann et al., 2013) |
| | (mitigate rebound – where cost savings could lead to increase in consumption) | | (Gottberg et al., 2010) |
| 5 | Minimise transport of goods | To ensure that benefits of intensifying use are not negated by new impacts | Demailly & Novel, 2014; Leismann et al., 2013; Heiskanen & Jalas, 2003; (Gottberg et al., 2010) |
| (5a) | Minimise disposable packaging | As above | Leismann et al., (2013) |
| 6 | Reduce private vehicle kilometres travelled (VKT or VMT) | To ensure that transport sharing /servicing leads to an overall reduction in resource use and pollution | (Shaheen and Chan, 2015; Stanley, 2014) |
| | (Mode substitution) | | (Fishman et al., 2013) |
| | (Link with public transit) | | (Fishman et al., 2013; Murray et al., 2012) |

Methods

Due to the general lack of information about PSS in emerging economies and PSS business sustainability practices, we have used an exploratory approach in this study. In

the first instance, we identified PSS businesses in three Southeast Asian cities (Bangkok, Manila and Hanoi) and then conducted interviews with a number of business operators. Our approach draws on Adaptive Theory (Layder, 1998), which is based on Grounded Theory, see (Corbin and Strauss, 2008; Glaser and Strauss, 1967). In both approaches, empirical data is used to develop theory, however Grounded Theory tends to focus on empirical data in isolation, while Adaptive Theory recognises the influence of prior knowledge in the process of analysis and theory development. Our analytical framework in this study is collated from literature (See Table 15), and these form the ‘orienting concepts’ for our analysis using Adaptive Theory.

In order to identify PSS businesses in these cities, we started by developing a framework of potential PSS business types within the categories of “shared-access” and “service to replace product”. We collated a list of potential business types from literature and checked them against various online databases of sharing economy and collaborative consumption businesses, such as (Owyang et al., 2014). This framework is shown in Appendix Five. The intention was to include all relevant business types regardless of whether they are considered new (e.g. car sharing) or more traditional (e.g. taxis). We used this framework as the basis for a web search for shared-access and service to replace product businesses in Hanoi, Manila and Bangkok, searching for each business type in English, with local assistants searching in Vietnamese, Tagalog and Thai. We subsequently developed a database of available PSS businesses in those cities.

In the second phase of the research we used the database to contact a range of businesses in each of the three cities to participate in interviews. We conducted semi-structured interviews with twenty different businesses, in person and typically within the business premises. Our intention was to purposively sample for diversity; however, we interviewed more laundry services as they were the focus of a separate detailed case study. In Table 16 we have listed the business types, cities and number of interviews of each type. Some interviews were conducted in English, others were conducted with the help of an interpreter. Each interview lasted from one to one and a half hours, except for the interviews with laundry service businesses, which tended to be around 30-40 minutes.

Table 16: Business types interviewed in each city³

| Business types | City | No. | Business model |
|----------------------------------|---------|-----|-------------------------------------|
| Bike-share | Bangkok | 1 | B2C, facilitated by city government |
| Ride-share and Taxi-share | Hanoi | 1 | C2C and B2C |
| Tool rental | Bangkok | 1 | B2C and B2B (some C2C) |
| Laundry services | Manila | 8 | B2C |
| | Hanoi | 5 | |
| Designer bag rental | Bangkok | 1 | B2C |
| Toy rental | Hanoi | 1 | B2C |
| Baby equipment rental | Bangkok | 1 | B2C |
| Fashion rental | Bangkok | 1 | B2C |

Our analytical framework was based on the key criteria for environmental sustainability identified from the literature and collated in Table 15, and these formed the orienting concepts for our interview protocol and analysis. In the interviews business owners were asked questions about their business operations and practices with regard to sustainability. The interview question guide is shown in Appendix One. The interviews were semi-structured, so that interviewees had the opportunity to elaborate or focus on their own area of interest. After each interview, interviewees were emailed a copy of the interview notes and were given the opportunity to make corrections. In the case where an interpreter was used, the interpreter was asked to check the interview notes.

The interviews were coded and analysed thematically with the aid of qualitative analysis software Dedoose. Themes were developed where interviewees from different businesses repeated similar ideas. We examined both similarities and differences between business responses and collected quotes from interviewees to illustrate both. After the initial round of analysis, the interviews were re-analysed to refine and confirm the themes. We also wrote memos after analysing each interview transcript to develop typologies regarding the emergent themes. The results describe current business practices with regard to the sustainability criteria and the key factors influencing their

³ In the interviews it was agreed that specific business names would not be used in research outputs; therefore each business is referred to by its generic function e.g. “bike-share”.

practices. These typologies formed the basis of our analysis in the discussion in Section 5.

There are some limitations in this study with regard to the breadth and number of businesses interviewed. The intention was to identify issues influencing business practices across a variety of PSS businesses for households, and in many cases one of each business type were interviewed (e.g. one designer bag rental, one tool rental). This means that the issues raised are not exhaustive, but do reflect the range of factors influencing PSS business practices. It is also important to note that many of these business types are relatively new and there are few in operation. There are a greater number of interviews from laundry service businesses than other types (which reflects their relative abundance) and this could skew the results towards that business type. However, the analysis was oriented towards comparing different business types, and this can be seen in the way the results are reported. Note that this study is limited to considerations of environmental sustainability. The factors influencing business sustainability practices vary according to product type and context. In this section, we discuss findings from our interviews with business owners/operators in relation to each of the key sustainability criteria in Table 15. We draw on narratives from the interviews to examine how our business participants are currently operating and to understand what influences their current practices with regards to these sustainability criteria. In section 5 we discuss how policy can support or guide PSS businesses to enable better environmental outcomes.

Criteria 1: Using durable, quality goods

Several businesses explicitly talked about the quality and durability of their goods, and it appears that rental business owners are incentivised to use durable, good quality products, either to withstand repeated use or attract customers. The **toy rental business** owner in Hanoi buys most of her toys from the United States, and some from China, which have been produced for the European market. She described them as “high quality, high price” toys, and this appeared to be her market niche in terms of providing access to better quality toys than what is commonly found in street markets. The **baby equipment rental** owner in Bangkok explained that she opts for “medium quality imported goods”, as “I have to buy brands that the customers know. If I buy good ones then I can keep them longer”.

The **tool rental** business owner in Bangkok explained that he had previously bought cheap tools from China, but that they were only rented out once before breaking. He said that, “Now with products from China, the price is very cheap... If someone sees that price they buy, but the quality is not up to it”. He said that “now I buy the best quality for long term use and more profit”. This example illustrates that while there are incentives for rental businesses to buy better quality, they must increasingly compete with vendors selling inexpensive items that are poor quality.

Business owners in the fashion sector also pointed to the role of the consumer in the durability of their goods. The **designer bag rental** business said, “the lifetime of these bags depends on how customers take care of them and the quality of the bag”. At the **fashion rental** business, “it depends on how the customers take care of the clothes, if they treat them well they can be rented many times”. The **toy rental** business also find that “customers have a different attitude when they don’t own them; they will use toys to their full capacity and beyond”, however they did say that some customers are very careful. It appears that businesses mitigate against poor treatment of goods by using more durable goods, however, this may be difficult for products that are more delicate, such as clothing.

From these examples, the factors driving the use of durable, quality goods within rental businesses are customer demand for quality goods and durability required for repeated rental. However, external factors may detract from this business model, such as customers treating goods poorly and competition from inexpensive alternatives.

Criteria 2: Intensifying use of goods

Rental and service businesses should intensify the use of products compared to individual purchase; however, businesses stocking products that are used insufficiently could negate these benefits. We asked businesses about their stock and how often it is used. Within the **Bangkok bike-share scheme** there are 50 stations with a total of 400 bikes available (Bicycle Thailand, 2012). At the time of interview, members were taking 500-600 bike journeys per day, suggesting that each bike is used at least once per day. Amongst the **laundry shops in Manila**, each washing machine is used 5 times a day on average (across seven shops), which suggests a fairly high rate of machine usage. The **designer bag rental** business in Bangkok indicated that on average 25% of

their bags would be rented out at a time. In this case, this business is only likely to reduce overall ownership if each customer would normally purchase and use more than 4 bags. The **toy rental business** in Hanoi reported that generally 65-70% of her toys are rented out at a time. Considering that purchased toys may only be used by a child for a short time before sitting idle, this suggests a high utilisation rate. Across these businesses, products are generally being used frequently and are not sitting idle. However, the intensity of use varies depending on the nature of the product.

For some businesses, a high utilisation of goods may be difficult to achieve due to fluctuating demand, such as the **baby equipment rental** business, which depends largely on seasonal tourism. The **tool rental business** explained that, “for a renting business you have to stock plenty of equipment to fulfill the demands of customers”, suggesting that a shortfall in stock availability would be problematic. He indicated that his plentiful stock attracted repeat customers. The **fashion rental business** in Bangkok also highlighted the need for a wide range of stock to meet customer demands, as people will ask for a particular colour and then want a choice from long, short and different styles. The owners estimated that a minimum of 20% of their clothing is rented out at any time, stretching up to 50% at busy times of the year. The majority of their clients rent dresses for weddings, parties and events. Considering that many customers would otherwise purchase a dress and wear it once, a 20-50% utilisation rate is much higher than an individual could achieve.

From these examples it appears that these rental businesses can achieve similar or higher utilisation than would be the case for individual ownership, which would have environmental benefits. However, benchmarks of typical product usage rates might be required to adequately compare PSS to individual purchase options. Businesses catering to demand for a diverse range of goods (e.g. clothing rental) or a large quantity of goods (e.g. tool rental) may result in lower utilisation rates. Similarly, new businesses may experience low uptake in the early phases (e.g. bike-share), and rental businesses reliant on seasonal tourism (e.g. baby equipment rental) could have fluctuating utilisation.

Criteria 3: Repair, take-back and recycling of goods

If extending a product’s useful life is a key requirement for sustainability, then repair is integral to achieving that goal. For products with recyclable or hazardous components,

such as electrical and electronic waste, co-ordinating proper recycling is a critical issue for sustainability. We asked businesses about their practices with regard to repair and recycling.

The **tool rental business** owner reported that he cleans and oils his products in between customers, and for small tools and equipment, he would normally change the motor and parts himself. However, for large construction equipment, he would usually sell them after 3 years of rental, where they could be repaired or rebuilt for the second hand market. However, if he expects something to break, he is likely to sell it before that happens. If a tool breaks while being rented, they usually repair the tool and take the repair cost from the deposit.

The **designer bag rental business** undertakes repairs in their shop and they also have a maintenance facility called a “bag spa” to keep the bags in good condition. The business owner suggested that good quality bags can be rented for more than 5 years if they are treated well by customers and maintained by the shop. The **fashion rental business** had only been open a year, and did not have much experience with how long their clothes might last due to wear or fashion, however, so far they have repaired damaged clothing within the shop. The **baby equipment rental** business explained that some baby equipment items need to be replaced after a certain period of time due to safety concerns. For example, a car seat needs to be retired after 5-6 years. Accordingly, they tend not to repair their equipment and often sell equipment to friends before it becomes worn. In this situation, repair of rental goods is not desirable, but professional recycling may still be possible.

Amongst the interviewees, we found that business owners are inclined to undertake small repairs themselves and in the case of damage by the customer, they are able to recoup some of their repair costs. However, when major repairs are likely to be required, it seems that most businesses sell their products and the responsibility for recycling gets passed on. In all of the examples above (except fashion rental which was relatively new), the businesses described selling their stock second-hand. This suggests that rental businesses are unlikely to be directly involved with recyclers, due to the thriving second hand markets in these cities. None of the businesses interviewed were involved with recycling or remanufacturing goods, which may be a lost opportunity.

However, take-back and recycling may be most important for electrical and electronic goods.

Criteria 4: Replacing product purchase

The intention of PSS is for rental/service to replace the need for product purchase. However, whether that actually occurs is one of the most difficult sustainability issues to assess. Examples from interviewed businesses suggest that replacement is highly dependent on context and may be more likely for services and rental options provided in high-density environments.

In Manila, **laundry shop** owners explained that laundry services were for people living in apartments and condominiums, as they typically have no laundry facilities and are not allowed to hang washing on balconies. This effectively forces people to use laundry services. In areas of Manila with high-rise housing, laundry services are highly likely to replace machine ownership. In Hanoi the situation may be different depending on the location and nature of housing. In one laundry service located near an apartment block, the interviewee explained that a “normal” customer would get wash and dry service 4-5 times a month, which suggests it is used for their primary washing needs. However, at another **laundry service** in Hanoi, the owner thought her service was not a replacement for having a washing machine at home, as customers tended to use her service when they did not have space to dry things, or did not have the right cleaning products. Several of the laundry shops in Hanoi explained that their customers were more numerous during winter when it is difficult to dry clothes in Hanoi’s climate. Considering this, laundry services in Hanoi may not always replace the purchase of a washing machine, however, those services may replace the need for households to purchase a dryer, which is only needed at certain times of the year.

The **fashion rental** business described their customers as “local people and others who have to go to parties or work and don’t want to buy” and many of them “only want to wear a dress once”. In this example of infrequently used goods, the business is providing a service that is likely to replace purchase. In the literature, Demailly & Novel (2014) refer to the phenomenon of ‘hyperconsumption’, where sharing can stimulate greater consumption than before. Some of the businesses described customer behaviour in relation to renting and purchasing. The **designer bag rental** business

explained that they have two types of customers with a 50:50 split of each. The first type already use designer bags but they “don’t want to buy all the new arrivals... they just rent one bag a month”. The other type of customer might not have as much money and wants to try using a designer bag by renting it. If they like it, “they may end up buying the bag”. This example suggests that renting goods can mitigate multiple purchases where customers are already familiar with the product, but for customers that are unfamiliar with a product, renting may lead to a purchase.

In these examples, the ability for a rental or service business to replace the purchase of goods differs depending on the nature of the product and the housing form. For example, customers are unlikely to collect multiple washing machines in the way that they might collect multiples of clothing and toys, and people living in dense urban environments are less likely to store goods in their homes. To better understand the situations/products for which rental is likely to replace a purchase, much more research would be required, including customer surveys with different rental services in different contexts.

Criteria 5: Minimising transport and disposable packaging

Sharing goods between customers has the potential to increase transportation and packaging, which is detrimental particularly if transport is motorised and packaging is disposable. Our business examples suggest that non-motorised transport is possible, particularly in high-density environments. However, businesses would need to localise their operations to minimise motorised transport.

In all of the **laundry service shops** interviewed in Manila, the customer base lived in close proximity in condominium buildings, and all shops reported that they pick up and deliver laundry from apartments to the shop by walking and using trolleys. Most of these shops were laundering at their shopfront, however, one of the stores used a van to transport clothing to and from another laundry. In contrast, in Hanoi the housing stock is visibly very different and there were fewer laundry shops in the central and inner suburbs of the city. The **laundry service shops** that were interviewed in Hanoi explained that their customers were generally local, but some came from up to 10 kilometres away. The laundry services in both cities used new disposable plastic bags to package clean laundry.

The **toy rental business in Hanoi** indicated that most of her customers were based within a 20 km radius of her store and toys are delivered by vehicle, but she also occasionally rents to customers in neighbouring provinces. In the past, she had rented toys to people in Ho Chi Minh City (more than 1000 km away), but she found that shipping was riskier and the rental costs needed to be much higher. In this example there is a disincentive to ship rental goods long distances. Most of the customers for the **fashion rental business** were based in Bangkok; however, sometimes they would post items of clothing to customers from other provinces. While the toy rental business had to package toys for transport, the fashion rental business generally had customers pick up and drop off their rental items. Co-ordinated transport of goods is likely to have a much lower impact than individual collection, but may be difficult for goods that need to be tried, such as fashion items.

Minimising transport of goods or transport for services is easier in a high-density environment. However, high rents for business space make this more difficult in densely populated residential areas. Some laundries in Manila undertake their laundering remotely from their shopfront; this is likely due to space/rent constraints. Even without physical proximity, for most of these businesses it would be possible to optimise transport through a postal (rather than special motorised) delivery service. Similarly, it would be possible for all these businesses to adopt reusable packaging options, particularly as goods are regularly transported back and forth.

Criteria 6: Transport: Reducing private vehicle kilometres travelled

Literature examining the sustainability of transport sharing businesses points to ‘reducing private vehicle kilometres travelled (VKT)’ as the most important metric. This metric encompasses a range of related issues, such as passengers reducing or eliminating journeys, sharing journeys, shifting to less polluting transport modes and linking with public transport.

The intention for the **bike-share** scheme in Bangkok is to link with public transport, such as the BTS and MRT subway systems with major destinations such as universities, important office buildings and shopping malls. The scheme operator suggested that bike-share probably replaces motorcycle taxis and walking. The **ride-share scheme in Hanoi** is still fairly new and the manager of the scheme did not yet have a sense for

how it impacts the way people travel. Both the ride-share scheme and the bike-share scheme described their businesses as complementary to public transport. The ride-share scheme in Hanoi said, “bus and metro are the highest level of ridesharing and ride-sharing can’t replace this... Currently the public transport needed doesn’t exist. The bus network is quite good in terms of its range, but the quality is not good. The buses are crowded and dirty and are only used by students”. This highlights the influence of external factors in determining the efficacy of transport sharing, in this case with the need for supporting public transport infrastructure.

Unlike other sectors, many transport related businesses such as bike-share and carpooling platforms have been developed to alleviate sustainability, transport and traffic issues. However, newer app-based ride-sourcing businesses tend to focus on convenience. The **ride-share scheme** operator noted the problem that had arisen with ride-sharing schemes in the U.S., where some ride-share schemes had become more like on-demand taxis (ride-sourcing). This in effect creates new vehicle trips rather than reducing the overall number, this is a concern in a city such as Hanoi, which currently has very low vehicle ownership rates.

Understanding the full impact of transport sharing is complex and involves more systemic analysis. Fortunately, there are numerous researchers analysing the impact of shared transport schemes, for example see summaries by Fishman et al. (2013) and Shaheen and Khan (2015); and there is likely to be further definitive results in the future. In our case studies, interviewees highlighted the need for adequate public transport infrastructure, so that bike-share and ride-share complement rather than replace it, and for ride-share schemes to involve multiple passengers to make sustainability benefits clearer.

Summary and discussion

Across the participating businesses, it seems that most are incentivised to use durable, quality goods and the renting/servicing business models tended to intensify product use. Our interviewees were inclined to undertake minor repairs of their goods, but tended to sell goods second hand rather than undertake major repairs and they did not engage with recycling. Transportation of goods is highly context and product-service dependent, however some of our participant businesses in dense urban environments used minimal

motorised transport. In all cases it would be possible to optimise delivery systems to reduce motorised transport and use reusable packaging. Understanding the impact of shared transport can be complex, but environmental benefits are clearer if vehicle transport involves more than one passenger. Whether the use of PSS businesses replaces product purchase may depend on the nature of the product and the available space within homes. It may be simpler for PSS to replace the purchase of rarely used goods and ‘non-collectible’ items (e.g. a washing machine), rather than ‘collectible’ items such as bags and toys.

During the analysis, it emerged that some of the sustainability criteria are more important for particular sectors. Clearly, (6) ‘reducing vehicle kilometres travelled’ is particularly oriented towards the transport/mobility sector. (3) ‘Repair, take back and recycling’ is particularly important for goods that have high environmental impacts during the production and disposal phase, such as electrical and electronic goods. Whether (4) ‘rental replaces purchase’ (or leads to hyperconsumption) may be the least well understood of all the criteria. While important for most sectors, this is particularly important for non-EE goods (e.g. clothing, bags, toys), which are more likely to be collected in multiples by consumers. Table 17 provides a summary of the findings from the business participants, in terms of current business practices and the factors that support or inhibit positive environmental outcomes with regard to each of the sustainability criteria. In the final column, we have suggested some indicative policy interventions that may help to address the factors inhibiting businesses from meeting the sustainability criteria.

Many of the supporting or inhibiting factors listed in Table 17 would be relevant in any economic setting; however, some are distinctive to an emerging economy. For example, positive factors such as businesses undertaking small repairs within their shop are enabled by relatively low wages. The risk with transporting goods long distances is related to underdeveloped postal or courier systems. The high density of housing and small living spaces is also distinctive to Asia. Other inhibiting factors that are more acute in emerging economies include a lack of public transport (making connections with transport sharing difficult), a thriving second hand market (which makes retrieval of recyclables more complex), and a lack of customer familiarity with goods means that renting may still inspire customers to purchase them.

Table 17: Summary of current business practices, influencing factors and potential interventions with regard to key sustainability criteria

| Key criteria for environmental sustainability | Evidence of business practices from case studies | Factors assisting businesses to meet criteria | Factors inhibiting business from meeting criteria | Potential interventions to support environmentally sustainable outcomes |
|---|---|---|--|---|
| Use durable, quality goods | Businesses are generally using durable goods to enable repeated rental | <ul style="list-style-type: none"> • Customer demand for quality goods • Durability required for repeated rental | <ul style="list-style-type: none"> • Customers treating goods poorly • Competition from inexpensive alternatives available to purchase | <ul style="list-style-type: none"> • Guidelines for businesses to reinforce good practice. These could be added to existing programs for green labelling or industry accreditation such as Thailand’s Green Industry Mark |
| Intensify use of goods | Renting and sharing generally enables greater utilisation | <ul style="list-style-type: none"> • Nature of business with multiple users | <ul style="list-style-type: none"> • Customer demand for diversity • Customer demand for quantity • Low uptake of rental/service business • Seasonal business | <ul style="list-style-type: none"> • Guidelines for businesses to reinforce practice. May require development of benchmarks for different product types e.g. handbags are typically used for X% of useable life, therefore renting businesses should improve on this standard. |
| Enable repair, take back and recycling | Business operators will do minor repairs, but will avoid major repairs and sell goods instead | <ul style="list-style-type: none"> • Ability to undertake small repairs within the business • Ability to recover repair costs through customer deposits | <ul style="list-style-type: none"> • Major repairs and remanufacturing too expensive for businesses to undertake, particularly for small businesses • Easy to sell damaged goods in second hand market • Products with safety aspects cannot be easily repaired | <p>This criterion may be most important for EE goods</p> <ul style="list-style-type: none"> • Regulatory mechanisms or positive incentives to ensure take-back and recycling, such as extended producer responsibility (EPR) |

| Key criteria for environmental sustainability | Evidence of business practices from case studies | Factors assisting businesses to meet criteria | Factors inhibiting business from meeting criteria | Potential interventions to support environmentally sustainable outcomes |
|--|--|--|--|---|
| Replace product purchase | Difficult to determine. Depends on context and product | <ul style="list-style-type: none"> Dense housing (lack of storage space) Less 'collectible' or infrequently used products Customer familiarity with goods | <ul style="list-style-type: none"> Products that can be collected (or where multiples are desirable) Lack of customer familiarity with goods (rental can lead to purchase) | <ul style="list-style-type: none"> Needs further research, particularly for 'collectible' product types to understand consumer response to availability of renting/servicing |
| Minimise transport and disposable packaging of goods | In high-density situations with frequently used goods / services non-motorised transport is possible. Disposable packaging widely used. | <ul style="list-style-type: none"> Dense housing/ urban environment Risk of loss/damage when transporting goods long distances | <ul style="list-style-type: none"> High rent for business space in dense areas, businesses need to be locally based Products that need to be tested by customer in person (e.g. dress rental) Norms in using disposable packaging | <ul style="list-style-type: none"> Guidelines for businesses (as suggested above), particularly for businesses starting up and planning their approach to logistics Incentives for businesses to encourage use of reusable packaging e.g. tax on packaging In high rise areas, governments could require developers to set aside shop space for 'sharing' and service businesses (to serve tenants) with affordable rent |
| Reduce private vehicle kilometres travelled (for passenger transport) | Many transport businesses are developed with sustainability in mind, but ride-sourcing needs incentives to encourage multiple passengers | <ul style="list-style-type: none"> Good connections with public transport (Bangkok) | <ul style="list-style-type: none"> Lack of quality public transport Ride-sourcing / on-demand taxis without multiple passengers can reduce efficiency and induce more trips Poor connections with public transport (Hanoi) | <ul style="list-style-type: none"> Improvements to public transport & infrastructure to support transit connections Regulations or positive incentives to encourage options for 'ride-pooling', where multiple passengers may share a ride |

For PSS businesses explored in this study, we find that the first two criteria (1) using durable goods and (2) intensifying use of goods may be characteristics of the PSS business model, not just in theory but also in practice. This means that PSS businesses are already likely to meet these criteria, however, these characteristics still need to be accounted for to enable the full environmental benefit from PSS. In contrast, business practices with regard to the remaining criteria are influenced by contextual factors, including market conditions, public infrastructure, housing form, customer behaviour and the nature of the product itself. As a result, government interventions may be required to enable the full potential for positive environmental outcomes. For example, minimising disposable packaging (5a) can be enabled by a combination of policy and business measures. However, several criteria will require systemic changes to enable businesses to meet them. For example, ‘enabling repair, take back and recycling’ (3) and a ‘reduction in vehicle kilometres travelled’ (6) require a supportive regulatory framework, public infrastructure and major shifts in business and customer practices. The issue of whether PSS can replace product purchase (4) is perhaps the least well understood of all criteria. Ensuring that PSS does indeed replace a purchase would also require a combination of systemic changes, particularly to consumption behaviour. These findings are illustrated in Figure 13 and represent a preliminary theory regarding how these sustainability criteria need to be addressed.

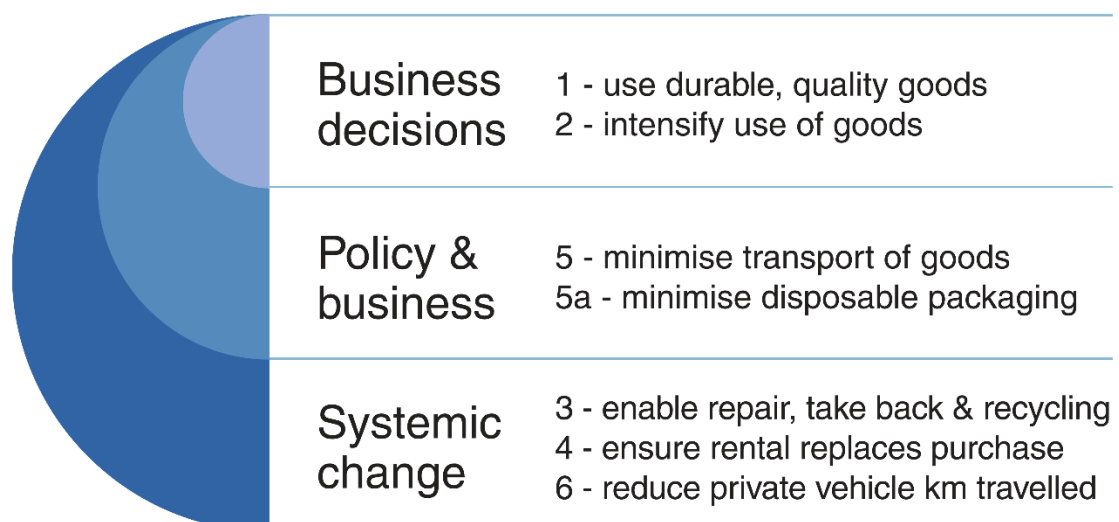


Figure 13: Levels of intervention required to address the six sustainability criteria

Vezzoli et al., (2015) summarise the barriers and enablers for sustainable PSS, collated from recent literature. They highlight some of the important difficulties faced by PSS

businesses, such as the need to make medium and long-term investments and the financial uncertainty this creates. Some of the barriers raised by Vezzoli et al., (2015) are echoed in this study, such as: a) the difficulty for PSS businesses competing with low cost alternatives where externalities are not included in the price and b) the cost of labour increasing, making repairs and services more expensive. However, the literature tends to focus on designed PSS, where existing firms shift from traditional business models to PSS. As such, the barriers described in Vezzoli et al., (2015) are related to transitioning and making new business models viable, primarily in B2B in developed countries. Our study adds to this literature, as we identify the inhibiting or enabling factors for sustainable PSS business practices in the Southeast Asian context. We focus on businesses that are already operating with business to consumer (B2C) exchanges.

Suggested policies to support sustainable PSS from the literature typically include: regulations to internalize the costs of waste and pollution, environmental taxes, consumer information and extended producer responsibility (EPR) (Mont and Lindhqvist, 2003; Vezzoli et al., 2015). In Table 17, we include these and other specific measures that could enable more sustainable business practices in the context of Southeast Asian cities. It was beyond the scope of this paper to explore these policy options in detail, but future research to assess the costs, benefits and feasibility of different policy interventions would be a valuable addition to the literature.

Conclusions

The increasing use of PSS for households represents an opportunity to enable less resource intensive consumption. However, there are sustainability pitfalls, where sharing goods can cause adverse impacts. In this paper, we identified key criteria from the literature for improving the environmental sustainability of PSS businesses, and we have examined these through business examples in three Southeast Asian cities – Hanoi, Manila and Bangkok. Our aim was to understand current business practices with regard to these key sustainability criteria and to determine the factors that enable or inhibit businesses from meeting these criteria in an emerging economy context.

We identified six sustainability criteria from the literature as focal points for mitigating potential adverse impacts and ensuring positive environmental outcomes from PSS businesses. These are: (1) using durable, quality goods, (2) intensifying use of goods,

(3) undertaking repair, take back and recycling of goods, (4) ensuring rental replaces purchase of goods, (5) minimising transport and disposable packaging, and (6) reducing private vehicle kilometres travelled. We find that the first two sustainability criteria (1-2) may be characteristics of the PSS business model, not just in theory but also in practice. Business practices with regard to the remaining criteria are influenced by contextual factors, including: market conditions, public infrastructure, housing form, customer behaviour and the nature of the product itself. Whether PSS actually replaces product purchase (criterion 4) is a key issue for further research.

Factors inhibiting sustainable PSS that may be more acute in emerging economies include: a lack of public transport, a thriving second hand market (making retrieval of recyclables more complex), and a lack of customer familiarity with goods (as renters may still be inspired to purchase). Policy and systemic changes will be required to overcome some of the inhibiting factors, therefore government interventions are likely to be required to enable the full potential for positive environmental outcomes.

Indicative policy interventions for the Southeast Asian context are summarised in Table 17 and include business guidelines and green accreditation, regulations to encourage take back and recycling and regulations to ensure that ride-sourcing businesses also enable ride-pooling.

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CHAPTER SIX:

PAPER III

Dirty Laundry in Manila: Comparing Resource Consumption Practices for Individual and Shared Laundering

The paper presented in this chapter has been published online. This is the peer reviewed version of the article:

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Summary

Changing lifestyles in developing and emerging economies entails a shift in technology use, everyday practices and resource consumption. It is important to understand the sustainability consequences of these changes and the potential for policy to guide practices toward more sustainable lifestyles. In this study we investigate laundry practices in the City of Manila, the Philippines, and compare the resources consumed in three different modes of laundering. We examine (1) traditional washing by hand, (2) washing by machine at home, and (3) using a laundry service. In addition to comparing the consumption of water, energy and detergents, we also examine the social aspects of laundering using the lens of social practice theory. We use empirical data gathered in interviews with laundry service operators and people laundering at home to undertake qualitative and quantitative analyses of laundry practices and resource consumption. We find that hand washing uses the least water and energy, but large quantities of detergents. Machine washing and laundry services are comparable for water consumption, but energy use is much higher for services as they use dryers. Social changes such as an increase in work available for women and the nature of future housing are likely to influence the dominance of either shared or individual laundering methods. These findings illustrate the social complexity of transitions to product-service systems, and the interdependencies between their social and environmental impacts.

Introduction

In emerging and developing economies laundering practices have been steadily shifting from traditional hand washing toward greater use of semi-automatic and automatic washing machines (Lin and Iyer, 2007; Wang et al., 2014). In addition to technological changes, there are a variety of alternatives to home laundering, including laundry services, coin-operated self-service laundries, and communal laundries. Studies suggest that shared access to goods or services (known as product-service systems (PSS)) uses fewer resources than individual consumption options (Heiskanen and Jalas 2003; Tukker et al. 2006). Product-service systems are also increasingly being cited as a strategy for implementing the circular economy (CE) (Mendoza et al., 2017; Ness and Xing, 2017). However, studies regarding PSS are often theoretical and are focused on high-income industrialized countries. While these technological and social transitions

are occurring in emerging economies, there is an important opportunity to understand which options can enable lifestyle improvements in a resource effective way.

Changes to everyday household practices which are occurring in developing and emerging economies, such as the increasing use of household appliances and cars have direct implications for the consumption of energy, water, detergents and other products (Wilhite, 2008). This growth in resource use and the consequent environmental impacts are important for industrial ecology. The 2010 special issue on sustainable consumption (Tukker et al., 2010) left aside the important changes that happen in developing countries where an emerging middle class increasingly engages in resource- and emissions-intensive consumption. The 2016 special issue on the supply chain consequences of consumption explores social practices in the food sector (Burger Chakraborty et al., 2016) and has articles on China, India, and Thailand, demonstrating a shift in focus in the industrial ecology of consumption towards issues in developing countries. Studies investigating consumption in developing countries are also relevant to the emerging discourse regarding sustainable lifestyles (Akenji and Chen, 2016; UNEP, 2016b). According to a recent United Nations Environment Program (UNEP) report, shifting toward sustainable lifestyles will require changes to the systems that determine lifestyle choices as well as changes to social practices (Akenji and Chen, 2016).

In an editorial, Lifset (2008) highlighted the importance of integrating industrial ecology's strength in quantitative analysis with more qualitative studies, particularly to address the complex issues around consumption. Changing consumption practices interact with technological and social changes. For example, new housing types tend to require more cooling appliances, and greater use of detergents mean that more water is needed for cleaning (Wilhite, 2008). Wilhite clarifies the interdependencies of laundering:

“Concerning clothes washing and the consumption of washing machines, a perspective on gender relations and the social organization of work is absolutely essential to understanding change” (Wilhite, 2008, p. 6).

Sahakian and Steinberger (2011) combined quantitative data on electricity consumption with qualitative social science methods to understand household energy consumption in

Manila. However, these types of multidisciplinary studies remain uncommon in industrial ecology. As Sahakian and Wilhite (2014) explain, industrial ecology approaches examine consumption using material flow analysis or life cycle analysis, however “too often these environmental management tools fail to consider the dynamic relation between people, things and social contexts” (Sahakian and Wilhite, 2014, p. 39). Moreau et al (2017) and Blomsma and Brennan (2017) have also recently called for greater focus on the social dimensions within industrial ecology and circular economy studies. We therefore set out to examine laundering as a social practice and to also quantify the resource consumption embedded within these practices.

In this research, we compare the social practices and resource use associated with three laundering methods: hand washing, machine washing and laundry services, in the City of Manila, the Philippines. We use social practice theory (SPT) to examine different laundering methods, in terms of the participants’ material consumption, personal perspectives, and social context. We have predominantly used qualitative methods to understand these social practices, however we have also drawn on quantitative data to develop estimates of resource consumption associated with different laundry methods. Our aim is to understand the environmental consequences of changes in practices and the social dynamics that underpin them. Through this study, we provide new empirical data regarding the use of water, energy, detergents and plastics and information regarding the costs and time associated with each of the three laundering methods. We also provide insights on the participants’ perceptions and preferences regarding laundry options and the potential social mechanisms for change. Drawing on our results we identify the socio-economic contexts in which various laundering methods are embedded. These are critical for understanding how change in laundering methods is likely to occur and is particularly relevant for policy makers seeking to guide more sustainable lifestyles.

Background

Resource consumption in laundering

Changing laundering practices have implications for energy consumption, such as doing laundry at home or externally, using a machine or hand-washing, using cold or hot water and drying by line or with a machine (Anderson, 2016). Laundry services are

expected to use less resources than using a washing machine at home due to significantly reducing the number of machines required and through the use of larger, more efficient machines with the potential to recycle heat, water and detergents (Roy, 2000). Quantitative analyses have been undertaken of the impact of laundry services compared to individual machine washing, however many of these are theoretical and based on modeling, rather than actual consumption. For example, Haapala and colleagues' (2008) modeled the difference between a laundry service and machine washing at home based on US laundry habits and found that home machine washing used 1.5 times more resources than a laundry service. Komoto and colleagues' (2005) life cycle simulation of a clothes washing product-service system (PSS) compared four options ranging from individual machine use to coin laundries and laundry services; they found that the machine sharing options could achieve a tenfold reduction in environmental impacts.

Roy (2000) describes a Dutch study where a large neighborhood laundry was found to enable a tenfold reduction in resource use through water and detergent recycling. Hirschl and colleagues' (2003) study was largely empirical (based on surveys) and found that laundrettes use 50% less resources than home laundering, when including actual consumption of heat, light and transport to the laundry. However, this study was based on German conditions and self-service laundry operations. There is very little empirical research comparing laundry services and home laundering. There is also a lack of research examining operational product-service systems in less developed and transition economies.

Laundry practices in the Philippines

Metro Manila has a population of approximately 12 million with an annual average family income of approximately 7600 U.S. dollars (USD)/capita⁴ (PSA, 2015). An estimated 40.9% of the city's population live in slums (UN-Habitat, 2013). Washing machine ownership in the Philippines differs markedly according to income level. In the highest quintile ownership rates are at 70%, while in the lowest quintile only 3% own a washing machine; the average is 32% (Data sourced from PSA, 2012b). This contrasts with more industrialized countries in the region: in Japan washing machine ownership

⁴ Calculated from (PSA, 2015), draws on 2012 data

reached 90-100% in the 1970s (Oya, 2009) and in China machine ownership reached 90% in the mid 1990s (Wang et al., 2014). In the Philippines, lower income groups predominantly do their laundry by hand. The availability of low waged labor also means that wealthier households can afford to employ a maid for laundering.

The first commercial laundry in the Philippines was established in 1946, when a local businessman bought a mobile laundry trailer from the departing US forces (Wikipilipinas, 2007). By the 1960s, commercial laundries were operating to service the hotel and shipping industries; however, they only started offering laundry services to households from 1993 (Metropole, 2016). The oldest laundry service company in the Philippines suggests that this shift to consumer services was driven by changing lifestyles, including smaller living quarters, a lack of household helpers and “changing environmental conditions” (Metropole, 2016).

‘Changing environmental conditions’ is likely to refer to the changing urban form. Condominium towers have been rising in height in Metro Manila, from original tower heights of eight stories up to forty stories in the 1990s (Saloma and Akpedonu, 2016). Condominiums are often built on top of malls or otherwise have retail shops on the ground floor. They are typically inhabited by the middle and upper classes and particularly young professionals who want to reduce their commuting time, as traffic is notoriously bad in Metro Manila. Inside, condominiums are particularly small, ranging from 15-50 square meters and all rooms are compact (Saloma and Akpedonu, 2016). As a consequence, laundry must be undertaken in special communal areas such as roof decks or basements ((Saloma and Akpedonu, 2016), or otherwise use a laundry service.

Theoretical foundations

To examine and compare laundering activities we draw on Social Practice Theory (SPT). SPT emphasizes that consumption activities are socially embedded (Jaeger-Erben and Offenberger, 2014) and often involve shared routines and habitual activities (Røpke, 2009; Spaargaren, 2011). This means that the consumption of tools, appliances, water and energy in the household is unconsciously incorporated into routines (Shove, 2003a). SPT builds upon Bourdieu’s (1990) theory of practice, where an individual’s consumption practice is influenced by their social environment (social field) and their own system of dispositions (habitus). “Habitus” refers to the skills and practical know-

how that is acted out habitually, which Bourdieu (1990) refers to as a person's "embodied history". Habitus helps us to understand not just everyday actions or practices, but can also explain social skills and social mobility (Galvin and Sunikka-Blank, 2016). Bourdieu (1990) emphasized the importance of social standing or socio-economic position as an influence and constraint to social practices.

In neoclassical economic theory, consumption is framed as a choice made by rational individuals maximizing their utility (Stilwell, 2006). SPT contrasts with this view and aligns with the work of Veblen (1899), Polanyi (1944) and Duesenberry (1962), who all highlight the importance of social and cultural influences on consumption.

Several authors have applied SPT to examine resource consumption in the Philippines; in relation to food consumption (Saloma and Akpedonu, 2016), and energy for cooling (Sahakian, 2011; Sahakian and Steinberger, 2011). Shove (2003a), uses social practice theory in her analysis of laundry transitions in the United States and the United Kingdom. These studies have provided insights for the framework applied in this study.

Our approach in this study is to use social practice theory (SPT) to understand the personal, social and material factors that underpin laundering practices. This approach broadly aligns with the SPT framework proposed by Sahakian & Wilhite (2014), focusing on "the body", "the material world", and "the social world". Where "the body" refers to individual skills, competencies, dispositions and cognitive processes; "the material world" refers to material resources consumed within practices as well as technology and infrastructure; and "the social world", which refers to social and cultural norms and institutions (Sahakian and Wilhite, 2014). Social practice theory emphasizes that these three dimensions are interacting and influencing people's practices on an ongoing basis. For example, available technology influences our skills and competencies and our social experiences influence our physical dispositions. Within "the material world", we examine the resource consumption associated with each laundering method in quantitative terms.

Methods

To investigate laundering practices and their environmental impact in Manila, we undertook a qualitative study drawing on SPT and incorporated quantitative aspects to estimate resource consumption. We compared three laundering methods: washing by

hand, washing by machine and using a laundry service. Through interviews and participant observation we compared these three methods in terms of their resource consumption, their social context and the personal perspectives of the users / practitioners. We undertook structured interviews with six people who wash by hand, five people who use a machine at home and seven laundry service operators. In Appendix Six, we have set out the characteristics of each of these participants. All study participants operated their business or lived in the City of Manila, a densely populated area in the center of Metro Manila. We recruited laundry service businesses through door knocking and individual participants through a snowballing method, where initial recruits asked their friends and neighbors to participate. Interviews typically lasted 30 to 45 minutes.

Our analytical approach broadly followed the framework of questions set out in Shove (2003), “A whirlpool model of laundry” (Shove, 2003a, p. 134) (see Appendix Six), which was used to examine laundering using social practice theory. This framework includes questions related to routines, skills, personal dispositions and material consumption. All participants were asked for their opinions on the various laundry methods and their perceptions of how things might change in the future. The qualitative aspects of these interviews were initially collated according to question and perspective and were then analyzed according to emergent themes.

We adapted Shove’s framework to include the quantitative aspects needed to understand resource consumption. For example, at laundry service shops, participants provided their water and electricity bills and told us the number of gas tanks and sacks of detergent that they used each month, in addition to other operational details. In some cases we were able to observe the hand-washing process in action, other participants demonstrated their methods by showing us their buckets, sinks, machines and detergent packaging. We noted the brands and volumes of detergents used and measured the dimensions of containers to calculate volumes. Participants estimated the weight of washing they usually wash, and most participants also showed us the volume of clothing so that we could cross-check their estimates. For participants using machines, we noted the brand, model and capacity and the level to which it was filled. The scope of questions is listed in Appendix Six.

Estimates of resource use were limited to operational resource consumption, in particular for water, electricity, gas, petrol, detergents, plastic bags and labor time. The nature of the quantitative data used is explained in Appendix Six. Following the interviews, we collected secondary information to help determine the quantities of resources used by each method. This included:

- Water and electricity rates to calculate the total volume of water and electricity consumed by each laundry service business
- Weight and volume of standard scoops or sachets for various brands of detergent, fabric conditioner and laundry soaps
- Specifications for washing machines and dryers, including program time, power draw and water consumption. This was used to calculate the electricity consumption of individuals washing by machine and the electricity consumption of dryers used by laundry services⁵.

We used the quantitative information to estimate resource use per kilogram of clothing washed, which enabled comparison between the three methods.

Results and discussion

Through interviews and participant observation, we estimated the resource consumption associated with three laundering methods and explored the personal perspectives of participants and their social context. We present the findings for these three aspects in order, starting with the findings for resource consumption.

Material consumption

Participants washing clothing by hand used buckets and laundry basins filled with cold tap water to clean clothing manually with the aid of washing powder, fabric softener and laundry soap. Some participants used plastic boards to apply laundry soap.

Participants used a variety of different types of washing machines, including manual

⁵ Participants provided details of the brand and capacity of their machines (and the way they use them) and we researched the specifications for those machines as much as possible. However, in several instances locally based washing machine brands could not provide specifications for their washing machines and in these cases we used specifications for similar machines.

(wash only) machines, twin tubs (wash and spin separately) and fully automatic machines. Those using machines also used washing powder and fabric softener. All individuals interviewed hung their clothes out to dry. Laundry service shops typically used domestic sized washing machines and dryers, as well as irons and drew their detergents from bulk supplies. In this section we have benchmarked the resource consumption for each business and individual participant. These include: the water, energy and detergents consumed in the laundering process. We also estimated the associated labor time and financial costs, as these are likely to be important factors for participants when considering alternative washing methods.

Water

Access to water can be an important factor for deciding on a laundering method. Amongst our participants, we found that hand washing is likely to use the least water, while laundry services and machine-washing at home appear to use a similar volume of water (see Figure 14). However, it should be noted that the results for laundry services were determined from actual water bills, whereas water consumption for machine-washing at home was estimated from product specifications and participant responses. We nevertheless assume both data strategies to be sufficiently robust to allow for comparison.

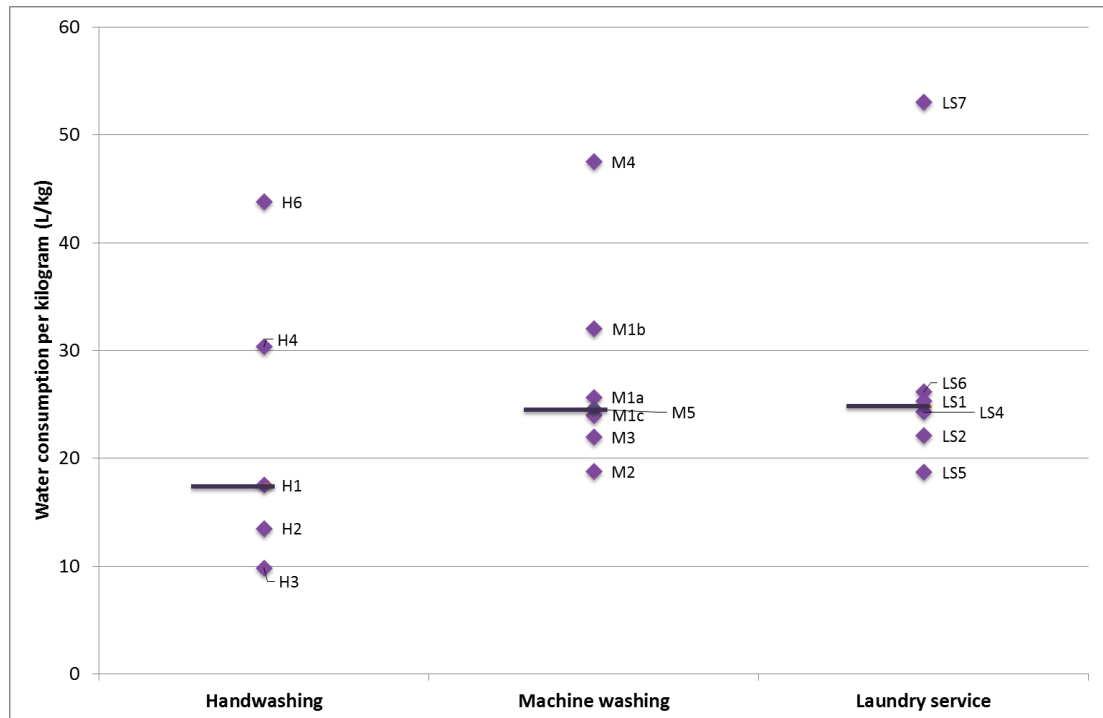


Figure 14: Water consumption per kilogram of clothing for three laundry methods in the Philippines in liters per kilogram (L/kg).

Note: Horizontal bar indicates median. No water use data was available for LS3. See Appendix Six for tabulated results.

Water use results for laundry services are fairly consistent; five out of six laundry service shops used between 19 and 26 liters per kilogram of laundry. These results fit within benchmarks from Australian studies, which show that institutional laundries use 9 to 27 liters of water per kg (L/kg) of clothing (Brown, 2009). Laundries in Manila are at the less efficient end of the spectrum and this is unsurprising as they typically use domestic-sized machines, which limit the efficiency that can be gained by laundering large volumes. Only one of the laundry service shops used industrial-sized washing machines (20 or 50 kg capacity), the remainder used domestic-sized machines (7–11 kg capacity) and one shop even used very small machines between 3.5 and 5 kg capacity.

The bulk of machine-washing users were estimated to use between 17 and 32 L/kg, which reflects the widespread use of top-loading washing machines. Based on data⁶ from Pakula and Stamminger (2010), we estimate the average water consumption for washing machines is 25 L/kg in China, 30 L/kg in Japan and 35 L/kg in Korea. In China

⁶ Data from Pakula gives average water used per cycle, and assumes 4kg washing per cycle.

the highest water efficiency grade for a top-loading washing machine is <20 L/kg, with the lowest grade being <36 L/kg (Wang et al., 2014). However, this is much less efficient than front-loading (or drum) washing machines that are used extensively in Europe. A German study reports that average water consumption in washing machines shifted from 31 L/kg in the 1980s to 10 L/kg in 2004 (Rüdenauer et al. 2005). Currently in Australia (and elsewhere) the highest efficiency machines use 6.5 to 8 L/kg (Australian Government, 2016).

Considering these much lower water efficiency benchmarks from elsewhere in the world, both individual washing machines and laundry services have the potential to significantly improve water use efficiency in the future if they were able to make the upfront investment in more efficient appliances. However, due to the use of old machines in households, it will take much longer for individuals to catch up with water efficiency advances. In hand washing there is more variability due to the different size of vessels used for washing, different practices regarding the number of rinses and the amount of water used in rinsing. The hand-washing results are also subject to greater uncertainty as the results relied upon participants estimating the weight of clothing they normally wash.

Detergents

In Figure 15, we have aggregated the quantities of laundry powder, laundry soap and fabric softener used by each of the study participants to give an overall view of detergent use. Participants washing by hand tended to use more detergent than laundry services or those using a machine at home. Note that this comparison does not take into account whether detergents are concentrated or otherwise. All of the participants in the hand-washing study used fabric softener, while this was less consistently used among machine washers and at laundry shops. In addition to fabric softener, around half of the people hand washing used laundry soap in addition to powder detergent and fabric conditioner.

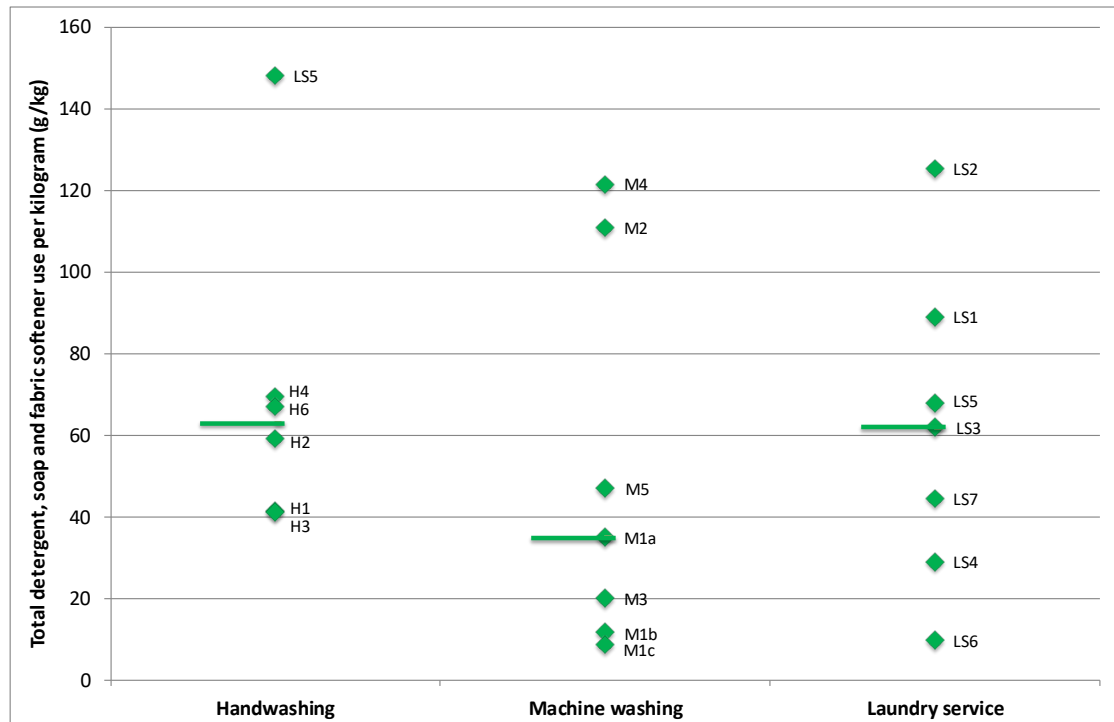


Figure 15: Consumption of clothes washing products (powder, soap and fabric softener) per kilogram of clothing for three laundry methods in the Philippines

Note: (g/kg = grams per kilogram). Horizontal bar indicates median. See Appendix Six for tabulated results.

The spread of results regarding laundry powder consumption across the three laundry modes shows that user behavior is a major factor in addition to other contextual issues. For example, people washing by hand tended to come from lower socio-economic groups and used small sachets of laundry powder that could be purchased cheaply on an individual wash basis. These prepackaged amounts for a single wash can dictate the amount of powder that people use, whereas for machines and at laundry shops people were using scoops of powder from larger bulk supplies and their use was more variable.

Energy

The operational energy use associated with each laundry method includes the amount of electricity used for washing and drying, gas used for drying within laundry services and petrol used for transport of laundered cloth by laundry services. We find that laundry services use significantly more energy than machine-washing at home and this is primarily due to the need for dryers (see Figure 16). All participants laundering at home hung their clothes to dry.

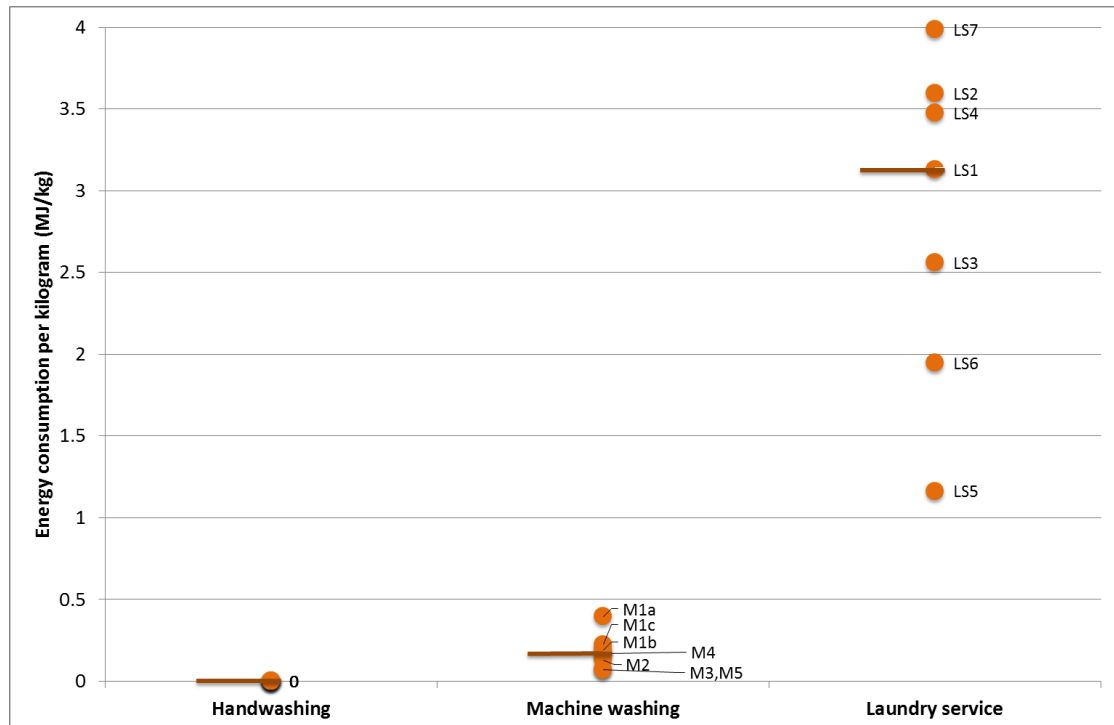


Figure 16: Energy consumption per kilogram of clothing for three laundry methods in the Philippines, in megajoules per kilogram (MJ/kg).

Notes: Horizontal bar indicates median. See Appendix Six for tabulated results.

Another reason for the substantial difference in energy consumption is that the results for laundry services are more complete. The electricity consumption for the laundry service shops was calculated from their average electricity bills, which means they included not only washing machine operation, but also ironing presses, lights and any other appliances in use in the shops. The electricity consumed by machines used at home was calculated from machine specifications for power draw and program time, and therefore only reflects the electricity consumption of the machine itself. Transport was only a minor contribution to overall energy use. All of the laundry service shops collected and delivered laundry to their customers on foot whenever possible as their customers were typically located near to or within the same condominium building and were able to transport the laundry by walking with trolleys. Five of the seven shops interviewed conducted their washing and drying on-site. The two shops dealing with the greatest quantity of laundry carried out their operations elsewhere. One of these two shops explained that their laundry operations were located a three minute drive away and we have therefore included an estimate of the transport required in their total energy consumption.

The results for machine-washing at home reflect the use of older style top-loading machines, most of which were semi-automatic. Of seven machines in the study, one was a twin-tub, five were wash only (no spin function) and only one machine was fully automatic. Most of these machines used between 0.07 and 0.23 megajoules per kilogram (MJ/kg) of clothing. Based on figures⁷ in Pakula and Stamminger's (2010) study, we estimate that the average energy use for washing in China and Japan is 0.09 MJ/kg and 0.33 MJ/kg in Korea. Chinese grades for washing machine energy efficiency range from <0.04 MJ/kg to <0.12 MJ/kg (Wang et al., 2014). This suggests that the machines used by participants in this study were quite energy inefficient; however, in many cases it may be due to the way the machine is operated. For example, some people only put a small volume of clothes in the machine, and others used manual settings and set long program times. However, as these machines were older it is not surprising that they were less energy efficient. Total energy consumption at the laundry shops was significantly higher and more variable, with consumption between 1.16 MJ/kg and 4 MJ/kg. As mentioned, this is due to gas/electric clothes drying in addition to other appliances in use.

In this study, we have focused on operational energy consumption, however production energy consumption or embodied energy can also be significant. While some studies have found that the embodied energy of a washing machine represents just a small component of the overall life cycle, about 1 to 4% (Bole, 2006), others find that the relevance of embodied energy is increasing due to operational efficiency and for more modern machines is around 16% to 25% of life cycle energy (Garcia, 2013). This is due to a shift in materials use (more electronics), changes in washing temperatures, and trends influencing load size (Rüdenauer et al. 2005). The electronic components of washing machines have major environmental impacts due to their extraction and processing (Garcia, 2013).

Materials / Machine utilization

While we have not examined embodied energy or other resource intensities in this study, a useful proxy for comparing the productivity of the embodied resources in washing machines, is the intensity to which machines are utilized. We have compared

⁷ Based on average electricity per wash cycle, assuming 4kg washing per cycle

the total number of washing loads carried out per month by the participants washing clothes at home with the total number of loads carried out by the laundry service shops. We have also determined a utilization rate for each machine in the study⁸, and found that people using machines at home use them for 1% to 3% of their useful time, while laundry services use them significantly more, with utilization rates between 16% and 87%. The detailed results for each participant are provided in Appendix Six.

These results can be considered in conjunction with the expected lifetimes of machines. Interviewees at laundry shops and people using machines at home were asked how long they expected their machines to last. People using machines at home estimated machine lifetimes of 5 to 10 years. Operators at laundry shops seemed to have similar expectations with five (out of seven responses) anticipating machine lifetimes between 5 and 12 years. Just two laundry shops had low, but perhaps more realistic, expectations for machine lifetime of around 2 to 3 years. This suggests that the higher machine utilization in laundry service shops does not necessarily reduce the lifetime of machines.

Another material and waste issue for laundry services is the use of disposable plastic bags. In this study, we found that laundry services use one plastic bag for every 3 to 10 kg of washing. We did not quantify packaging for detergents or other products; however, we note that people hand-washing use many small plastic sachets. These sachets represent a significant waste issue, such that Unilever is now trialing technology to recycle them in Indonesia (Kaye, 2017). People using machines use medium sized plastic containers and laundry services often used sacks of detergents. Bulk purchasing of detergents may reduce packaging waste.

Cost and time

In Manila, laundry shops are ubiquitous and compete for customers in densely populated areas. As such their rates are very similar and are generally between 25 and 35 Philippine pesos (PhP) per kilogram (~0.5–0.7 USD/kg). We can compare this with the cost of doing laundry at home either by hand or by machine. In Table 18 we have calculated two estimates for the costs associated with each laundry method. In the first row, the “cost to consumer” is the apparent cost of detergent, water, electricity and

⁸ For this we have assumed a maximum machine use time of once per hour, for fifteen hours a day, seven days a week, which we establish as 100% utilization equal to 450 uses per month.

machines or the cost of the service. The second estimate draws on information from participants regarding the time spent washing, as well as our own estimates regarding the time spent hanging, collecting and folding laundry. In the second row, we add our estimates for labor costs to the “cost to consumer” to provide an overall comparison of the three methods adopted by participants. Detailed results and assumptions relating to these calculations are provided in Appendix Six.

Table 18: Cost estimates for three laundry methods in Philippine pesos (PhP)**

| | Hand washing | Machine washing | Laundry services |
|------------------------------------|---------------------|---|-------------------------|
| Cost to consumer (PhP/kg) | 6–11 | 3–5 (old manual machine), 10–26 (semi-automatic and auto machines) | 25–35 |
| Cost + labor value (PhP/kg) | 29–66 | 10–12* (old manual machine), 16–32* (semi-automatic and auto machines) | 25–35 |

*Note that labor estimates for old manual or semi-automatic washing machines do not include in-process labor such as carting water to fill the machine or manual rinsing or wringing

**In 2017, 1 USD is worth approximately 50 PhP

We find that while laundry services have the highest apparent cost to the consumer, if we incorporate the value of the labor time, washing by hand becomes as expensive as a laundry service and can be much higher at 29 to 66 PhP/kg. Washing with a machine at home can also be as expensive as a laundry service (up to 32 PhP/kg), especially considering that these estimates do not include the labor associated with using an older style machine, such as manual rinsing or wringing. This indicates that laundry costs may be similar across the three methods. Choosing to use a service or not may partly depend on the availability of work for women. For some participants, doing the laundry was almost a part-time job. For those hand washing for a family, it is at least a day’s work per week and for one woman, it was 20 hours a week. The cost of electricity is also likely to be a factor, as the Philippines has one of the highest electricity tariffs in the world (Tiglao, 2014).

Personal perceptions of washing methods

In order to understand the personal aspects of laundering, such as individuals' perceptions, dispositions towards different methods and their skills and competencies, we asked participants why they choose to use a certain method of laundering, what their perceptions were regarding people who use other methods and how they thought things might change in the future. We have used codes to indicate different interviewees, where M = machine user, H = person washing by hand, LS = laundry service user. The description of each interviewee is provided in the Appendix Six.

Of the six households interviewed that washed clothing by hand, five were from a lower socio-economic background, and one was a maid undertaking hand washing within a middle-upper class home. Only one participant relied exclusively on washing by hand. Other participants tended to wash their clothing by hand, but used machines for sheets and towels. Regardless of background, most participants felt that hand washing was much cleaner than using a machine and several complained that machines do not remove stains. The maids in a wealthy home (M1) explained that even though she washes the clothes of her employers in a machine as part of her job, she still washes her own clothes by hand so that she "can be assured of being clean". As such, she considered her hand washing skills to be superior to the work of the machine. Another participant explained that water is not piped into the machine and a lot of effort is required to fill it by carrying buckets from the tap; this means she prefers to wash by hand (H4). Another participant explained that she preferred to hand wash to avoid a large electricity bill (H5).

Participants washing by hand tended to be wary of laundry service shops as "the machine doesn't make it as clean" (H1, also H2, H5), "you can't see how they do the laundry" (H3), "they don't separate different colors" (H5), and they "might mix clothes from different people" (H3). For these reasons, the majority of people washing by hand did not want to try using a laundry service. Only one participant suggested she might use a laundry service to wash large items such as sheets. None of the participants mentioned cost as a factor, although this would also likely be a barrier. Participants washing clothes with their own machines had similar perceptions of laundry services and were mostly concerned that their clothing might get mixed with other people's clothing in the washing process. This seems to reflect a general concern about

cleanliness, shared by most hand and machine-washing participants in this study, particularly with regard to clothing (rather than sheets or towels). Note that all laundry service operators insisted that they never mixed clothing from different customers.

Several observations point to the pride that participants took towards their laundered clothes. The mistrust of machines and laundry services highlights the importance of cleanliness, and the confidence participants have in their hand-washing skills. As Shove suggests, “senses of self are very much at stake in the handling of laundry” (Shove, 2003a, p. 119). This identity is also strongly linked to judgments about standards of cleanliness, personal appearance and domestic skills (Shove, 2003a). Several participants only washed clothing by hand, and used a washing machine for sheets and towels. This may be due to the difficulty of hand washing larger items, but also may be due to the greater importance of cleanliness and caring for clothing. Four of the six hand-washing participants carried out their washing in a communal area, such as communal courtyards in between apartments. People who owned washing machines also placed these in the common courtyards. This means that the laundering method and energy expended in laundering were readily observable by their neighbors, adding an element of performance and pride.

Social context

To understand the social context of different laundering methods we drew on individuals perceptions of different laundry methods and asked laundry service operators how people perceived their service and who their customers were. The laundry shop owners indicated their customers tend to be university students and younger people working in offices, all of whom live in high-rise buildings and are likely to be middle to upper class in Filipino society. Around half of the laundry service shops thought that people perceived benefits in using a laundry service, such as saving time, “saving on the water bill” (LS8) (as “water in the tower is expensive”) (LS3), or because “it’s cheaper than doing it at home” (LS3). Other shops pointed to necessity as people in Manila lacked space or lived in buildings with no facilities. One said, “it’s cleaner and cheaper to do it yourself. Students don’t have time to do it themselves” (LS2). Several thought that families tend to have a maid do their clothes washing and that it was cheaper to have a maid wash clothes by hand. One participant thought the main benefit was the fact that it is hassle free “it’s like instant noodles” (LS6).

All individual study participants were women and were either laundering for their jobs as maids or laundered for their families. The majority of laundry service shops were also operated by women, with just two exceptions. This aligns with the literature which finds that laundry is gendered and has a long association with female domestic labor and the housewife's identity (Shehan and Moras, 2006; Shove, 2003a). A study in the UK found that women contributed 92% of household laundry time in 1985 and this lowered only slightly to 84% in 2005 (Anderson, 2016). Laundry is still gendered in the Philippines as it is elsewhere in the world, however, similar to the history of commercial laundries in the west, men are more involved when laundry becomes a business (Watson, 2015).

One interviewee highlighted class distinctions, where “Class A and B⁹ don't use laundry shops... they have their own maids” (LS7). This and other interviewee comments throughout this study confirm a relationship between income levels and laundering methods, where low income households wash clothing by hand, the middle class use their own machines or laundry services and the upper middle classes employ maids to wash their clothes by hand. We have described this socio-economic relationship in more detail in the discussion and in Table 19.

Triggers for change

We are interested in whether urban Filipinos in the future are more likely to use laundry services or to buy their own washing machine and dryer. To examine this, we have drawn on participants' responses regarding their perceptions of the future as well as historical information regarding the drivers for changing laundering practices elsewhere in the world. In Table 19, we summarize the various aspects of laundering social practices, including the material, personal and social aspects, and we use this to identify the potential drivers of change.

Most of the people operating laundry services thought that more people would be using their services in the future for several reasons: the number of laundry shops has been growing rapidly in recent years, more high-rise condominiums are being built, “people are busy and working” (LS6) and there are likely to be more university students and

⁹ Filipinos commonly refer to people of different socio-economic classes as A, B, C, D and E. PinoyMoneyTalk (2012) suggests that A, B = 1%, C = 9%, D = 60% and E = 30% of the population.

working people. However, several interviewees thought that families and people owning a house would be unlikely to use a laundry service. “If people own their own house, they would want their own machines” (LS2). Several service operators thought that they were likely to continue to serve a niche of students and working people. As one explained, “In the long run, people will want to have their own machines, there are certain savings. But there will still be people using laundry shops” (LS8). Only one of the hand washing participants could envision change in the future, she said that maybe “in the future when people are busy and going to jobs, they will use laundry shops, but poor people will want washing machines” (H5).

Table 19: Social practice dimensions and potential change mechanisms for laundering practices in Manila, the Philippines

| <i>Income level</i> | Household type | Laundry method | Material | Personal | Social context | Potential mechanisms of change |
|---------------------------|-----------------------|--------------------------------|---|---|--|--|
| <i>Low income</i> | Individual | Hand washing | Low cost equipment, low cost to consumer Soap, powder and fabric softener are accessible Small living space | Hand-washing seen as cleaner Pride in washing skills Pride in appearance Mistrust of services Sense of self-sufficiency | Lack of work for women Traditional gender roles Washing performed in communal areas | Higher workforce participation for women Inexpensive washing machines more common |
| | Family | Hand washing, Home machine use | Old second hand machines are accessible Electricity available Small living space | | | |
| <i>Middle class</i> | Individual | Hand washing, Laundry services | Condominium living - lack of space and facilities Condo building regulations High equipment and electricity costs | Pride in appearance Hand-washing seen as cleaner Indifference | Work, lack of time Changing gender roles High-rise lifestyle Urban migration for university or work | New housing is built with self-contained (rather than shared) laundries Lack of space |
| | Family | Home machine, Maid | House ownership or condominium living Housing has space Machines are affordable | Pride in appearance Hand-washing seen as cleaner | Work, lack of time Labor is affordable | Shift from houses to more apartment and condo living Lack of available maids |
| <i>Upper middle class</i> | Individual & family | Maid | House ownership condominium living Housing has space | Pride in appearance Hand-washing seen as cleaner Skills of household helpers Service orientation | Labor is affordable | Higher workforce participation of women Lack of available maids |

In the future, the most important factors for changing from hand washing to machine washing or laundry services will be increased workforce participation of women, increased affordability of machines, changes in housing style and urban design and the availability of dedicated spaces for privately owned washing machines. Shove (2003a, p. 120) refers to the “decline of the servant classes” as a key driver of changes in laundering practices in the U.K. and United States. When this occurs in the Philippines, maids will no longer service wealthy households. Whether higher incomes will drive private ownership of appliances or whether there is a preference for laundry services may depend on housing form and the relative wage-earning potential of laundry service workers. The pride taken in appearances of cleanliness and the long history of gender roles may keep laundering as a practice that occurs within the home, particularly with the strong economic interests of machine and detergent producers in putting “machines in every home” as was the case in the United States (Shehan and Moras, 2006, p. 40).

Domestic washing machines are becoming more common and less expensive in the Philippines, and this is likely to lead to all lower and middle class families aspiring to own a machine. However, the potential dominance of individual washing machines depends on housing type, urban form and building regulations. If more families begin to live in apartments and condominiums there could be an expansion of laundry services due to space limitations in apartments. If newer condominiums begin to include space for a washing machine, they will also need to include a dryer as drying space is rare in small apartments and typically air-drying is not allowed on balconies. The second scenario with individual washers and dryers represents a significant increase in embodied energy and resources.

Our analysis of the time and costs associated with each laundering method found that if labor is considered, hand washing is equal to or more expensive than the unit cost of laundry services. This suggests that if more work becomes available for women, it will be more economical or time saving for them to begin using a machine in the household or a laundering service. However, our qualitative analysis suggests that decisions to use a washing machine or laundry services will not be purely economic, as laundering skills, pride and identity play an important role in hand washing. A shift towards machine use is likely to influence the meaning of laundering and may change standards

of cleanliness. As Shove explains, the washing machine can “rescript the meaning of clean” (Shove, 2003b, p. 405).

If change in the Philippines is similar to elsewhere, once workforce participation for women increases further, there will be fewer household helpers. The middle-upper classes will have the choice of purchasing a machine(s) and doing this labor themselves, or using external laundry services. However, both people washing at home and laundry service operators felt that people used laundry services due to necessity, where people lack space or time, and were primarily for use in high-rise condominiums. This suggests that if future housing is lower density, people may be unlikely to use laundry services.

Intervention points

There are several potential points of intervention to improve resource consumption associated with laundering in the future. As centers of laundering, laundry services present an excellent opportunity to improve resource efficiency by adopting more efficient machines, using renewable energy, rainwater supplies or even enabling synergies with other businesses or cooling systems. Some laundries we observed already cooperate with neighboring water-bottling businesses. New condominium buildings could provide a communal laundry space or laundry services, rather than equipping each apartment with individual laundering facilities. In high-density settings, laundry services can work particularly well due to minimal transport requirements. In medium density neighborhoods, such as those where many of the hand-washing participants lived, there is also an opportunity to facilitate communal laundries, as participants already use shared courtyards for laundering. In the future shared machines could be placed in these communal spaces. In medium and lower density neighborhoods, it may be more resource effective to discourage ownership of individual dryers (through monetary disincentives), and to include efficiency standards and warranties for washing machines, to ensure that individual machines are more durable and more water and energy efficient. In medium and lower density areas, operators of laundry services could be encouraged to localize their services. Policies and decisions regarding infrastructure have potential to influence social practices and contribute to reducing the impact of laundering in the future.

Conclusions

In examining laundry practices in Manila, the Philippines, we find that each laundry method is associated with different socio-economic classes and household and housing types. The overview of material, personal and social factors associated with different laundry practices provides insights into likely drivers of change in the future. Social factors such as women's workforce participation will be important for shifting away from hand-washing. Female work is also significant at other income levels, particularly if more work for women means that maids become unavailable. In addition, material factors such as housing form, building regulations and available space may be significant factors influencing laundering methods. Changes in laundry practices will result in differing impacts on resource consumption depending on laundry method. Washing clothing by hand uses the least water and energy, but significant amounts of women's time. Laundering at home with a washing machine uses a similar quantity of water to laundry services in Manila, but far less energy due to the ability to air-dry clothes at home, rather than using a dryer. However, we can assume that embodied resource use is significantly higher for individual machine-washing at home, as utilization rates are much lower compared to laundry services, particularly if individual households also own dryers. Key intervention points to reduce resource consumption of laundering include: standards for new machines, assistance for laundry service shops to improve efficiency, and requirements for buildings to enable communal laundering spaces. These findings illustrate the social complexity of transitions to product-service systems, and the interdependencies between their social and environmental impacts.

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CHAPTER SEVEN:

PAPER IV

Transitions to sharing? Barriers and enablers for collaborative consumption in Southeast Asian cities

The paper presented in this chapter has been submitted to a journal for review and has the following citation.

Retamal, Monique, and Karen Hussey. submitted. "Transitions to sharing? Barriers and Enablers for Collaborative Consumption in Southeast Asian cities."

Abstract

Collaborative consumption (CC) businesses may offer an opportunity to develop less resource intensive modes of consumption through shared-access to goods and services. The emergence of these businesses in rapidly growing economies in Asia therefore presents a potential contribution to sustainable consumption and production goals. Understanding the barriers and enablers for these emerging business types can provide important information for policymakers on how to support transitions to more sustainable consumption. In this study, we use the multi-level perspective framework to examine the socio-technical regimes influencing CC businesses in Hanoi and Bangkok, by drawing on document analysis and semi-structured interviews with policymakers, SCP experts, business owners and managers. We found there to be high level policy support for sustainable consumption and production activities in both countries with many new laws and strategies being developed. However, the most significant barriers appear to be social norms regarding ownership, commercial norms, and business concerns such as a lack of access to finance. In both countries, there is a lack of legal definitions and appropriate business permits for collaborative consumption businesses, particularly with regards to transport sharing. For policymakers in Asia interested in supporting these business types, it will be important to establish an appropriate legal framework and undertake awareness raising campaigns to shift consumer perceptions.

Introduction

Collaborative consumption and the related ‘sharing economy’, have garnered attention due to their potential to create new markets (Botsman and Rogers, 2010; Martin, 2016; PWC, 2014; Woskowsky, 2014), offer sustainable consumption options (Heinrichs, 2013; Matzler et al., 2014), and for the challenges they pose to regulators and policymakers (Schor, 2014; Woskowsky, 2014). While the literature has focused on the rise of collaborative consumption (CC) in western developed countries, the trend is also appearing in emerging economies (Retamal, 2017). With claims that collaborative consumption offers a more sustainable alternative to mass consumption, its use in rapidly growing economies in Asia is significant. In the west, CC businesses have faced considerable opposition and policymakers have had to respond rapidly (Schor, 2014;

Zon, 2015). There is a lack of literature examining CC in emerging economies and the barriers they are likely to encounter in different institutional contexts. Recognising that gap, this study examines the barriers and enablers to collaborative consumption in two Southeast Asian cities, using the framework of multi-level perspective (eg. Geels 2004, see below).

The potential for CC to enable sustainability benefits has particular significance in Asia, which has the fastest growing consumption in the world, and a rising middle class seeking to improve their lifestyles through greater access to consumer goods (Schandl and West, 2010). While interest in CC/ the sharing economy in developing countries is growing, there are very few studies examining their use (Hira, 2017; Hira and Reilly, 2017). Retamal (2017) found that CC businesses are emerging in Southeast Asian cities but remain a niche mode of consumption. As one of the UN's Sustainable Development Goals is to encourage sustainable consumption and production patterns (United Nations, 2016), it is relevant to understand the conditions under which CC businesses achieve environmentally sustainable outcomes, as this may help to support transitions to more sustainable consumption. Indeed, rapid economic growth in industrialising Asia means that new socio-technical systems are being developed and embedded, and these transformations may provide opportunities to develop more sustainably (Berkhout et al., 2009).

Definitions

Businesses that offer customers access to goods through short-term rental, or offer services that can replace physical products, are expected to significantly reduce the resource intensity associated with consumption (Tukker and Tischner, 2006a). These business types align with definitions of collaborative consumption, as “temporary access non-ownership models of utilizing consumer goods and services” (Belk, 2014, p. 1595), and can also relate to the sharing economy. However, sharing economy definitions can be much broader (Martin, 2016), and may focus more explicitly on customer-to-customer (C2C) transactions (Codagnone and Martens, 2016; Frenken and Schor, 2017). Short-term renting and servicing business models are also a subset of product-service systems (PSS), which have been discussed in the academic literature for around twenty years (Goedkoop et al., 1999; Mont, 2002; Stahel, 1997a; Tukker, 2015). PSS research has focused more on business to business (B2B) examples, due to a lack

of uptake with business-to-consumer (B2C) offerings (Tukker, 2015). However, the recent surge in B2C businesses offering shared-access to goods such as cars, bicycles, clothes and so on, represents a popular manifestation of PSS enabled by the internet, which we refer to as “collaborative consumption”. In this paper, we draw on literature from PSS and the sharing economy as appropriate and available.

Barriers for sharing businesses

PSS is a more developed field of enquiry with regard to examining barriers to uptake of sharing related businesses. Tukker & Tischner (2006a) emphasise the influence of socio-technical regimes and embedded institutions as barriers to change. Mont & Plepys (2008) find that uptake of sustainable PSS is influenced by a range of factors other than individual rationality, including social norms, psychology and institutional arrangements. Tukker & Tischner (2006a) and Ceschin (2013) suggest that the success of sustainable PSS will require a significant shift in the established institutional environment, to overcome corporate, cultural and regulatory barriers. Wong (2004) highlights the importance of cultural factors with regard to consumer acceptance of PSS in developed countries. Mont (2004) examined the normative and regulatory institutions surround three business types: car sharing, washing services and tool sharing. Their study found that an appropriate regulatory framework would be essential to stimulate investment in these business types, and that uptake is hindered by socio-cultural expectations regarding material prosperity (Mont, 2004). Vezzoli et al. (2015) reviewed barriers to the diffusion of PSS businesses and found that small businesses face difficulties with financing due to the uncertain cash flows associated with renting. The greatest barrier to PSS was the cultural shift required to move away from “owning” goods, along with the low cost of purchasing goods (Vezzoli et al., 2015). The legal and political struggles faced by major sharing economy players have been topical, and are often driven by resistance from incumbent industries, or are due to undesirable social impacts (Martin, 2016; Schor, 2014). This review highlights the importance of various socio-technical regimes on uptake of sharing business models, including the: socio-cultural, commercial and governance regimes.

While these studies provide some background to the likely barriers faced by collaborative consumption businesses in developed economies, these issues are context specific and there is a lack of literature examining barriers and potential enablers in

emerging economies (Vezzoli et al., 2015). Similarly, in literature regarding transitions in developing economies, there is much less focus on shifts relating to social practices, innovations and behaviour change (Wieczorek, 2017).

Research questions and contributions

In this study, we set out to examine the barriers and enablers for collaborative consumption businesses in two rapidly changing Southeast Asian cities – Hanoi and Bangkok. As suggested by the literature, we examine the socio-technical regimes and institutional context in which these businesses operate. The key research questions are:

RQ1: How do the dominant socio-technical regimes in Hanoi and Bangkok enable or constrain collaborative consumption in those cities?

RQ2: How durable are those regimes in each city and how do they differ in relation to the prospects for collaborative consumption in both cities?

RQ3: What are the potential ‘levers for change’ that can be used to support CC businesses in these emerging economies?

This paper contributes to literature regarding: (1) transitions to CC/ the sharing economy, and specifically in emerging economies; (2) transitions studies examining social innovations in developing countries; and (3) place-specific insights into potential sustainability transitions.

Multi-level perspective framework and transitions in Asia

This study draws on the “multi-level perspective” (MLP) framework (Geels, 2004; Geels and Schot, 2007; Rip and Kemp, 1998), which is a three-tiered model to describe socio-technical transitions. Using this framework, collaborative consumption businesses can be described as niche innovations, which demonstrate alternative means of providing goods and services, outside of dominant regimes (Berkhout et al., 2009; Geels and Schot, 2007). As innovations that propose a radically different means of provision and consumption, they face significant barriers entering the mainstream, as these niches need to contend with the dominant socio-technical regimes (Geels, 2004). ST regimes sit at the mid-level of the framework, and for each regime, there are a set of relatively stable institutions, practices, actors and artefacts that reinforce existing socio-

technical systems (Berkhout et al., 2009; Markard et al., 2012; Rip and Kemp, 1998). At the highest level, regimes are influenced by the socio-technical landscape in which they are situated, including the physical, political and economic environment (Berkhout et al., 2009). As regimes are often locked-in, changes occur when established regimes are destabilised and transformed, through pressure from the landscape or niches (Markard et al., 2012).

Reviews of the sustainability transitions literature highlight the benefits of drawing on established theories in other fields, including institutional theory (Markard et al., 2012; Wieczorek, 2017). There are significant commonalities between the concept of socio-technical regimes and that of institutions (Andrews-Speed, 2016) . As,

“institutions are persistent, predictable arrangements, laws, processes or customs serving to structure political, social, cultural or economic transactions and relationships in a society. They may be informal or formal...” (Dovers and Hussey, 2013, p. 14).

Informal institutions can be described as “sanctions, taboos, customs, traditions and codes of conduct” (North, 1991, p. 97), and as such are more embedded in tradition and culture and they change more slowly (North, 1990). Formal institutions include “constitutions, laws, property rights” (North, 1991, p. 97), which can change quickly when laws change (North, 1990). Ahlstrom & Bruton (2010) argue that for economies in transition, institutions are much less durable and evolve quickly and less predictably. Similarly, transitions studies find that socio-technical landscapes and regimes are less distinct, and regimes are less uniform in developing economies (Wieczorek, 2017). In particular, regimes in emerging economies in Asia appear to be changing more quickly, and more simultaneously than elsewhere (Marcotullio 2005). As complex changes are occurring, analyses of transitions need to be place-specific (Wieczorek, 2017). In this study, we use the MLP framework with a focus on institutions, specifically considering their durability and propensity to change. We also consider ST landscapes and regimes together, as the boundaries are often indistinct; and we situate the research specifically within the cities of Bangkok and Hanoi using empirical research.

Our analytical framework has been adapted from frameworks developed by Sue et al., (2014) and Outhred (2007) in their analysis of energy systems and encompasses the

relevant regimes highlighted in the literature - see Table 20. The subsequent analysis is structured according to these four major regimes.

Table 20: Socio-technical regime framework.

Adapted from Sue et al., (2014) and Outhred (2007)

| Regime | Role |
|---|---|
| Socio-cultural | The social and cultural context in which businesses, governments and other organisations operate. This includes attitudes, perceptions, cultural norms and expectations that influence consumption in these cities. |
| Governance | The set of formal institutions, legislation and policies that govern shared-access and service businesses. |
| <i>Political, economic and administrative</i> | Political and economic climate, administrative processes, and government capacity to enact, regulate and enforce policy and overarching legislative and regulatory regimes. |
| <i>Policy and legislative</i> | Legislative frameworks enacted by national governments that affect businesses and consumers; also includes non-legally binding policies and programs that influence businesses (the latter could include information campaigns, market incentives, labelling schemes etc.) and prioritise where financial and human resources will be expended. |
| <i>Regulatory</i> | Regulatory arrangements that prescribe and enforce specific legal requirements for businesses. |
| Commercial | Commercial arrangements that determine how businesses operate. This includes both formal and informal market rules and could include issues such as business ownership and tenure arrangements, tax systems etc. |
| Technological / physical | Technology and infrastructure which contributes to or supports the environment in which businesses operate. This includes the streets and public transport system, residential buildings, waste management and recycling facilities, provision of information and communication technologies. |

CC encompasses businesses in multiple different sectors, for example: transport/mobility, housing, clothing; and in each sector, there are specific socio-technical regimes. In this study, we offer an overview of the likely socio-technical barriers and enablers across a variety of CC businesses in Hanoi and Bangkok, with some further detail in key sectors.

Methods

This study draws on four months of field research in Hanoi and Bangkok, where we undertook forty-two semi-structured interviews. Socio-technical regimes embody the “beliefs, values, expectations and cognitive routines of the various actors” (Andrews-Speed, 2016, p. 217). We therefore interviewed a variety of relevant stakeholders (detailed in Table 21) as important socio-technical regime actors. The focus was on businesses offering business to consumer (B2C) exchanges and these tended to be small to medium enterprises, including bikeshare, rideshare, tool, toy and fashion rental amongst others listed in Table 21.

Table 21: Number and type of interviewees in Hanoi and Bangkok

| Interviewee type | Hanoi | Bangkok |
|---|---|--|
| Policymakers | 6 | 3 |
| SCP practitioners and experts | 1 x multilateral organisation 1 x NGO 5 x academics/consultants | 2 x multilateral organisation 3 x academics 2 x consultants 1 x donor agency 3 x business associations |
| SME offering collaborative consumption from business to consumer (B2C) | 1 x rideshare (C2C) and taxishare (B2C) | 1 x bikeshare |
| | 5 x laundry services | 1 x tool rental |
| | 1 x toy rental | 1 x designer bag rental |
| | 1 x (planned) bikeshare | 1 x baby equipment rental |
| | | 1 x fashion rental |
| Large business owner (B2B) | - | 1 x lighting company (offering lighting as a service) 1 x carpet company (experience with carpet as a service) |
| Total | 21 | 21 |

We analysed the interviews qualitatively according to the socio-technical regimes framework set out in Table 20, and according to emergent themes. In the analysis, comments are attributed to the broad category of interviewee type, such as “SCP expert”, “CC business operator/owner” or “large business owner” as an ethical

consideration to preserve interviewee anonymity. For further details regarding the method see Appendix Seven.

Results & Discussion

Socio-cultural regime

Attitudes towards ownership

Cultural attitudes towards ownership emerged as a key barrier to uptake of sharing businesses in both cities. Interviewees from an **NGO** working with community groups explained that the dominant Kinh ethnic group had a strong preference towards ownership in their culture whereas ethnic minorities such as the H'mong, Dao and Ede people have a "strong community feature of their culture" that may be more amenable to sharing. H'mong people and other minorities in Vietnam are known for their collectivist culture (Wenner Conroy, 2006). When discussing the potential for sharing rather than owning, most interviewees contended that it was unlikely to work in Vietnam. As **policymakers** commented, "Renting is very limited in Vietnam, and it's difficult to find", and Vietnamese "want to sell or buy and be finished with commitment right after that". An **SCP expert** explained that Vietnamese people would be concerned about sharing expensive items as people may not take care of them or may even steal parts.

In Bangkok, an **SCP expert** suggested that, "Thai people still want to own products" and noted that price remains an important consideration. Another **SCP expert** concluded that the main obstruction to sharing and renting businesses was "the mindset of people who have difficulty with the concept of renting or paying a subscription". Some **business owners** and **SCP experts** thought that in Thai culture, people would normally borrow from their neighbours rather than rent goods. There were diverging views among **SCP experts** in relation to whether car and ride sharing would succeed in Thailand. Cars are seen as status symbols that families aspire to purchase and, in addition, the car is seen as a private, individual and safe space. One expert explained "for Thai people, their personalities are expressed inside their car; they decorate them so the space is more personal... people don't want anybody they don't know inside their car". However, in contrast, some **SCP experts** pointed out that Thai people are already

accustomed to using semi-formal shared forms of transport, such as motorcycle taxis, van taxis and Songthaew (pick-up trucks).

Lack of awareness / familiarity with CC

In Hanoi, **policymakers** did not think that Vietnamese people would be familiar with sharing type businesses, and businesses would need to “change people’s minds” if they wanted to increase their customer base. In a study of people’s willingness to use CC in Europe, Möhlmann (2015) found that utility, trust, cost savings, and familiarity were essential. SCP practitioners in Bangkok reported that as the middle class are earning more, their expectations are increasing and their consumption is increasing accordingly. Growing consumerism is at odds with the “sufficiency economy” philosophy, which has been promoted by the King since 1974 and has been incorporated into a series of National Economic and Social Development Plans (NESDB, 2011). Awareness of sustainable consumption and production is just beginning in Thailand, prompted by promotion from the Ministry of Natural Resources and Environment (MoNRE). Policymakers highlighted that while awareness is growing, Thai people are not yet choosing green products.

Repairing

While sharing and renting businesses are uncommon in Hanoi, there is a very strong culture of repairing goods. Product longevity and repair are important aspects of sustainable CC (Retamal, 2017). Various interviewees explained supported the notion that “everything can be repaired in Vietnam” (PM). **Policymakers and SCP experts** acknowledged that this is due to economic reasons, and one explained the history, “in the past, Vietnam went through 50 years of isolation from the world economy and everyone had to save everything they had”. In Bangkok, a **policymaker** observed that while repairing is still popular, this is not the case for electrical and electronic goods, “young people just don’t care about repairing, they might have 2-3 phones”. While repairing goods is still culturally strong in Vietnam, the practice of repairing may be changing in Thailand, with young people less likely to repair or maintain.

Living arrangements

Family structure and size of living quarters appears likely to influence whether sharing happens within the family unit or through a business. **Policymakers and SCP experts** noted that, in Vietnam, large family groups often live together. In Hanoi, the average household size is 3.8, however in other regions the average household size can be as high as 4.5 (GSOV, 2012c). Accordingly, family groups already have the opportunity to share many household goods with extended family in the same home. However, young people are often looking for opportunities to live separately from their parents (various interviewees). These young people, living on their own, or in smaller family units may be the most likely market for collaborative consumption with several **CC business owners** commenting that small families or people renting a house are more likely to rent goods. However, this would often be a short-term arrangement until those people are ready to buy a home. Sharing and renting appears to be more useful or acceptable amongst smaller family units. In Bangkok, **SCP experts** expected single people and small families living in apartments and condominiums to be more likely to make use of services outside the home. Household sizes in Bangkok are already smaller than in Hanoi, at 2.7 occupants (NSO, 2010).

Changing lifestyles and attitudes

A **policymaker** in Hanoi explained how attitudes towards services have been changing, where in the past paying for a service would feel uncomfortable, because of

“the idea that you are exploiting people to do a service for you. Before, when there was socialism, everybody was equal and you had to do things for yourself. To pay for something, even having a maid, society looked down on that. However, this is changing.”

Now it is much more common for people to have maids in Vietnamese cities. An older **policymaker** lamented the change from socialism to the present day, “before there was more sharing, more exchange of information, and more get-togethers”.

In Hanoi, only the **rideshare business** identified with the global trend of ‘the sharing economy’, and predicted that customer to customer (C2C) sharing would be the trend for the future, as it can be much cheaper. However, “the challenge is developing trust

between participants” and he concluded that “the market in Vietnam is not mature enough for C2C”. Several **SCP experts** considered that sharing models could work in the future “if it is very convenient”, “practical and easy to access”, and if people can save money. **SCP experts** also highlighted that “Vietnamese people are very adaptive and open to change” and that “young people are more open to sharing, also sharing of knowledge”.

In Bangkok, **academics** highlighted a shift that had occurred in the labour force, where “before, every house had a maid in Thailand, but now things have changed”. Thai women would now prefer to do other work, so there are fewer housemaids available. This suggests a decline in household services. With regards to consumption patterns, an **SCP expert** suggested that social norms are changing quickly and that young middle-class people in Asia use information technology quite intensively, making them more receptive to internet based businesses. An older **business owner** thought that sharing could become a trend in Thailand, starting with the younger generation.

Two **business owners** renting designer bags and fashion noticed that customer attitudes have changed, as initially people did not accept the idea of renting; however, customer numbers have been continuously increasing, as people “know they have ability to buy, but they get bored very fast, and instead of buying renting is better”, and “people’s perspectives have changed... people thought they could buy something once and use it many times, but now people don’t use them as many times.”

Socio-cultural regime summary

The socio-cultural barriers and enablers for each city are summarised in Table 22. Common barriers across both cities were a standard preference for owning goods and a lack of awareness of sustainable consumption or sharing businesses. These barriers are similar to PSS studies from Europe that found cultural expectations of ownership were a major barrier (Mont, 2004; Vezzoli et al., 2015), along with awareness and acceptance (Laukkanen and Patala, 2014). However, multiple socio-cultural changes are occurring, particularly in Hanoi, with changing living arrangements, uptake of new technology, and services becoming more acceptable. Attitudes are also changing in Bangkok, where renting is becoming more acceptable, and unlike Hanoi, the practice of repairing goods is fading, which signals shorter product lifetimes. A distinctive enabler for use of CC in

Hanoi may be for young people moving out of the extended family home, because they lack essentials.

The socio-cultural regime primarily consists of informal institutions, which according to North (1990) are more durable. However, our findings indicate numerous changes are occurring. This is in line with Ahlstrom & Bruton's (2010) research, who highlight that institutions evolve more rapidly in transition economies; and Marcotullio's (2005) research, which found rapidly changing regimes in Asia. The exception to this appears to be the preference for ownership, which may only be changing very slowly and in relation to particular goods.

Table 22: Summary of socio-cultural barriers and enablers in each city

| BARRIERS | ENABLERS |
|---|---|
| HANOI | |
| <ul style="list-style-type: none"> • Preference for ownership • Lack of trust in relation to the potential misuse of goods • Lack of familiarity with sharing type businesses • Historically uncomfortable with services owing to previous socialist political regime, with informal sharing being more common and 'acceptable' | <ul style="list-style-type: none"> • Young, small families may be most likely to rent • Strong culture of repairing and maintaining goods • Large families live and share together • Changing attitudes, services more acceptable • Vietnamese people are very adaptive to change |
| BANGKOK | |
| <ul style="list-style-type: none"> • Preference for ownership • Lack of awareness of the principles behind sustainable consumption and production • Cars and private vehicles considered to be personal 'spaces' • Repair still popular, but not with young people | <ul style="list-style-type: none"> • Fits with existing lifestyles • Small apartments and a lack of space enables sharing (also long commutes, look for convenience of service) • Already using shared transport – songthaew, van taxis etc • History of household services • Young people use ICT intensively, more open to internet-based businesses • Changing attitudes, more people open to renting as consumption is faster |

Governance regime

Free market landscape

In interviews, policymakers in Hanoi preferred a free market approach. One **policymaker** explained “In the constitution, business is as free as possible ... with a market economy mechanism under the orientation of socialism”. This sentiment was shared by another **policymaker** in Hanoi, who indicated their support for sharing businesses and asked “but do we need to regulate or make them free?”. This reflects the layering of neoliberal market economics over a framework of socialism, and a distinctive shift from Vietnam’s history as a formerly planned economy. Berkhout et al (2009) refer to Thailand as a ‘capitalist developmental state’, where the government has facilitated very targeted development policies to enable trade and investment. Rock et al (2009) argue that this style of governance provides a powerful setting to enable sustainability transitions. Despite these differing orientations, both countries have various formal strategies, policies and laws to support sustainable consumption and production.

High level policies, but no specific support

In both Hanoi and Bangkok, there are a number of high-level strategies and action plans with the potential to promote sustainable business (see Table 23), however, none specifically support sharing/renting businesses. The strategies in Vietnam have a number of relevant goals in common, such as: developing an eco-friendly consumption culture, promoting sustainable lifestyles, developing eco-labelling, promoting green public procurement, promoting the 3Rs (reduce, reuse, recycle) and increasing public transport and bicycle use. The Thai initiatives engage more directly with businesses, for example through green certification schemes (see Table 23), however, these typically apply to large enterprises.

New laws provide enabling environment for sustainable business

In both countries, new legislation regarding waste and resources has the potential to encourage sustainable business activity. These include recent modifications to the Vietnamese *Law of Environmental Protection* and three proposed laws in Thailand, which would be the first solid waste management laws in their country – see Table 23.

Specifically, both countries now have relatively new or pending laws for extended producer responsibility (EPR), which includes waste electrical and electronic equipment (WEEE) amongst other hazardous items. Several **SCP experts** in Bangkok expressed hope that WEEE and EPR legislation will “deliver a push to eco-design” and encourage producers to innovate. These new laws may encourage the use of renting business models, where the manufacturer can easily recall products. However, an **SCP expert** in Hanoi expected that in reality electrical goods would be resold rather than disposed of. **SCP experts** in Bangkok believe there is likely to be some resistance from producers who do not want to take responsibility for e-waste recycling. Businesses in Thailand are currently trying to negotiate with regards to targets, as they do not want the targets to be enforced with penalties (**SCP expert**).

Table 23: Policies, strategies and laws for SCP in Vietnam and Thailand

| | VIETNAM | THAILAND |
|---|--|---|
| National strategies and action plans | <ul style="list-style-type: none"> • <i>Cleaner Production in Industry up to 2020</i>, • <i>Sustainable development strategy for 2011-2020</i>, <ul style="list-style-type: none"> ◦ Section 2, point 5 - goal for “devising initiatives for sustainable business, piloting such business models for multiplication” • <i>Green growth in Vietnam for the period 2014-2020</i> • <i>Sustainable production and consumption to 2020 with a vision to 2030</i> <p>(Viet Nam Government, 2016, 2014, 2012a, 2012b, 2009)</p> | <ul style="list-style-type: none"> • <i>Green growth strategy</i> as part of the National Economic and Social Development Board (NESDB) plan • <i>Thai Green Industry Mark</i> – certification increasingly popular since launch in 2011 • <i>Green public procurement</i> plan since 2008 for central government, currently being launched in local and state authorities (Suksod, 2015) • <i>Thai ecolabel</i> since 1993 – has not had much success (SCP experts) |
| Relevant laws for SCP and waste | <p><i>Law of Environmental Protection 2005 (revised in 2014)</i></p> <ul style="list-style-type: none"> • <i>Article 44</i> encouraging state funded institutions to prefer eco-friendly products and services; • <i>Article 45</i> states that manufacturers or businesses are responsible for reducing, reusing and recycling waste; • <i>Article 87</i> relates to the collection and treatment of discarded products (extended producer responsibility) • <i>Article 141</i> gives responsibility to the Ministry (MoNRE) to construct and implement policies on SCP and to endorse environmentally friendly products. <p>Prime Minister’s decision (no. 16/2015/QD-TTg)</p> <ul style="list-style-type: none"> • requires manufacturers to manage the collection and treatment of hazardous consumer goods - batteries, fluorescent bulbs, electronics, air-conditioners, tyres and motor vehicles (Vietnam Government, 2015). | <p>Recently prepared:</p> <p><i>Draft National Waste Management Act (Royal Thai Government, 2016)</i></p> <p><i>3R Promotion Law</i></p> <ul style="list-style-type: none"> • sets out “principles for modern solid waste management such as resource efficiency, • extended producer responsibility, and • the transboundary movement of products and wastes” <p><i>Act on the Management of Waste Electrical and Electronic Equipment and Other End-Of-Life Products</i></p> <ul style="list-style-type: none"> • now under review, and expected to pass (Manomaivibool and Vassanadumrongdee, 2016). |

Challenges for implementation

While there are numerous new policies and laws that can support the development of more sustainable business practices, there are likely to be challenges in implementation. A **policymaker** in Hanoi explained that their department has a small annual budget and small team, which is currently overwhelmed by urgent priorities - “E-waste is just one part of the house (of hazardous waste management) and there are more urgent and crucial foundations to be built first”. This lack of time and capacity was also evident with other policymakers in Hanoi and Bangkok. An **SCP expert** in Bangkok told us that the pollution control department (PCD) has had a role in drafting law for WEEE, but under the existing legal arrangements and compliance regime, they have no power to regulate, and experts are not sure which governmental organization could take a regulatory role. The implementation and enforcement of environmental regulations has been decentralized to local governments in Thailand, and **SCP experts** are concerned that local governments lack capacity to enforce e-waste laws.

Business permits do not support the renting model

A lack of specific support for collaborative consumption businesses could be constraining CC with regards to business licences in both cities. One **CC business owner** in Hanoi complained that they had not applied for a business licence because they were not sure whether to choose a “rental” or “selling” licence, when they wanted to do a mixture of both. This business owner had recently been penalized for their lack of business licence. Similarly in Bangkok, another **CC business owner** found that available business permits did not match their business model, which involved some sales in addition to rentals. The distinction between renting and selling is also complicated for tax purposes when they need to explain the proportion of the business that is renting vs selling. Provision for a third type of business licence, combining renting and selling might facilitate paperwork and formalisation for CC businesses in both cities.

Laws and regulations to mitigate risks

One **CC business owner** felt that Thai law does not support the system of rental companies taking deposits for rental items to mitigate their potential losses. While the Thai Civil and Commercial Code does outline provisions for deposits (sections 0657-

0673), this business owner thought that the law should also specify the percentage of asset value that should be taken for a deposit. This would support his business asking for a deposit and also allow him to retain the deposit in part or in full if goods were damaged or not returned. This business owner found that customers often try to negotiate the deposit down from 80% to 50% of the asset's cost, which is a risk if customers steal their products. He felt that Thai law didn't support him to recover losses, particularly if there was insufficient documentation. This could be a barrier for smaller businesses in particular.

Government support for bikeshare

The only sector where governments have actively promoted or enabled collaborative consumption is in transport and mobility. Both cities have been active in developing bikeshare schemes, with Bangkok's public bikeshare opening in late 2012 (Shady, 2012), and Hanoi's scheme in the planning phases. **Policymakers** in Hanoi are concerned about the level of air pollution and congestion in the city, and this has been a driver for transport-related initiatives. In 2014 the Prime Minister decreed that five Vietnamese cities would implement bikesharing schemes (VietNamNet, 2014). A **policymaker** explained the approach, "The main support from the government will be allocating sidewalk space for bicycles. The rest is for the market investor to ensure business." A similar process has already taken place in Bangkok with the introduction of their **bikeshare scheme** supported by Bangkok Metropolitan Administration, which assisted a private company to operate the scheme. While the bike share scheme in Bangkok is privately run, a **business manager** explained that geographical extension of the scheme is dependent on the city government providing them with the right to operate. This system may be challenged, however, if new dockless bicycles extend their current scope beyond Thai universities (Boonruang, 2017).

Contrasting approaches to managing congestion

Both cities deal with significant traffic congestion; however, in Hanoi traffic consists primarily of motorcycles, while in Bangkok, cars dominate (Fernquest, 2017; Petsko, 2016). Car ownership in Vietnam is 18 per 1000 people, compared to 140 per 1000 people in Thailand (Asia News Monitor, 2015). Historical policies have contributed to these different situations.

Business owners and **policymakers** explained that the Vietnamese government has introduced high taxes to discourage private car ownership. One policymaker suggested that cars in Vietnam are double the price of cars in Thailand, which is also supported by news reports (Tran, 2017). In addition to high purchase costs, prospective vehicle owners in Vietnam face a special consumption tax of 40-60%, VAT of 10%, as well as ten different fees for registration, plates, and road maintenance (Asia News Monitor, 2015). These taxes appear to have reduced car ownership and may create incentives for sharing, however, there are some barriers. A type of car-sharing occurs in Vietnam, where car owners use their car on the weekend and rent it to a car rental company during the week (**SCP expert**). While this practice occurs, it is currently not permitted by the law if a car is registered for private use.

The Thai government's approach to vehicle ownership contrasts significantly. An **SCP expert** described that during 2012-2013, the Prime Minister promoted a popular policy reducing taxes for people buying their first car. According to an **SCP expert**, this policy "absolutely increased traffic in Chiang Mai and Bangkok". This policy, combined with the construction of new highways and additional lanes has significantly enabled private car ownership in Bangkok.

Legal and regulatory challenges for transport sharing

In Hanoi, a **policymaker** highlighted that car or motorbike share and ride-share sit in a legal and regulatory gap between public and private transport, as currently "there is no word in the law that mentions these businesses". The Vietnamese Law on Road Traffic 2008 sets out the definitions and requirements for passenger transportation. A new decree (86/2014) set out new regulations for passenger transport in cars, however, this was not explicit about car and ride sharing. Laws tend to be updated every ten years, and to make changes they need "good evidence and experiments on how these services are operating – safety, quality, fire protection etc" (**policymaker**). News sources report that taxi-sharing companies Grabshare and Uberpool have recently been banned in Vietnam due to issues with transport law; however, they are reportedly still operating (Le, 2017; Nguyen, 2017). Article 45 in Ministry of Transport circular 63 (No. 63/2014/TT-BGTVT) states that a transport company cannot take more than one passenger 'contract' per journey (Ministry of Transport Vietnam, 2014). As Grabshare

and Uberpool provide an opportunity to reduce car journeys, this represents a significant formal barrier to more sustainable sharing.

There are various regulatory hurdles for ridesharing in Bangkok. Prospective rideshare drivers must register and obtain a licence from the government, as they are responsible for the lives of their passengers (**SCP experts**). Rideshare (or carpooling) that occurs without payment is legal, but if paid, the driver has to attend training and obtain another permit. In Bangkok, taxis and buses must be registered with the Ministry of Transport so that accidents can be covered by the government's insurance, however this requirement varies, and fees are lower for less formal transport such as motorcycle taxis and van taxis (minibuses) (**SCP experts**). Motorbike taxis have been regulated in Thailand since 2005 (Oshima et al., 2007), and the regulatory situation may be in flux due to pressure from internet-based motorbike taxi services, which have recently been forced to withdraw from Thailand (Russell, 2016).

Summary of Governance Regime

Barriers and enablers within the governance regime are summarised in Table 24. There are multiple potential enablers that the two cities have in common, including: high level policy support for SCP; active support for bikesharing; and new laws to encourage sustainable business activity, including extended producer responsibility (EPR).

However, both cities are likely to face challenges in implementing their EPR laws. A common barrier for businesses in both cities was a lack of legal definitions for sharing / renting businesses and therefore a lack of specific business permits. European studies have also highlighted the need for a regulatory framework to stimulate investment (Mont, 2004). Differences between the two cities include contrasting policies with regard to car ownership, where Vietnamese policy has discouraged car ownership and Thai policy has actively enabled it.

There is evidence that existing sharing businesses do not fit with the current governance regime and are therefore exploiting opportunities to continue operating. For example, with businesses not registering due to a lack of an appropriate category, or by exploiting a lack of law enforcement with regards to taxisharing, which has been officially banned. Mahoney & Thelen (2010), refer to this as a type of gradual institutional change, called "drift", where a gap between rules and enforcement allows change to occur. North

(1990) explains that formal institutions, such as laws and regulations are relatively less durable as they can easily be changed by government. However, changes to law are also limited by politics and institutional cycles of change – one of the policymakers in Thailand explained that most laws can only change every ten years.

Table 24: Summary of barriers and enablers within the Governance regime in Bangkok and Hanoi

| BARRIERS | ENABLERS |
|---|---|
| HANOI | |
| Lack of legal definitions, for example: <ul style="list-style-type: none"> • legal and regulatory gap for motorbike and ride sharing; • taxisharing currently not permitted by law; and • there are no specific business permits for renting and selling The new EPR law is likely to face challenges in implementation | High level policy support for SCP Active support for bikesharing Historical disincentives for car ownership through heavy taxes New laws encouraging sustainable business activities, e.g. Extended Product Responsibility encourages recycling to occur within businesses |
| BANGKOK | |
| Lack of legal definitions, for example: <ul style="list-style-type: none"> • lack of specific business permits for renting and selling; • lack of specific support for deposit taking; and • various permits required for ridesharing where driver is paid The new EPR law is likely to face challenges in implementation Historical incentives for car ownership | High level policy support for SCP Active support for bikesharing New laws encouraging sustainable business activities, e.g. Extended Product Responsibility encourages recycling to occur within businesses |

Commercial regime

Landscape of commercial survival

SCP experts explained that Vietnam had endured five years of economic hardship due to the financial crisis and consequently SMEs had switched from development to

“survival mode”. **SCP experts** reported that since 2009, hundreds of thousands of businesses closed. Surviving businesses had to focus on core business and use innovative solutions to cut costs, including finding new markets to survive. However, another interviewee suggested that some companies see sustainability as an opportunity to get out of the financial crisis. More recently, taxi companies in Bangkok and Hanoi have been affected by the arrival of new app-based options and have lobbied governments to create a “more equal” business environment (Le, 2017; Russell, 2016).

B2B more familiar and trusted

The commercial norm of buying and selling still dominates in both cities. Where interviewees had heard of renting and servicing businesses was typically in business-to-business (B2B) models, such as: large printing and computing companies; and with water, lighting and energy provision. Several **policymakers** in Hanoi suggested that “The renting model is for big foreign companies, as it would only work with big companies that have a long history of development”. However, this refers to long-term leasing and servicing, rather than short-term rental which does not require the same long-term commitment. **SCP experts and business people** in Bangkok indicated that renting/ servicing business models work best in situations where there is a high level of investment. A **business manager** noted that large businesses with rental offerings “can be trusted”, and one **SCP expert** felt that B2B examples would have a greater environmental impact.

Business model benefits and challenges

In Hanoi, a **business owner** running a customer-to-customer (or C2C) sharing platform found it difficult to remain financially viable and suggested that businesses dealing with consumers need to do more business-to-consumer (B2C) exchanges to cover costs. A **business owner** in Bangkok described a similar experience, initiating a C2C platform for customer sharing and finding that it was not popular, ultimately ran a B2C business in parallel. These examples highlight that B2B models are already accepted within the dominant regimes, while C2C represents the most radical novelty and has met the most resistance.

Commercial risks

The commercial difficulties explained by **various CC business owners** in Hanoi include: making sure that people pay deposits; the risk of goods being damaged; and in sharing businesses, making sure that users do all the verification and security steps. **Businesses** in Bangkok described some similar risks, such as: the uncertainty with regard to how consumers will care for goods; the reliability of goods; and whether they will break-even on their investment. **Business owners** renting designer bags and fashion items in Bangkok both reported that the rental part of their business was more profitable than sales. A **business owner** in Hanoi complained that marketing and customer education had consumed a lot of resources. This is likely due to the lack of customer familiarity with such business types, as such, advertising may be a significant cost for other new business types.

Difficulties obtaining finance

Business owners renting tools, designer bags and fashion items in Bangkok all commented that obtaining finance for their upfront investments was one of their greatest difficulties. The **business owner** renting tools explained that it is difficult for renting businesses to obtain finance, as there is greater uncertainty and the return on investment is slower. In his experience, banks require lot of information regarding how the business will ensure that customers make their payments. In Hanoi, the rideshare scheme operator sought funding from donors as a social enterprise, but also relied on personal funds in the start-up phase.

Summary of commercial regime

Commercial barriers were much more evident than enablers in both cities and the barriers were very similar – see Table 25. In both cities, businesses struggled to enable peer to peer or C2C business models and reverted to B2C options. B2B businesses faced fewer barriers, which is similar to experiences in advanced economies (Tukker, 2015). In both cities, CC businesses faced difficulties obtaining finance and multiple commercial risks in running their businesses, such as the risk of asset damage and profit uncertainty associated with that. These commercial barriers are echoed in European settings, where Vezzoli et al (2015) highlights a lack of finance and uncertainty

regarding cash flow as key barriers. The norm of buying and selling dominates, and is most supported by other institutions.

Table 25: Summary of barriers and enablers within the commercial regime - Bangkok and Hanoi

| BARRIERS | ENABLERS |
|---|---|
| HANOI | |
| <p>Buying and selling dominates</p> <p>Perception that B2B can better enable renting models</p> <p>C2C not operating well yet, businesses revert to B2C</p> <p>Numerous commercial risks exist, for example:</p> <ul style="list-style-type: none"> • Ensuring people pay deposits • Risk of asset damage • Ensuring users undertake security / verification steps <p>Difficulties in obtaining finance felt by SMEs</p> <p>Significant ‘up front’ expenditure required on advertising/making people aware</p> | <p>B2C businesses represent a way to earn money for businesses also operating C2C</p> |
| BANGKOK | |
| <p>Buying and selling dominates</p> <p>Perception that B2B can better enable renting models</p> <p>C2C not operating well yet, businesses revert to B2C</p> <p>Numerous commercial risks exist, for example:</p> <ul style="list-style-type: none"> • Risk of asset damage • Reliability of goods • Profit uncertainty <p>Difficulties in obtaining finance felt by SMEs</p> | <p>Rental is more profitable than sales for a number of CC businesses</p> |

Technological / physical infrastructure regime

New technology starting to be used

Despite various commercial constraints, rental businesses that have started in Hanoi *are* making use of new technologies and these can be considered enablers for sharing/renting businesses. New rideshare **businesses** are using the internet, sms and mobile phone apps to help people connect for car-pooling and taxi-sharing, which is considered “a very new concept in Vietnam”. One rental **business owner** explained that 50% of her customers come through the internet. Rideshare businesses are also adopting multiple payment options to allow for people who do not yet have electronic banking. According to an **SCP expert**, multiple payment methods are planned for the bikeshare scheme in Hanoi, including credit cards and a preloaded electronic card.

In Bangkok, **business operators** for fashion and designer bag rental commented on the importance of social media for their advertising. The tool rental business in Bangkok explained that the majority of their competition does not use the internet and instead operate from shopfronts, so there is still a mix of internet and non-internet based businesses.

Infrastructure barriers for transport sharing

An **SCP expert** in Bangkok highlighted the importance of the environmental context of a city and its effect on the acceptability and drivers for various transport sharing businesses. For example, an **SCP expert** explained that carpooling was more common in Bangkok in the past, due to multi-passenger lane designation. However, this has become less common as more lanes have been added to major roads.

The **bikesharing business manager** in Bangkok described the following infrastructural and logistical barriers: difficulty in finding space for bike stations in a congested city like Bangkok; a lack of cycleways and signage for bicycles on roads and consequent safety issues; and difficulties maintaining the stock of bicycles at each station as well as space for people to return them, particularly during peak traffic conditions. **SCP experts** also cited environmental issues such as road conditions, air pollution and heat as key barriers to bikeshare. Some enablers for the bikeshare network have been the

placement of stations at major transport hubs and near to office buildings, shopping malls and universities.

Similar challenges were expressed by interviewees regarding transport sharing in Hanoi, as “Vietnamese conditions are also not very friendly for bicycles as the roads are crowded ...” (**business owner**). **SCP experts** and **policymakers** pointed to the lack of public transport in Hanoi to connect to, a lack of cycling networks and narrow streets as physical barriers to bikeshare. However, a **business owner** pointed to a variety of new infrastructure planned by the government such as roads, bridges, a new fast bus and an above ground metro. Hanoi’s Transport Master Plan aims to increase public transport use from 9% to 40% by 2020, with the metro opening after 2018 (Ortega, 2016); as well as new bus rapid transit lines (Petsko, 2016).

Logistical barriers to goods sharing

Transferring shared goods presents a logistical barrier in congested cities. A **business owner** in Bangkok renting equipment for children commented that she faces logistical difficulties transporting larger pieces of equipment and toys. On the subject of carsharing, a **business owner** noted that a carshare system relies on predictable timing for booking, returning and picking up vehicles, which would also be difficult in cities where heavy traffic is the norm.

Small living spaces are a driver

As mentioned in the socio-cultural regime under living arrangements, small families in Bangkok living in apartments may be most likely to use CC options. Limited space within apartments mean that they are unlikely to have laundry equipment and either make use of shared central laundry facilities within their building or external pay-per-wash machines. The official minimum standard for an apartment for five people in Bangkok is 34 m² (Usavagovitwong et al., 2013). Space constraints in apartments mean that many people have minimal cooking equipment. This, combined with the time pressures created by long commutes to work, mean that purchasing meals or eating on the street, referred to as using the “plastic bag housewife” (**SCP expert**), is a convenient and popular alternative to cooking.

Summary for technological / physical infrastructure regime

Physical and technological infrastructures can create ‘lock in’ to carbon intensive systems (Unruh, 2000). Physical barriers and environmental conditions present major challenges for low-carbon shared transport in both cities, with a lack of space for bikeshare docks and cycleways; congestion and narrow streets making cycling difficult; and hot climates and air pollution. A key difference between the cities is Bangkok’s highly developed public transport networks compared with Hanoi’s public transport which is still being developed. Information technology in the two cities was primarily enabling, rather than constraining, as businesses tended to offer hybrid online/offline services and payment systems. Small living spaces in Bangkok are likely to drive use of CC options. In Hanoi, new technology is starting to be used and significant public transport development is underway, suggesting that this regime is in flux, while in Bangkok these changes have already occurred and the technological/ physical infrastructure regime may be relatively more stable. See summary in Table 26.

Table 26: Technological / physical infrastructure regime barriers and enablers

| BARRIERS | ENABLERS |
|--|---|
| HANOI | |
| Infrastructure issues for transport sharing <ul style="list-style-type: none"> • Roads are crowded and narrow, which is unfriendly for cycling • Sharing options need to connect to public transport, however, there is a lack of transport | New use of smartphone apps and internet booking services for sharing Hybrid systems of card and cash payments are currently being used for ridesharing and are planned for bikesharing New public transport being planned – metro and new buses |
| BANGKOK | |
| Infrastructure issues for transport sharing <ul style="list-style-type: none"> • Lack of space for bikesharing stations • Lack of cycleways and signage lead to safety issues • Logistical challenge to maintain bike stocks • Difficult road conditions, air pollution and a hot climate make cycling unfriendly <p>In a congested city, logistical issues can arise when transporting shared goods as timing can be unpredictable with traffic</p> | Small living quarters and long commutes may drive people to use services and sharing options |

Conclusions

This study provides an empirical analysis of socio-technical regime barriers and enablers for collaborative consumption in the Southeast Asian context, and considers the key levers that might enable change. It is evident from the analysis that the situation is complex with multiple competing influences. I have made an attempt to visualize the important barriers and enablers across each regime in

Figure 17. This figure highlights that the most durable or stable barriers exist in the socio-cultural and commercial regimes, with “ownership culture”, and the norm of buying and selling, along with the resistance of incumbent industries. In the technological/physical regime, there are environmental barriers to specific types of CC businesses, such as bikeshare, however, lifestyle pressures of time and space may drive use of other types of CC businesses. Aside from the “ownership culture”, there are many aspects of the socio-cultural regime that appear to be changing and enabling different consumption practices. There are multiple commercial barriers for CC businesses, however, many of the commercial risks may be mitigated through support in the governance regime. In the governance regime, there are numerous high-level policies and laws that are enabling, however, at a detailed level there are specific barriers for CC businesses related to legal frameworks. These legal barriers can be mitigated by governments, which can in turn legitimize CC businesses, reduce their commercial risks and thereby increase their access to finance. Legal changes to facilitate CC businesses may therefore be a key lever for triggering change in other regimes.

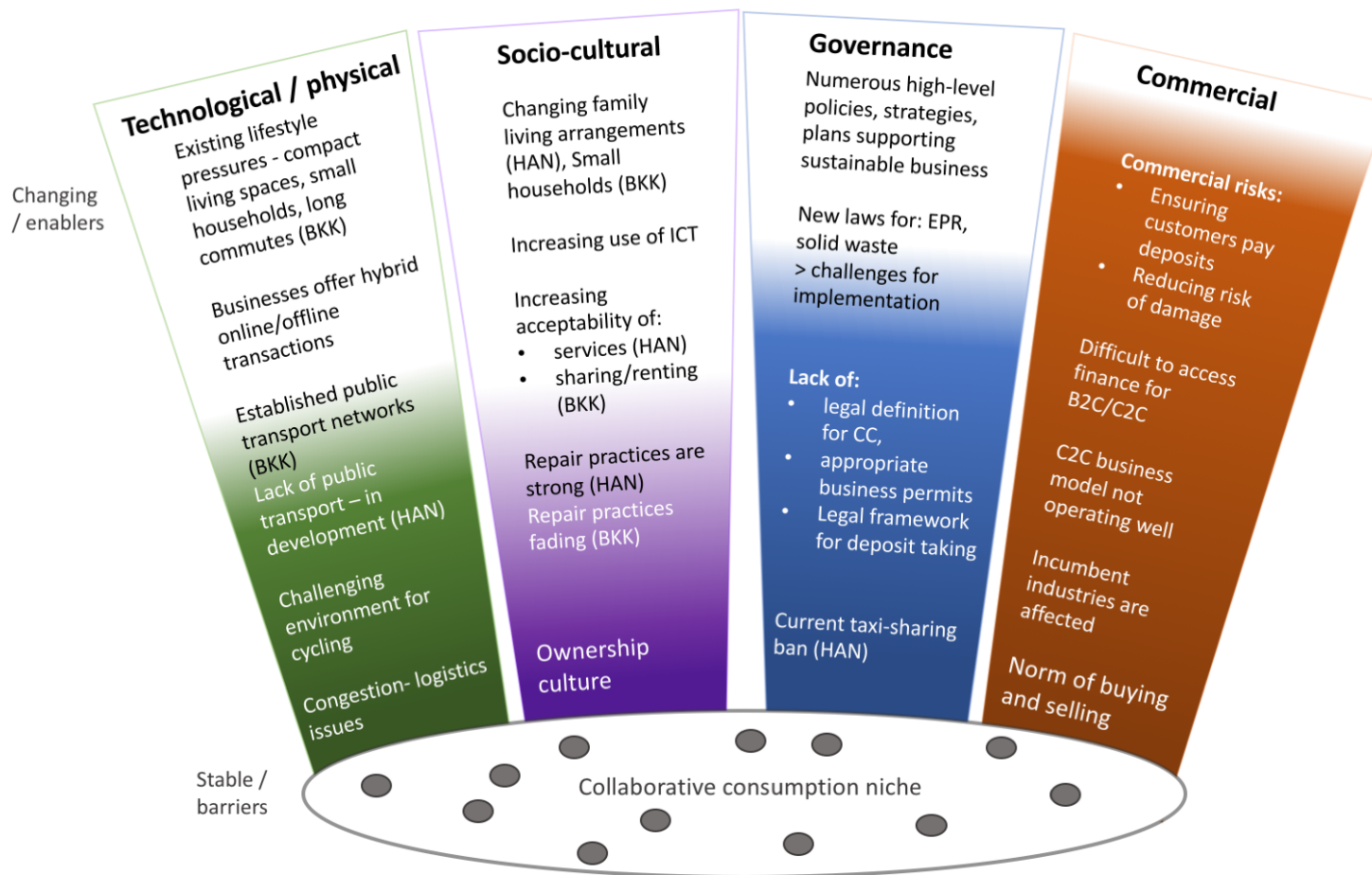


Figure 17: Summary of socio-technical regime barriers and enablers for collaborative consumption in Bangkok and Hanoi.

Note, the most stable barriers appear at the bottom, and barriers are in colour. Enablers and changing regime aspects are towards the top, with a white background.

Acknowledgments

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PART III

SYNTHESIS

CHAPTER EIGHT:

PAPER V

Collaborative consumption in Southeast Asian cities: A synthesis of prospects and challenges for environmental sustainability

The paper presented in this chapter has been submitted to a journal for review and has the following citation.

Retamal, Monique. Submitted. "Collaborative consumption in Southeast Asian cities: A synthesis of prospects and challenges for environmental sustainability"

Abstract

Collaborative consumption and its alter ego “the sharing economy” have attracted significant attention in recent years due to the emergence of new business models, industry disruption, regulatory issues and the potential social, economic and environmental impacts of these new business types. Academic literature on collaborative consumption (CC) to date has focused on high-income countries. There has been little examination of CC in emerging or developing economies, yet with the potential for CC to offer more sustainable consumption options, its impact could be significant. This study examines the prospects for environmentally sustainable CC businesses in Southeast Asia, drawing on the results from four studies examining the current use of CC in three cities – Bangkok, Metro Manila and Hanoi. In these studies, we have (1) characterized the current business types and users in these cities; (2) examined business sustainability practices; (3) explored consumer practices and compared resource use with regard to shared and individual laundering; and (4) identified the social, cultural and institutional barriers and enablers for CC businesses. This study uses social practice theory to integrate the findings of these studies and to identify potential levers for change: where CC might take hold and where policy is needed to promote more environmentally sustainable CC.

Introduction

Collaborative consumption of household goods and services has primarily been observed and studied in highly industrialised countries, in markets that are already saturated with consumer goods. In these settings, collaborative consumption offers consumers a shift from ownership to “access” (Botsman and Rogers, 2010). However, in emerging economies the situation is different, as rapidly growing middle classes are seeking to gain access or ownership to new consumer goods for the first time. By offering opportunities to share consumption, collaborative consumption (CC) businesses may have the potential to reduce the overall demand for material goods (Heiskanen and Jalas, 2003; Tukker and Tischner, 2006b). CC is therefore a topic of interest for sustainable development agendas. Collaborative consumption is suggested as a strategy for shifting to more sustainable lifestyles (Akenji and Chen, 2016; Mont et

al., 2014). CC is also related to product-service systems and access- or performance-based business models, which are expected to contribute to a circular economy (Bocken et al., 2014; Geissdoerfer et al., 2017). However, there is presently a lack of literature examining the use and impacts of CC in developing or emerging economies (Hira, 2017; Hira and Reilly, 2017). This study considers the prospects for environmentally sustainable collaborative consumption businesses in Southeast Asia, a region in which consumption is growing rapidly (Schandl and West, 2010), and is a focus of efforts for sustainable consumption and production (Hoballah, 2014).

Most definitions for collaborative consumption are broad, for example, Belk considers collaborative consumption to be “people coordinating the acquisition and distribution of a resource for a fee or other compensation” (Belk, 2014, p. 1597). Botsman’s (2015) definition of CC includes sharing of both tangible and intangible resources (such as skills) via both monetary or non-monetary exchanges. Botsman and Rogers (2010) find overlap between collaborative consumption and product-service systems (PSS), where customers pay to access goods, rather than owning them. This is also known in the literature as “access-based consumption” (Bardhi and Eckhardt, 2012). Martin (2016) equates collaborative consumption with the sharing economy, however, recent work suggests the sharing economy is defined more narrowly than CC. Codagnone & Martens (2016) and Frenken & Schor (2017) propose that the sharing economy refers specifically to consumer-to-consumer exchanges (C2C), where consumers share their idle resources and provide other consumers with temporary access. This definition excludes businesses that provide customers with shared-access to goods, for example through bikeshare or carshare. In this study, I am interested in businesses that enable consumers to share goods through business-to-consumer (B2C) or consumer-to-consumer (C2C) exchanges, and consequently use the broader term collaborative consumption.

Of all of these concepts, the literature regarding product-service systems (PSS) is the most developed, and while historically PSS has tended to focus on business-to-business (B2B) applications (Tukker, 2015), the PSS literature offers useful insights regarding the sustainability of PSS models, as well as barriers to their uptake. Tukker and Tischner (2006b) found that businesses offering shared-access to goods, or ‘services to replace products’ held the greatest potential to reduce resource and energy use. As this

paper focuses on environmental sustainability, the scope is limited to these two business types. I use the overarching term “collaborative consumption”, and the terms “shared-access” or “services” to distinguish between the product or labour focused sub-types. While these PSS business types are considered more likely to yield environmental benefits, research shows that outcomes are dependent on the context and business model (Demailly and Novel, 2014; Tukker, 2015). It is therefore highly important to understand the contextual factors that can enable environmental sustainability.

Literature regarding the challenges for shared-access businesses primarily derives from the field of PSS. The uptake of PSS business is influenced by the dominant socio-technical regimes, institutional arrangements, and social norms as well as individual rationality (Mont and Plepys, 2008; Tukker and Tischner, 2006b). Consumer acceptance of PSS is dependent on context and cultural factors (Vezzoli et al., 2015; Wong, 2004). Social barriers may include a lack of awareness and acceptance (Laukkanen and Patala, 2014; Mont, 2004) and the dominance of an “ownership culture” (Vezzoli et al., 2015). In order to enable PSS uptake, businesses may need an appropriate regulatory and legislative framework (Laukkanen and Patala, 2014; Mont, 2004). Businesses are likely to face uncertainties with regard to financing and cash flows, and often need external infrastructure and technology to enable their operation (Vezzoli et al., 2015). Given the context specific nature, and the lack of literature examining these businesses in emerging economies (Vezzoli et al., 2015), I set out to investigate the use of businesses providing “shared-access”, and “services to replace products” in emerging economies in Southeast Asia.

Social practice theory (SPT) is increasingly used in the field of sustainable consumption to improve understanding of the way consumption practices form, embed and change over time (Hargreaves, 2011; Huber, 2017; Sahakian and Wilhite, 2014; Shove, 2014). SPT has also recently been used to examine collaborative consumption (see Huber, 2017), and product-service systems (see Mylan, 2015). Mylan’s (2015) study did not explicitly analyse PSS, and instead examined other sustainable household practices, drawing insights for consideration within the PSS field. As Mylan (2015) and Tukker & Tischner (2006b) explain, consumption dynamics tend to be neglected in PSS studies. Huber’s (2017) study uses SPT to examine peer to peer examples of collaborative consumption such as cohousing and P2P accommodation in Europe. With the limited

number of academic articles examining PSS or CC with the social practice theory lens, there remains a broad opportunity to further experiment with SPT to better illuminate the consumption dynamics of practices involving sharing, renting, or service acquisition for the household. Several authors have used SPT to examine consumption practices in Southeast Asian cities, for food consumption in Metro Manila (Burger Chakraborty et al., 2016; Saloma and Akpedonu, 2016), and for energy and cooling in Metro Manila (Sahakian, 2014; Sahakian and Steinberger, 2011), however, these have not involved the use of PSS or CC. An exception is the study of laundering methods in Metro Manila (Retamal and Schandl, 2017), which uses SPT and is part of the body of work to which this paper refers.

In this study, I focus on collaborative consumption for households in three Southeast Asian cities – Bangkok, Hanoi and Metro Manila. These cities serve as examples of dynamic emerging economies, where consumption practices are changing rapidly. Our primary research question is: What are the prospects for environmentally sustainable collaborative consumption practices in Southeast Asian cities? I address this question by synthesizing four smaller studies, that have investigated different aspects of collaborative consumption and its context in Southeast Asia. In addressing the “prospects” for environmentally sustainable CC businesses, I seek to understand what enables uptake of these businesses, and what practices or contexts facilitate environmental sustainability. The original research is primarily qualitative, with some quantitative assessment of resource consumption. I synthesise the results from four papers and four years of research using a social practice theory framework. I identify enabling characteristics for CC in the Southeast Asian context, including business types, users, material enablers and user motivations. I also identify the contextual factors constraining further use of CC, as well as the institutional arrangements and policy interventions that may be used to both improve sustainability and uptake.

Theoretical framework

In social practice theory, consumption is framed as a component of every day practices, which include things such as cooking, sleeping, working, eating and travelling (Røpke, 2009). These practices are often habitual and routinized (Warde, 2005), which means that the consumption of resources such as energy, water and appliances are

unconsciously integrated in daily routines (Mylan, 2015; Shove, 2003b). In undertaking these daily practices, people also acquire skills and competencies (Warde, 2005), which further embed their consumption activities. Social practice theory (SPT) shifts the focus of consumption studies from the consumer to the practice (Spaargaren, 2011; Warde, 2005), where the practice is a reflection of individual habits, routines, available tools and resources and the social and material environment, rather than purely focusing on consumer decision-making. Practices are pre-structured by their context, however, performers of practices also have agency to shift their practices (Jaeger-Erben and Offenberger, 2014). Therefore SPT incorporates both structure and agency, and acts as a mediating concept (Huber, 2017; Mylan, 2015). McMeekin & Southerton (2012) compare SPT to the multi-level perspective approach, and find that SPT is better at explaining final consumption. SPT has been chosen as the analytical framing for this paper due to the potential to comprehensively articulate the factors influencing consumption practices.

While frameworks for SPT vary, most theorists conceive of three interlinked dimensions, such as: materials, competences and meanings (Shove, 2003a), where meanings can include values, norms and social meanings (Jaeger-Erben and Offenberger, 2014). Huber (2017) also adds rules or institutions as a fourth dimension. A slightly different terminology focuses on the individual, material things and their social meanings (Galvin and Sunikka-Blank, 2016; Sahakian and Wilhite, 2014). In this research, I draw on the conception of SPT proposed by Sahakian and Wilhite (2014), comprising “the personal” which refers to habits, individual dispositions, skills and cognitive processes; “the material world”, which refers to technology, infrastructure, resources and finances; and “the social world”, which comprises the social, cultural and economic context and formal institutions. This framework incorporates all of the SPT dimensions previously discussed, including Huber’s (2017) fourth dimension, as institutions are incorporated into the social world or social meanings. The dimensions of social practice theory are illustrated in Figure 18. When discussing how SPT might be used to inform policymaking, Sahakian and Wilhite (2014) propose that change depends on how durable each of the three dimensions is, so the challenge is to identify the potential levers within the social practice framework that might have the greatest impact.

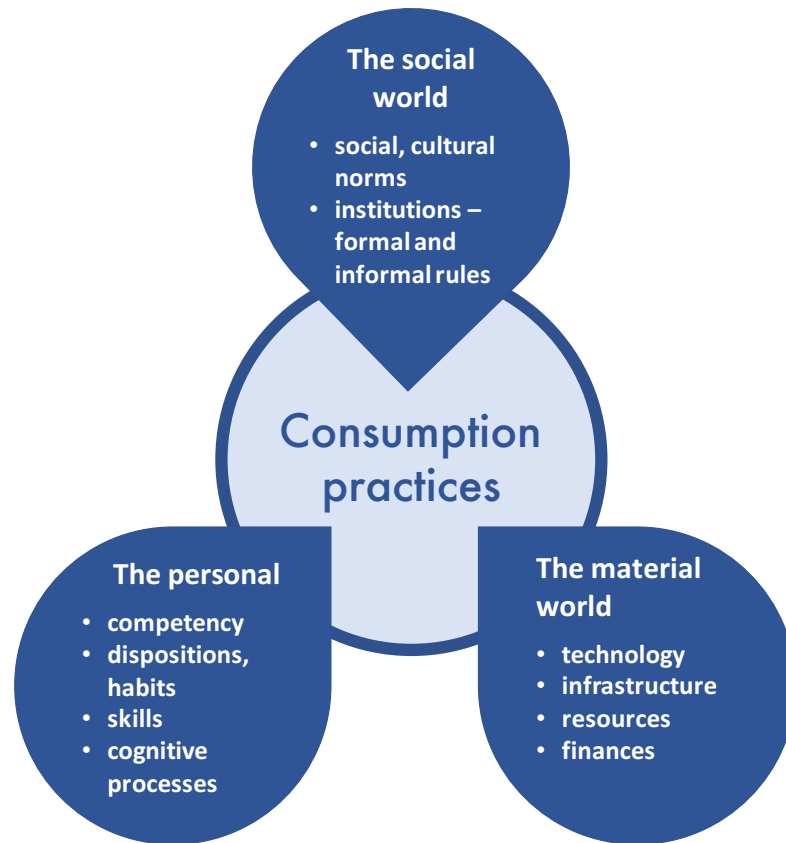


Figure 18: Dimensions of social practice theory. Terminology adapted from Sahakian and Wilhite (2014)

McMeekin & Southerton consider that practices are “a nexus between producers and consumers” (2012, p. 356) and in this study both sit at the centre of the analysis, as both are critical to the further expansion and environmental sustainability of CC practices. SPT is often applied at a micro scale to consider specific practices in context. However, SPT can be considered a “meso level analytical construct”, at the intersection of macro level configurations and micro-level performances of practices (McMeekin and Southerton, 2012, p. 350). This study attempts to understand the broader consumption influences for CC using a SPT framework, which means that it focuses on the macro-level configurations, rather than the micro level performances of practices. The application of SPT to examine a consumption phenomenon at a broad scale, across several cities and sectors is novel. Due to the macro level focus, the picture of CC

practices can only be partial, however, this paper provides new insights into CC practices in emerging economies where there has been little research to-date.

Methodology

This research is based upon data gathered during 2014-2015, and includes sixty-one semi-structured interviews carried out across the three cities – Hanoi, Manila and Bangkok. The initial data also included a database of existing CC businesses, developed through internet searches and supplemented by interviews. The database provides an overview of the types of CC businesses that were available in each city. Interviewees included a wide variety of stakeholders, such as: CC business operators, policymakers, academics, consultants, multi-lateral organisations and individual consumers. Table 27 lists the number and type of participants interviewed in each city. Eight different types of CC businesses were interviewed across the three cities to gain insights regarding the broad nature of the CC phenomenon and the diversity of factors potentially influencing CC practices. These examples were chosen to symbolically represent the range of CC businesses that were available in each city, in line with purposive sampling approaches in qualitative research (Ritchie and Lewis, 2003, p. 83). The diverse sample enabled identification of cross-cutting themes, and configurations that may influence multiple types of CC practices. However, noting that this broad approach limits the detail that could be gathered for specific sectors, and from individual consumers. This study relies more heavily on the perspectives of CC providers and a range of expert stakeholders.

Table 27: Number and type of interviewees across the three cities

| | <i>Bangkok</i> | <i>Hanoi</i> | <i>Manila</i> |
|--|--|--|---|
| <i>CC business types investigated</i> | Bike share Tool rental Baby equipment rental Fashion rental Designer handbag rental | Ride-share & taxi-share (planned) Bikeshare Toy rental Laundry services (x 5) | Laundry services (x 8) |
| <i>Position / role of interviewees</i> | Small CC business owners (x 4) CC business manager (x 1) Senior policymaker (x 1) Policymakers (x 2) Staff at multilateral organisations (x 2) Academics (x 3) Consultants (x 2) Donor agency staff (x 1) Leaders at other associations (x 3) Large business owners (x 2) | Small CC business owner / operators (x 7) Senior policymakers (x 2) Policymakers (x 4) Senior staff multilateral organisation (x 1) Senior staff at NGO (x 1) Academics / consultants (x 5) | Small CC business owner / operators (x 8) People laundering at home (x 11) |
| <i>Total no.</i> | 21 | 21 | 19 |
| <i>Interview type</i> | Semi-structured | Semi-structured | Structured (quantitative) interviews, Semi-structured (qualitative) interviews, Participant observation |
| <i>Interview length</i> | Average 1 hour | Average 1 hour | 20 mins structured, 20 mins semi-structured |
| <i>Other data inputs</i> | Official documents, websites | Official documents, websites | Official documents, websites |

This paper synthesizes the findings from four previous papers to address a broader research question regarding the prospects for environmentally sustainable collaborative consumption practices in Southeast Asia. The four papers relate to this topic in different ways. The first paper characterises the business types, sectors and users of collaborative consumption across Metro Manila, Hanoi and Bangkok (Retamal, submitted). The second paper examines the environmental sustainability of CC business practices for a number of case study businesses, across several sectors in the same three cities (Retamal, 2017). The third paper is a detailed study of laundry practices in Manila and the resource consumption associated with laundry services compared to individual laundering (Retamal and Schandl, 2017). The fourth paper is a comprehensive analysis of the socio-technical regimes constraining or enabling collaborative consumption businesses in Bangkok and Hanoi (Retamal and Hussey, submitted). The research approach in Bangkok and Hanoi was the same and data from these cities is readily comparable. The research approach in Metro Manila was primarily focused on a case study of laundering, however, it did include the same initial research steps as the other two cities, which means that it is possible to compare the range of businesses and types of users. Table 28 highlights where the four studies align with parts of the practice theory framework. In this paper, I combine all of these dimensions to develop an overall picture of the prospects and challenges for environmentally sustainable collaborative consumption (CC) in these three Southeast Asian cities.

Table 28: Scope of four related studies and their findings that contribute to this synthesis using the social practice theory framework

| | Geographical scope | Sectoral scope | Unit of analysis | Categories of findings with regard to the social practice theory framework | | |
|---|---------------------------------|---|---|--|--|---|
| | | | | Personal | Material | Social |
| <i>Study 1 – Characterising CC businesses and users</i> | Hanoi, Bangkok and Metro Manila | Transport, food, housing, recreation, laundering and clothing | Context for CC practices | | Material nature of shareable /serviceable goods | Social characterization of users |
| <i>Study 2 – Business sustainability practices</i> | Hanoi, Bangkok and Metro Manila | Transport, housing, recreation, laundering and clothing | CC business practices | Dispositions and skills of business owners | Sustainability of asset management | External factors influencing business practices |
| <i>Study 3 – Laundry practices in Manila</i> | Metro Manila | Laundering | Laundering practices (as a specific type of CC practices vs alternatives) | Householder dispositions | Resources consumed in three different laundering practices | Socio-economic context for different laundering practices |
| <i>Study 4 – Contextual barriers and enablers</i> | Hanoi and Bangkok | All sectors | Context for CC practices | | | Social norms and institutions influencing CC |

Results

Collaborative consumption providers in Bangkok, Hanoi and Metro Manila identified through the internet and interviews were found to be a mix of established and relatively new shared-access and service businesses. Established business types tended to be services such as meal deliveries, laundry services and collective taxis, particularly in Bangkok and Manila (Retamal, submitted), and these were numerous and widely used in each city. However, there were just a few examples of each “new” business type found in each city, including: bikeshare, rideshare, tool, toy and fashion rental (Retamal, submitted), suggesting that the practice of collaborative consumption in the sense of “shared-access to goods” was emergent, and not yet normalized. In the following sections, I present the synthesis of results according to the three dimensions of Social Practice Theory – the material, the personal, and the social. As the three dimensions are interwoven, there are some instances where practices are relevant across more than one dimension.

The material world

What material goods are involved?

In the first paper, I identified the types of shared-access and service businesses that were available in Bangkok, Hanoi and Metro Manila, and found a range of established and relatively new shared-access and service businesses (Retamal, submitted). Established business types tended to be services such as meal deliveries, laundry services and collective taxis. New business types included: bikeshare, rideshare, tool and toy and fashion rental (Retamal, submitted). The number of businesses found in each city was small, apart from those in the transport and laundry sectors. The transport / mobility sector had by far the greatest number and different types of collaborative consumption businesses; some were app-based and relatively new e.g. ride- and taxi-sharing in Hanoi; while others have a longer history, such as van-pooling in Bangkok and SUV taxi-sharing in Metro Manila. After transport, laundry services were the next most prevalent business type across the three cities. In general, services were more available than shared-access businesses, for example: laundry services were more available than self-service laundries; rideshare/taxishare was more available than carshare; household

repair services were more prevalent than equipment rental (Retamal, submitted). This highlights the availability of relatively low-waged labour to undertake household services. Other business types that appear to be growing in number are rental of fashion items and children's toys. Food services were widely available through traditional street food, and more formal food delivery businesses were available in each city (Retamal, submitted). Many apartments in Bangkok and Metro Manila have minimal cooking facilities (Saloma and Akpedonu, 2016), so street food and food services can be a regular and viable replacement for cooking at home.

The common characteristics of goods that were available through shared-access or services were goods that are either: infrequently used; collectible in nature; large or space consuming; or relatively expensive / quality items (Retamal, submitted). Collectible goods include toys and clothing, where variety is desirable. A number of household items were typically unavailable for short-term rental (shared-access), including: personal electronics, major household electrical appliances, cars and everyday clothing. These items may be less shareable due to: a lack of user know-how and low levels of trust with expensive items; or more practically, some goods are immovable, used too frequently, or are too personal to share (Retamal, submitted). Based on an analysis of current ownership of durable goods in the three cities, and the prevalence of shared-access or service options; CC businesses have the most potential to replace ownership of vehicles and washing machines /dryers through service options. This potential is relevant to sustainable consumption efforts which focus on the highest impact sectors, such as transport and housing (Schroeder and Anantharaman, 2017; Spangenberg and Lorek, 2002).

Are business assets managed sustainably?

In the study of business practices (Retamal, 2017), I developed a list of key criteria that represent common pitfalls hindering sustainable outcomes for collaborative consumption businesses. The criteria for sustainable business practices identified from the literature are: 1) using durable, quality goods; 2) intensifying use of goods; 3) enabling repair, take back and recycling of goods; 4) ensuring rental replaces purchase; 5) minimising transport and disposable packaging of goods; and for transport, 6) reducing private vehicle kilometres travelled. I qualitatively evaluated twenty

businesses against these criteria and found that businesses performed well against the first two: as they are generally using durable goods to enable repeated rental and their product or service tends to enable more intensive use of goods (Retamal, 2017). Several participating businesses undertook minor repairs in house (e.g. tool rental), but sold their assets before they would break or require major repairs. There were incentives for businesses to reduce transportation of goods due to the risk of damage. The most difficult criteria to assess was whether CC businesses replaced the need for product purchase, however, I found that this is more likely in high-rise areas (where space is lacking), or for goods that are infrequently used, or are less collectible (e.g. a washing machine) (Retamal, 2017).

Businesses catering to diversity were more likely to stock large quantities of products, which reduced the intensity of product use and some of the potential environmental benefits of sharing (Retamal, 2017). Businesses offering short-term rental of collectible goods (e.g. movies, books, games, clothes) were less likely to be replacing new purchases. Material factors that inhibited business from undertaking repairs included: products with safety aspects that are difficult to repair (such as baby equipment); the ability to readily sell damaged goods on the second-hand market; and the cost of major repairs and remanufacturing being too high or too difficult for small businesses. The transportation needs of sharing businesses are affected by whether the offering needs to be tested by a customer in person (e.g. clothing rental), and whether high rents inhibit businesses from being locally based. Non-motorised, lower impact transport options are more likely to be available in high-density areas, for example with the use of trolleys for laundry delivery in Manila (Retamal, 2017).

Do collaborative consumption services use less resources than individual consumption practices?

Sustainable outcomes for sharing-based businesses depend on context and business type (Demailly and Novel, 2014; Tukker et al., 2006). We undertook a quantitative study comparing the resource consumption of laundry services in Manila with individual laundering practices, and found that water use was similar between services and at-home laundering methods, however, laundry services had higher energy consumption due to the use of dryers (Retamal and Schandl, 2017). Detergent use was higher for

individuals laundering by hand at home, due to the practice of using multiple types of detergent. In addition to the operational consumption of resources, we also considered the embodied resources in the laundering equipment. We calculated that every machine in a laundry service replaced 9 to 23 washing machines in homes and achieved utilization rates of up to 87% (Retamal and Schandl, 2017). In the future, if individual households begin to own and use dryers, the energy intensity of laundering may become similar to services, and the difference in embodied resources and energy would be even more pronounced.

What physical enablers for CC businesses are evident?

People living in small apartments or condominiums appear to be more likely to use collaborative consumption businesses. From laundry services in Manila to toy rental in Hanoi and tool rental in Bangkok, business owners repeatedly mentioned a lack of space as an important reason for customers to engage in periodic rental or use services. This can be due to a lack of storage space for consumer goods and / or a lack of internal facilities for things such as cooking and clothes washing (Retamal, submitted). During our case study of laundry in Manila, we found that people living in poor areas undertook their washing in communal courtyards, which could be an enabler for future shared facilities (Retamal and Schandl, 2017). When examining business practices (Retamal, 2017), I found that businesses operating in densely populated environments were more likely to meet with sustainability criteria. For example, where people lack storage or facilities, collaborative consumption businesses are more likely to replace purchase of products; and businesses operating in high-rise areas can transport shared goods or operate their service using minimal or no motorised transport (Retamal, 2017). However, this is contingent upon businesses being able to operate locally – high rents would drive businesses further away and increase transport needs.

Traffic congestion was an important motivation for transport sharing businesses, such as the ride-share scheme in Hanoi and the bike-share scheme in Bangkok (Retamal, submitted). A lack of space for parking and the time and cost associated with commuting are also likely to be drivers for uptake of shared transport options. Good public transport has been an enabler for the bike-share scheme in Bangkok, as bike stations have been integrated with metro stations (BTS, MRT). The ride-share scheme

operator in Hanoi indicated that a lack of adequate public transport in Hanoi was a barrier for ride-sharing, as it needed to integrate with public transport (Retamal, 2017). Proponents of bike-share schemes in both cities pointed to a number of physical challenges to cycling, including: congested streets, difficult road conditions, a lack of cycleways, air pollution and hot climates (Retamal and Hussey, submitted).

Technologies such as smartphone apps and internet payment systems are often thought to be essential components of the sharing economy or collaborative consumption (Botsman and Rogers, 2010; Owyang et al., 2014). While these technologies are generally an enabler for sharing businesses, the internet and online payments are not essential for all collaborative consumption businesses in Southeast Asia (Retamal and Hussey, submitted). Many businesses we interviewed operated partly online and partly as a shopfront (e.g. designer bag rental and fashion rental) and nearly all accepted cash payments (Retamal, submitted).

Summary for the “material world”

The material aspects of the barriers and enablers for environmentally sustainable CC are summarized in Table 29, with regards to the products, businesses, and their operating environments. The enablers highlight material goods and environments in which environmentally sustainable CC are more likely to operate / succeed in these three cities in Southeast Asia, and may be reflective of other cities in the region.

Currently, collaborative consumption businesses are primarily a niche form of consumption, with the exception of transport sharing and laundry services. These two business types are also the most likely to contribute to reducing environmental impacts in critical sectors such as transport and housing. However, more research is needed to confirm their impacts in different contexts. Our study of laundering in Manila found that sustainability benefits were offset by use of dryers, which were not commonly used in homes in our study. CC businesses are managing their goods in positive ways for sustainability by purchasing durable goods, using them intensively, and undertaking repairs. However, there are still possibilities for their sustainability benefits to be negated, and without guidance, there is no guarantee these businesses will achieve sustainable outcomes. There are a number of facets of the physical environment that would drive or facilitate use of CC, including high-rise living, small apartments and

traffic congestion. Where there are some deficits, such as a lack of public transport, there are changes taking place, such as major public transport works in Hanoi.

Table 29: Summary of barriers and enabler for CC with regard to "the material world"

| Product level | Business level | Business environment |
|---|--|---|
| ENABLERS | | |
| <p>Nature of shareable/ serviceable goods:</p> <ul style="list-style-type: none"> • infrequently used • collectible in nature • large/space consuming • relatively expensive <p>Goods that are most readily replaced by services:</p> <ul style="list-style-type: none"> • cars (ridesharing, taxisharing) • washing machines and dryers (laundry services) | <p>CC business practices supporting sustainability:</p> <ul style="list-style-type: none"> • purchasing durable goods • using goods intensively • minimising transport in high rise areas • undertaking minor repairs | <p>Enabling physical environment or drivers:</p> <ul style="list-style-type: none"> • high rise, small apartments • communal spaces in apartment blocks – enabler for future sharing • traffic congestion • good public transport • internet plus shopfronts • flexible payment options |
| BARRIERS/ DETRACTIONS | | |
| <p>Less shareable goods:</p> <ul style="list-style-type: none"> • require some skills to use • are used too frequently • are too personal to share | <p>Business practices hindering sustainability:</p> <ul style="list-style-type: none"> • businesses overstocking goods – especially those catering to diversity or quantity • where services increase material consumption e.g. laundry services need dryers, sharing goods needs more transport | <p>Material environment hindering sustainability:</p> <ul style="list-style-type: none"> • high rents mean CC businesses cannot always be locally based • lack of public transport connectivity • lack of safe cycling infrastructure |

The personal

The personal aspects of the Social Practice Theory (SPT) framework refer to unconscious habits, personal dispositions, cognitive (conscious) decisions as well as personal skills. I have drawn from interviews with SCP experts, policymakers, business people and some individuals. While the focus of our studies varied, I have drawn out the personal aspects from each of these.

What habits and dispositions might influence collaborative consumption in these cities?

Business owners and policymakers reinforced that consumers in Hanoi and Bangkok are oriented towards buying goods new in the first instance. However, several CC business owners found that attitudes were changing and thought that people would be more inclined to rent in the future when the option is more readily available (Retamal and Hussey, submitted).

Policymakers and SCP experts thought that customers and businesses would not be inclined to share or rent goods due to a lack of familiarity with collaborative consumption business types and potentially due to fears that users might damage or steal goods (Retamal and Hussey, submitted). This lack of trust was evident in other business examples. In a case study of laundering in Manila, individuals washing their clothing at home expressed a lack of trust in laundry services and in the use of machines, rather than hand laundering. Their concerns in using a service were that clothing might not be cleaned sufficiently or that their clothing might be mixed with another's. This demonstrated the personal nature of laundering, the importance of cleanliness, a lack of trust in services, as well as pride in their own laundering skills (Retamal and Schandl, 2017). However, using a laundry service was common practice for many students and young professionals living in high-rise condominiums in Manila (Retamal and Schandl, 2017).

Several SCP experts that we interviewed explained a Thai orientation towards home services, where in the past people had maids working in their homes (see Retamal and Hussey, submitted). Now that Thai women have more options for work, there are fewer housemaids available and people either employ foreign housemaids or seek external

services. In contrast, a policymaker in Hanoi explained that home services were uncommon in Vietnam in the past due to socialism, but are now becoming more common and socially acceptable (Retamal and Hussey, submitted).

In Bangkok, SCP experts also thought that carsharing and ridesharing would be unlikely to work there due to: safety concerns, the personal nature of vehicles and the fact that cars are a status symbol (Retamal and Hussey, submitted). The rideshare business in Hanoi experienced difficulties getting participants to undertake all of the security steps required for registrations, which highlights customers disinclination to undertake the administrative aspects of sharing.

What conscious choices are driving people to use renting and sharing businesses?

According to business owners, saving money is a factor for customers using the rental businesses for toys, fashion, designer bags, ride share and bike share. The toy rental and designer bag rental businesses both identified two main reasons for customers to choose their services, one is to gain access to goods they can't afford and the other reason was to gain access to a greater variety of goods "because they get bored quickly" (Retamal, submitted). Several businesses described their market niche as providing access to high quality goods. Environmental concerns were only mentioned by the bikeshare and rideshare businesses as potential reasons people may choose to use their service. However in their customer surveys it was lower on the list of customer motivations, after cost saving and gaining access to transport (Retamal, submitted). Laundry service businesses in Manila thought that people used their services due to a lack of time and space and also to save money (Retamal and Schandl, 2017). In summary, the four broad motivations for using CC businesses include: (1) a lack of space or facilities; (2) gaining accessing to goods more affordably; (3) gaining access to variety; and (4) to meet a short-term or one-time need (Retamal, submitted).

How are business people inclined to treat their assets?

Most renting and sharing businesses in Southeast Asia have not been developed with sustainability in mind: the main exception is rideshare and bikeshare, which were conceived to alleviate traffic issues and air pollution (Retamal, 2017). Without sustainability being a driver, business people were inclined to undertake a number of

resource and cost saving activities. Logistical difficulties and risks associated with transport mean that businesses tended to reduce transportation of goods. In high-rise areas, deliveries were more readily undertaken on-foot (Retamal, 2017). CC businesses were inclined to buy durable goods that would withstand repeated rental, maintain their goods and also undertake minor repairs in-house. However, businesses were inclined to sell their stock before major repairs were needed, which may be due to economic reasons or due to a lack of repair skills within the business. Tool and fashion rental businesses felt the need to stock a reasonable quantity and diversity of items, to ensure dependability for customers (Retamal, 2017).

Summary for “the personal” aspects

There are a number of reasons consumers would want to use CC, including to save money, access variety, save space at home or to fulfil a short-term need. However, currently these consumption options are not very visible, as people lack familiarity and CC businesses are few. Consumers are also in the habit of buying goods if they are affordable, and shifting to use of CC requires breaking this habit. There are also a number of personal factors that are likely to influence uptake, including; a lack of trust in services and other users, a disinclination to share personal spaces or goods and the personal meanings attached to doing household work. However, attitudes are changing and it appears that shared-access options are becoming more accepted in Bangkok, while services are becoming more accepted in Hanoi. See summary in Table 30. These findings indicate that while there are a number of rational reasons to use CC, individuals may be held back by a lack of CC options and due to habits and personal concerns. The importance of habits and personal dispositions are highlighted by social practice theorists examining shifts to sustainable consumption options (Sahakian and Wilhite, 2014; Spaargaren, 2011; Warde, 2005).

Table 30: Summary of barriers and enablers with regard to the "personal" dimension

| Consumer | Business operator |
|--|--|
| ENABLERS | |
| <p>Existing consumer habits:</p> <ul style="list-style-type: none"> • Bangkok & Manila history of using household services <p>Changing attitudes:</p> <ul style="list-style-type: none"> • Increasing use of shared-access in Bangkok • Household services more acceptable in Hanoi <p>Cognitive consumer choices:</p> <ul style="list-style-type: none"> • gaining access to goods less expensively • accessing variety • meeting a short-term need • saving space at home | <p>Cognitive business choices:</p> <ul style="list-style-type: none"> • Choosing durable goods • Undertaking maintenance and repair of goods |
| BARRIERS / DETRACTIONS | |
| <p>Consumer dispositions as barriers to sharing:</p> <ul style="list-style-type: none"> • Orientation to buying and owning goods • Lacking familiarity with sharing businesses • Lacking trust in services and other users • Disinclination to share personal spaces or personal items • Household work connected to personal pride and other meanings | <p>Business operator dispositions/choices:</p> <ul style="list-style-type: none"> • Lack of skills or interest in doing major repairs or refurbishing goods |

The social world

Who are the users of shared consumption likely to be?

Based on interviews with collaborative consumption business operators, users in our study can be classified into four broad categories: (1) young people, such as students and office workers; (2) people transitioning lifestyles; (3) the upper middle class and aspiring elite; and (4) broadly anyone attending or catering for events, or for tourists

(Retamal, submitted). These categories all represent specific customer niches. As such, there were a lack of businesses serving either the bulk of middle class families, or people from lower socio-economic groups (Retamal, submitted). The first category of users – university students or young professionals – appeared to be the most common. People “transitioning lifestyles” refers to people who cannot afford to buy goods or perhaps a home, and rent to facilitate a different lifestyle. The “upper middle class” renters were accessing quality lifestyle goods such as designer handbags and other fashion items (Retamal, submitted).

What is the social and economic context for services or shared use?

In general, middle-class and upper middle-class people appeared most likely to be using formal sharing businesses in these cities. I did not investigate informal business types or informal sharing within social networks, which may be more common among people from lower socio-economic groups (Retamal, submitted). I identified two major categories of CC business types: those that enable basic provisioning, and those that provide choice and convenience, with the latter generally serving the upper middle class (Retamal, submitted). In Bangkok, I found more collaborative consumption businesses and more that would enable access to luxury goods or lifestyles, for example, rental of designer handbags, and rental of winter coats and baby equipment for overseas travel. I also found businesses that were targeting the “high society” with upmarket toy and fashion rental. This contrasts with other types of collaborative consumption businesses that serve more basic consumption needs, such as ride-share to facilitate transport in Hanoi, toy rental for young families in Hanoi, and laundry shops providing services to students in Manila (Retamal, submitted).

In a case study of laundering in Manila, I found that poorer people do their own laundry and single middle class people may use a laundry service, however the wealthy are more likely to have an in-house maid service (Retamal and Schandl, 2017). These distinctions are likely to be strongly related to the work opportunities available to women: working women are more likely to use a service or have a maid helping at home, and in the future, more work opportunities for women may mean fewer are working as maids (Retamal and Schandl, 2017). The relative difference in wages in a city is likely to determine whether services, such as laundry wash and dry are more

common than shared-access type businesses, such as coin-operated laundries. I note that labour-intensive services rely on some level of income inequality, and propose that as the middle-classes grow, such services may become less available. If societal trust grows as the middle-classes grow, shared-access businesses may become more available (Retamal, submitted).

What are the likely socio-cultural barriers or enablers for sharing and servicing?

In Bangkok and Hanoi, several societal norms are likely to hinder further use of collaborative consumption. There remains a dominant preference for owning goods, a lack of awareness about sustainable consumption and a lack of awareness about sharing-type business offerings. However, businesses offering shared-access or services noted that customer numbers have been steadily increasing, which suggests that attitudes are changing, at least amongst niche groups (Retamal and Hussey, submitted). In addition to this, we noted a theme of socio-cultural change. For example in Hanoi: younger families are starting to live separately from the extended family home; home services are becoming more socially acceptable; and new smartphone technology is becoming more widely used. This period of change may present an enabler for new smartphone enabled businesses offering services or shared-access, particularly for young people setting up their first home (Retamal and Hussey, submitted). In Bangkok, fewer changes appear to be occurring, however, many facets of existing lifestyles may lend themselves to shared-access or service businesses, including: long commutes, small apartment living, and existing informal modes of transport sharing (Retamal and Hussey, submitted).

What commercial risks are encountered by businesses?

Business-to-business (B2B) models of renting and servicing were considered more established and trustworthy and appear to be better supported by banks. In contrast, customer-to-customer (C2C) models struggled to operate in both Hanoi and Bangkok (Retamal and Hussey, submitted). Businesses offering C2C exchanges also offered B2C exchanges in order to ensure some profitability. While B2C models were relatively easier to operate, businesses in both Hanoi and Bangkok described a similar set of commercial difficulties. B2C renting businesses in both cities struggled to obtain

finance from banks, and struggled to ensure that customers paid adequate deposits in case of asset damage (Retamal and Hussey, submitted).

What formal institutions influence collaborative consumption in Bangkok and Hanoi?

In Thailand and Vietnam, there are currently no policies specifically supporting collaborative consumption or sharing economy style businesses. There are numerous policies and programs supporting sustainable consumption and production (SCP) activities at a high level, however, these are primarily targeted at major industries rather than small businesses (Retamal and Hussey, submitted). In Thailand, there are several proposed laws currently being considered, which may be relevant to collaborative consumption businesses in the future, including the National Waste Management Act, the 3R (Reduce, Reuse, Recycle) Promotion Law and the Waste Electrical and Electronic Equipment (WEEE) Law. Law to enable extended producer responsibility (EPR) has recently been passed in Vietnam but still requires implementation. At the detailed level, there are some formal barriers to sharing businesses, such as the ban on taxi-sharing in Vietnam due to legal requirements specifying taxis can only take one passenger “contract” at a time. Businesses that enable a combination of sharing, renting and selling in Thailand and Vietnam lack a specific legal definition, and therefore find it difficult to obtain appropriate business permits (Retamal and Hussey, submitted).

Summary for “the social world”

CC is serving niche customer groups but does not appear to be serving middle class families or lower-socioeconomic groups. However, CC businesses report that acceptance is increasing and their businesses are growing. There are multiple lifestyle aspects that would lend themselves to more shared-access or service businesses, including existing shared transport and the space and time pressures created by long commutes and small apartment living. In addition, there are several socio-cultural changes occurring which may facilitate greater use of CC, such as young families moving out of the extended family home in Hanoi. When the middle classes grow and wages increase in these cities, there may be fewer service-based options and more shared-access options. There is plenty of high-level policy support for sustainable business activity, but a lack of specific support for CC businesses, including a lack of legal definitions and frameworks to support their operation. For example, CC

businesses face a number of commercial risks, with regard to potential property damage, and the lack of an appropriate legal framework to support deposit-taking. CC businesses face greater risk and uncertainty due to the lack of formal institutional support, which creates some commercial uncertainty and difficulty in obtaining finance. See summary in Table 31.

Table 31: Summary of barriers and enablers with regard to the “social world”

| Social aspects | Societal norms, institutions |
|--|---|
| ENABLERS | |
| <p>Niche customer groups include:</p> <ul style="list-style-type: none"> • young adults; • people transitioning lifestyles; • upper middle class; • tourists and others with short-term needs. <p>CC businesses provide:</p> <ul style="list-style-type: none"> • basic provisioning for middle classes, • choice and convenience to upper middle class <p>CC suits existing lifestyles:</p> <ul style="list-style-type: none"> • long commutes, informal shared transport • small apartment living, small family unit <p>Increasing CC customers suggest growing social acceptability</p> | <p>High-level formal institutions are supportive:</p> <ul style="list-style-type: none"> • policies and laws supporting SCP activities and sustainable business <p>Socio-cultural changes occurring:</p> <ul style="list-style-type: none"> • young families moving out from extended family homes in Hanoi • home services more socially acceptable in Hanoi • middle-classes are growing, shared-access may become more available |
| BARRIERS / DETRACTIONS | |
| <p>Social norm of buying goods you can afford</p> <p>Lack of consumer awareness regarding:</p> <ul style="list-style-type: none"> • sustainable consumption • sharing business models <p>CC businesses currently not serving:</p> <ul style="list-style-type: none"> • bulk of middle class families • lower-socioeconomic groups | <p>Labour intensive services associated with availability of low-waged labour (income inequality)</p> <p>Lack of formal rules hinders CC businesses:</p> <ul style="list-style-type: none"> • lack of legal definitions • lack of appropriate business permits <p>CC businesses face difficulties:</p> <ul style="list-style-type: none"> • obtaining finance • ensure adequate deposits to reduce risks • ensuring profitability for C2C models |

Opportunities for interventions

Within the material dimension, there are a number of enabling factors for CC businesses, with the physical environment likely to support sharing in high-rise, small apartments, and traffic congestion likely to drive use of transport sharing options. There are also a number of business practices that impact positively on sustainability such as using durable goods and undertaking repairs. The difficult barriers in the material world include infrastructure that does not support public transport or low carbon options such as cycling. Transport infrastructure is well developed in Bangkok, is under development in Hanoi and needs much more development in Metro Manila. The key opportunities for intervention are at the business level, in terms of encouraging sustainable practices amongst business operators, and at the neighbourhood level, potentially enabling communal spaces or affordable rent for sharing businesses. Governments can also develop better public transport and cycling networks.

At the personal level, there are a number of enablers, such as changing attitudes and various cognitive choices that could convince people to use CC options. However, there are a number of barriers relating to individual dispositions, such as issues of: trust, familiarity, the habits of purchasing goods; and the personal nature of some types of consumption. These barriers are likely to be durable and difficult to change. The key opportunities for influence are to raise awareness and increase familiarity with sharing type businesses. This overlaps with the social world in terms of enabling social acceptability.

In the social world, the durable barriers are likely to be social norms for buying goods that are affordable, and the fact that CC businesses are currently only serving niche groups, as discussed above. The key opportunities for interventions are for governments to legitimise sharing/renting/selling businesses by creating a legal definition, appropriate business permits and setting up a legal framework to support deposit taking and reduce property risks. This may in turn provide the foundation for businesses to access finance.

Of the three dimensions, the first important step may be to legitimise CC businesses. Without legal frameworks to support them, these business types will struggle to exist and would be unlikely to proliferate and become mainstream. Once businesses have

been legally enabled, this may encourage investment and financing. Following this, it will be important to encourage sustainable operations, through incentives or sustainability guidelines for businesses.

Conclusions

This paper has synthesized a body of research regarding collaborative consumption in three Southeast Asian cities – Hanoi, Metro Manila and Bangkok. The key question addressed in this paper, is: what are the prospects for environmentally sustainable collaborative consumption in Southeast Asian cities? The question has been addressed by examining the three dimensions of consumption proposed by social practice theory – the personal, the material world and the social world. Using this framework, I have identified the key barriers and enablers for collaborative consumption businesses, with a summary table at the end of each of the three sections. The analysis reveals the durable barriers to CC and the barriers that might be overcome with government interventions.

There are many positive enabling factors for CC in these three cities, including: the existing physical environment and urban lifestyles; changing attitudes to renting and services; and changes to family living arrangements. However, there are still very few businesses available. With CC businesses facing a number of risks; and consumers enveloped in purchasing habits and a very strong ownership culture, some systemic changes would be required. In this case, it appears that shifting formal institutions are an important lever. Simple changes such as legal recognition of the business type, appropriate business permits, and legal guidelines on deposits can help to reduce business uncertainty. This would clarify the potential for profitability and enable better access to finance and insurance. Once CC businesses are enabled, more businesses can enter the market and visibility could increase. This visibility, as well as some awareness raising would be required to enable a breakthrough. Broad visibility may already be starting in the transport sector, with the recent introduction of taxi-sharing apps. With some commercial and legal barriers mitigated, the next step would be to encourage sustainable business practices. Sustainability benefits from CC are quite possible, but are not guaranteed. The environmental sustainability of CC businesses therefore needs to be supported through guidelines, incentives or other programs. The key sectors that appear likely to grow and potentially influence the environmental impacts of household

consumption are transport sharing and laundry sharing/ services. It is not clear whether CC options can become useful to middle class families; however, the growth of toy rental is positive, and clothing rental has potential with regards to women's fashion. The social implications of CC in general and for services in particular need to be explored in further research.

Based on both the barriers and enablers identified in these four studies, we can also build a picture of the "ideal" conditions which are likely to enable CC in these three cities, this is shown in Figure 19. This figure is useful for illustrating the complexity of factors influencing consumption from all three dimensions. It can also help to frame future efforts to enable collaborative consumption, particularly in the Asian region, but it may also be relevant in other contexts. The SPT framework was useful for structuring and clarifying the different dimensions of CC and it helped to broadly separate the barriers that are more personal and less changeable, from the material and social barriers that might be influenced by business activities and government interventions.

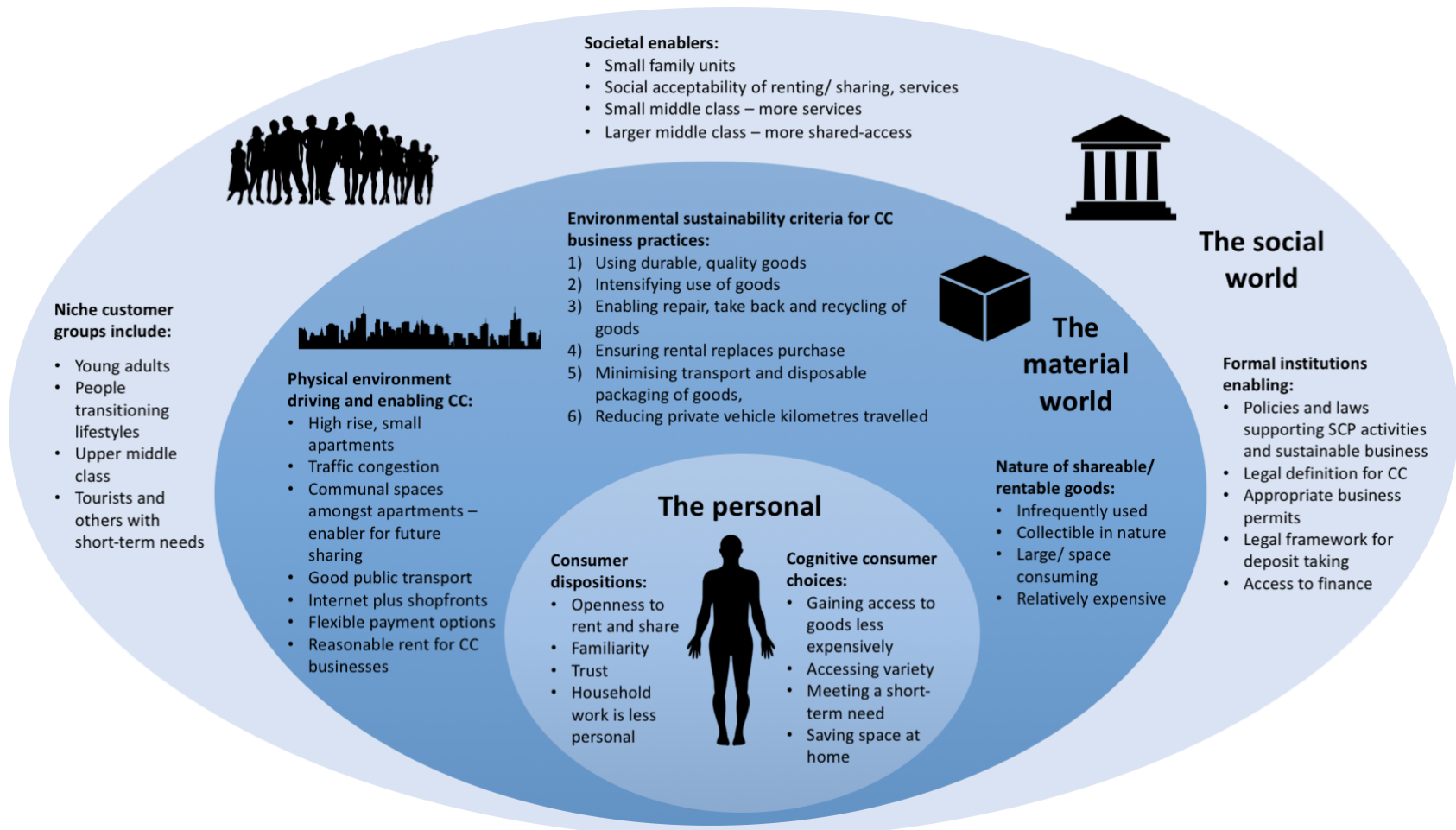


Figure 19: Conditions enabling collaborative consumption. Based on a synthesis of research in Southeast Asian cities and using a social practice theory framework.

This paper addresses a broad question across three countries and multiple sectors. As such, this study cannot capture the detail behind every factor influencing every sector in which CC businesses are operating. However, at this stage the CC business model is nascent, there are few businesses, and in these studies, we have interviewed a variety of businesses from different sectors to gain a breadth of perspectives. Drawing on over sixty in-country interviews with knowledgeable stakeholders, this study offers a useful overview of the factors influencing CC and its prospects as an emerging environmentally sustainable form of consumption. This information is useful for practitioners and policymakers for SCP in the region. As these businesses develop, further research will help to illuminate the prospects for different CC business models and specific sectors.

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CHAPTER NINE:

Conclusions and future research

In Chapter Eight, I provided a synthesis and discussion of findings from the four main research papers and responded to the primary research question of this thesis. For ease of reading this thesis, this chapter simply provides a brief overview of the research questions, findings and contributions to knowledge. The chapter finishes with future research directions.

This thesis has explored the emergence of collaborative consumption businesses in three Southeast Asian cities – Bangkok, Metro Manila and Hanoi. The aim was to gain insights into how these alternative consumption options might contribute to more environmentally sustainable household consumption in emerging economies. To explore this topic, I investigated the nature of collaborative consumption businesses in these cities, issues affecting their environmental sustainability and the barriers and enablers to their further proliferation. I undertook primary research over a six-month period while immersed in the three cities, which included sixty-one interviews with relevant stakeholders. In the following section I summarise the findings in relation to each research sub-question.

Research questions and findings

The primary research question for this thesis is: *What are the prospects for environmentally sustainable collaborative consumption businesses in Southeast Asia?* To answer this question, I developed a number of sub research questions and studies. I explain the findings for the sub-research questions first and finish with the primary research question.

RQ1: In which sectors is collaborative consumption (CC) currently emerging in these cities, and who are the users? In which sectors do CC businesses have the potential to replace the purchase of goods?

Collaborative consumption businesses in Hanoi, Bangkok and Metro Manila exist in numerous sectors, including for: transport, food, housing, recreation, laundry and cleaning, clothing and healthcare. However, in the food and housing sectors, these were predominantly traditional service businesses. New business types included bikeshare, rideshare/taxishare, tool, toy and fashion rental. Four categories of user types were identified based on interviews with business operators, with the first type being the most common: (1) young people such as students and office workers; (2) people transitioning lifestyles; (3) upper middle-class people renting to access more diversity; and (4) tourists and people renting for events. Along with these customer types, business owners identified four likely reasons for use: a lack of space or facilities at home; less expensive access to goods; access to variety; or due to a short-term need. CC businesses in the transport sharing and laundry services sector were identified as the most likely to replace ownership of goods, being vehicles, washing machines and dryers. This is due to the fact that CC businesses are widely available in these sectors, together with the fact that the majority of people in these cities do not yet own these goods. Aside from these sectors, toy rental, clothing rental and bikeshare are increasingly available and may offer opportunities to avoid ownership of goods, or reduce the impacts of transport. However, CC businesses are notably not yet serving middle class families or lower socio-economic groups, which will be important if CC is to become more widespread. Further details of these findings can be found in Chapter 4: Paper I of this thesis, along with some theoretical propositions regarding share-ability and service-ability.

RQ2: How are CC businesses currently operating in these cities with regard to sustainability practices? What factors enable or inhibit them from achieving environmentally sustainable outcomes?

To address this question, I identified six sustainability practices from the literature that can mitigate potential rebound effects and ensure positive environmental outcomes from CC businesses, these include: (1) using durable, quality goods, (2) intensifying use of goods, (3) undertaking repair, take back and recycling of goods, (4) ensuring rental replaces purchase of goods, (5) minimising transport and disposable packaging, and (6)

reducing private vehicle kilometres travelled. Amongst the twenty CC businesses that were interviewed for this study, I found the majority performed well with regards to criteria 1 and 2. Business practices with regard to the remaining criteria were influenced by contextual factors, including: market conditions, public infrastructure, housing form, customer behaviour and the nature of the product itself. Factors inhibiting sustainable PSS that may be more acute in emerging economies include: a lack of public transport, a thriving second hand market (making retrieval of recyclables more complex), and a lack of customer familiarity with goods (as renters may still be inspired to purchase). Further details of these findings can be found in Chapter 5: Paper II, and in Table 17 there are suggestions for interventions that might facilitate environmentally sustainable outcomes.

RQ3: How does resource use compare for individual and shared consumption in the case of laundering in Manila? What conditions facilitate collaborative consumption?

In this detailed study comparing resource use and social practices associated with different laundering methods in Manila, we found that different laundering methods are associated with different socio-economic classes and household and housing types. With regard to resource consumption, we found that washing clothing by hand uses the least water and energy, but significant amounts of women's time. Laundering at home with a washing machine uses a similar quantity of water to laundry services in Manila, but far less energy due to the ability to air-dry clothes at home, rather than using a dryer. However, we can assume that embodied resource use is significantly higher for individual machine-washing at home, as machine utilization rates are much lower compared to laundry services.

This example of individual and shared laundering practices highlighted the complexity of context and its influence on the relative resource consumption of CC, as we found that laundry services were using domestic sized machines (rather than industrial sized machines), were not mixing clothes from different customers and were compelled to use dryers due to space constraints. If laundry service businesses were using efficient, industrial sized machines, there would have been water savings. If in the future, householders begin to own and use dryers, and laundry services use efficient machines, then services are likely to be more energy and water efficient in operation, and would be

significantly more resource efficient in terms of the embodied resources in laundering equipment.

The overview of material, personal and social factors associated with different laundry practices provided insights into the likely drivers of change in the future. These include: women's workforce participation, the availability of low-waged labour to undertake household services, the personal meanings of household work, and trust in services. Material factors such as housing form, building regulations and available space will be significant factors influencing laundering methods in the future. Further details of these findings can be found in Chapter 6: Paper III.

RQ4: What are the barriers and enablers for CC business in Bangkok and Hanoi in terms of the relevant socio-technical regimes? What are the key levers of change?

The key barriers to CC from a governance perspective, relevant to both cities, are the lack of: legal definitions, appropriate business permits and legal frameworks to facilitate deposit-taking. The current ban on taxi-sharing in Hanoi is a specific legal barrier. The key socio-cultural barrier in both cities is the presence of an “ownership culture”, which may be difficult to shift. In the technological / physical regime, traffic congestion presents logistical barriers to goods sharing and a challenging environment for cycling and bikesharing. The lack of adequate public transport in Hanoi is currently a barrier to further transport sharing, however, major new transport networks are under construction. In the commercial regime, the dominant barriers are the business norm of buying and selling, and the resistance of incumbent industry groups. In addition, there are specific commercial barriers to CC businesses, including: difficulties in accessing finance, challenges in making C2C businesses profitable, ensuring customers pay deposits and thereby reducing the risk of asset damage. Implementing a legal framework to support CC businesses in the governance regime would likely mitigate the commercial regime barriers and may be the key lever for change in other regimes to enable further mainstreaming of CC businesses.

In terms of enablers, in the governance regime in both cities there are numerous policies and new laws relating to sustainable business and solid waste that could support CC businesses at a high-level. There are multiple socio-cultural factors that may facilitate adoption of new consumption options, including changing family living arrangements

in Hanoi, small household sizes in Bangkok, increasing acceptability of services in Hanoi and increasing acceptability of sharing/renting businesses in Bangkok. In the technological/ physical regime, CC businesses in both cities tend to offer hybrid online or offline transactions and multiple payment options. There are also various lifestyle characteristics in Bangkok which may drive use of CC, including high-rise living, small living quarters and long commutes. Further details regarding these findings can be found in Chapter 7: Paper IV.

Primary research question: What are the prospects for environmentally sustainable collaborative consumption businesses in Southeast Asia?

There is strong potential for CC businesses in the transport sector to take hold in Southeast Asian cities, with new app-based services proliferating in addition to traditional ridesharing options. This is significant considering that transport is one of the highest impact household consumption sectors. Laundry services are typically established, but are widespread and could be readily supported by city governments. Due to their widespread availability, these two CC business types have the potential to replace the need to purchase major equipment – cars, washing machines and dryers - and thereby contribute to reducing the environmental impacts of household consumption related to high impact consumption sectors, transport and housing/laundry. These two business types have the potential to mainstream without intervention, however, their sustainability outcomes are not guaranteed. With transport sharing options gaining popularity, in these cities there may be an opportunity for governments to facilitate the most environmentally beneficial options, such as taxi-sharing / carpooling, over traditional taxi use facilitated by an app. In Hanoi, this is a critical issue where presently app-enabled taxi use is allowed, while taxi-sharing is banned.

With regards to other CC business types, there are a number of commercial barriers for small businesses and they appear unlikely to proliferate without government support. Businesses such as toy rental and fashion rental may grow and continue to serve niche groups, but may not enter mainstream use unless there is a critical mass of CC businesses entering the market. To create opportunities for a range of CC business types across the spectrum of household consumption, governments will need to develop legal frameworks to support them. This will in turn reduce commercial risks, and improve

business access to finance. From there, the prospects for CC businesses depend on a combination of factors: whether CC business models are widely profitable; whether the physical urban environment continues to create pressures on householder's space and time, thereby driving use of shared-access and services; and whether socio-cultural changes and greater uptake of technology create an openness and social acceptability for use of CC. The personal meanings attached to product ownership and household work are likely to limit the penetration of CC businesses to the less personal aspects of household consumption. The spread of CC services may continue while there is a small middle-class in cities such as Hanoi and Manila. With a larger middle-class, such as in Bangkok, shared-access businesses may become more common. In all cases, positive social and environmental outcomes will need to be encouraged or incentivised by governments.

Reflections

Decoupling and sustainable consumption

In Chapters 2 and 3, I presented a range of literature that foregrounds this research with concepts such as decoupling, the environmental Kuznets curve and weak and strong sustainable consumption. I now reflect on these concepts with regard to the findings of this research. The interviews in this study revealed that the users of CC in the three cities were most likely to be middle to upper middle class, which suggests that CC is not accessible to lower socio-economic groups. This is a critical barrier to the usefulness of CC in enabling “leapfrogging” or “tunneling through” the Kuznets curve, as avoiding the peaks of resource consumption will require adopting less resource intensive consumption practices while the economy and middle classes are growing. If users only adopt CC once they have already achieved a certain level of wealth, then the potential to avoid wasteful consumption is greatly diminished. With regard to decoupling, or the de-linking of economic growth from material resource use, it appears unlikely that CC can assist with the process of decoupling, unless: lower socioeconomic groups participate, uptake of CC is spread far more widely across the population and consumption sectors, business sustainability can be ensured and rebound effects can be mitigated.

In addition to the difficulties with regards to decoupling and “leapfrogging”, the lack of participation by lower socio-economic groups suggests that CC may not represent an option for “strong” sustainable consumption (SC), as strong SC is expected to address inequalities by enabling better distribution of resources. Enabling lower-socioeconomic groups access to participate in CC would assist with both the environmental and social sustainability of the consumption model. This is also highlighted by the types of products that are being shared through CC. The analysis in Paper 1 identified two key types of businesses, those which provide “basic provisioning” and those which enable “choice and convenience”, with businesses serving the latter more likely to be catering to consumerism. The latter type is more likely to be used by wealthier people and is less likely to address issues of sufficiency and overconsumption.

Examining diverse cities

Investigating collaborative consumption in three different cities was helpful, as the initial goal of this study was to identify the existence and nature of CC in Southeast Asian cities. The three different cities enabled me to identify a wide variety of collaborative consumption practices and businesses. It was particularly useful to see that Bangkok, a wealthy and economically open country, had the largest variety of CC businesses available. At the time, far less diversity in CC was available in Metro Manila, which is also an economically open country, which suggested that income levels and potentially other cultural or demographic factors played a role. Interestingly, the CC examples found in Hanoi were practical, relating to fundamental needs such as transport and laundering, compared to the CC examples in Bangkok, which were of a more discretionary nature, such as fashion rental. Undertaking research in three cities was challenging, due to logistics and the time required to develop an understanding, make contacts and conduct interviews or collect other data. However, I believe that examining three different locations provides a much more diverse picture of collaborative consumption in Southeast Asia and its challenges and prospects. Examining only one city would have limited the capacity to understand the influence of different contexts, and the ability to understand the potential for CC more broadly.

Theories applied

This thesis drew upon social practice theory (SPT) and multi-level perspective (MLP) as theoretical lenses to understand the potential for greater uptake of collaborative consumption in Southeast Asia. Each theory has strengths and weakness in this application. Social practice theory best represented my perspectives on consumption influences, taking into consideration: social norms, institutions, technology and infrastructure as well as bodily habits and skills. SPT considers individual agency interacting with structure in a dynamic way, and practices sit at the centre of the analysis. It was very useful to help identify the broad range of influences pertaining to laundering practices in Paper III. However, it is typically applied at a smaller scale, and it was challenging to apply it across a range of collaborative consumption practices in the synthesis in Paper V, considering the level of detail that could be applied. Multi-level perspective has a greater focus on business and the broader regime factors influencing success. MLP was useful to understand the systemic barriers and enablers for collaborative consumption, and the combination with institutional theory helped to identify the durable and less durable barriers. In this regard MLP may be better at identifying powerful regimes, rather than SPT which considers influencing factors equally. While the use of SPT for the synthesis in Paper V was challenging due to the scale, it was a useful opportunity to combine findings from the two different theoretical approaches, and to ensure that aspects of the personal dimension were considered alongside the detailed analysis of the structural barriers and enablers.

Contributions to knowledge

This thesis addresses a significant research gap where there has been little investigation of product-service systems and collaborative consumption business models in emerging economies. It provides several unique contributions to the academic literature, using an interdisciplinary approach, drawing on the social sciences and industrial ecology.

The thesis:

- Provides insights into the nature and use of collaborative consumption and product service system businesses in emerging Southeast Asian cities, and explores the potential for leapfrogging consumption through sharing in practical

terms, and contributes to theory development regarding share-ability and service-ability (Chapter 4: Paper I)

- Develops a framework of key sustainability issues in order to examine the sustainability of practices within collaborative consumption businesses, and uses this framework to assess businesses in the Southeast Asian setting (Chapter 5: Paper II)
- Compares actual resource consumption for individual and shared laundering practices in Metro Manila, drawing on empirical data, with the first examples of this comparison undertaken in an emerging economy setting. It also illuminates the social dimensions of various laundering practices and the complexity associated with technological transitions (Chapter 6: Paper III)
- Presents a comprehensive examination of socio-technical regime barriers and enablers for collaborative consumption in Hanoi and Bangkok, with key insights for policy makers and SCP practitioners in Asia (Chapter 7: Paper IV)
- Presents a unique synthesis of findings using social practice theory to identify the key factors from the social, personal and material aspects of consumption that influence the prospects for environmentally sustainable collaborative consumption (Chapter 8: Paper V).
- Uses social practice theory as a unifying meta theory in an innovative way, as I incorporate both quantitative and qualitative findings and consider consumption influences at a meta scale (Chapter 8: Paper V).

Future research

Social sustainability

In the present situation, where collaborative consumption and sharing economy businesses are becoming more common in developing and emerging economies, there is an urgent need to understand their social impacts. With increasing numbers of app-based services, there are likely to be impacts on service workers, and incumbent industries in general. These issues have already been highlighted in advanced economies (Martin, 2016; Schor, 2014), and may be intensified in contexts with more vulnerable communities, and less regulation and law enforcement.

There is an emerging interest in the potential impacts of the sharing economy on development (Hira, 2017; Hira and Reilly, 2017), and this raises important questions about income inequality, considering the nature of service work, and the reality of asset sharing when few can afford to own. With the introduction of new CC and sharing economy (SE) businesses in developing countries, there are issues regarding the distribution of wealth, particularly if those companies are foreign-based. If these businesses continue to expand in developing and emerging economies it will be important to understand how they can serve lower-socioeconomic groups and how profits and employment might be localised.

The social and economic dimensions

Extending on from the social impacts, the social and economic dimensions of CC and SE need to be explored further. For example, the consumer to consumer (C2C) business model may provide greater potential for environmental benefits through sharing of idle, rather than new assets (Frenken and Schor, 2017). However, as a business model, C2C can struggle to be profitable. Understanding how the C2C model can be economically viable for other industries beyond ridehailing (Uber) and home sharing (Airbnb) will be important for the ongoing sustainability of the sharing economy.

On the social side, CC and SE entail very different relationships between the consumer, product and provider. Social practice theory (SPT), and papers within this thesis (see Chapter 6: paper III) highlight the importance of the personal dimensions of consumption, including consumer habits and dispositions, and how these can form a barrier to uptake of shared consumption options. In the field of sustainable consumption, there is significant research using social practice theory to understand how to influence more sustainable consumption practices (Sahakian and Wilhite, 2014; Shove, 2014; Spaargaren, 2003; Warde, 2005), however, there are few studies using SPT to examine PSS, CC and SE. Due to the fundamentally different nature of shared-access and services, the fields of PSS, CC and SE would benefit from further application of SPT, to gain deeper understandings of the personal and social dimensions that can motivate shared consumption.

Environmental sustainability

At the core of this thesis and significant other academic work regarding PSS, is the theoretical premise that shared-access and servicizing can reduce environmental impacts compared to individual ownership of material goods. While this premise is supported by a number of empirical works, there is insufficient evaluation of the environmental impacts of different types of businesses, operating in different contexts (Tukker, 2015; Vezzoli et al., 2015). There is also recognition that outcomes are highly context dependent (Demailly and Novel, 2014; Tukker and Tischner, 2006a). While this thesis contributes to the literature regarding the contexts that may enable sustainable outcomes in Southeast Asia, much more evaluation of real world PSS, CC and SE businesses and the contexts that enable positive environmental outcomes is needed.

Arising from this thesis is a need to separately consider the potential of CC businesses that provide “basic provisioning” versus those that provide “choice and convenience” (see Chapter 4: Paper I). CC businesses in the latter category tend to enable access to a diversity of goods, for example, rental of toys, clothing and accessories. It is unclear whether these business types replace or reduce individual ownership, so it will be important to examine real world examples to understand how the use of these business types influences the householder’s consumption of other goods. Intertwined with this, is the potential to prioritise business types and products that may achieve the most significant overall reductions in environmental impacts.

Policy studies

From the research to date, it is clear that PSS, CC and SE businesses are niche business types that generally struggle to enter the mainstream, with the exception of some major international sharing economy businesses. It is also evident that their social and environmental implications vary according to context. Therefore, in order to enable these businesses to enter the mainstream, formal institutional support in the form of appropriate policy settings and regulation is likely to be required. Thereafter, policy guidance is likely to be needed to ensure positive social and environmental outcomes. This raises a number of questions with regard to which types of policies that influence PSS, CC and SE businesses and which types of policies or programs might be effective in enabling positive outcomes.

There are suggestions in the literature that extended producer responsibility (EPR) style policies will encourage businesses to adopt PSS style business models to facilitate take-back of goods (Mont and Lindhqvist, 2003; Plepys et al., 2015). Now that EPR policies are emerging around the world, there are opportunities to examine whether this is indeed the case. Some research has been undertaken to examine policies to facilitate PSS in Europe (Mont and Lindhqvist, 2003; Plepys et al., 2015), however, more research in a variety of jurisdictions would be beneficial. In particular, there are few examples of policy programs that directly foster these business types. A prominent example is that of Seoul, South Korea, where the sharing economy has been facilitated by government programs. Evaluation of these and other examples will facilitate the development of appropriate policy frameworks.

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APPENDICES

Appendix One

Interview Guides – for CC businesses

| Theme | Questions |
|---|---|
| Open question | Tell me about your business and how it operates (What was your motivation for starting the business? How long has it been running? etc) |
| Customers | What types of people use your business/service? (age, socio-economic status) Why do you think people use your business/service? |
| Replacing product purchase | Do you think your customers use your service instead of purchasing the product? |
| Product durability | How long do your products last? (How often do you replace your equipment/goods?) |
| Local scale / transport / packaging | Where do your customers live? How do you transport goods, how far? Do you use packaging? |
| Increasing product use | How many items do you have in stock? How much of your stock is being rented at a time? |
| Repair and end of life | Do you repair your goods? What do you do with goods when they are too difficult to repair? |
| (for transport sharing only) Reducing vehicle kilometres travelled | What mode of transport does your service replace? Do you have any data on number of trips/passengers per year? |
| Perceptions | What do you think the community perception is regarding this type of business/service? |
| Barriers / enablers | What challenges have you encountered since starting this business? What situation would make your business more popular? Any policies / regulations / taxes that influence your business? |
| The future | What do you think will change in the future and how will that affect your business? |

Interview guide for other stakeholders and experts

| Topic | Interview Question |
|--|--|
| Opening | In what areas do you work? Tell me about your role. |
| Sustainable consumption and production activities | |
| SCP in <country> | What kind of sustainable consumption activities do you see occurring in the business community in <country>? |
| | What / who are the drivers for these activities? Have they been effective? |
| | What institutions in your country are involved in SCP? (who are the stakeholders?) |
| | And what are the directions for SCP within the policy community? |
| Focus on CC / PSS – use table of examples in each sector to begin discussion | |
| Exploratory - understanding business sectors | Tell me about any businesses you know of that provide a service or shared access to goods |
| | What online businesses are you aware of that involve sharing or renting goods part-time? |
| Customers/perceptions | What members of the community do you think are likely to use these services? |
| Perceptions/future potential | What is your experience with such businesses? |
| | What do you think the market would be for more of these types of businesses in the future? Any particular sectors where these business types might work? |
| | What do you think the community response would be if more of these types of services were available? (Is it culturally acceptable? Are there any connotations?) |
| Barriers/enablers | How do you think government policies or regulations influence the use of these types of business models? (Are there any incentives available or any legal or regulatory barriers?) Or are there other barriers? |
| | With regard to policies and regulations, are there any documents you can refer me to? |
| Case studies | Do you know of any particular businesses that might be useful case studies for this research? |
| Snowball | Is there anyone else that you would recommend that I speak to? |

Appendix Two



Participant Information Sheet

About the researcher: Monique Retamal is undertaking this research as part of her PhD studies at the Australian National University within the Fenner School of Environment and Society. She has a background in environmental/water engineering, sustainability research and political economy.

About the research:
Models for sustainable consumption? Service and access-based business models in emerging economies in Asia

This research will examine the use of business models that offer a service or shared access to goods as an alternative to purchasing products, and whether they have potential to contribute to more sustainable consumption practices. Some examples of these types of businesses include communal laundries, car share schemes or farm equipment co-operatives. The research aims to identify where these types of businesses are currently operating and where they may have some further potential in emerging economies in Asia. The study will focus on Thailand, Viet Nam and the Philippines and will involve semi-structured interviews with individuals from business and trade councils, multi-lateral organisations, consumer organisations, academics, non-government organisations, policy makers and business owners. The study will also involve analysis of government policies that may support these business models and will include case studies of businesses in each country.

Participant involvement: You are invited to participate in a 30-60 min interview to discuss the topic of 'business models for sustainable consumption'. I will write notes during the interview and send these notes to you by email so that you can check and confirm my summary afterwards.

Contacts and questions: If you would like to discuss the study after the interview, you may contact myself (Monique Retamal) or one of my supervisors listed below.

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Participant consent form

Name: _____

- I agree to share information and opinions on the topic of "business models for sustainable consumption", which will contribute to Monique Retamal's PhD research and will be published as part of that research
- I understand that when the research is published, my comments will not be directly linked to me or my organisation by name, but may be attributed to my role e.g. 'business owner', 'policymaker', 'academic', 'industry representative'.
- I consent to my organisation being listed as a participant in Monique Retamal's final PhD document (yes / no) (please circle one)
- I agree that I am contributing voluntarily and that if I change my mind, I can withdraw from the study at any time without giving a reason (note: if you withdraw, Monique will remove your data from the study)
- I have received an information sheet that provides more details about the research project, and contact details of the researcher and supervisors. I understand that I can contact Monique / her supervisors / or the local contact at any time to ask for more information about the study or how my contributions are being used.

Signed: _____ Date: _____

Ethics Committee Clearance:

The ethical aspects of this research have been approved by the ANU Human Research Ethics Committee. If you have any concerns or complaints about how this research has been conducted, please contact:

Ethics Manager

The ANU Human Research Ethics Committee
The Australian National University
Telephone: +61 (0) 2 6125 3427
Email: Human.Ethics.Officer@anu.edu.au

Appendix Three

Organisations interviewed for this research

| Stakeholders and experts | |
|---------------------------------|--|
| Bangkok | Chulalongkorn University, Bangkok |
| | CSR Club of Thailand |
| | National Science and Technology Development Agency |
| | United Nations Economic and Social Commission Asia Pacific (UNESCAP) |
| | United Nations Environment Programme (UNEP) |
| | Institute for Global Environmental Strategies (Japan) |
| | Federation of Thai Industries |
| | SCP-Thailand |
| | Ministry of Natural Resources and Environment (TH) |
| Hanoi | Ministry of Natural Resources and Environment (VN) |
| | Vietnam Cleaner Production Centre |
| | Ministry of Industry and Trade |
| | Vietnam Rural Industries Research and Development Institute |
| | Ministry of Planning and Investment |
| | Ministry of Transport |
| | Vietnam Environment Administration |
| | University of Transport & Communications Hanoi |
| | United Nations Industrial Development Organisation (UNIDO) |
| | Asia Pacific Roundtable for Sustainable Consumption and Production |
| Manila | Philippine Center for Environmental Protection and Sustainable Development |
| | De La Salle University, Manila |
| Businesses | |
| Bangkok | Pun Pun Bike |
| | All Sweet Dreams |
| | Siam Borrow Bag |
| | Coderent |
| | Baby equipment rental |
| | L&E |
| | Carpets Inter |
| Hanoi | Dichung |
| | Toy rental company |
| | Laundry services x 5 (Hanoi) |
| Manila | Laundry services x 8 (Manila) |

Appendix Four

Estimating the size of the middle class

This appendix provides greater background to the calculations regarding the size of the middle class and other socioeconomic groupings. There is currently no consensus on how to define a country's middle class, and there are a range of relative and absolute measures in use. These range from considering the middle three quintiles of a population (Easterly, 2001), to global measures of income, such as \$10–\$100 PPP/capita/day (Kharas, 2010). There are a handful of references that provide country-specific estimates of the middle-class threshold in Thailand, Vietnam and the Philippines. Business consultants BCG charted spending on basic goods in Vietnam at different income levels and found that expenditure started to increase more rapidly once people started to earn the equivalent of \$17 purchasing power parity (PPP) capita/day in 2012 (Bharadwaj et al., 2013). Researchers at the Thai Development Research Institute suggest that the middle class in Bangkok is equivalent to the middle three income quintiles (TDRI, pers. comm. 30 September 2015), which would mean that a lower threshold for the middle class there was equivalent to \$18 PPP capita/day in 2013. Studies by statisticians in the Philippines have suggested lower thresholds for the middle class, of either \$10 PPP capita/day in 2013 (determined by statistical cluster analysis) (Virola et al., 2013), or \$11 PPP capita/day in 2012 (calculated as four times the poverty line) (Albert et al., 2015). To estimate the size of the middle class in this study, we have adopted lower thresholds for the middle class of \$11 PPP capita/day for Manila, \$17 PPP capita/day for Hanoi and \$18 PPP capita/day for Bangkok.

To estimate the size of the other income groups, we used one of the international estimates for the middle class (from the OECD) of \$10–\$100 PPP/capita/day (Kharas, 2010), considering the lower bound \$10 PPP/capita/day as the threshold for the emerging middle class, that is, the group on the verge of starting a middle class lifestyle. We consider the upper boundary of \$100 PPP/capita/day to be the threshold for the affluent class. In Manila the threshold for the emerging middle class was set slightly lower, to \$6 PPP/capita/day, due to the middle class threshold being lower in that city. An Asian Development Bank study noted that people earning \$2 - 4 PPP per day are

very vulnerable to economic change and may easily slip back into poverty (Chun, 2010). This informed the choice of \$6 PPP/capita/day as the threshold for the emerging middle class in Manila. The low-income groups are defined as those people below the emerging middle class threshold in each city.

Using the thresholds from Table 3, we have estimated the size of each socioeconomic group in each city, detailed in Table A1. It should be noted that the cities' populations are based on official sources (GSOV, 2014; NESDB, 2014; PSA, 2015). However, a study examining the continuous urban area of these cities estimated much higher populations for Bangkok (15 million instead of 8.6 million) and for Manila (24 million instead of 12 million) (Demographia, 2015). If these higher population estimates are correct, then the population living on the city fringes or living and working informally may be part of the low-income group. Consequently, the estimates of the number of people in low income groups could be very conservative. This analysis provides an initial 'best estimate' based on official data and available information.

Table A1 – Estimates of middle class size in Manila, Hanoi and Bangkok.

| City | Manila | Hanoi | Bangkok |
|--|--------|-------|---------|
| Population (millions) | 12.0* | 7.1# | 8.6** |
| Lower threshold for middle class (\$ PPP/ cap/ day) | 11 | 17 | 18 |
| Proportion above threshold | 50% | 20% | 80% |
| Estimate pop'n middle class or above (millions) | 6.0 | 1.4 | 6.9 |
| Proportion emerging middle class | 30% | 30% | ~10% |
| Estimate pop'n emerging middle class (millions) | 3.6 | 2.1 | 1.3 |
| Proportion low income | 20% | 50% | ~10% |
| Estimate pop'n low income (millions) | 2.4 | 3.5 | 0.9 |

Population data sources: *(PSA, 2015),#(GSOV, 2014), **(NESDB, 2014)

Appendix Five

Framework of household consumption clusters with potential shared-access and service business types.

| Consumption cluster | Business types | |
|---|--|--|
| | 'shared access' | 'service to replace product' ¹⁰ |
| Transport/mobility <ul style="list-style-type: none"> - Commuting for work, study and local recreation - Excludes vacation travel | Car share (club membership), car or motorbike rental (for recreation), bike share, renting personal car to car rental business, person-to-person car rental | public transport, vanpooling, carpooling/ride-sharing, taxi-sharing, ride-sourcing (private vehicle taxi), regular taxi, motorcycle taxi |
| Food <ul style="list-style-type: none"> - Food acquisition, storage, preparation and cooking - Use and cleaning of eating utensils | Shared kitchen: appliances shared between a group of residents | restaurants/street food meal delivery, fresh/refrigerated food delivery (daily), catering for parties/events |
| Housing <ul style="list-style-type: none"> - Shelter (Construction and maintenance) - Light, energy for cooking and appliances - Comfort (heating, cooling, furnishings) | Tool renting: power tools, hand tools, large equipment etc. Utilities: solar panel sharing | Building & maintenance: building, gardening, plumbing, electrical, other repair (services to replace do-it-yourself options) |
| Recreation <ul style="list-style-type: none"> - Home entertainment - Sports - Music/arts & other hobbies - Excludes tourist recreation and accommodation | Rental of leisure items: books, games, movies, television, DVD, computers, tablets, gaming equipment, other electronics, sports & outdoor equipment, equipment for music, art, hobbies, children's toys & equipment, furniture and equipment for events (used at home) Shared facilities: Internet/games cafes, subscription to sports and leisure facilities (also music/arts), children's play facilities | Virtual games, books and music |

¹⁰ While some of the services appear to replace labour with labour (e.g. meal delivery, home cleaning), these services enable customers to avoid purchasing associated material goods (e.g. refrigerator or vacuum cleaner).

| | | |
|---|---|--|
| Laundry and cleaning - Textile and home cleaning | Self-service coin laundry, other shared laundries | laundry wash and dry service, dry cleaning, home cleaning services |
| Clothing - All types of wearables - Regular and special occasion | Rental of costumes & formal wear, Rental of fashion or designer clothes, shoes, handbags, accessories | clothing subscription service (with delivery) |
| Healthcare - Medical equipment and mobility - Within the home, excludes healthcare in institutions | Rental of wheelchairs, walking frames, other medical equipment | Mobility service, Other home health service |

Appendix Six

Supplementary material from Retamal & Schandl, 2017, *Dirty Laundry in Manila: comparing resource consumption practices for individual and shared laundering*, Journal of Industrial Ecology In press. <https://doi.org/10.1111/jiec.12696>.

Table A1 – Characteristics of study participants

| Hand washing | | | | |
|-------------------------|-----------------------------------|---------------|-------------------------|-----------------------|
| ID | Social group | Gender | Interviewee Role | Family size |
| H1 | Working class | F | Individual | 1 |
| H2 | Working class | F | Family member | 5 |
| H3 | Working class | F | Family member | - |
| H4 | Working class | F | Family member | 3 |
| H5 | Working class | F | Family member | 6 |
| H6 | Middle/upper middle class | F | Maid | 4 |
| Machine-washing | | | | |
| ID | Social group | Gender | Interviewee Role | |
| M1 | Middle/upper middle class | F | Maid | 5 |
| M2 | Working class | F | Family member | - |
| M3 | Working class | F | Family member | 3 |
| M4 | Working class | F | Family member | - |
| M5 | Working class | F | Family member | 6 |
| Laundry services | | | | |
| ID | Social group served | Gender | Interviewee Role | Notes |
| LS1 | Middle class - tenants, students | F | Business operator | |
| LS2 | Middle class - tenants, students | F | Business operator | |
| LS3 | Middle class - families, students | F & M | Business operators | |
| LS4 | Middle class - students | F | Business operators | |
| LS5 | Middle class - students | F | Business operators | |
| LS6 | Middle class - condo residents | F | Business operator | |
| LS7 | Middle class - students | M | Business operator | |
| LS8 | Middle class - students | F | Business operator | Qualitative data only |

Table A2 – Analytical framework for laundering practices, adapted from Shove (2003) “Whirlpools of laundering”

| Shove’s (2003) whirlpool | Scope in this study |
|--|--|
| <p>How is laundry done?</p> <p><i>What steps and stages? What skills and expertise? Who does it?</i></p> | <p>Participant’s own description of steps, observation of some steps.</p> <p>Family size, position of person laundering</p> |
| <p>What are the tools of laundering?</p> <p><i>What devices, appliances and chemicals are involved?</i></p> | <p>Buckets, washboards, type of machines, soaps, detergents, water, electricity, gas, petrol, plastic bags, number of staff members, transport</p> |
| <p>When to launder?</p> <p><i>What are the cycles and flows of washing wearing and appearance?</i></p> | <p>Frequency and time taken by humans and machines</p> |
| <p>What is there to launder?</p> <p><i>What stocks, fabrics and types of clothing are involved?</i></p> | <p>Types of things laundered and typical weight</p> |
| <p>Why launder?</p> <p><i>For sensation, display, disinfection, deodorization or routine.</i></p> | <p>Limited to questions regarding perceptions of different laundry methods</p> |

Table A3 – Quantitative data sources and scope

| | Hand washing | Machine washing | Laundry service |
|-----------------------|-----------------------------------|---|---|
| Data source | Interviews with individuals | Interviews with individuals and machine specifications | Interviews with business operators and utility bills |
| Nature of data | Empirical, estimated | Calculated, theoretical | Empirical, determined from utility bills |
| Inclusions | Water Detergents Labor time | Washing machine (water and energy), detergents Labor time | Washing machines Dryers Ironing presses, lights Detergents Plastic bags Labor time Transport (fuel) |

Table A4 – Detailed results - Water consumption

| Handwashing (L/kg) | | Machine washing (L/kg) | | Laundry service (L/kg) | |
|-----------------------|-----|---------------------------|----|---------------------------|----|
| H1 | 18 | M1a | 26 | LS1 | 25 |
| H2 | 14 | M1b | 32 | LS2 | 22 |
| H3 | 10 | M1c | 24 | LS4 | 24 |
| H4 | 30 | M2 | 19 | LS5 | 19 |
| H5 | 135 | M3 | 22 | LS6 | 26 |
| H6 | 44 | M4 | 48 | LS7 | 53 |
| | | M5 | 25 | | |

Note: Participant H5 may have underestimated the weight of laundry washed, and this affects their unit consumption for water and detergent.

Table A5 – Detailed results - Detergent consumption

| Handwashing (g/kg) | | Machine washing (g/kg) | | Laundry service (g/kg) | |
|-----------------------|-----|---------------------------|-----|---------------------------|-----|
| H1 | 41 | M1a | 35 | LS1 | 89 |
| H2 | 59 | M1b | 12 | LS2 | 125 |
| H3 | 41 | M1c | 9 | LS3 | 62 |
| H4 | 69 | M2 | 111 | LS4 | 29 |
| H5 | 148 | M3 | 20 | LS5 | 68 |
| H6 | 67 | M4 | 122 | LS6 | 10 |
| | | M5 | 47 | LS7 | 44 |

Table A6 – Detailed results - Energy consumption breakdown

| Participants | Electricity for washing (kWh/kg) | Electricity for drying (kWh/kg) | Gas for drying (kWh/kg) | Petrol for transport (kWh/kg) | Total (kWh/kg) | Total (MJ/kg) |
|-------------------------|----------------------------------|---------------------------------|-------------------------|-------------------------------|----------------|---------------|
| Machine washing | | | | | | |
| M1a | 0.11 | | | | 0.11 | 0.40 |
| M1b | 0.05 | | | | 0.05 | 0.19 |
| M1c | 0.06 | | | | 0.06 | 0.23 |
| M2 | 0.04 | | | | 0.04 | 0.13 |
| M3 | 0.02 | | | | 0.02 | 0.07 |
| M4 | 0.05 | | | | 0.05 | 0.17 |
| M5 | 0.02 | | | | 0.02 | 0.07 |
| Laundry services | | | | | | |
| Participants | Electricity for washing (kWh/kg) | Electricity for drying (kWh/kg) | Gas for drying (kWh/kg) | Petrol for transport (kWh/kg) | Total (kWh/kg) | Total (MJ/kg) |
| LS1 | 0.25 | 0.021 | 0.60 | | 0.87 | 3.13 |
| LS2 | 0.17 | 0.035 | 0.79 | | 1.00 | 3.59 |
| LS3 | 0.22 | 0.041 | 0.45 | | 0.71 | 2.56 |
| LS4 | 0.13 | 0.043 | 0.79 | | 0.97 | 3.48 |
| LS5 | 0.10 | 0.065 | 0.16 | | 0.32 | 1.16 |
| LS6 | 0.19 | 0.035 | 0.22 | 0.09 | 0.54 | 1.95 |
| LS7 | 0.43 | 0.035 | 0.65 | | 1.11 | 3.99 |

Table A7 – Detailed results - Machine utilization rates, individual ownership vs laundry service

| Machine ID | Loads / month / machine | Percent utilization | Laundry service ID | Loads / month / machine | Percent utilization |
|------------|-------------------------|---------------------|--------------------|-------------------------|---------------------|
| M1a | 12.9 | 3% | LS1 | 72 | 16% |
| M1b | 4.3 | 1% | LS2 | 123 | 27% |
| M1c | 4.3 | 1% | LS3 | 100 | 22% |
| M2 | 8.6 | 2% | LS4 | 246 | 55% |
| M3 | 4.3 | 1% | LS5 | 392 | 87% |
| M4 | 4.3 | 1% | LS6 | 75 | 17% |
| M5 | 8.6 | 2% | LS7 | 136 | 30% |

Table A8 – Detailed results - Cost of washing clothes by hand (PhP = Philippine Pesos)

| | Cost per month (detergents, water) (PhP/month) | Expenses per weight clothing (PhP/kg) | Cost per weight (USD/kg) | Labor time per kilogram (mins) | Labor value (minimum wage rate) (PhP) | Total cost expenses + labor (PhP/kg) |
|-----------|--|---------------------------------------|--------------------------|--------------------------------|---------------------------------------|--------------------------------------|
| H1 | 259 | 9 | 0.18 | 26 | 25 | 33 |
| H2 | 1131 | 6 | 0.12 | 25 | 24 | 29 |
| H3 | 167 | 7 | 0.15 | 62 | 58 | 66 |
| H4 | 261 | 10 | 0.22 | - | - | - |
| H5 | 279 | 22 | 0.46 | - | - | - |
| H6 | 788 | 11 | 0.24 | 40 | 38 | 49 |

Table A9 - Detailed results - Costs for home machine ownership (PhP = Philippine Pesos)

| | Operating (water, electricity, detergents) (PhP/month) | Machine cost (PhP/month) | Expenses per weight (PhP/kg) | Cost per weight (USD/kg) | Assumed labor time per kilogram (min/kg) | Total cost expenses + labor (PhP/kg) |
|------------|--|--------------------------|------------------------------|--------------------------|--|--------------------------------------|
| M1a | 556 | 250 | 10 | 0.22 | 7 | 17 |
| M1b | 71 | 31 | 4 | 0.09 | 7 | 11 |
| M1c | 78 | 25 | 3 | 0.07 | 7 | 10 |
| M2 | 730 | 107 | 20 | 0.42 | 7 | 26 |
| M3 | 57 | 53 | 5 | 0.11 | 7 | 12 |
| M4 | 120 | 51 | 26 | 0.55 | 7 | 32 |
| M5 | 333 | 41 | 10 | 0.21 | 7 | 16 |

Assumptions associated with cost and time

The capital cost of the machines was pro-rated according to how long the participants thought the machine would last. For laundry services the labor time for the customer is assumed to be close to zero, as services typically involve collection and delivery. For home machine washing, we have estimated the time required to sort clothing, fill the

machine, hang to dry, collect and fold clothing – we estimate this to be 7 mins/kilogram for a fully automatic machine. We do not have estimates for the labor time associated with using a semi-automatic machine. For washing by hand we have added 7 mins/kilogram to the time each participant spent washing and rinsing the clothes. Labor costs are based on a minimum wage of 454 pesos per day, 57 pesos per hour (National Wages and Productivity Commission, 2016).

Appendix Seven

Additional details on method of Paper IV: Transitions to Sharing

We recruited interviewees in two ways, the first was a snowballing technique and the second relied on internet searches for businesses. For the former, we started with relevant academics in each country and asked them to refer us to other relevant people and so on. This approach provided us with access to a range of local SCP experts as well as policymakers working directly with SCP issues such as waste, environmental protection and green growth. Several of these experts helped to identify collaborative consumption businesses, however we identified the majority of the businesses through internet searches. The internet was a focus for searching for CC businesses as their popularity has been largely facilitated by the internet (Botsman and Rogers, 2010; Owyang et al., 2014). We used a framework to identify and search for collaborative consumption businesses online; this method is documented in Retamal (2017). Once we had established a list of businesses in Hanoi and Bangkok, we contacted a range of CC businesses for interview.

Interviews were semi-structured and in-depth and the average interview time was one hour. All interviews were conducted in person, except one, which was conducted by telephone. We asked interviewees to relate their perspectives on Vietnamese or Thai attitudes to collaborative consumption as well as any legislative, regulatory, political, commercial or technical aspects that influence their use. The majority of interviews with policymakers, SCP experts and large businesses were conducted in English, while the majority of interviews conducted with SME businesses were conducted with the help of an interpreter. We took notes to document the interviews and sent those notes back to interviewees afterwards to check. In cases where an interpreter was involved, the interpreter cross-checked the notes against their own and sent questions of clarification to interviewees. We also consulted a range of documents to illustrate various aspects of the institutional landscape, including reports on SCP programs, government policies and statutes and other industry documents.