

Values of Waste

A Meta-Ethnography of China's Informal Recycling Sector

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Abstract

China is currently reinventing its waste management and recycling system. This has far-reaching implications also beyond China's borders, as witnessed by the country's move in 2018 to ban imports of solid waste from overseas. The Chinese government has been under considerable pressure to clean up its recycling industry, which has been predominantly unregulated since the reform and opening-up era ushered in a period of meteoric economic growth in the 1980s. Until now, waste management and recycling have been presided over by a massive and intricately networked informal sector that primarily employs rural poor and members of the so-called "floating population" of migrant workers. Efforts by Chinese authorities to impose strict regulations have so far been largely unsuccessful, as these informal actors repeatedly manage to subvert crackdowns and other prohibitive measures. This thesis seeks an explanation for this remarkable resilience and finds it in the sector's high degree of *organizational flexibility* and deep *embeddedness in social, political, and economic structures*. These findings are discussed at length in a broader socio-economic context, and it is argued that more deep-seated issues pertaining to rural poverty and other metrics of social and economic inequality must be resolved in order to replace the informal sector in a responsible manner. This literature-based study is conducted in the form of a meta-ethnography, a method of synthesizing findings from a selection of published qualitative studies.

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Abbreviations

PRC – People's Republic of China

CCP – Chinese Communist Party

FYP – Five-Year Plan

NDRC – National Development and Reform Commission

WM – Waste Management

MSWM – Municipal Solid Waste Management

WEEE – Waste Electrical and Electronic Equipment

IRS – Informal Recycling Sector

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1 Introduction

1.1 Thesis statement and research question

In 2018, China sent shockwaves throughout the entire developed world when it was announced that the country would impose strict regulations on foreign waste imports, amounting to a de-facto ban on virtually all incoming shipments of waste. For more than two decades, a host of high-income countries, including the US, Japan, Australia, and the UK as well as other EU states, had relied on being able to ship their recyclables to China for processing (Brooks et al., 2018; CNBC, 2018; SCMP, 2019e). China also benefited enormously from this arrangement, as these imports have provided millions of tons of cheap secondary material for the manufacturing sector that sustained the meteoric economic growth rates the country was experiencing during this period¹ (Minter, 2013). However, the massive recycling industry that has processed all this imported waste, along with rapidly growing amounts of domestically generated waste, has been predominantly unregulated. This industry has been run by a largely unskilled workforce employing cheap and crude methods and technology, which has resulted in widespread environmental and ecological degradation and is a major public health problem in some areas (Minter, 2013; Zeng et al., 2016; Lora-Wainwright, 2017; Goldstein, 2017a). The Chinese government has been under enormous pressure to clean up this sector for a number of years, and it is against this backdrop the 2018 import ban should be considered. Currently, Chinese authorities are putting their weight behind a fully regulated formal system which is congruent with targets set in the current Five-Year Plan (Li et al., 2016), as well as broader industrial, economic, and environmental policy goals (Schulz, 2015; Schulz & Steuer, 2017). However, the persistence of the remarkably resilient informal recycling sector (IRS) alluded to above has made the successful implementation of this system extremely difficult. The IRS has dominated municipal solid waste management (MSWM) and recycling in China for more than three decades and controls the flow of recyclable waste from the point of generation to refurbishment and processing. Since the early 2000s, Chinese authorities have made considerable efforts to suppress and replace the IRS, but success has been limited so far.

¹ Between 1978 and 2011, China could boast an average annual GDP growth rate of around 10% (Steuer et al., 2018b: 189).

In a number of other countries with a strong presence of informal recycling and waste management (WM) activities, efforts to empower and include informal stakeholders in government-sanctioned programs and official systems have proven largely successful (Benson et al., 2014; Ferri et al., 2015; Aparcana, 2017; Kaza et al., 2018). Among the most obvious advantages with an inclusive approach is the money that potentially could be saved by allowing the continuation of a well-established and very efficient WM system, which in the case of China would amount to billions of RMB annually (Steuer et al., 2018a; 2018b). Furthermore, groups of otherwise marginalized people could be provided with legitimate employment opportunities. However, the Chinese government does not see such policies as congruent with its vision of a modern and sustainable WM system. Instead, the IRS is seen as an obstacle to achieving this goal, and an adversary in the competition over a valuable resource (Schulz, 2015). Despite this, the IRS has not relented and has so far been able to maintain an upper hand. Herein lies the research interest that informs this thesis, and the research question my study aims to answer is as follows:

-What explains the resilience of China's informal recycling sector (IRS) against efforts to suppress it?

The subject of informal WM and recycling in China is steadily becoming a topic of interest in academic circles. Recently, contributions by Wu Ka-ming (2016; forthcoming) and Stefan Landsberger (2019) have garnered considerable attention. Over the last decade or so, the body of qualitative literature on this topic has grown considerably, approaching different aspects and operating with different levels of analysis. This study takes it upon itself to take stock of some of the knowledge that has accumulated to date, in the form of a *meta-ethnography*. It should be stated clearly that it is a literature-based study as opposed to one made on the basis of self-gathered empirical data. The meta-ethnographic approach is one of the more commonly cited ways of conducting meta-synthesis of published qualitative research (Campbell et al., 2011; Cahill et al., 2018). The use of this method here seems to be an object of some novelty, as it is most extensively employed in the context of healthcare and nursing research. While similar to a conventional narrative literature review in that it summarizes findings from existing research, the meta-ethnographic approach aims to move

beyond just a summary and contribute new insights. When done properly, a meta-ethnography adds much more adequacy and thoroughness than a simple literature review. This is achieved by "translating" a selection of studies into one another (Noblit & Hare, 1988), treating the accounts of the original authors of the studies as equivalent to data to be interpreted, instead of relying on the interpretation of self-gathered empirical data (Britten et al., 2002).

Accordingly, a meta-ethnography is "meta" because it is based on the interpretation of interpretations. For my meta-ethnographic study, six published studies were selected for synthesis. When taken together, these six studies were found to form a *line-of-argument synthesis* which provides an adequate answer to my research question. The line of argument is constructed on the basis of two particular phenomena described across the entire selection of studies in relation to success factors pertaining to the IRS. These two phenomena, dubbed *key concepts* for the sake of this study, are *organizational flexibility* and *embeddedness in social, political, and economic structures*. The whole line of argument, and also the answer to my research question, is as follows: "until recently, China's IRS has exhibited a remarkable level of resilience against economic and regulatory pressure because of its high degree of *organizational flexibility* and deep *embeddedness within social, political, and economic structures*."

Through this study, I have discovered that the research puzzle outlined above opens up a number of discussions not only about waste management in policy and practice in the world's most populated country, but also about broader socio-economic issues that demand further attention. While informal economic activities are hardly unique to China, the country's recent history, demographic composition, and political system all contribute to a particular set of dynamics that make the Chinese case stand out. China's meteoric economic development during last four decades have led to a considerable improvement in living conditions for hundreds of millions of people, but a significant portion of the country's population still faces crippling poverty. The income gap between the rural poor and the urban middle- and upper-classes keeps growing (SCMP, 2019b). Rural-to-urban migrants are continuously subjected to discrimination and exploitation in formal employment situations and, for many, informal waste work has come to represent an attractive alternative to formal work, e.g. in factories or construction. To them, waste symbolizes an opportunity to escape from poverty and oppressive labor regimes (Inverardi-Ferri, 2018b). However, many also lack real alternatives to informal waste work, and are to a varying degree dependent on it for survival. Who does the right to process and profit from waste belong to in this context? This study reveals that

waste and the IRS are inextricably linked to matters of gross economic inequality in contemporary Chinese society. The Chinese government's failure so far to eliminate the IRS should be a strong indication of its inability see the issue in a broader socio-economic context. These issues will be highlighted and discussed further in light of the findings of my study towards the end of the thesis.

1.2 Thesis outline and structure

In the section above, I have briefly introduced and presented the key findings and central arguments of my study. In the next chapter, I will provide a brief history of waste management (WM) in China since 1949 and outline how China's IRS has emerged and developed. Here, I also describe the organization and stakeholder composition of the IRS, both in WM structures in cities and urban areas as well as in informal recycling industry hubs, i.e. clusters of informal recycling workshops and processing plants that are typically found in rural townships. In the following section, I briefly describe the regulatory responses and frameworks that have been instigated in response to the informal dominance over WM and recycling, and very briefly address the efficacy of these responses and frameworks. In chapter 3, I describe the methodology chosen for this study. I begin by conceptualizing *informality* and emphasize the relationship between recycling and WM in developing countries, naturally with particular focus on China. I then move on to describe the method I have used to conduct my analysis – the meta-ethnographic approach to qualitative meta-synthesis – in some detail. After that, I break down the process of conducting a meta-ethnographic study by describing how I approached the "seven steps of meta-ethnography" (Noblit & Hare, 1988) for the sake of this project. In chapter 4, I lay out the findings of my study in the form of two *key concepts* that are found across my selection of six published studies and revealed through the synthesis process. When taken together, these two key concepts form a *line of argument* which answers my research question inquiring about the resilience of China's IRS. Following that, I discuss the implications of these findings in a broader theoretical and socio-economic context. To bring the thesis to a close, I will make some concluding remarks and careful prognoses about the future of China's IRS in light of recent developments in relevant policy areas.

2 Waste management in China

2.1 China's informal recycling sector

After the Chinese Communist Party (CCP) came to power under Mao Zedong's leadership in 1949, a comprehensive WM and recycling system was implemented primarily as a measure to mitigate resource scarcity. By invoking a powerful socialist-nationalist rhetoric, the state managed to mobilize the population to collect and redistribute reusable discards as a way of contributing to the "national production." Dedicated recycling depots were established on almost every city block, to which urban residents could bring their discards and in return receive a small but rare monetary compensation. State-employed collectors even offered door-to-door collection (Steuer, 2017; Wu, forthcoming). This system thrived until Mao's death in 1976, which precipitated the far-reaching social and economic reforms initiated by his successor, Deng Xiaoping. During the 1980s, activities directed at boosting economic growth were given top priority by the central government, resulting in municipal governments redirecting resources from WM to investment in local industries. Due to rapid urbanization and a demand for space required to accommodate the increasing levels of commercial activity in the cities, recycling depots were closed down or forced to relocate away from city centers. This made waste disposal considerably less convenient for urban residents, forcing them to find alternative ways of getting rid of their household refuse. Many started dumping their waste on the street and open dumpsites surrounded the urban centers in cities like Beijing (Tong & Tao, 2016; Steuer et al., 2017; Steuer, 2017; Wu, forthcoming). Meanwhile, China's manufacturing sector was growing fast, and the demand for cheap raw material was soaring.

Following the de-collectivization of agriculture, a stream of surplus labor started pouring into the cities during the 1980s. In the new market economy, it became difficult for farmers to sustain themselves and their families from farming alone. For that reason, many set their eyes to the cities looking for better-paying jobs, mostly in factories or in construction (Steuer et al., 2017). However, many members of this so-called "floating population" of internal migrants, were also forced to turn to scavenging and collecting waste for a living. At the time, MSWM was completely unregulated and neglected by municipal authorities, which opened up a latitude for a network of informally organized actors to develop and virtually monopolize the collection and processing of recyclables. These informal actors mimicked some of the institutional features of the Mao-era system, notably door-to-door household

collection and the establishment of waste markets and depots near urban centers (Tong & Tao, 2016; Steuer et al., 2017).

Before I go on describing China's IRS in greater detail, a couple of caveats are in order. Official data on waste generation, portions of waste captured by informal channels, and the size of the sector in terms of manpower are highly inconsistent. While there may be several reasons for this, Linzner & Salhofer (2014) find, for instance, that methods used for data gathering vary greatly between studies, if they are stated at all, which consequently yields equally varying results. Most numbers and figures used in research on this topic are therefore based on extrapolations and "guess-estimates" made on the background of individual case studies (Steuer et al., 2017). There is just no way around this problem, as an absence of documentation and accountability is in the nature of informality. As outlined above, the IRS emerged in a regulatory vacuum and the absence of a functioning formal MSWM system, following the onset of the reform and opening-up era. Over a period stretching more than 30 years, the sector has grown to a considerable size. As of 2014, the number of people estimated to be involved with informal recycling activities was approximately 0.56%–0.93% of the urban population, i.e. 3.3–5.6 million out of an urban population of about 600 million nationwide (Linzner & Salhofer, 2014: 896). This workforce is almost exclusively comprised of migrant workers. Out of an estimated 180–200 million migrant workers, about 3% are calculated to be part of the IRS (Linzner & Salhofer, 2014: 905; Steuer et al., 2017: 141). Meanwhile, official figures put the number of people engaged in waste recovery in China at as high as 18 million (Gu et al., 2016: 19). Again, these numbers are hard to verify due to the lack of documentation and the fact that people tend to move between formal and informal work in response to fluctuations in the economy and the labor market (Steuer et al., 2018a).

In their comprehensive institutional analysis of informal recycling activity in Beijing, Steuer et al. (2017) presents a categorization of different informal stakeholder roles according to the kind of tasks they perform, the number of recyclables they trade, and how much revenue they generate. They identify a hierarchy along which these various stakeholders operate and do business with one another. Collected recyclables increase in value the higher up the hierarchy they are traded, which is how the income of informal stakeholders is generated. On the bottom of this hierarchy are the waste pickers (WPs), who typically roam the streets on foot and gather recyclables from waste bins in public and residential areas. One

step up the ladder are waste merchants (WMs), who primarily engage in household doorstep collection, using modified tricycles or trucks to transport their goods. This way, they are able to move considerably larger amounts of recyclables over greater distances than WPs. Finally, there are the middlemen (MM) who buy recyclables from WPs and WMs in bulk at informal trading points (TPs) that pop up at designated locations around the city. MM typically use trucks to transport large quantities of recyclables to depots located on the outskirts of urban Beijing for storage until they are sold and shipped off to be processed. Studies of MSW and WEEE management in other Chinese megacities provide solid grounds to infer that these patterns are ubiquitous throughout urban China (Zhao et al., 2009; Yu et al., 2010; Chi et al., 2014; Fei et al., 2016; Cao et al., 2016; Steuer et al., 2018b). Moreover, by taking a global look, Wilson et al. (2006) find that these basic organizational traits are shared by informal recycling sectors in developing countries across Asia, Africa, and Latin-America.

After being separated and sorted by higher-level waste traders, e.g. middlemen (MM), different categories of waste end up on different trajectories according to their utility and market value. The two most notorious categories of recyclable waste are waste electrical and electronic equipment (WEEE) and plastics. Whereas plastics are typically transported straight to processing plants, WEEE constitutes a far more intricate and potentially valuable category. In fact, discarded e-devices are considered by many Chinese as tradable commodities that have considerably higher market value when sold intact on the second-hand market. Informal WEEE recyclers will therefore go to great lengths to keep discarded e-devices as intact as possible, in order to maximize profits (Chi et al., 2011; Schulz, 2015). If devices are not salvageable, recyclers will dismantle them and remove individual components and sell those in bulk instead. Only as a final resort will recyclers turn to material recovery, which involves the smelting or "baking" of machine components to extract precious metals, most notably copper (Schulz, 2015; Lora-Wainwright, 2017). These practices are typically conducted using crude and primitive methods and technologies, with little regard for health and safety. The deleterious effects of certain informal recycling practices on both public health and the environment are well-documented (Wilson et al., 2006; Chi et al., 2011; Zeng et al., 2016; Lora-Wainwright, 2017).

The final processing of waste, i.e. refurbishment, extraction of material, and/or preparation for entry into the manufacturing sector, usually takes place in rural areas where clusters of informal recycling workshops and processing plants have emerged and virtually

eliminated all other economic activity in the area. Huge amounts of both domestically generated and imported waste pass through these recycling hubs. Two of the most infamous locations of this kind are Guiyu in south China's Guangdong province and Wenan in the northern Hebei province. Sometimes also referred to as "the e-waste dump of the world," (Lora-Wainwright, 2017: 125) Guiyu has a population of about 150,000, of which 100,000 are migrant workers, and has been home to more than 300 companies and 3-5000 individual workshops that have processed up to 20 million tons of WEEE annually (Chi et al., 2011: 735; Lora-Wainwright, 2017: 135). An estimated 80% of local families are involved in WEEE recycling, which has become highly diversified and specialized over the years – each village in Guiyu county specializes in different processes, components, and materials (Lora-Wainwright, 2017: 135-137). At its peak, the plastic recycling industry in Wenan was equally impressive, with somewhere between 1.3 and 2.5 million tons of plastic waste being traded here annually by 10-20,000 businesses together employing 100-200,000 people, locals and migrants alike (Goldstein, 2017a: 4). Similar to Guiyu, small-scale businesses here were typically family-run, with migrant workers hired as additional labor for the most strenuous tasks (Minter, 2013; Lora-Wainwright, 2017; Goldstein, 2017a). However, as business was booming in these areas in the early 2000s, evidence of the environmental degradation and health hazards caused by this unregulated industry began to emerge. Amid growing concerns about environmental and ecological sustainability, China's government was forced to take action and has since enacted increasingly strict prohibitive measures against the IRS.

2.2 Formal and regulatory responses

The first noteworthy piece of legislation directly concerning MSWM was the 1995 Solid Waste Environmental Pollution Prevention Law (SWEPPPL). The formal regulatory framework has since been developed continuously, most prominently under the 2002 Cleaner Production Promotion Law (CPPL) and the 2008 Circular Economy Promotion Law (CEPL). WM was also more recently addressed in the 2014 amendment to the Environmental Protection Law (EPL) (Steuer, 2017). In sum, the placement of WM regulations under these legal frameworks strongly indicates that China's top leadership regards WM as an integral part of both the country's broader industrial policy strategy and environmental policy goals as stated in the 11th Five-Year Plan (FYP) and elaborated on in subsequent FYPs. In terms of specific regulatory instruments, the Chinese government has sought to emulate regulatory frameworks found in high-income Western countries. Most notably in the category of WEEE,

for which China has enacted two directives that are translated virtually verbatim from corresponding EU directives, namely the 2006 Restriction of Hazardous Substances (RoHS) Directive and the 2009 China WEEE Directive (Salhofer et al., 2016; Schulz & Steuer, 2017). Between 2003 and 2011, a host of pilot projects were launched in several major cities to gather know-how and establish formal collection channels for WEEE. However, these efforts faced several issues. Most importantly, they simply could not compete with informal collectors that had cultivated deep-set business connections among households and residential areas and offered doorstep collection and a pecuniary reward for recyclable discards (Yu et al., 2014; Gu et al., 2016). The final round of pilots between 2009-11 did, however, address some of the problems faced by the earlier trials by initiating an Old-for-New (OfN) take-back scheme, which was predicated on heavy subsidies to relevant formal stakeholders, i.e. retailers, collectors, and processors. Based on the principle of extended producer responsibility (EPR), the use of subsidies as a financing mechanism has been carried over to the current system. However, due to a lack of formal collection capabilities, formal recyclers now spend a significant portion of these subsidies on sourcing WEEE through informal channels, which accounts for 85-100% of their input (Schulz & Steuer, 2017: 317; Steuer, 2017).

A key tenet of China's regulatory framework on WM is that the responsibility for waste collection is handed to local governments, and, additionally, the CEPL explicitly encourages local governments to "support waste recovery enterprises and other organizations." (Steuer, 2017: 418) The SWEPL, which contains the most detailed regulations for collection of household waste, also encourages outsourcing of waste collection services to private enterprises. However, waste management firms are required to obtain a license which can only be acquired through formal registration and payment of fees in order to legally conduct business (Steuer, 2017). Most informal stakeholders have neither incentive nor the opportunity, for financial and/or legal² reasons, to accept this agreement. The intricate network of informal collectors and traders have until now retained most of their dominance and have thus forced formal recycling enterprises to cooperate with them in order to meet capacity requirements (Tong & Tao, 2016; Steuer, 2017). For now, the government seems to accept this informal dominance at the collection level, particularly with regards to WEEE.

² The *hukou* (户口) system severely limits migrant workers' access to housing, formal employment, and welfare benefits in the cities they dwell in. I return to this point at a later stage in the thesis.

The WEEE directive even stipulates that e-discards can be collected via a "multi-channel" approach, effectively endorsing trade of WEEE between informal collectors and formal recyclers. Hence, it is legitimate for formal enterprises to source material through informal channels, which, as mentioned above, is paid for using state subsidies (Schulz, 2015; Schulz & Steuer, 2017; Steuer, 2017). Steuer (2017) even suggests that this could be interpreted as a pragmatic solution to ensure that subsidies are indeed directed at securing sufficient recovery rates for formal recycling plants. This also makes sense when seen in relation to the government's stance on the informal recycling industries in places like Guiyu and Wenan. The strict prohibitive policies led against these recycling hubs in the last decade or so, certainly indicate that the government is highly concerned with suppressing the unregulated recycling activities that permeate these areas. Accordingly, it makes sense that the government is willing to direct considerable resources toward diverting the waste flow from informal channels to formal ones, even if it means cooperating with informal stakeholders on collection. However, efforts to suppress the recycling industries in Guiyu and Wenan, mostly in the form of crackdowns, have so far been largely unsuccessful. When they are forced to close in one location, informal workshops and processing plants have a strong tendency to reappear in new locations. For instance, while a sweeping crackdown on the plastics industry in Wenan in 2011 successfully removed the segment from that particular location, the industry merely dispersed over a greater geographical distance to operate more covertly and dangerously. Thus, the drastic actions taken against the sector in Wenan have only exacerbated what Goldstein (2017a) refers to as a "race to the bottom." (P. 3)

China is currently undertaking considerable efforts to transform its WM system from the ground up. In the 13th FYP, incineration has been declared a pillar industry and billions of dollars are currently being invested in waste-to-energy (WTE) incineration plants all over the country (Li et al., 2016; Goldstein, 2017b). Even though the IRS traditionally has diverted a significant portion of recyclables away from landfills, the pressure on national landfill capacity is extremely high due to the remaining residual waste that is not of interest to the IRS. This development has not only been exacerbated by unrelenting urbanization (Li et al., 2016), but is arguably also influenced by decreasing secondary material prices as a result of the ongoing slowdown in China's economy (Goldstein, 2017b; Steuer et al., 2018a; 2018b). As fluctuations in material prices are found to have a non-trivial impact on informal recycling activities, a significant number of recyclables that would normally be processed informally has ended up in landfills (Steuer et al., 2018a; 2018b). In order to maximize the efficiency of

WTE incineration plants, source separation at the point of generation is key. Guidelines on source separation and waste collection in residential areas and public institutions, e.g. schools, hospitals, army barracks etc., have therefore been issued by the government, in which 46 key cities and province-level cities are expected to incrementally develop comprehensive WM systems to a high international standard by 2035 (MOHURD, 2017).

3 Methodology

I begin this chapter by conceptualizing *informality* and place it in the context of recycling in developing countries and, in particular, China. Then, I will outline the research method chosen for this study, i.e. meta-ethnography, explain its theoretical underpinnings in qualitative research and the interpretive paradigm of social science, and argue why I find it a useful method for this research project. Finally, I break down the seven steps of meta-ethnography as I approached them for the sake of this study.

3.1 Conceptualizing informality

Although the dichotomy of formal and informal economies has been discussed in the field of development studies since the mid-20th century, a uniform definition of *informality* is yet to be agreed upon (Chi et al., 2011; Chen, 2012; Benson et al., 2014). In the broadest possible sense, informality typically involves otherwise legal economic activities that are performed without documentation, and avoiding taxation, licenses, registration, and regulation. Informal economies have variably been referred to as "gray" or "shadow" economies, invoking connotations to crime and illegality, and have been regarded as taking place outside the official economic structures (ibid.). However, it has become commonly accepted to regard formal and informal economies as interdependent and the boundaries between the two domains as blurred and fluid. Value generated in the informal economy will often directly benefit and stimulate the official economy, highlighting the complementary interdependency between the two domains (Chi et al., 2011). Informality can thus be regarded as an aspect of economic heterogeneity (Inverardi-Ferri, 2018a), and though it is present in countries at all stages of development, it is more pervasive in lower-income countries (Chi et al., 2011; Benson et al., 2014). Countries with a notable presence of informal economic activities are often characterized by weaker states with limited resources and looser regulatory grips on various economic sectors, creating space for informal practices to develop. Thus, informality is in some cases tolerated and even encouraged by governments that see some social or economic utility in allowing certain informal activities to take place (Inverardi-Ferri, 2018a; 2018b).

Several factors make WM and recycling particularly susceptible to informality in developing countries. In countries undergoing economic transition, factors such as rapid

population growth, urbanization, and rural-to-urban migration contribute to massive increases in MSW generation. Economic growth periods are typically accompanied by spikes in industrial and manufacturing output, which in turn increases demand for cheap raw material and creates a market for secondary material that can be derived from waste. Additionally, when a public service like WM is neglected and wages in formal employment and prices for products and services remain low, members of poor and otherwise marginalized social groups, have a strong incentive to turn to scavenging for a living (Wilson et al., 2006). Informality can therefore be interpreted as both a mode of adaptation to scarcity and as a way of taking advantage of opportunity (Inverardi-Ferri, 2018a, 2018b). The informal recycling industry is purely market-driven, which creates a highly competitive environment and a strong incentive to collect and process large quantities of recyclables. On the one hand, this makes informal systems highly efficient. Recovery rates at 20-30% are common in countries with prominent informal recycling sectors (Velis et al., 2012: 44), while as much as 80% has been reported in individual cases (Wilson et al., 2006: 801). By remaining self-organized and economically self-reliant, they also constitute a highly cost-effective MSWM system that saves governments and local authorities millions of dollars in public expenditure (Velis et al., 2012; Steuer et al., 2017). In sum, the IRS provides an absolutely vital public service at virtually no cost for the government, while contributing material input to the manufacturing sector that keeps the economy going (Wilson et al., 2006). On the other hand, the low-cost, unskilled, and unregulated nature of informal recycling activities also produce a host of unfortunate side-effects, such as health and safety issues, child labor, pollution, political collusion etc., that make inclusion or integration into formal systems very difficult (Velis et al., 2012). In this respect, informality represents a particularly challenging governance dilemma (Benson et al., 2014).

The Chinese case aligns perfectly with the descriptions outlined above, albeit with some of its own characteristics. It is evident that a fierce competition is taking place between the informal sector and the government-sanctioned formal system over the right to collect and process China's recyclable discards. Although experiences from formalization or integration of informal actors into official systems in other countries have been largely positive (Wilson et al., 2006; Velis et al., 2012; Benson et al., 2014; Ferri et al., 2015), such efforts seem incongruent with current Chinese policy trends. The top leadership has a distinct vision of how the country's future WM system should look like, and it does not seem to include informal stakeholders and the type of activities they engage in. Building on previous

legislation, the current FYP clearly states that China will continue moving towards a high-tech circular economic model which will focus primarily on incineration and material recovery (Schulz, 2015; Li et al., 2016; Goldstein, 2017b). The financial and technological barriers for entry into this system are extremely high, which effectively rules out the participation of informal actors. The IRS is thus perceived as an obstacle to the implementation of this system and an adversary in the competition over a valuable resource, rather than a potential collaborator in finding a solution to a pressing infrastructural problem. This can at least partly explain the government's prohibitive stance against the IRS and the competitive dynamics that play out between the two sides. The analysis presented in this thesis, which has been conducted in the form of a meta-synthesis of published qualitative studies, aims to shed light on *how China's informal recycling sector so far has been able to hold its ground in an increasingly competitive environment*. The findings of this study show that informal recycling in China is an extremely complex issue with far-reaching socio-economic implications. It reveals that the bisectoral conflict, at heart, is a competition over the right to process and profit from waste, with each side having strong incentives to pursue hegemony. I will continue this discussion in greater detail in chapter 4, after I have outlined the choice of research method for this study and presented my findings.

3.2 Meta-ethnography

Qualitative meta-synthesis can be described as an effort to synthesize findings from a selection of published qualitative studies on a given topic, with the aim of not only taking stock of the current state of knowledge on that topic, but also to produce new insights (Noblit & Hare, 1988; Britten et al., 2002; Campbell et al., 2011; Cahill et al., 2018). Thus, the purpose of meta-synthesis is to move beyond the traditional narrative literature review, which only describes and summarizes previous work on the topic and establishes a discourse within which one's own study can be placed. A meta-ethnographic study, on the other hand, aims to shape and add to the discourse it is nested in (Noblit & Hare, 1988). The meta-ethnographic approach proposes a way of achieving this by taking an inductive and interpretive look at a selection of studies and identifying common themes and concepts used by the original authors to interpret certain aspects of a given social phenomenon. If these concepts are found to complement each other, they can be combined across the studies to form a more detailed, richer account of that phenomenon than the studies are able to do individually, producing a whole that is greater than the sum of parts (Campbell et al., 2011). This kind of conceptual

innovation is a key hallmark of a successful synthesis (Campbell et al., 2011; Cahill et al., 2018).

In the book that is widely recognized as the origin of qualitative meta-synthesis (Lee et al., 2015), *Meta-Ethnography: Synthesizing Qualitative Studies* (1988), authors George Noblit and Dwight Hare put forth the assumption that a set of studies subjected to the meta-ethnographic approach to synthesis can be related to each other in one of three ways: (1) as *reciprocal translations* of accounts into one another, (2) as *refutational synthesis* of accounts that stand in opposition to one another, or (3) as accounts that can be taken together to form a *line-of-argument synthesis*. A line of argument can only be built upon a successful reciprocal synthesis (Cahill et al., 2018). The relationship between the studies is revealed through close and repeated readings, and critical analysis of the hypotheses, theories, and results presented in them. Throughout this process the synthesizer identifies and takes note of themes and concepts that represent the original authors' attempts to explain the phenomena they have encountered in their studies. It can be useful to think of these themes and concepts as interpretive metaphors, given that they represent the authors' *interpretations* of the phenomena they are investigating, rather than explanations based on deductively reasoned theoretical assumptions. Thus, meta-ethnography sits firmly in the interpretive paradigm of knowledge production within the social sciences, from which most discursive qualitative research methods have been developed (Campbell et al., 2011). The interpretive paradigm stands in opposition to the positivist paradigm, which is predicated on the assumption that knowledge accumulates, and that predictive and generalizable theories and laws are possible in the realm of social science. Interpretivists, on the other hand, approach research by seeking "meaning in context" (Mishler, 1979, cited in Noblit & Hare, 1988: 17), i.e. they believe that context affects the meaning of social and cultural phenomena, and that accounts from a multitude of perspectives are what enhances human discourse and our understanding of social and cultural reality (Noblit & Hare, 1988). Interpretivists typically rely on "thick description" of social phenomena, i.e. the interpretation of certain events beyond what is superficially observable about them in order to decipher their underlying social or cultural meaning. The interpretation of these events thus provides a context within which culture can be "thickly described" (Geertz, 1973/1993). To make their interpretations intelligible, interpretive researchers must construct "adequate metaphors" (Noblit & Hare, 1988) that are comprehensible across several contexts. These metaphors are similar to what Schutz (1962)

conceptualizes as second-order constructs and are analogous to what we understand as key concepts or interpretive metaphors in the context of a meta-ethnography.

When conducting a meta-ethnography, the actual synthesis effort is described by Noblit & Hare (1988) as the act of *translating* the concepts and metaphors identified in each study into one another. This process is both inductive and interpretive, in the sense that the synthesizer engages in the interpretation of the original authors' interpretations, treating them like analogies of one another that can be put together to form a detailed narrative. If the synthesis enables the creation of these third-order constructs, in continuation of Schutz' (1962) terminology, the meta-ethnography has served its purpose of producing conceptual innovation. This way, it contributes to the literature rather than just summarizing it and can thus exceed the limitations of a traditional narrative literature review (Britten et al., 2002; Cahill et al., 2018). Conceptual innovation can be achieved when the relationship between the studies is determined as reciprocal so that a line of argument can be created. After an inference about the "whole" line of argument has been made, a grounded theory must be developed from repeated comparisons between the studies. This theory must both "fit" and "work" so that any differences and similarities between the studies can be put into a new interpretive order. This process can reveal things about the studies that may previously have been hidden, which in turn can increase our understanding of what is being studied (Noblit & Hare, 1988).

3.3 Conducting a meta-ethnography

Noblit & Hare (1988) propose a basic framework for conducting a meta-ethnography which most qualitative synthesizers adhere to. This framework is expressed as the following seven-step process: (1) *getting started*, (2) *deciding what studies are relevant to the initial interest*, (3) *reading the studies*, (4) *determining how the studies are related*, (5) *translating the studies into one another*, (6) *synthesizing translations*, and (7) *expressing the synthesis*. It is noted that this process rarely takes place linearly – it is iterative, and steps tend to overlap and run in parallel with one another (Noblit & Hare, 1988). Through my own experience I can confirm that this is indeed the case. It was often hard to tell exactly what exact step I was on at all times, as the steps tended to segue into each other and sometimes occurred simultaneously. However chaotic the synthesis process may seem at times, though, the seven steps serve as a useful framework for conducting a meta-ethnography in a systematic manner. In retrospect, it

was challenging but helpful to try to separate the different stages from one another and summarize the process chronologically. Through this process, it was revealed that each step serves its own purpose and that following them adds rigor to the study, even though a certain degree of overlap between steps is inevitable. Modelled after existing meta-ethnographic studies³, I have in the section below outlined my synthesis process according to Noblit & Hare's (1988) seven steps. An extensive summary and discussion of the findings of the synthesis and their further implications are presented in chapter 4.

3.3.1 The seven-step process

Getting started

My initial interest for the topic of this study was sparked by a combination of events. When I was preparing to begin work on this thesis, I had known for a while that I wanted to cover an environment-related topic. I decided to look more into waste management, a subject of which I knew very little, neither in a Chinese nor any other context. At the time, the foreign waste import ban had just come into force and as a result there was an increase in focus on China's role in international waste trade. It became apparent to me that Chinese waste management policy had great implications far beyond the country's borders and merited further exploration. I became fascinated by the formal-informal dichotomy and the sheer size and complexity of the informal recycling sector as it was described in the literature. Another turning point came upon my first viewing of Wang Jiuliang's gripping 2015 documentary, *Plastic China* (塑料王国)⁴. This intimate portrait of life in an informal plastic recycling facility is a powerful reminder of the human dimension of the Chinese government's failure to regulate domestic waste management, imports, and recycling, and it successfully sets the issue against a broader socio-economic backdrop. My interest for the topic was informed further by my own experiences from spending time in China. I recall observing waste pickers in the streets and collectors operating out of the courtyards of apartment buildings I have lived in, loading their trucks and motorized tricycles to the brim with cardboard and plastic. However, I never reflected on the magnitude and complexity of the system they were part of, nor the broader socio-economic implications of what I witnessed, before I started looking into the literature. My preliminary literature searches revealed there to be a steadily growing body

³ See in particular Britten et al. (2002) and Cahill et al. (2018).

⁴ For more info on *Plastic China*: <https://www.plasticchina.org/>.

of qualitative research on the topic, with contributions coming from different disciplines and highlighting different aspects. In light of the recent waste import ban and other regulatory and policy changes that will probably have profound effects on all aspects of waste management in China, now appears to be a good time to try to summarize and synthesize some of the knowledge that has been produced in recent years. At the time of writing, it is still too early to provide a meaningful analysis of the effects these recent developments have had on informal recycling activities – more research must be conducted, and more empirical data must be gathered. However, a systematic way of synthesizing research findings, such as meta-ethnography, may yet bring new insights to the surface and form a basis for some careful prognoses about the future. For a synthesis to be meaningful it must ask a clear-cut and appropriate question, so that one can proceed with the synthesis in a purposeful manner. I decided that the objective of this project would be to *look for an explanation to the resilience exhibited by China's IRS in an increasingly hostile environment.*

Deciding what is relevant to the initial interest

This step is to a large degree determined by the scope of the study and the questions it aims to answer. The scope of my study is fairly limited, so, like Britten et al. (2002), I have chosen not to address the issue of quality appraisal, assuming instead that the research included here is of acceptable quality. The studies included in this synthesis were therefore chosen in a semi-arbitrary manner, with a focus on variation and the degree to which they appeared to address my research interest, based on preliminary readings. The frequency of citation of either author or candidate study across the literature was also considered. A chief criterion was, naturally, that the studies were at least partially based on qualitative research, in order to make a qualitative synthesis feasible. Repeated readings and comparisons narrowed the number of candidate studies down to the final six studies that are included in this synthesis. In instances of several contributions from the same author(s), especially when empirical data had been reused, the text that featured themes and concepts that I deemed most relevant to my study was chosen. The final selection of studies consists of four articles published in peer-reviewed journals, one chapter in an edited volume, and one chapter in a monograph:

- Schulz, Yvan. (2015). Towards a New Waste Regime? Critical Reflections on China's Shifting Market for High-Tech Discards. *China Perspectives*. 3, pp. 43-50.

- Tong, Xin & Tao, Dongyan. (2016). The rise and fall of a "waste city" in the construction of an "urban circular economic system": The changing landscape of waste in Beijing. *Resources, Conservation and Recycling*. 107, pp. 10-17.
- Goldstein, Joshua. (2017a). A Pyrrhic Victory? The Limits to the Successful Crackdown on Informal-Sector Plastics Recycling in Wenan County, China. *Modern China*. 43(1), pp. 3-35.
- Lora-Wainwright, Anna. (2017). Ch. 5: E-waste Work: Hierarchies of Value and the Normalization of Pollution in Guiyu. In *Resigned Activism: Living with Pollution in Rural China*. Cambridge, MA: The MIT Press.
- Steuer, Benjamin, Ramusch, Roland & Salhofer, Stefan P. (2018a). Can Beijing's informal waste recycling sector survive amidst worsening circumstances? *Resources, Conservation & Recycling*. 128, pp. 59-68.
- Inverardi-Ferri, Carlo. (2018b). Sitting amid a pile of jewels: Youth unemployment and waste recycling in China. In T. Mayer, S. Moorti & J.K. McCallum (eds.), *The Crisis of Global Youth Unemployment* (pp. 156-167). Abingdon, Oxon; New York, NY: Routledge.

Reading the studies

This step involves the repeated and close reading of the selected studies and taking note of the themes and concepts that are relevant to the synthesis questions. At this stage, I was still only working within each individual study. The themes and concepts, sometimes referred to as second-order constructs, found in the original studies are treated as data for the synthesis (Britten et al., 2002; Cahill et al., 2018). In order to capture the full context of the original authors' accounts, I also recorded information about the setting and duration of each study, numbers and descriptions of participants, descriptions of sites, and other methodological minutia to the extent such information was expressed in each study. It proved useful, as suggested by Lee et al. (2015), to employ different "strategies for reading" (p. 341) when reading for different purposes, e.g. to familiarize, identify, extract, record, organize, compare,

and relate (Lee et al., 2015). This step is repeated throughout the entire synthesis process and is the most fundamental aspect of the synthesis endeavor.

Determining how the studies are related

At this stage, I began looking for recurring themes and interpretations across the studies and had to consider the degree to which the interpretations of one author complemented, overlapped, or stood in opposition to those of the other authors. This proved to be a challenging task. While the various studies are all concerned with the same overarching topic, they focus on different aspects and employ different perspectives and levels of analysis. The studies range from an institutional overview of Beijing's informal structures (Steuer et al., 2018a) to a historical look at the plastic recycling industry in Wenan (Goldstein, 2017a). While the majority of the studies have the IRS as their core research subject, Lora-Wainwright (2017) and Inverardi-Ferri (2018b) place the IRS in the context of other phenomena that are the primary concerns of their studies. All studies were, nonetheless, found to be adequately interested in the topic to be of immediate interest to my study. This level of variation was necessary to stay true to one of the core ambitions of this synthesis effort – to say something about the "whole" field of China's IRS based on rich accounts of its constituent parts. Therefore, a significant amount of time was spent on this step to discern whether and how studies that appeared to have little in common contained interpretations of the same phenomena. I created lists of themes, concepts, and interpretations so that I could more easily juxtapose these items across the studies. It became necessary to place these items within different categories, adding new levels of abstraction.

Translating the studies into one another

At this stage, I had prepared a set of overarching conceptual categories within each study, containing various themes and concepts that explained some phenomenon related to the resilience of China's IRS. The next step was to begin translating themes and concepts across the studies into one another and find out if the conceptual categories of one study could encapsulate themes and concepts from the other studies. Here, it should become evident whether the studies can be treated like analogies, as proposed by Noblit & Hare (1988), i.e. that the studies are, despite their dissimilarities, in fact trying to explain the same phenomenon, only in different conceptual languages. I proceeded by repeatedly comparing the themes and concepts of each study with one another and trying them out in different

categories. Differences and similarities were highlighted so that adjustments could be made to the categories in order to make them applicable to themes and concepts found in each study. Some categories had to be rebranded or collapsed into each other to achieve this, while others had to be dropped altogether. Concepts that did not fit within the reworked categories were made redundant. I decided to name these final categories *key concepts*. These key concepts can be treated as common denominators that are valid across the selection of studies. Thus, a key concept represents an idea found in each study in a reduced enough form to make the conceptual languages used across the studies mutually intelligible.

Synthesizing translations

In the end, I was able to identify two key concepts that were relevant to my research puzzle and eligible across the entire selection of studies: *organizational flexibility* and *embeddedness in social, political, and economic structures*. The synthesis revealed that none of the studies stood in direct opposition to each other, eliminating the possibility of a refutational synthesis. Instead, the studies all seemed to be reciprocal with regards to both of the key concepts, reinforcing their strength as explanatory approaches. Some of the studies bring more to the table within one key concept than the other, which is expected given the variation among the sample of studies. Some of the studies appeared to overlap more directly with one another, while others contributed unique perspectives on certain phenomena. Nevertheless, the synthesis has managed to reveal that two key concepts – *organizational flexibility* and *embeddedness* – can be identified across the selection of studies, and that they together form a robust line of argument that can explain the resilience of China's IRS.

Expressing the synthesis

This final step involves writing out the synthesis in a way that clearly and systematically summarizes the findings generated by my meta-ethnographic study. This is done in a step-by-step manner below, in chapter 4. The review of my findings is followed by a discussion about the implications of these findings in light of existing assumptions about informal economies and recycling/waste management, and in a broader socio-economic context.

4 Findings and discussion

4.1 Key concepts and line of argument

My study seeks an explanation for the resilience exhibited by China's IRS until recently in the face of increasing pressure. Based on findings from the six sample studies, two key concepts emerged from the synthesis that are put together as a line of argument. I will begin this chapter by unpacking the two key concepts revealed by the synthesis and take a closer look at the original authors' themes and concepts that are contained within them, in order to explain how they can be taken together to form the line of argument. In my view, this line of argument provides a convincing explanation for the resilience of the IRS. The key explanatory concepts were identified as *organizational flexibility* and *embeddedness*. The line of argument can be summed up as follows: "until recently, China's IRS has exhibited a remarkable level of resilience against economic and regulatory pressure because of its high degree of *organizational flexibility* and deep *embeddedness within social, political, and economic structures*." I will now delve deeper into my analysis and present the main findings corroborating this explanation step by step.

4.1.1 *Organizational flexibility*

In his analysis of China's WEEE management system, Schulz (2015) finds that the informal sector has gained a competitive edge over its formal counterpart because of its "diversified strategy" approach to WEEE handling. Informal actors take advantage of the opportunity to choose from different practices, as they are not constrained by the same regulations as formally registered enterprises. For informal actors, the profit margin from selling reused components and intact appliances on the second-hand market is so high that they can offer higher prices to households for their e-discards than formal actors can compete with. Formal actors, on the other hand, are only incentivized to send WEEE to the shredder for extraction of raw material. Informal actors are thus capable "to realize more fully the market potential of each appliance," (Schulz, 2015: 47) leaving "the fate of appliances [...] largely determined by how much value can be drawn out of them and how." (Ibid.: 48)

Tong & Tao (2016) explore the rise and fall of the "waste city" of Dongxiaokou in Beijing. Dongxiaokou was the location of a marketplace for informal waste trading in the early 2000s which grew into a massive business complex, housing more than 1000 family

workshops and 30,000 people at its peak (p. 13). For a few years, Beijing's informal waste traders and workshop owners enjoyed a certain degree of stability. Following a loosening up of requirements to legally open a recycling market in 2003, many markets appeared around the city, of which Dongxiaokou quickly grew into the biggest one. A "flexible specialized network" (p. 13) emerged around these markets by virtue of extensive linkages between peddlers, scavengers, and specialized workshops located within the markets. After being sorted and traded in the markets, recyclable material was transported to recycling plants located in the countryside. In 2011, however, Dongxiaokou was demolished to make way for real estate development and subsequent crackdowns succeeded in removing all informal WM activity from the area. Since then, informal markets have reappeared as smaller "waste villages" located farther away from the city center (Tong & Tao, 2016).

In his article about Wenan, also known as "North China's plastic waste recycling capital," (Goldstein, 2017a: 3) and the aftermath of a sweeping crackdown on the sector in 2011, Goldstein (2017a) finds that informal recyclers simply dispersed and moved to other locations following a sweeping crackdown on the entire plastic recycling industry in the region in 2011, not unlike what happened in Beijing following the demolition of Dongxiaokou (Tong & Tao, 2016). Before the final blow, the IRS of Wenan had already withstood a considerable amount of regulatory pressure but local enforcement was sporadic at best, creating a highly ambiguous legal environment. Nevertheless, pressure was high enough to remove incentives for informal recyclers to invest in safer, i.e. more expensive, equipment and other safety measures. This situation engendered a kind of forced flexibility among informal recyclers as a means to survival in the business. The downside was the detrimental effects these crude recycling practices had on the environment and public health, which created an impetus for increasingly strict enforcement of regulations. However, when the 2011 crackdown swept across the region, it was a relatively cheap and simple matter for many local recyclers to close down their shops and move somewhere else and start up again. While this flexibility is essential to the sector's survival, it also contributes the perpetuation of dangerous practices that induce continued stigmatization and gives the sector a bad reputation. Goldstein (2017a) refers to this phenomenon as a "race to the bottom" (p. 3) dynamic.

Lora-Wainwright's (2017) contribution reveals that the flexibility of the informal WEEE recycling industry in Guiyu, or "the e-waste dump of the world," (p. 125) to a large

degree is predicated on the family and kinship structures that permeate the local business culture. Hence, it is difficult to distinguish *flexibility* from *embeddedness* in this context, it rather highlights the interconnectedness of these two aspects of informal resilience in Guiyu. In this study, flexibility is better understood as a function of the deep embedment of informality in local social and family life. Lora-Wainwright (2017) finds that most of the recycling businesses in Guiyu are small scale family-run enterprises that provide a safety net for their employees. The flexibility and security provided by family and kinship networks create a latitude for experimentation with different jobs and activities, according to the needs of the business and, by extension, the family. This flexibility has thus made the informal recycling business is also highly adaptive to fluctuations in material prices, which in turn is greatly influenced by global macro-economic trends. The author highlights the heterogeneity within the sector and the presence of a perceived value hierarchy of activities in which some jobs are considered more attractive than others according to certain criteria. She identifies a strong preference for reuse and refurbishment of components and e-discards due to a higher profit margin and reduced levels of risk when compared with material recovery, which is typically associated with more dangerous and labor-intensive work. Factors like profitability, exposure to pollution, and safety concerns greatly determine the choices people make. In times of need, residents in Guiyu thus have the opportunity to pursue high-risk/high-gain strategies in order to rebound (Lora-Wainwright, 2017).

Steuer et al. (2018a) find that responsiveness to macro-economic trends and the ability to adapt to fluctuations in secondary material prices are manifestations of an organizational flexibility which greatly aids the continued survival of Beijing's informal WM structures. Their study reveals that the stakeholder composition of the city's informal segment has changed considerably over a relatively short period of time, and that this development correlates with a decline in secondary material prices and increasing regulatory pressure. The relative portion of scavengers and waste pickers increased markedly, while the number of wholesalers and middlemen has decreased, suggesting that these stakeholders have pursued business opportunities in other areas of the informal economy. The merchants and middlemen have changed their work routines and accepted lower salaries. The informal sector's long-established practices and strategies give it an organizational flexibility that enables it to withstand both economic uncertainties and increasing regulatory pressure.

In his study on the relationship between youth unemployment and informality in contemporary Chinese society, Inverardi-Ferri (2018b) finds that informal recycling to many rural-to-urban migrants represents opportunity and an alternative to formal labor, in which migrants are routinely subjected to discrimination and exploitation. The income levels in informal WM and the kind of formal work that is typically available to migrants are comparable, and informants in the study cite a sense of freedom and mobility as attractive features about working in the IRS. Migrants are connected to informal work in the cities through extensive kinship networks. Informality do not only represent a safety net, but also a preferred mode of employment. In this context, flexibility can thus be understood as a facet of the IRS that facilitates a steady inflow of labor into the sector which contributes to its sustenance.

When taken together as a whole, these accounts from the sample of six studies form a line of argument that explains the resilience of China's IRS. It is shown that *flexibility* works as a key concept across all six studies, despite the variation in cases, levels of analysis, and the different sections of the IRS that are explored. While it may not always be obvious or explicitly stated to the same degree in each study, flexibility is a recurring theme which appears across all the studies in relation to the informal sector's success factors, from the organization of waste pickers in Beijing (Tong & Tao, 2016; Steuer et al., 2018a) to the WEEE recycling industry in Guiyu (Schulz, 2015; Lora-Wainwright, 2017) and the recruitment of labor into the sector (Inverardi-Ferri, 2018b). At first sight, the relationship between the studies may not be obvious at all, hence the importance of repeated readings. It may take several readings before it becomes apparent that the studies may in fact be describing the same phenomenon. The term "organizational flexibility" is taken from Steuer et al. (2018a: 60), to which they attribute the ability of the informal sector to withstand economic uncertainty and regulatory pressure. It became evident throughout the synthesis process that the other studies contained descriptions of phenomena that could be interpreted as flexibility. Consequently, the other accounts could be translated, in Noblit & Hare's (1988) terms, into each other through abstraction and reduction until they fit within the conceptual framework of *organizational flexibility*. The synthesis shows that flexibility is engendered by both opportunity and necessity; it is both a manifestation of good business acumen and resistance against regulatory pressure and repressive measures. The same basic organizational traits are found in the informal WM structures of big cities and in clusters of recycling operations typically located in the countryside. Even though different activities are performed

in different settings along the value chain, it is all part of the same network and the vast majority of stakeholders belong to the same socio-economic class. At all levels and in all contexts, market demand governs the material flows and profitability of the business. Sporadic enforcement of regulations creates a risk-filled, legally ambiguous environment. In response, the IRS in China has developed practices and strategies to maximize profit under uncertain and hostile conditions. These conditions have thus forced an organizational flexibility out of informal stakeholders that enables them to rebound quickly after crackdowns and other repressive measures and adapt their business practice to fluctuations in secondary material prices. This is a recurring phenomenon across the variety of cases looked at in the study sample, from the waste markets of Beijing to the WEEE recycling workshops of Guiyu. Being a purely profit-driven industry, informal stakeholders aim to reduce costs wherever they can, and they employ diversified strategies to squeeze the most value out of their goods. This kind of flexibility is in many cases enabled by the extensive family and kinship networks that permeates the industry. These structures provide a certain degree of social and economic security for individuals, creating space for experimentation with different materials and practices when changes have to be made. Barriers to entry are low, especially if one gets connected through these extensive social linkages, making it relatively easy for people to move between formal and informal work. For many migrants, informal work either in recycling or other sectors, is preferable to formal employment, where wages are low and exploitation and discrimination is commonplace. Flexibility thus enables a steady influx of labor into the sector as long as the necessary incentives are in place.

4.1.2 Social, political, and economic embeddedness

The other key concept pertaining to the resilience of China's IRS is its deep embeddedness within social, political, and economic structures. Schulz (2015) finds that informal actors dominate collection of WEEE at the point of generation, i.e. households, giving them an enormous advantage vis-à-vis attempts made by officially registered recycling enterprises to divert the waste flow to formal channels. These enterprises have been permitted to source from informal actors, and they now have to spend significant portions of their government subsidies on this in order to compete with informal recyclers, who typically offer better prices to collectors. Thus, local authorities end up "tacitly endorsing" (p. 46) informal WM activities, at least at the household collection level. In areas with dense IRS activity, such as Guiyu, local governments will rarely enforce regulations unless they are compelled to by the

central government, suggesting that the informal recycling business is deeply connected to local economies and political affairs.

The problem of diverting recyclables to formal channels is also addressed by Tong & Tao (2016), who focus on the attempted implementation of an "urban circular economic system" in Beijing in the early 2000s. The municipal government used competitive measures to challenge the informal dominance over waste collection but failed to consider how habituated informal recycling had become both among the urban citizenry and the migrants who relied on waste collection and trading as a source of income. Formally registered recycling enterprises attempted to recruit local residents, but the Beijingers were reluctant to join. Instead, these companies had to hire migrant scavengers to run designated collection sites. Despite contracts with certified enterprises, however, these contracted collectors would still prefer to sell their goods to informal markets if they could get a better price.

The pervasiveness of the informal plastic recycling industry in Wenan before the 2011 crackdown is described extensively by Goldstein (2017a). Nearly every household across 30 villages was involved in some capacity, making the segment truly entrenched in the local economy. It provided local authorities with a considerable source of income in a time when local governments were encouraged to pursue economic growth at all cost. Due to a lack of receipts and other legal documentation, local officials would accept bribes instead of taxes to leave polluting workshops alone. As scrutiny on the informal recycling industry increased during the early 2000s due to environmental and public health issues, enforcement gradually became more severe until the 2011 crackdown removed the entire industry, which had employed thousands of locals. Smaller clusters of plastic waste recycling workshops have since reappeared elsewhere in Hebei province, only operating more covertly than previously, indicating that informal plastic recycling will persist as long there is a profit to be made in the business.

As hinted upon earlier, Lora-Wainwright (2017) finds that the deep embedment of the informal WEEE recycling sector in Guiyu in the local social, political, and economic structures has made it remarkably resilient. Over its three decades of unfolding in the region, the industry has become the primary means of livelihood for the locals. The recycling business pervades family life, "as businesses rely on family collaborations and support." (P. 141) Collusion with local authorities, that have benefitted financially from the industry, has protected local businesses from economic pressure and regulations issued by the central

government. The heavy dependence on WEEE recycling makes it inconceivable for locals to transition to alternative income sources. The author also highlights that locals are keenly aware of the negative environmental and health impacts of this line of work but have developed various coping strategies to get by. The perceived lack of any real alternatives to informal recycling permeates these accounts, giving a strong indication as to the level of embedment of this industry in people's lives.

Steuer et al.'s (2018a) findings lead them to conclude that the IRS "constitutes an indispensable pillar for Beijing's waste management" (p. 59). They find that informal waste collection is deeply embedded in the day-to-day management of residential communities through direct contact with households and doorstep collection. This is achieved through the cultivation of steady customer bases, which fosters mutual reliability and trust among residents and collectors. Survey data reveal that informal collection is the preferred way of waste disposal among urban households in Beijing. Residents cite factors like the financial compensation offered by informal collectors, habituation, ideals about social welfare, and a perceived contribution to resource conservation as reasons for this strong preference. Even operators of certified collection booths prefer to sell their goods through informal channels. As also noted by Tong & Tao (2016), most of these operators are former informal collectors with long-cultivated business ties to informal stakeholders who can offer better prices than formal enterprises (Steuer et al., 2018a).

Finally, Inverardi-Ferri (2018b) finds that informal recycling has become institutionalized as a result of the steady influx of migrants, driven by poverty from rural areas to the big cities in search of job opportunities. Pursuing work in the IRS is now a long-established "conscious strategy to make a living and gain control over the amount of time they engage in labor." (P. 157) Facilitated by the industry's embedment into family and kinship structures, the flow of migrants into the sector has created a "specific economic geography." (P. 162) In Beijing during the 1990s, informal settlements emerged on the outskirts of the city center that grew into highly organized waste markets and eventually, in Tong & Tao's (2016) terms, "waste villages." These "agglomeration economies" provide a variation of opportunities for young migrants who can navigate the social structures of these spaces.

Like in the case of *flexibility*, the synthesis has shown that *embeddedness* works as a key concept which explains the resilience of China's IRS across a relatively broad selection of studies and on multiple levels of analysis. The term "embeddedness" carries strong

connotations to the work of economic anthropologist Karl Polanyi, who argued that economic and social systems are intrinsically linked to and embedded within one another (Polanyi, 1944/2001). While it is beyond the scope of this thesis to provide a full treatise on Polanyi's argument, it is useful to keep in mind that the term has a certain theoretical underpinning. The conceptualization of the IRS as embedded in various social, political, and economic structures appears explicitly in several of the sample studies. It was through Lora-Wainwright's (2017) rich account of the informal WEEE recycling industry in Guiyu that I first discovered the potential utility of embeddedness as a key concept. On repeated readings, a common narrative emerged across the selection of studies. The synthesis shows that the IRS is so embedded in social, political, and economic structures in contemporary Chinese society that, until recently, attempts to remove it through competitive measures or strict enforcement of regulations have been largely unsuccessful. Instead, local authorities around China have come to rely on the IRS for MSWM and are left with few options but to "tacitly endorse" (Schulz, 2015: 46) informal activities, at least at the level of household collection. Several attempts, in the form of various pilot projects on the municipal level, at taking up the competition with informal collectors and traders have produced suboptimal results. The strong habituation of and preference for informal collection among urban households, which is largely due to the monetary compensation offered by informal collectors, allow the IRS to retain control over the waste flow from the point of generation (Steuer et al., 2018a). Certified recycling companies are thus forced to buy recyclables from informal traders in order to meet capacity requirements (Schulz, 2015). However, they have to offer prices that can compete with informal recyclers. Even collectors hired by certified recycling companies prefer to sell their goods through informal channels, where they can get better prices by virtue of their long-cultivated business relationships with the IRS (Tong & Tao, 2016; Steuer et al., 2018a). In rural townships like Guiyu and Wenan, informal recycling industries were allowed to grow unabatedly for three decades, completely hijacking the local economies and shaping local political and social life. At their heights, the recycling industries in Guiyu and Wenan were the primary sources of income for locals, involving thousands of households in each case. Local authorities, with their strong incentives to pursue local economic growth, became stakeholders through collusion with the recyclers, and would only sporadically enforce environmental regulations. Even after increasingly drastic measures were taken against the sector in these regions, informal recyclers have persisted by moving their businesses elsewhere, indicating the degree to which these people depend on this business for sustenance

(Goldstein, 2017a; Lora-Wainwright, 2017). Finally, turning to informality has become institutionalized as a survival and employment strategy for young migrants through its embeddedness in extensive kinship networks (Inverardi-Ferri, 2017b).

In sum, the synthesis shows that all of these accounts describe how the IRS in various ways is deeply embedded social, political, and economic structures in contemporary Chinese society, and therefore is extremely hard to uproot in an effective and responsible manner. It will have to be dis-embedded not only from the lives of the millions of people who depend on it for a living, but also from the current "waste regimes" (Gille, 2010 cited in Schulz, 2015: 43) of China's megacities, and not least from the manufacturing sector which creates the demand for cheap secondary material that sustains the sector. The IRS issue is thus inextricably linked to questions of poverty alleviation, city planning, and national economic and resource management policy. Replacing it will require a massive undertaking and demands policy changes that go far beyond just issues of waste management. In the next section, I will discuss the IRS and the findings of this study in a broader socio-economic context.

4.2 Values of waste

As the literature suggests, informality is most likely to manifest in response to economic necessity, often as a result of exclusion from formal employment regimes. For disenfranchised groups in developing countries, informality can represent an attractive survival strategy and an opportunity to escape crippling poverty. Informality thrives in unregulated sectors of the official economy, which in many developing countries include waste management and recycling. These conditions were laid out perfectly in the 1980s China, when comprehensive reforms transformed the nation's economy. Millions of people poured into the cities from the countryside looking for work, but many faced insurmountable obstacles and were left with few choices but to begin scavenging for waste to make a living. One feature about the Chinese case that makes it stand out from a number of other countries with a strong presence of informal economic activities is the *hukou* (户口) system⁵. This system imposes severe limitations on employment opportunities and access to social security and welfare services outside the area of one's hukou designation. As a consequence, hukou-

⁵ The household registration system, known as *hukou* (户口), was imposed in 1958 to control internal migration.

lacking migrants were, and still is, subjected to routine exploitation and discrimination, providing a strong incentive for many to turn to the informal sector. For this group, waste has come to symbolize not only survival and a way out of poverty, but also an alternative to subjecting oneself to a demeaning, oppressive, and under-paid employment regime (Inverardi-Ferri, 2018b; Wu, forthcoming). In the period following the de-collectivization of agriculture, enormous areas of farmland were rendered non-arable by local industry, effectively removing farming as an option for local peasants to sustain themselves and their families (Goldstein, 2017a; Lora-Wainwright, 2017). Consequently, in places like Guiyu and Wenan informal recycling became a way to make a living without having to leave one's hometown and endure the struggles experienced by migrant workers in the cities and elsewhere. Thus, waste becomes a symbol of survival as well as freedom and agency to some informal stakeholders, but also a state of entrapment – an experience of lacking any real alternative but to continue working in the informal recycling business. This greatly informs the behavior of the IRS and the way it has organized itself to withstand regulatory and economic pressure. However, it is also emblematic of a grim socio-economic feature of contemporary Chinese society, namely the widening wealth gap between the urban middle- and upper-classes and the rural poor. The continued prevalence of informal WM and recycling activities and the persistence of informal stakeholders in an increasingly hostile environment are strong indicators that China still has a significant poverty problem.

Waste can be characterized as an economic "bad," a negative externality of production, consumption, and economic growth which is neither desired nor desirable (Steenmans et al., 2017). Yet, waste is also a resource with a potentially high financial value attached to it and is consequently traded as a commodity. In countries where waste management is neglected and a market demand for secondary material is present, waste inevitably becomes part of the "commons," i.e. a resource which belongs to all members of a society. The problem with waste, though, is that most people do not regard it as a resource and usually want as little to do with it as possible. Consequently, waste is typically left to be handled by people with few or no other options, which has been the case in China since the 1980s. On a positive note, this arrangement has been hugely beneficial to Chinese society on a number of levels. A significant portion of the migrant population have been able to make a living this way, urban residents have had their waste disposed of in an efficient manner, and Chinese authorities have saved billions of RMB in expenditure on WM (Steuer et al., 2018a; 2018b). However, unregulated, low-cost recycling practices performed by unskilled workers

using crude tools and machinery produces its own set of negative externalities. The detrimental environmental and public health impact of this industry became undeniable and forced the Chinese government to take action. The regulatory responses to the informal dominance have largely been presented as part of an overarching environmentalist agenda but peeling back the layers of rhetoric quickly reveals additional objectives. As Schulz (2015) convincingly argues, the implementation of a WEEE management system focusing solely on material recovery aligns perfectly with ambitions to boost China's manufacturing output and increase domestic consumption. The formal system, which so far has not been very successful due to the dominance of the IRS, is designed to extract valuable material, e.g. precious metals, from the electronic waste stream through shredding, discarding any leftover material and ruling out reuse of functioning components. The usable material is then fed straight into the manufacturing sector to be turned into new products. This system puts the Chinese government in control of the waste stream from point of generation to transformation into raw material, effectively turning waste into a tool to further its political and economic ambitions (Schulz, 2015; Steuer & Schulz, 2017). Accordingly, the IRS is perceived as an obstacle to the successful implementation of this system and an adversary in the competition over access to a valuable resource.

The main weapon utilized against the IRS in this conflict is an overwhelmingly negative discursive framing that is propagated through media outlets, academia, and NGOs. The formal system aims to legitimize itself using a language of environmentalism, modernization, and technological and scientific progress, to which the IRS is portrayed as the antithesis (Schulz, 2015). By framing certain informal activities as illegal, the state defends the use of drastic repressive measures that displace thousands of people, such as the 2011 crackdown in Wenan (Goldstein, 2017a). In cities like Beijing, the vast majority of informal stakeholders are migrant workers whose very presence is considered illegal, which keeps them from being recognized as legitimate stakeholders in the city's WM system (Tong & Tao, 2016). The quasi-collaborative relationship between informal collectors and certified recycling companies should be regarded as a necessary but, ideally, temporary concession from the formal sector's side, rather than a genuine attempt to include the IRS in the official system. The routine exclusion of informal stakeholders from decision making processes pertaining to MSWM and recycling only widens the schism between the two sectors and exacerbates tension (Tong & Tao, 2016; Goldstein, 2017a). Consequently, informal actors are forced to continue employing and developing counterstrategies to avoid arrests, deportation,

foreclosure etc., in order to stay alive in the business. As depicted by Lora-Wainwright (2017) and Wang Jiuliang's documentary film *Plastic China*, informal recyclers are willing to accept dangerous and extremely harmful working and living conditions in order to do so. Most of these people are fully aware of the dangers to their own health and the environment posed by their line of work. They operate in a constant state of negotiation with regards to how much they are willing to endure and develop various coping strategies to make life in these circumstances acceptable, which completely debunks the stigmatized image of informal recyclers as a monolithic group of greedy and careless borderline criminals (Lora-Wainwright, 2017; Wu, forthcoming). Following the assumption that people would exit the sector to pursue other lines of work if given any real alternatives (Wilson et al., 2006), these depictions certainly indicate a shortage of attractive options.

If their goal is indeed to eradicate and totally replace the IRS, it seems as though Chinese authorities have approached this challenge from the wrong angle. Their strategy looks like a case of attempting to treat the symptoms rather than curing the disease. This may stem from a gross miscalculation of the resilience of the IRS and a failure to identify its interconnectedness with broader socio-economic issues. This resilience, as shown by the meta-synthesis conducted for this study, is supported by two key factors – a high degree of organizational flexibility and a deep embeddedness in social, political, and economic structures. Together, these two features make it extremely hard to out-manuever the IRS using chiefly competitive and prohibitive measures. The flexibility exhibited by informal stakeholders is in part developed in response to such measures, which in terms of causality implies that government efforts to suppress the sector have in fact only made it more able to withstand this kind of pressure. Part of what enables the IRS to develop these effective counterstrategies is the sector's embeddedness in various social, political, and economic structures. While this embeddedness is essential to the sector's survival, it also represents a double-edged sword. Through its embeddedness in family and kinship networks, the IRS has become a safety net and fallback strategy for a significant portion of China's migrants and rural poor and is the preferred option of many over the limited number of alternatives available to them. To a substrate of this group, informality may even be the only option available, bar begging, due to illness, old age, or lack of documents (Steuer et al., 2018a). Given how punishing, dangerous, and humiliating this line of work can be, it is quite telling that it is still considered a preferable option by millions of Chinese. To some informal stakeholders, the sector has come to represent the only available means of livelihood due to its

deep embeddedness in the local economies of rural areas where informal recycling industries are pervasive. The growth and habituation of informal recycling in places like Guiyu and Wenan virtually eliminated all other local economic activity. As depicted by Lora-Wainwright (2017) and Goldstein (2017a), locals largely do not have a perception of there being any other options available to them but to stay in the recycling business. In a sense, they are thus dependent on and trapped in informality, forced to cope with adverse living and working conditions and to be flexible and develop strategies to counteract regulatory pressure. On a positive note, however, signs are emerging that indicate that the Chinese government is increasingly directing its efforts toward two root causes that underpin the issue of informal WM and recycling, namely rural poverty and the hukou system.

5 Conclusion and outlook

The impetus for this thesis was to find an explanation for the remarkable resilience exhibited by China's IRS in an increasingly hostile environment. This has been provided through the novel application of the meta-ethnographic approach to qualitative meta-synthesis on a selection of six published qualitative studies. My meta-ethnographic study successfully produced a line-of-argument synthesis on the basis of two key concepts that are applicable across the entire selection. These key concepts each represent a complex social phenomenon that is described and interpreted in various ways in relation to IRS' success factors by the different studies. The key concepts, or phenomena, are *organizational flexibility* and *embeddedness in social, political, and economic structures*, and together they form the following line of argument and answer to my research question: "until recently, China's IRS has exhibited a remarkable level of resilience against economic and regulatory pressure because of its high degree of *organizational flexibility* and deep *embeddedness within social, political, and economic structures*." The broader socio-economic implications of these findings are discussed at length above.

What the future holds for China's IRS, its rural poor, and the "floating population" is hard to predict at this juncture. It seems likely that the IRS will eventually disappear or at least become a very marginal segment in the country's socio-economic landscape. The question remains, though, of what will happen to the people who inhabit the sector when this transpires. A recent survey reveals that the migrant population, while having grown slightly since the previous year, is becoming older and travels shorter distances to find work. This is likely a reaction to the ongoing slowdown in China's economy, which has resulted in factory closures and less activity in the manufacturing sector (SCMP, 2019a). However, it may also be a sign of improving living conditions in poorer rural areas. In 2012, the government laid out an ambitious plan to eliminate poverty by 2020⁶, which has included dispatching 775,000 officials to villages around the country to implement poverty relief schemes (Xinhua, 2017). Their efforts may have begun to bear fruits. Moreover, the National Development and Reform Commission (NDRC) has recently instructed local authorities to offer grants to returning migrants, which could also explain why more people choose to return home (SCMP, 2019a). Finally, President Xi Jinping has reportedly made "rural rejuvenation" a key priority and

⁶ Set against a domestically determined poverty threshold of a yearly income of RMB 2300 (about USD 340) (Xinhua, 2017; SCMP, 2019c).

vowed to address the increasing income gap between the rural and urban populations (SCMP, 2019b). These developments have been accompanied by a gradual loosening up of the hukou system, making it easier for rural hukou holders to convert to urban status and to obtain permanent residence permits in cities with populations of up to 5 million (SCMP, 2019d). While the largest cities like Beijing and Shanghai will maintain stricter restrictions, this relaxation may increase the likelihood of informal actors becoming empowered as stakeholders in the design of official MSWM systems in many cities around China. Granted that they do not all return to their hometowns if living conditions in the countryside continue to improve.

If these recent policy developments achieve their desired effects, there is a good chance that the IRS might dissipate by itself, as migrants will have increasingly strong incentives to return home and local economies in rural areas are repaired and diversified. The informal stakeholders who remain in the cities may become absorbed into official MSWM systems or find legitimate jobs in other sectors, as hukou restrictions are loosening up. However, these are still early stages and it is premature at this point to gauge the efficacy of these campaigns and policy changes. In any case, the tension between informal and government-sanctioned formal stakeholders is likely to remain high for still some time to come. Formal recycling enterprises are continuously working on methods to challenge the dominance of informal collection channels. The latest weapon introduced to the fight is mobile apps, typically utilized through integrated multi-function platforms like WeChat (微信) and Alipay (支付宝), in a bid to make formal collection services more convenient. Whether this is enough to compete with the doorstep collection and pecuniary reward offered by informal collectors remains to be seen. As for the portion of the sector responsible for the final processing of waste, the "race to the bottom" described by Goldstein (2017a) is likely to proceed at perhaps an even faster pace following the 2018 foreign waste import ban. Seeing as a significant portion of the waste processed by informal recyclers has come from overseas (Chi et al., 2011; Goldstein, 2017a; Brooks et al., 2018), their future in the business is indeed not looking bright. This tendency should be exacerbated even further by the economic slowdown China is currently undergoing, which reduces the market demand for secondary material. The competition over domestically sourced recyclables will be fierce and the amounts that need to be processed to turn a profit will increase drastically. It is crucial for these people that recent policies, such as the rural rejuvenation project, is implemented with

efficacy sooner rather than later, so that they become enabled to pursue alternative means of livelihood and improve their living conditions.

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