# A STATE-OF-THE-ART OF SCIENTIFIC RESEARCH ON SUSTAINABLE CONSUMPTION IN CHINA

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# Abstract

Global (research) networks to address sustainable consumption and production (SCP) are growing recently to stimulate mutual learning and to try to tackle sustainability problems more globally. This study aims to help framing the identity of the SCP network and to contribute to its future research agenda by giving a first impression of the research on SCP in China. The focus on China is chosen because of its growing impact of consumption and its relatively new appearance in the field of SCP. To come with a state-of-the-art on China related SCP literature, a systematic literature analysis was done. For developing the research on SCP the sociological practice theory was used to include in the research both the actor-side and systems of provision side from the practice model; furthermore a trend approach was developed sketching general trends in China which can influence consumption directly and indirectly; and finally, a short overview of other consumption theories was given. This way a broad insight into consumption theory was provided.

The research found a substantive amount of literature both on sustainable consumption in general and on food consumption specifically in China, the research focus of this study, which is positively striking. A main result is that the topics of consumer behaviour and culture (values, attitudes and awareness) are frequently addressed in the literature. This indicates the presence of research on agency, lifestyles, values and awareness as representing the actor-side of the social practices model as it is used in the literature on sustainable consumption in OECD countries in particular. The role of systems of provision in organizing (sustainable) consumption practices as emphasized in the social practices model, however, is less present in the China related literature, and confined to the role of supermarkets in the supply of organic food, and the role of government agencies in developing policies for sustainable consumption.

Next to the thematic focus, the most prominent (lead) authors from the China related SCP literature are outlined. In this way, we were able to show the existence of a network of a core of authors on sustainable consumption. Furthermore, trends and shifts in China in relation with sustainable and food consumption are outlined from an in-depth literature analysis per topic. This analysis resulted in a good overview of main topics addressed in the literature and also identified key discussion points in the current SCP research. Finally, conclusions and recommendations are given on the state-of-the-art on China related SCP research.

*"One's overconsumption is one's deprivation"*

(Ashish Kothari, 2014)

# Preface

In this thesis I explored (research on) sustainable consumption, a subject which has had my interest for several years, and which I developed further during my internship at the Collaborating Centre on Sustainable Consumption and Production in Wuppertal, Germany. It therefore seemed logical to end my study by writing my master thesis on this subject as well. China was chosen as specific focus of my research, because of its recent growth in consumption and the simultaneously lack of knowledge/research on sustainable consumption there. At the same time, the Global Research Forum on Sustainable Production and Consumption organized a conference to gather sustainable consumption and production (SCP) researchers at the Fudan University in Shanghai, China, in June 2014, and a workshop in November 2014 at the Renmin University in Beijing, China. The purpose of my study was to make a state-of-the-art of the current research on SCP in China to help preparing for the workshop in November 2014, and at the same time to contribute to the development of the research agenda of SCP.

Working on my master thesis therefore not only gave me insights into the research on sustainable consumption, it also gave me the chance to join and help with the conference in China, to meet several experts in real, and to explore the networks around global sustainable consumption research myself. Finally, it gave me the opportunity, especially during the conference, to develop and profile myself as a starting researcher in the field of SCP research.

For supporting me in joining this great experience and for supervising me during the whole process of my master thesis, I would, first of all, like to thank my supervisor Gert Spaargaren. I am very grateful to him for this fantastic opportunity. I would also like to thank Peter Oosterveer in advance for being the second reader of my master thesis.

Furthermore, I would like to thank Wenling Liu for her input on my thesis and her insights in China specific literature. It was nice to get in contact and to meet her and Lei Zhang at the conference in Shanghai. Also, I would like to show my gratitude to Maurie Cohen, who gave me the opportunity to give a poster presentation on my research at the conference. It was great to meet him in real. I would also take this chance to express my thanks to all the people I met during the conference for their inspiring thoughts and our conversations.

Next, my thanks go to my friends Ruth, Inge and Mandy for their feedback on my thesis and support during the process, as well as to my brother Justin for his insights on the writing of my research. Finally, my thanks go to my beloved parents and boyfriend for supporting me throughout the whole process of writing my master thesis which has not always been easy.

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# 1. INTRODUCTION

Global climate change due to rising greenhouse gas emissions is a pressing, if not the most, environmental challenge of the 21st century. Research networks worldwide have been and still are being established in an attempt to address climate change. Also in the field of sustainable consumption and production (SCP), research networks are set up, such as the Sustainable Consumption Research and Action Initiative (SCORAI) and the Global Research Forum on Sustainable Production and Consumption (GRF-SPaC). To approach the consumption problems more broadly and thoroughly, it is important that the research networks keep developing and that researchers within the networks continue to learn from each other. One way to establish this can be the organization of conferences where researchers worldwide come together to share their knowledge and experience.

When looking specifically at sustainable consumption in the People's Republic of China (hereafter China) (the focus of this paper), research on this topic so far has not been so extensive. It is important to include China in the research and networks because of its expected growing impact of consumption. This research tries to contribute to the research (networks) on SCP in China, by focusing on the current research executed on sustainable consumption in China. It aims to give a state-of-the-art of the research and identifies trends and facts in the literature, from which gaps in the research could be identified when making an international comparison. By doing this research, a first assessment of the nature and identity of the current research is made, outlining the network profile in the field of sustainable consumption and China.

This chapter looks into China's contribution to $CO_2$ emissions and the relevance of studying research on SCP in China as done in this research. It further outlines the focus used in the rest of this study, and explains the research questions addressed.

## 1.1 CHINA'S SHARE OF $CO_2$ EMISSIONS

According to the International Energy Agency (IEA) (OECD/IEA, 2013), China has been one of the largest contributors to the increase in global $CO_2$ emissions for several years with emission levels even approaching those of the United States of America (U.S.A.) around the year 2006[1]. Compared to the total emissions of other countries, both China and the U.S.A. were since the 1990s way ahead in their share of emissions. In 2012 China still has this position as mayor contributor in the share of $CO_2$ emissions. Yet, the growth in 2012 was one of the lowest China has seen in a decade, mainly due to a significant improvement of the country's energy intensity and its use of renewable energy, and also the U.S.A. reduced their total emissions knowingly by switching from goal to gas in power generation (OECD/IEA, 2013, p. 9).

[1] As argued by several authors: Peters et al. (2006; 2007); Netherlands Environmental Assessment Agency (NEAA), (2007); Arvesen et al. (2010); and Gregg et al. (2008).

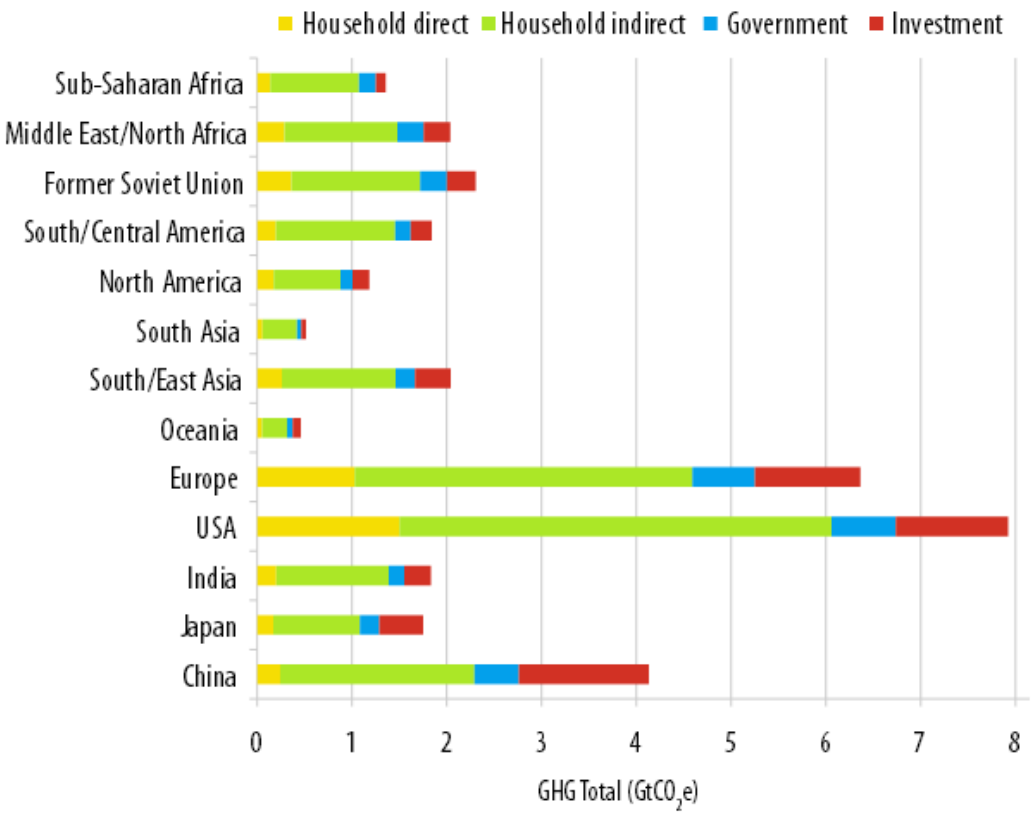
Climate change issues have a high priority for the Chinese government and recently several plans have been developed to tackle and mitigate the climate change, such as the 12th Five-Year Plan for National Economic and Social Development established by the National Development and Reform Commission (NDRC) of China, which was approved in 2011. This plan sets binding targets for the following 5 years to reduce the energy consumption, mainly through improving efficiency, cutting the $CO_2$ emissions and by raising the proportion of non-fossil fuels in the total primary energy mix (NDRC, 2012).

Zhou et al. (2012) argue it is obvious China's largest efforts in tackling climate change so far, mainly focused on a national energy strategy and the industrial sector. Yet, as research done by Peters et al. (2006) describes, even with the efficiency improvements and rapid entering of the best available technologies, it is unlikely that China's $CO_2$ emissions can be reduced by 2030 to the level as it was in the year 2000. Peters et al. (2007, p. 5939) found that "infrastructure construction and urban household consumption, both in turn driven by urbanization and lifestyle changes, have outpaced efficiency improvements in the growth of $CO_2$ emissions". Thus the improvements in technology and efficiency have only partially balanced consumption growth, and therefore great potential remains in reducing emissions by making improvements in both production and consumption systems. The increasing share of $CO_2$ emissions from household consumption will be responsible for at least half of the emission growth in the future according to Peters et al. (2006; and 2007). McKinsey[2] estimated in 2009 that expenditure by Chinese households as a percentage of GDP is approximately half the U.S. consumption part, and clearly below private spending levels in Europe and Japan. An overview of greenhouse gas emissions made by the United Nations Environmental Programme (UNEP) in 2010, shows China is third in rank compared to the other world regions, when looking at greenhouse gas emissions arising from household consumption, government consumption and investment (see figure 1).

Peters et al. (2007) describe it is likely that the environmental pressures from increased household consumption, urbanization, and population in China will continue to grow as China keeps developing. Also Arvesen et al. (2010) argue that due to continued urbanization and economic growth in China, big changes in consumption can be expected in the future. The share of household consumption in greenhouse gas emissions in China can thus not be ignored, revealing the importance of consumption practices in China when addressing climate change.

[2] McKinsey is a well-established American global consulting firm.

**Figure 1: Direct and indirect greenhouse gas emissions arising from household consumption, government consumption and investment in different world regions**




*In: UNEP, 2010, p. 48*

## 1.2 THE NEED TO INCLUDE CHINA IN SCP RESEARCH

Research on the topic of sustainable consumption in China is recently growing and gaining recognition for its relevance. On a global scale, sustainable consumption has been studied since the 1990s. China, however, has not been very apparent in research networks on sustainable consumption which originated especially in Europe and the U.S.A. Studying sustainable consumption in China is therefore a relevant contribution to the sustainable consumption and production agenda.

Including China in the SCP research is even more important since China has become a big emerging player in the field of global environmental change. Environmental scientists worldwide have been recognizing the role of China in for example climate change politics and renewable energy. Although the literature on 'China and the environment' is expanding at a fast rate, the focus lays mainly on production, technology and the macro level. Attention to sustainable consumption tends to be less visible and prominent in the literature on China, although since the late 1990s this is slightly increasing.

Focusing on sustainable consumption in China is additionally relevant since the fast growth of the middle class and its considerable 'consuming power' is recognized by many

authors in the SCP field[3], and it is expected to increase in the coming decades. One of the challenges the world faces today is how to combine the increasing levels of consumption and the accompanying welfare gains with a sustainable way of living; in a way that increased consumption goes along with diminishing environmental impacts.

This research aims to make an assessment of scientific studies on China and sustainable consumption which are published so far in the international field on SCP, in an effort to contribute to the emerging field of research on sustainable consumption in China. The assessment is done in order to identify the themes and topics that are currently central in the literature on China. Also, when comparing the research at an international level, gaps in the research can be identified. By assessing the existing literature this research aims to contribute to developing the future research agenda on China and SCP[4].

## 1.3 SPECIFYING THE SCP RESEARCH ON CHINA

In 2009 Patrick Schroeder wrote that growing incomes and urbanisation in China will increase the share of emissions from the consumption domains of private mobility, housing and food and that these fields will account for one of the largest shares of China's emissions in the future. Table 1 shows the rising living standards in China in 2007 and its effect on clothing, food, housing, transportation and consumer durables in rural and urban areas in China. The fields Schroeder mentions are the same fields with a major impact on $CO_2$ emissions as found in Europe. In Europe the private (household) consumption domains of food (and beverages), housing and transport together account for about 70-80% of Europe's total environmental impact[5]. According to Spaargaren et al. (2012) these same fields are key units of analysis for consumption policies around the globe. Other scholars often mention energy among the important consumption fields, here, however energy is seen as contributing to all the consumption fields, for example the energy that is needed in housing. Therefore energy will not be specified as an explicit domain in the research here.

[3] For example Schroeder, 2009; and Gerth, 2010.

[4] And to the preparations for a -research on sustainable consumption- workshop in China which will be held in November 2014 in collaboration with the Sustainable Consumption Research and Action Initiative (SCORAI) network at the Renmin University, Beijing, China.

[5] According to several scholars as Tukker et al. (2008); and the EEA (2010); and China Council for International Cooperation on Environment and Development (CCICED) (2013).

**Table 1: Rising living standards in China**

| | Rural | | Urban | |
|---|---|---|---|---|
| **Income level** | **1978** | **2007** | **1978** | **2007** |
| Per capita rural net income (yuan) | 133.6 | 4,140.4 | | |
| Per capita urban disposable income (yuan) | | | 343.4 | 13,785.8 |
| Family Engel's coefficient (%) | 58.8 | 43.1 | 54.2 | 36.3 |
| **Clothing** | | | | |
| Per capita purchased clothes (per piece of clothing) | 0.7 | 2.4 | 3.13 | 7.82 |
| **Food** | | | | |
| Per capita grain consumption (kg) | 248 | 199 | 205.3 | 77.6 |
| Per capita pork consumption (kg) | 5.2 | 13.4 | 13.7 | 18.2 |
| Per capita poultry and egg consumption (kg) | 0.8 | 4.7 | 1.97 | 10.3 |
| **Housing** | | | | |
| Per capita housing space (square metres) | 8.1 | 31.6 | 4.2 | 22.6 |
| **Transportation** | **2000** | **2007** | **2000** | **2007** |
| Car ownership per 100 families (no.) | | | 0.5 | 6.06 |
| Motorcycle ownership per 100 families (no.) | 21.94 | 48.52 | | |
| **Consumer durables** | **1985** | **2007** | **1985** | **2007** |
| Colour TV ownership per 100 families (set) | 0.8 | 94.4 | 17.2 | 137.8 |
| Refrigerator ownership per 100 families (no.) | 0.1 | 26.1 | 6.6 | 95.0 |
| Washing machine ownership per 100 families (no.) | 1.9 | 45.9 | 48.3 | 96.8 |

*Source: China National Bureau of Statistics, 2008, China Statistical Yearbook 2008.*

*In: UNDP, 2010, p. 11*

The high impact of the consumption domains in Europe, and the prospects for the same fields in China, make it useful to take a look into the same consumption domains when assessing sustainable consumption in China, thereby taking into account that global and local dynamics in food, housing or transport work out differently in different regions. For example, sustainable housing practices in rural India or East Africa are different from the climate proofing of houses in the Netherlands or the UK (Spaargaren et al., 2012).

Assessing sustainable consumption in China is a broad topic, and therefore a more narrow focus is necessary for this assessment. To specify the research, the focus lies on literature on China's sustainable consumption in general, as well as on one of the three consumption domains which have a huge share in Europe's total environmental impact: food. This demarcation is favourable due to time limits and working capacity. The consumption domain of food is chosen because of the expectation that the topic of food consumption is clearly

present in the literature on SCP in China, partly due to the food safety incidents in China in the last decade.

## 1.4 RESEARCH QUESTIONS

To be able to give a clear overview of scientific literature on China's sustainable consumption in general and on China's food consumption specifically, and to give an impression of the main topics and trends found in this literature, the research is divided in two. On the one hand an analysis is done to create a -'state-of-the-art'- regarding scientific social sciences studies on China and sustainable consumption by investigating the (amount of) articles found, and thus identifying the body of knowledge. On the other hand, central trends and topics in the SCP literature in China are explored, again differentiating between sustainable consumption in general and food consumption specifically. The following two main research questions are formulated:

1. How can the state-of-the-art of scientific literature on China's sustainable consumption in general and on food consumption specifically, as conducted so far in the international field on SCP, be specified with respect to a and b (a= the categories to be derived from the literature overview, and b= the authors most prominent in the SCP literature on China)?

2. What are central trends and topics in the literature on China's sustainable consumption in general and China's food consumption specifically?

### READING GUIDE

In the next chapters the theory and methodology behind the research questions from this paper are elaborated on, explaining which decisions were taken and which steps were made to make an assessment on SCP literature on China. Research question 1 is answered in chapter 4 of this assessment by giving an overview of the main categories discussed in the body of knowledge and showing the prominent (lead) authors in the field. Chapter 5 focuses on research question 2 and thus outlines the prominent trends, first on China's sustainable consumption in general, and second on China's food consumption specifically. Chapter 6 'Conclusions and Recommendations' focuses on the outcomes given by answering the main questions from this research. Finally, in the epilogue, a reflection on the research and future of SCP literature on China is given.

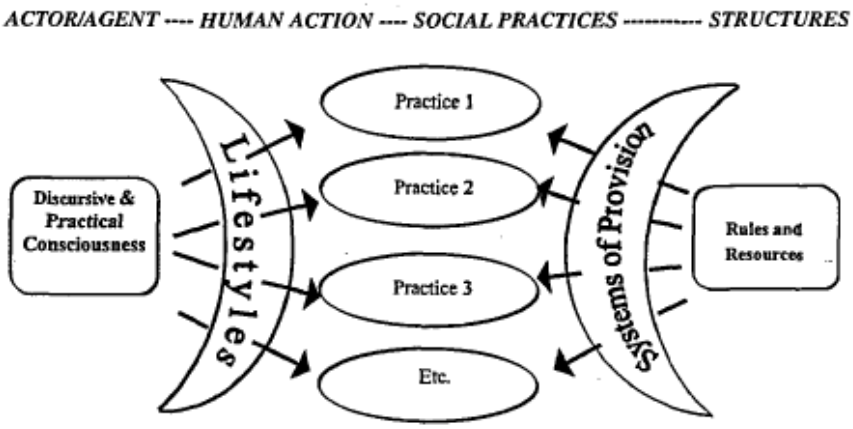
# 2. SCP THEORIES WITH RELEVANCE FOR CHINA RESEARCH

Where to begin with developing an assessment of environmental social science literature on China and SCP? In the area of sustainable consumption research the Social Practices Model (SPM) as developed in European social sciences studies is becoming increasingly popular, since it breaks with other sustainable consumption studies that are more individualistic or systemic[6] according to several authors[7]. This research makes use of the social practices model as an important point of reference to characterize the available literature on sustainable consumption in China. Next to this specific point of reference however, it also addresses other consumption theories that are present in the literature and it discusses more general trends in Chinese society which influence sustainable consumption developments in a more indirect way. By using a combination of these approaches an effective method is used to address sustainable consumption in China. This chapter looks into the approaches and specifies how they are applied when making an assessment of sustainable consumption research in China.

## 2.1 THE SOCIAL PRACTICES MODEL

The social practices model puts practices that are shared among people at the centre of analysis in order to better understand everyday consumption practices (Spaargaren, 1997; Spaargaren and van Vliet, 2000; Shove, 2003; Shove et al., 2012). It looks into normal daily routines and its possibilities for reducing the overall environmental impact. Social practices can be influenced on the one hand by individual lifestyle choices, and on the other hand by the possibilities offered by systems of provision.

**Figure 2: A conceptual model for studying consumption practices**




*In: Spaargaren and van Vliet, 2000.*

[6] Other scholars also write about the preference of the social practice model above individualistic approaches such as the behavioural theory of Azjen (1991) and/or the systemic approach as the transition theory: Nijhuis (2013); and Contrast (2007).
[7] Spaargaren and van Vliet (2000), Spaargaren (2011) and Wilhite (2010).

Figure 2 provides a schematic overview of the practices model. Practices as 'shopping for sustainable food in the supermarket' or 'using renewable energy for heating and cooling the home' are examples of the kind of 'units of analysis' that are suggested by the SPM.

The SPM can be applied to several consumption domains, such as housing, food and mobility. In the Netherlands scholars commonly use five till ten consumption domains as: food, clothing, caring, living, recreation, sports, holiday, etcetera (Spaargaren et al., 2002). The CONTRAST research project[8] for example divides consumption in six domains, and each domain exists out of several practices. Table 2 shows the scheme with 36 consumption practices from the CONTRAST project, which is aimed to be in line with the international agenda for SCP policies according to Spaargaren (2011).

**Table 2: Domains and practices relevant for the governance of sustainable consumption.**

| Food | Leisure and Tourism | Dwelling the House | Being Mobile | Clothing & Pers. Care | Hobby and Sports |
|---|---|---|---|---|---|
| dining out | alpine holiday | gardening | business travel | shopping for cloth | fishing |
| shopping for food | city trips | redecorating the kitchen/bathroom | city biking | jacuzzing/ fitness | Playing ball |
| cooking for friends | costas/beach holidays | indoor climate controll | commuting | showering | horse riding |
| food on the move | leisure parks | moving house | slow travel | laundring | dogs and pets |
| eating in a canteen | backpacking | handling domestic wastes | buying a car | sewing and mending | running/biking |
| kitchen-gardening | outdoor recreation | refurnishing the house | leisure travel | collecting old cloth | DYO |

*In: Spaargaren, 2011, p. 816*

The practices described are all situated at a certain place and a certain time which is one characteristic of practices. Practices as eating in a canteen, or shopping for food always take place at a location which belongs to the practice (Contrast, 2007, p. 72). Or as Giddens described

[8] The CONSTRAST (Consumption transitions for sustainability) research examined sustainable lifestyles and consumption patterns. The research was a collaboration between Wageningen University, Tilburg University, Milieu Natuur Planbureau (now: PBL, the Netherlands Environmental Assessment Agency) and Landbouw Econonomisch Instituut (agricultural economic institute).

'localities are implied in interaction': the supermarket or kitchen all determine what the practice of shopping or cooking includes and means (In: Contrast, 2007, p. 72). On the other hand, the practices can be studied for the ways in which they are reproduced over time in a patterned, specific way. The situated practices are then studied in relation to the institutional actors and factors in their specific domain.

## Using the Practices Model for research on SCP

By studying a selected set of consumption practices in everyday life domains (as food, housing and transport), the characteristics and dynamics of consumption as a social phenomenon are taken into account when developing the SCP agenda, which can be seen as 'zooming in' on concrete practices, networks, systems and behaviours of consumption as amongst others suggested by Davide Nicolini (2009). The use of a 'consumption focused search-instrument' like the SPM is important in order to frame research topics and themes in a way that has direct relevance for SCP-research. Via the SPM the focus lays specific on key actors and processes that play a role in shaping actual, everyday life practices of sustainable consumption.

Due to the nature of the SPM as conceptual or theoretical tool, it is claimed to be applicable in different socio-cultural contexts and time periods. Whether shopping for food in China or in Germany, the practice under study results from the interplay of actions from both the shopping citizens (consumers), the shop-floor and its actors, technologies and products, and the actors, regulations and strategic innovations higher up in the production-consumption chain and network that are 'connected' to this particular practice. So what is decided by governments in terms of food-safety politics, and by retail managers and the food processing industries at international and national levels, only appears in the SPM-modus when they have direct relevance for the particular practice of shopping for food in the supermarket X or Y.

An important aspect of the social practices model for this research on consumption in China is the focus on the different consumption domains and practices. For this research, the food domain is selected to make a sector or domain-specific exploration for sustainable consumption in China. Also important for this research is the interplay of agency and structure as represented in the practice literature in a way as described above. Specific SCP questions can be addressed in the various consumption domains, and one can wonder for example what the role of the government is in labelling supermarket products. Important questions which were taken into account during the literature research were therefore: What has been written on the levels of green provision in the different consumption domains in terms of available products and services, regulatory policies/subsidies/strategies of the government, and the level of consumer orientation in the retail? And: What are the levels of green involvement of consumers

when looking at individual behaviour, lifestyles and awareness? Both sides as addressed in the SPM are thus used in the literature search.

Both sets of questions refer to different levels of society: the agency questions to the micro level and the system-of-provision questions to the macro level. When 'zooming in' on particular everyday practices (shopping in the supermarket) we work on the micro level. When 'zooming out' from specific consumption practices and investigating the 'landscape factors' that do have relevance for the practice as such, we focus on the macro level. The focus then lays on trends and shifts in policies, culture and the economy, so-called landscape factors, in present day China with relevance for specific fields and practices of sustainable consumption, in this case general and more specific food trends. Landscape factors can have their influence on consumption in two specified ways. First, as described, there are general trends and developments with particular relevance for specific consumption domains and practices. Second, there are trends and developments that influence consumption domains indirect and in a general way, as illustrated in the next section.

## 2.2 OTHER RELEVANT CONSUMPTION INSIGHTS

Next to (domain and practice specific) macro-level trends as emphasized by the SPM model, there are general trends in history and society that have an influence on practices and consumption domains in an indirect and more general way, and thus not with respect to only one of the specific consumption fields or practices. These general trends and shifts (macro level included) are first introduced and discussed, followed by a short characterization of other theories found in the literature which address sustainable consumption behaviours and trends in a way that differs from the SPM model.

### General trends and shifts

Relevant trends and shifts in Chinese society can have their influence on consumption but not always in direct, specific, easily detected ways. For example when income levels rise, the expectation is that this factor will have an impact on consumption without specifying the particular consumption practices or domains that are affected. The same holds for the increase of urbanization processes, since this will affect both rural and urban practices of consumption, etcetera. The main trends and shifts in policies, culture and the economy in China are not organized in terms of SPM-research since these trends do not focus specifically on practices. These trends and shifts are supposed to affect consumption in more indirect and diverging ways when compared to the actors and dynamics of the systems of provision from the SPM for consumption practice X or Y.

## Investigating the Chinese landscape factors

China has for decades been ruled with a communist government, controlling strictly and holding the country away from thorough foreign involvement. In 1978, however, the open-door policy was implemented, attracting foreign retail and economic growth. Currently China is one of the largest economies in the world. The economic growth caused an increase in the (disposable) income levels of the citizens (Schroeder, 2009). Another main trend is the growth of the Chinese population, making China among the most populated countries in the world today. Besides, the population is only expected to increase. Most of the Chinese population currently lives in the urban areas and it is estimated that nearly 70% of the Chinese population will live in urban areas by 2035 (United Nations, 2011). In the last decade a lot of Chinese people migrated from rural areas to urban areas to find work in the cities, broadening the gap between rural and urban areas, and causing an increase in the need for urbanization. China will need to prepare its cities with appropriate housing and transport to accommodate all its citizens. When looking more specific at transport, China only recently came across the use and manufacturing of cars, while before China was famous for its extensive use of bicycles. Presently, China knows a massive car use, even causing excessive smog problems in the major cities of China (Time, 2014).

Due to the open-door policy, foreign food retail also entered China, making Chinese citizens familiar with for example supermarkets and fast food chains. New ways of shopping for food, and changing diets and cuisines are other clearly visible trends (Gerth, 2010). Moreover, a trend towards consuming more animal products is observable in China, especially meat and dairy products. Because of the increasing population and levels of people living in urban areas and moving away from rural regions, food security and provision is becoming increasingly important. Additionally, recent food scandals have attracted a lot of attention among urban consumers in China, causing a rise in awareness of the food supply system and concerns on food (The Telegraph, 2011). To ensure food safety consumers are looking for safer ways to buy food, as for example by buying organic food. Organic food is anyhow on the rise, also due to concerns on health and the social and ecological impacts of food.

## A selection of consumption theories

Here an overview of competing theories explaining and addressing general trends in relation to SCP (and thus not SPM-related) and this research is provided, again to make sure that the bigger picture around sustainable consumption is taken into account. The overview of theories mentioned here does not pretend to be extensive. A first theory is the Engel's Law. When citizens become wealthier they have more disposable income which results often in consuming more goods. The Engel's Law from economic sciences argues there is regularly a shift away from the amount of income spend on food to other domains, such as housing or transport (Cirera and

Masset, 2010). People start buying luxury goods as a car, a computer, a washing machine, etcetera. Also Gerth (2010) describes the expectation that the rising incomes will cause an immense growth in consumption expenditures from the Chinese, making China even become leading in consumption. Another effect from rising incomes is that people start to consume more animal products (Delgado, 2003). These changes in consumption cause a bigger impact on the environment.

A different theory which addresses consumer behaviour and focuses on individuals and their consumption choices is the theory on responsible consumption. Literature suggests[9] there is also a shift towards responsible consumption (or green consumerism) when disposable incomes keep rising. Responsible consumption commonly means that people take into account ideas of what is right and good when they purchase. Key issues can be: buying organic and local produced food, purchasing fair trade goods, and focusing on animal friendly products (Starr, 2009). This trend can be a way to overcome the environmental effects of rising consumption. But, responsible consumption so far is only a minority behaviour according to Starr (2009). From a retail perspective, retail can try to adjust to the responsible consumption behaviour by implementing green strategies.

According to Oosterveer et al. (2007) supermarket retailers have become key players in the expansion of sustainable food consumption. Therefore, the strategies and goals of supermarkets can be crucial in the future global provision of sustainable food products. Oosterveer et al. (2007) also summarize the reasons for European consumers to purchase sustainable food: concerns on health impacts and safety of food/food trust, concerns on animal welfare, the ecological impact of food provision and the social impact of food provision. One can wonder if these aspects are also reasons for Chinese consumers to buy organic.

## SUMMARIZING SCP THEORIES

This chapter explained the several approaches of looking at SCP which were used and applied throughout this research. A focus on the SPM, trends and shifts and other consumption theories was given to make sure the bigger picture of consumption was addressed. Although it might seem that the approaches cannot be mixed, they just represent different levels of zooming in/out on what is happening in society. General trends can thus be investigated for their specific relationship with a domain of consumption, or even particular consumption practices, and research on specific, situated practices can be conducted with the aim of getting a better understanding of general trends, etcetera. In the next chapter attention is given to the methodology used in this research. It is explained how the state-of-the-art is researched, and how central trends and topics in the literature were concluded.

[9] Guarin and Knorringa (2013) amongst others.

# 3. RESEARCH METHOD

This chapter focuses on the method used to create a state-of-the-art from literature on SCP in China, and on how to give insights into central trends and topics in the literature. By giving a clear overview of the decisions made and the steps taken, this research aims to be verifiable and solid. Here, the premises and choices that made it possible to give a manageable state-of-the-art of the literature on SCP in China are discussed. First the steps taken to identify the body of knowledge are outlined, focusing on the criteria for the selection of articles and the search process, as well as how categories and authors could be identified. The second part of this chapter addresses the way the trends and shifts were concluded from the SCP literature on China. By addressing the body of knowledge and the content of the SCP literature, this research aims to give a good impression of SCP literature on China.

## 3.1 CHARACTERIZING THE BODY OF KNOWLEDGE

To answer research question 1: "How can the state-of-the-art of scientific literature on China's sustainable consumption in general and on food consumption specifically, as conducted so far in the international field on SCP, be specified with respect to a and b (a= the categories to be derived from the literature overview, and b= the authors most prominent in the SCP literature on China)?", a systematic review on sustainable consumption and food consumption in China was carried out, mapping the research as available in English-written social sciences literature so far (the international field on SCP). A systematic review contains a systematic search in the literature by using online databases to find all relevant papers that fit specific criteria (Griffith University, 2013). In this research all studies that (1) are published in English, (2) identify sustainable consumption in general in China and/or food consumption in China, (3) are academic, and (4) are available as full-text articles, were tried to be identified to obtain a comprehensive list of sustainable consumption in general and food consumption in China.

The electronic databases Scopus (an online database with peer reviewed literature) and Google Scholar (a web search engine that searches within scholarly literature across different publishing formats and disciplines) were used to guarantee an academic level. In addition to peer-reviewed articles, also working papers, dissertations and reports were included, which were found due to searching with Google Scholar. This way all expert work was included. Furthermore, only the articles that could be accessed via Wageningen University or Google as full-text were included. It was additionally decided to specify the search on the use of China or Chinese in the title of the articles, to get a manageable overview. This was done in Scopus by adding "Chin*" and search in article title, and in Google Scholar by including "intitle:China" OR "intitle:Chinese" in the search.

## Search strategies

To find relevant articles for sustainable consumption in general, and for food consumption specifically in China, a selection of key words was made. This selection was done in collaboration with Gert Spaargaren based on our experiences in the field of SCP, thereby taking into account both sides of the social practices model, lifestyles and systems of provision, and the consumption trends and theories as described in chapter 2 of this research (see table 3 for the search words for sustainable consumption, and table 4 for the keywords for food consumption). These keywords were used in different combinations and entered both in Scopus and Google Scholar. An overview from the different key word combinations and resulting outcomes per search engine can be found in attachment I (sustainable consumption) and II (food consumption).

**Table 3: Overview key words sustainable consumption**

| | | | | |
|---|---|---|---|---|
| Sustainable | Behaviour/ behaviour | Perception | Green public sphere | Private |
| Consumption | Green | Household | Middle class | Purchase |
| Lifestyles | Consumer | NGO | Patterns | Values |

**Table 4: Overview key words food consumption**

| | | | |
|---|---|---|---|
| Food | Consumption | Agriculture | Slow food |
| Organic Food | Eco | Supermarket | Animal welfare |
| Green Food | Buy | Retail | Farmers |
| Sustainable Food | Interest | Supply | Supply chain |
| Consumer trust | Purchase | New food choices | Consumer cooperation |
| Label | Behavior/ behaviour | Local food | Community based agriculture |

The focus on articles on sustainable consumption in general was defined in two ways to make the overview graspable and manageable. Firstly, the search was done from the year 1995

onwards, any earlier there were almost no results when entering "China" and "sustainable consumption" in Scopus. Secondly, records focusing on energy and electricity were excluded because of the decided focus on sustainable- and food consumption. Similarly for articles on food consumption the focus in the research was specified. In this theme the search was prepared from 1990 onwards, because green (organic) food was developed in the 1990s in China.

### Literature overview

All the articles found with the search process just described were put in the database Endnote (a tool to manage bibliographies, citations and references), to keep track of the amount of literature. Additionally, relevant articles were added as presented by staff from the Environmental Policy Group at Wageningen University were the research is performed. After identifying articles through the databases, duplicate records were removed in Endnote, as well as records that appeared not to be accessible or available as full-text. Next, articles were screened on their titles and abstracts and then the articles that were irrelevant were excluded from the state-of-the-art. Criteria for the exclusions were: 1. Focus of the article on SCP literature on sustainable consumption, or food consumption; 2. Social science focus (too technical studies were excluded); and 3. Too detailed and specific studies. A figure was compiled summarizing the steps made during the research and representing the state-of-the-art of the literature. By following this system the results are reliable, quantifiable and reproducible according to Griffith University (2013). A final overview of articles remained: the body of knowledge.

The amount of articles selected all in the beginning from the results of entering the search words in Google Scholar and Scopus (and thus not after selecting the most relevant articles) were all screened by titles and abstracts, and from this a first categorization of the literature on SCP in China was made for sustainable consumption in general, and for food consumption in China. With this categorization a first idea of the literature on SCP in China could be given. Based on the final body of knowledge (after excluding irrelevant articles) an overview of articles could be given, representing authors that are active in the field of SCP in China. With this body of knowledge, research question 1 could thus be answered.

## 3.2 TRENDS AND TOPICS IN SCP LITERATURE

This section explains how the trends and shifts in China from the SCP literature were concluded, and addresses therefore research question 2: "What are central trends and topics in the literature on China's sustainable consumption in general and China's food consumption specifically?". To select and specify main trends and shifts for sustainable consumption in general, and food consumption in China specifically, about 20 articles were selected from the complete overview on sustainable consumption in general, and about 25 articles on food

consumption specifically. This selection was chosen with specific criteria: 1. Articles were selected from the different categories (this categorization is explained before); 2. Selection was done based on appearance and/or reputation of the authors (are there more articles in the body of knowledge written by the same author); and 3. Year of publishing (the most recent articles were included when possible). The selection of articles can be found in chapter 5 of this research: for sustainable consumption in general in China in table 11, and the overview for food consumption in China is visible in table 12. The purpose from selecting with this criteria was to include articles across the different categories and thus to ensure that different aspects on sustainable consumption and food consumption were included, relevant authors were addressed, and the overview given was based on the most recent research on the topics.

### Selecting the trends

The selected articles were thoroughly read and compared with each other to find the major trends and topics written on, its similarities and contradictions, and to thus identify the main trends and discussion points that come to the fore in the SCP literature. During this selection the focus was on the topics that were addressed among the articles and on uniformity of the content of the trends, but also prominent remarks and discussion points were taken into account to be certain that a clear and informed overview of trends and topics in the SCP literature was given. The separation between sustainable consumption in general and food consumption specifically remained in this chapter and the theory outlined in chapter 2 of this research was taken into consideration as well. By following this structure insight into the categories in the SCP literature on China was given.

## METHOD WRAP UP

This chapter explained the decisions and the steps made during the research process to come to a good impression of SCP literature on China. It showed how the state-of-the-art of the literature on China was conducted, showing the process of including and excluding articles in the search flow diagram, how an overview of the categories could be given and how information on the authors could be presented. Further, this chapter clarified how articles were selected and how trends and shifts from this same literature were concluded. All was done taken the theories as identified in chapter 2 of this research into account. The next chapter provides the outcomes for research question 1 and therefore gives insights into the literature search, the main categories found and the active authors in the field.

# 4. RESULTS ON THE STATE-OF-THE-ART OF SCP RESEARCH ON CHINA

What is the state-of-the-art of scientific literature on sustainable consumption and on food consumption in China as conducted so far in the international field on SCP? The outcomes from research question 1 are answered in this chapter. First, the literature search flow diagrams as developed in this research, are presented to give insight into the amount of articles identified and the process of including and excluding articles. Next, the categorization made in this research is showed for both sustainable consumption and for food consumption, outlining the prominent topics addressed. The chapter ends with an overview of the authors who are active in the field of SCP research on China.

## 4.1 LITERATURE SEARCH FLOW DIAGRAMS

The search procedure for articles in Scopus and Google Scholar, taking the (relevant) outcomes from both the engines together[10], identified 86 articles for sustainable consumption and 106 articles for food consumption in China. As is visible from the literature search flow diagrams in figure 3 and 4[11], duplicate articles, not accessible articles and not relevant articles were removed during the process of scanning the titles and abstracts, based on the criteria as identified in chapter 3 of this research. The search on sustainable consumption identified a lot of articles focused on food consumption in China. These were moved to the food consumption overview, and this explains the n=25 amount in figure 5.

Figure 3 and 4 show furthermore that additional records were identified through searching with new key words. After scanning the titles and abstracts of the articles it was concluded that not all categories expected were addressed. Therefore, new key words were added to the search process in an attempt to get a complete literature overview, explaining the "additional records identified" in Figure 3 and 4.

By following the structure as outlined, a final selection of articles remained: the body of knowledge. This included 45 articles for sustainable consumption in general, and 95 articles for food consumption specifically. This greater amount of articles on food consumption compared to sustainable consumption is an interesting result, and is probably due to food scarcity and food safety incidents in China which gave a boost to publications on food consumption there.

[10] Annex I and II show the different key word search combinations, their outcomes, and the amount of relevant articles selected from the outcomes and thus taken into account in this research.

[11] A remark on the literature search flow diagrams has to be made on the exclusion of articles in the body of knowledge. From all the articles in the body of knowledge the titles and abstracts have been read, however, only the articles that were selected to answer research question 2 were read completely to identify trends and shifts in consumption in China. During this process some articles were discovered that appeared not to be relevant after all, and were therefore still excluded, which explains the "exclude after reading amount" of articles in figure 4.

**Figure 3: Literature Search Flow Diagram General**

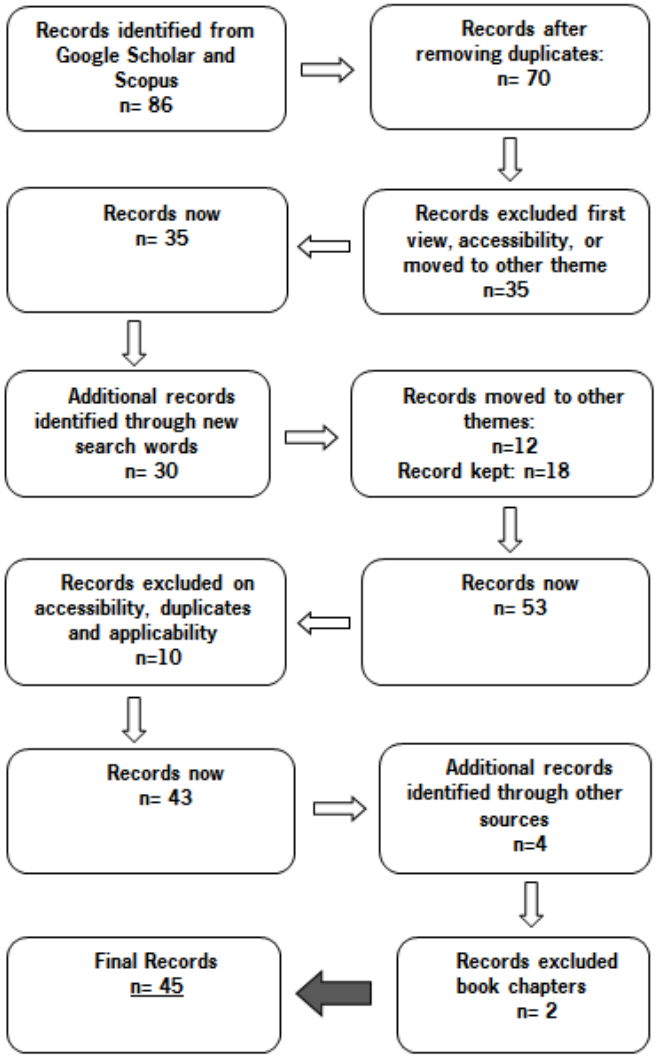
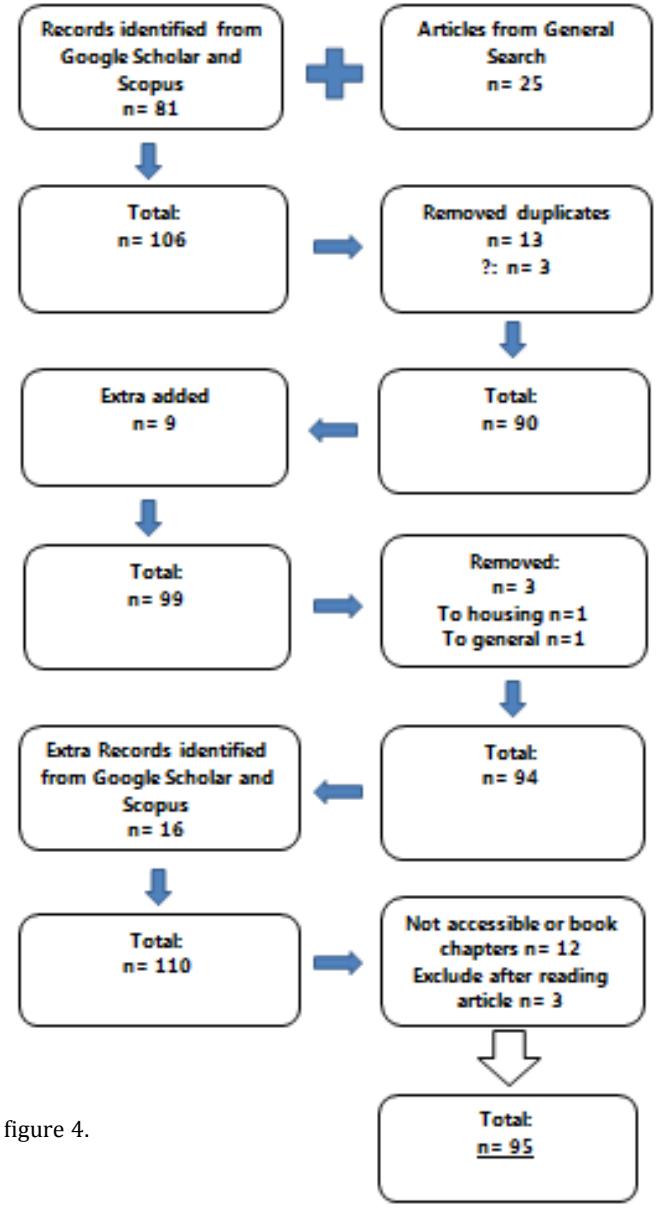



**Figure 4: Literature Search Flow Diagram Food**[12]




[12] Due to an error in Endnote, 3 articles are removed which are not traceable anymore, which explains the n=3 in figure 4.

## 4.2 CATEGORIES

From scanning the titles and abstracts of the articles from the first selection (n=86, and n=106), a categorization of the literature was made, on sustainable consumption and on food consumption in China. Most of the articles were placed into several categories, for example 'buyer behaviour' and 'urban consumers'. This section starts by giving an overview of the categorization made for consumption in general and then for food consumption, with an accompanying description of the categories and expectations made beforehand. These categorizations show the prominent themes that are currently put at centre stage in the research on SCP literature in China. The insights on categories given here can be compared for example with international SCP literature identifying the eminent themes and major gaps.

### Categories and expectations on sustainable consumption

**Table 5: Categorization sustainable consumption (SC) literature**

| | | |
|---|---|---|
| -Trends and facts<br>• New consumers<br>• Rising middle class<br>• Environment | -City planning and consumers<br>• Sustainable cities<br>• Low carbon cities | -Consumer culture<br>• Buyer behaviour<br>• Culture barriers<br>• Attitude awareness<br>• Values |
| - Urban environment<br>• Air quality<br>• Well-being<br>• Quality of life<br>• Households<br>• Behaviour | -The role of social movements<br>• (Non-Governmental Organizations (NGOs)<br>• Public participation | -Rural environment<br>• Income<br>• Behaviour |
| -International policy and the role of China | -Systems of provision for SC<br>• Sectors | Sustainable consumption policy |
| -Consumer and labels for SC<br>• Energy labelling | -Production and Consumption | - $CO_2$ Market drivers |

The categorization for sustainable consumption in China shows that the topics of 'new consumers' and 'rising middle class' are noticeable from the literature, as articles on the effects

from rising consumerism on the environment. Also, a focus on consumer culture is evident in the literature, focusing on buyer behaviour and values. A following category is the $CO_2$ market drivers; which factors drive $CO_2$ emissions in China? The systems of provision for sustainable consumption are a next category, thus looking at what influences if sustainable consumption is being practiced, although they appear to be less present in the literature than the lifestyles side of the SPM model.

Additionally is the categorization of rural environment versus urban environment. Because of the big differences in rural and urban areas in China (for example more air pollution in urban areas) a distinction in the literature between urban and rural areas was estimated before in combination with sustainable consumption. In relation with the urban environment more subcategories were addressed, showing that the research on urban environments in relation with consumption is broader addressed in the literature than the rural environment. Another category of interest is international policy and the role of China. Expected were topics as China and the World Trade Organization (WTO), or the trade with Africa [13], but these could not be concluded from the titles and abstracts of the articles in the body of knowledge. China's expanding environmental governance system, however, was addressed in relation with growing international policy.

Furthermore, the role of social movements for sustainable consumption is a topic discussed in the literature, separating between the involvement of NGO's and public participation. This categorization was not necessarily predicted, due to the role of the government and its top-down policies, although it is known this is slightly changing. Also labelling for consumption appeared to be a topic, focussing on energy. Food labelling is addressed thoroughly under food consumption. City planning in relation to sustainable consumption however, was not anticipated, but proved to be a category in the research anyway. The category production and consumption addressing both sides of the consumption practices, and finally the category sustainable consumption policy, appeared both in the literature showing current policies and/or the need for more policies on SCP in China. Due to the focus on sustainable consumption and not on the specific consumption domains, the role of (sustainable) transport for consumption, for example, does not appear from the research here, because the selection of articles focusing on transport belongs to the different consumption domain transport which is not examined in this research.

[13] China strengthened the ties with Africa to trade resources and food for its own consumption (Gerth, 2010).

## Food consumption categories and predictions

**Table 6: Categorization food consumption literature**

| | | |
|---|---|---|
| -General<br>• Trends and Facts<br>• Definition of sustainable food<br>• Market drivers for sustainable food | -Food chains and key actors<br>• Retail/food shopping<br>• Food industry/Supply chain/food sector<br>• Labelling/certification/ food safety regulation<br>• Supermarkets<br>• Local food/short supply chain<br>• Community Supported Agriculture (CSA)<br>• Green chain | - Consumer culture<br>• Buyer behaviour<br>• Attitude<br>• Method: WTP |
| -Organic agriculture | -Rural – Urban environment | -Marketing organic food |
| -Genetically modified organism (GMO) | - Green consumption/ ethical food | -Animal welfare |
| -NGOs | -Food and Household | -Food safety/security |
| -Aquaculture | -Lifestyle | -Food cuisine/culture |
| -Fair trade | | |

What is present from the food categorization is the attention for Chinese consumer behaviour for sustainable food. A lot of studies have been done on this, mainly by using the Willingness-to-pay (WTP) method for sustainable food which was clearly visible from scanning the titles and abstracts. Furthermore a slight separation in the literature was observable for urban and rural areas in relation with food. Also the food chains and key actors in food consumption and production were addressed, focusing on the food industry, retail, role of certification, etcetera. As was likely before the search, the role of local food and short chains from production to consumption of food would be a rising category within China. However, only few relevant

articles could be found for local food and short chains. For supermarkets a greater amount of articles was expected as well, especially due to their role in the supply of sustainable food.

Another category to be found was 'general on food consumption' in China, showing trends and facts, but mainly definitions of sustainable food and its market drivers. Naturally, organic agriculture in relation to sustainable food appeared in the literature. Next categories were food cuisine/culture, lifestyles and the role of aquaculture focusing on what is important in Chinese (food) traditions. Ensuring food safety appeared to be a major trend, which was predicted before due to the amount of food scandals in the country. Animal welfare did not appear so prominent in the literature on sustainable food, however, this was anticipated because food trust and health were expected as factors that influence the purchase of sustainable food in China. The articles found on animal welfare mainly focused on the use of animals in the lab. In the end health did not seem to be a category on its own that could be concluded from the titles and abstracts on food. Fair trade seemed to be a small category in SCP literature on China, which is logical since it is only just appearing on the market. The role of GMOs is clearly addressed in the literature, which was anticipated due to China's positive approach on GMOs.

The categorizations done here might sometimes seem logical. Some categories were predicted and proved to be discovered in the literature here as well. Other categories were unexpected and thus reveal new insights into the English research on SCP in China. The next section gives insights into the authors active in the field of SCP research.

## 4.3 AUTHORS

This section gives an overview of the authors of the articles that were identified in the body of knowledge on SCP literature in this paper. A separation is made on authors on sustainable consumption in general, and on food consumption specifically. The overview is given based on the amount of articles n=45 for sustainable consumption, and n=95 for food consumption, to identify the most relevant authors. First, an overview of all authors contributing in the fields is given in alphabetical order (table 5 and 7), followed by a list with the most prominent authors in the literature (authors that published several articles on the topic), in table 6 and 8. These overviews identify the (main) authors, the network, in the field of SCP research in China.

**Table 7: Overview authors sustainable consumption**

| | | | |
|---|---|---|---|
| AN, D. | GUENTHER, M. | MOL, A. P. | WEI, R. |
| BARRETT, J. | HAN, J. | PAN, Y. | WIEDMANN, T. |
| BARUA, A. | HAO, Y. | PAN, Z. | WOETZEL, J. |
| BI, J. | HARRIS, P. G. | PETERS, G. P. | WONG, Y. H. |
| CALHOUN, C. | HUBACEK, K. | QI, Y. | WU, G. |
| CAO, S | ISENSEE, A. | REINER, D. M. | WU, Y.P. |
| CARTER, N. T. | JIA, X. | REUSSWIG, F. | XIAO, G. |
| CHAIPOOPIRUTANA, S. | JU, M. | SAUNDERS, C. | YAM, R. C. |
| CHAN, R. Y. K | KHOR, N. | SCHROEDER, P. | YANG, G. |
| CHEN, L. | KIM, J. O. | SHANG, Y. | YANG, J. |
| CHEN, X. | KNORRINGA, P. | SHI, Y. | YUAN, Z. |
| CHENG, W. | LAU, L. B. Y. | SHISHIME, T. | YANG, J. X. |
| CHOI, H. | LEHRACK, D. | SIU, Y. L. | ZHAN, L. |
| COMBS, H. | LEUNG, T. K. P. | SUN, T. | ZHANG, B. |
| DRIVER, T. | LI, X.L. | TANG, E. P. | ZHANG, T. |
| FENG, K. | LIANG, S. | WAN, G. | ZHANG, Y. |
| FUJITSUKA, T. | LIU, L. C. | WANG, C. | ZHANG, X. |
| GAO, L. | LIU, J. | WANG, J. | ZHAO, H.-H. |
| GAO, Q. | LIU, Q. | WANG, P. | ZHAO, W. |
| GE, J. | LIU, X. | WANG, R. | ZHU, B. |
| GÉRARD, C. | LIU, Z. | WANG, Y. Y.-P. | ZHU, X.-D. |
| GUAN, D. | MARTENS, S. | WANG, Z. | |
| GUARIN, A. | MATHEWS, C. | WEBER, C. L. | |

**Table 8: Prominent leading authors sustainable consumption**

| | | |
|---|---|---|
| SCHROEDER, Patrick<br>N=2 | FENG, Kuishuang<br>N=2 | LIU, Jingru<br>N=3 |
| CHAN, Ricky Y.K.<br>N=3 | HUBACEK, Klaus<br>N=2 | YUAN, Zhang<br>N=2 |

**Table 9: Overview authors food consumption**

| | | | |
|---|---|---|---|
| ALLDRICK, A. | HILDEBRANDT, T. | ORTEGA, D. L. | VEECK, G. |
| BAI, J. | HO, P. | PAGNATTARO, M. A. | VERBEKE, W. |
| BIAO, X. | HO, S. C. | PAULL, J. | VERMEER, E. B. |
| BOURNE, S. | HOLST, R. | PEI, X. | WAHL, T. I. |
| BRADLEY, F. | HU, D. | PEIRCE, E. | WANG, H. |
| BURNS, A. C. | HUANG, G. | PERREA, T. | WANG, H. H. |
| BU-ZHUO, P. | HUANG, J. | PIENIAK, Z. | WANG, J. |
| CARACCIOLO, F. | HUANG, W. | PRÄNDL-ZIKA, V. | WANG, M. Y. |
| CHAIPOOPIRUTANA, S. | HUI, Q. Y. | PRAY, C. | WANG, R. |
| CHAN, R. Y. | HUI, X. | QI, Y. | WANG, S. |
| CHAUMET, J.-M. | JIA, H. | QI, X. | WANG, T. |
| CHEN, A. | JIANG, B. | QIAN, Y. | WANG, X. |
| CHEN, J. | JUN, H. | QIAO, J. | WANG, Y.-H. |
| CHEN, M. | JUSSAUME R.A, JR. | QIAO, Y. | WEN, T. |
| CHEN, S. | KEQIANG, Z. | QIN, J. | WU, L. |
| CHEN, W. | KIM, R. B. | QIU, H. | WU, S. |
| CHEN, Y. | KLEDAL, P. R. | REARDON, T. | XIANG, L. |
| CHEN, X. | KLEIN, J. | ROBERTS, R. | XIANG, H. |

| | | | |
|---|---|---|---|
| CHENG, C. | KNIGHT, J. | ROZELLE, S. | XIANJUN, L. |
| CHENG, L. | KRYSTALLIS, A. | RUAN, Y. | XIAORONG, W. |
| CICIA, G. | LANG, G. | RUNDLE-THIELE, S. R. | XIE, B. |
| COMBS, H. | LAU, L. B. | SANDERS, R. | XILIU, J. |
| CONNOLLY, A. | LEI, P. | SAVENIJE, H. H. G. | XING, F. |
| DAVEY, G. | LI, P. J. | SCHUMILAS, T. | XU, L. |
| DAVIS, J. | LI, T.-Y. | SCOTT, S. | XU, P. |
| DE ABREU, L. | LI, Y. | SHELMAN, M. | YANG, H. |
| DEANS, K. | LIAO, C. | SHEN, J. | YANG, J. |
| DEL GIUDICE, T. | LIN, L. | SHEN, L. | YANG, R. |
| DESEVEDAVY, F. | LIU, J. | SHEN, X. | YANG, W. |
| DU, L. | LIU, L. | SHENG, J. | YAO, L. |
| EGELYNG, H. | LIU, R. | SHI, Y. | YI, Q. |
| FABINYI, M. | LIN, X. | SI, Z. | YIN, S. |
| FAN, B. | LIU, Y. | SIRIEIX, L. | YU, H. |
| FAN, H. | LOBO, A. | STERNFELD, E. | YU, M. |
| FAN, S. | LONE, T. | SØRENSEN, B. T. | YU, X. |
| FONG, Q. | LÜ, L. | SULITANG, T. | YUNGUAN, X. |
| FONSECA, M. | MA, C. | TANDON, A. | ZENG, L. |
| FU, X. | MA, S. | TANG, F. F. | ZENG, Y. |
| GAO, H. | MARCHESINI, S. | TAYLOR, D. A. | ZHANG, X. |
| GAO, J. | MASCITELLI, B. | THIERS, P. | ZHAO, R. |
| GARRETT, T. | MCCLUSKEY, J. J. | THØGERSEN, J. | ZHAO, Y. |
| GENG, Y. | MCLOUGHLIN, D. | TIAN, X. | ZHOU, D. |
| GIORGI, L. | MERRIFIELD, C. | TIMMER, P. | ZHOU, Y. |
| GOMERSALL, K. | MIAO, B. | TINGYOU, L. | ZHU, B. |
| GRUNERT, K. G. | MICU, A. | TURNER, J. L. | ZHU, Q. |
| HALBERG, N. | OLYNK, N. J. | VEECK, A. | |

**Table 10: Prominent leading authors food consumption**

| | | | |
|---|---|---|---|
| XIE, Biao<br>N=2 | CHEN, Jue<br>N=3 | KIM, Renee<br>N=2 | ZHANG, Xiaoyong<br>N=3 |
| KLEDAL, Paul Rye<br>N=2 | LI, Peter J.<br>N=2 | PAULL, John<br>N=3 | VEECK, Ann<br>N=3 |
| SANDERS, Richard<br>N=3 | THIERS, Pau<br>N=3 | THØGERSEN, John<br>N=3 | |

## THE OVERVIEW

This chapter showed the outcomes for research question 1. The amount of literature found from the literature searches was positively striking. The categorizations done showed the topics addressed in the literature found and therefore gave a first impression of the SCP literature. Finally, the involved authors were mentioned, showing the network of a core of authors on sustainable consumption. The next chapter addresses the outcomes for research question 2, by giving insights into the main trends and shifts discussed in the literature on sustainable consumption and food consumption in China.

# 5. TRENDS IN CHINA WITH RELEVANCE FOR SCP

To identify and specify the main trends and shifts of sustainable consumption and food consumption in China, and to thus give an answer to research question 2, about 20 articles were selected per theme (both for sustainable consumption and food consumption) from the overview of articles, the body of knowledge (n=45, n-95), as identified in chapter 4 of this research. The selected articles were thoroughly read and compared to find the main topics discussed, their similarities and contradictions, and to thus identify the main trends and discussion points that come to the fore in the literature. The selection procedure for the articles, as well as a more specific description of the identification of the trends, is described in Chapter 2. An overview of the articles used can be found in the tables 11 and 12[14] in this research. This chapter outlines the trends on sustainable consumption in general and food consumption specifically in China by comparing the different articles and outlining the accompanying discussions, and gives suggestions for the future SCP research agenda.

## 5.1 GENERAL CONSUMPTION TRENDS CHINA

What are trends and discussion points in the literature on sustainable consumption in general in China? The focus here is given at first on the historical and current developments in China, as changing demographics and the Chinese government, to provide an idea of the general (changes in) landscape factors in China. Subsequently, attention is given to Chinese consumption trends, mainly by giving an impression of the discussions on the effects of the rise in incomes on consumption patterns and consumption values. The overview of general consumption trends in China then presents SCP policy trends in China. Finally, insights from the general trends outline for the further development of the SCP research agenda are given.

### Historical and current developments in China

Landscape factors have their influence on consumption as described in chapter 2 of this research in two particular ways. First there are general trends and developments with particular relevance for specific consumption domains and practices. Second, there are general trends in history and society that have an influence on practices and consumption domains in an indirect and general way. In this section, we focus on the second kind of trends and developments. Here, the changes in China's forms of governing from 1949 till now are presented to provide first of all an overview of the governing atmosphere in China. Subsequently, changes in the demographics of the Chinese population are sketched. Population growth has always been an important factor

[14] The tables 11 and 12 are ordered per categorization as developed in table 5 and 6 in Chapter 4. However, what must be noted is that not all categorizations from table 5 and 6 are included in table 11 and 12. This is because the categorizations done are based on the first outcomes of the search for relevant articles, and the tables 11 and 12 are based on the final amount of articles n=45, and n=95.

in SCP and environmental literature, as for example the -'IPAT'- model shows: Impact= People, Affluence and Technology.

### *Changing government*

In 1949 the People's Republic of China was created and ruled by a communist regime under Mao Zedong. With his regime, key sectors of the economy, such as banks, industry and trade, came under centralized control. Private enterprises were not allowed in communist China, only state-owned enterprises (SOEs) were permitted, which were mainly large industrial firms. Furthermore, agricultural land was redistributed among the farmers with the idea of collectivism. Farmers had to work together on the land, and the profit went to the state. However, yields were low and led to severe famine in China (Driver et al., 2011).

At the end of the 1970s Deng Xiaoping became leader of China and wanted to improve Chinese living standards. The open-door policy was implemented in 1978, under which China has undergone enormous changes (Pan et al., 2011). Central planning and state owned enterprises were slowly transformed. Foreign business was allowed to invest in China and many foreign retail outlets, as Carrefour, Tesco, and Wal-Mart can now be found at the Chinese retail market with Wal-Mart holding the majority of the share (Driver et al., 2011). The Beijing-based Chinese retail chain, Wumart, is the closest local competitor to Wal-Mart in China. Due to the new open-door policy, economic growth rose in China, making it presently one of the largest economies in the world.

Currently, Xi Jinping is president of the Republic of China. At this time China still knows a unique way of management, in which the Chinese government plays an important role in top-down decision-making. Mathews (2012) and Schroeder (2014) argue this form of government control can be of interest for the European context: When China has examples of were the top-down policy making easily works to address environmental issues, European countries can consider a more top-down approach as well. According to Schroeder (2014) this top-down policy in China is as yet only to a limited extent influenced by the new upcoming economy in which consumers are starting to take a more active role as is common in other, European, countries.

### *Population of the People's Republic of China*

During the period as just described, China's population has increased from around 540 million citizens in 1949 to more than 1.3 billion by 2006 (Hubacek et al., 2009). Future estimates sketch a rapid growing of the population[15]. When looking at the age of the Chinese population, Woetzel

[15] Driver et al. (2011) and Mathews (2012) are among the authors to write on this.

(2012) [16] writes the 0-to-14 year old group will see a decline of 1.2 percent per year, while the over-65 cohort will grow with 3.9 percent per year, meaning an ageing of the Chinese population[17]. This means furthermore that there will be fewer people available to work in the future (Woetzel, 2012). The ageing population in China has been predicted beforehand due to the one-child policy which was implemented in 1978. Currently, the one-child policy is liberalized. Another effect of this policy is a gender imbalance with more males than females according to Mathews (2012). One result from this is that the young male consumers are a key target in marketing. Additionally, more than 25% of Chinese men in their late 30s will never get married. Future households in China will have fewer people per household in the urban areas, also due to young people postponing 'life stages' as getting married, and getting children (Liu et al., 2009).

### *Population migration*

A more recent change in the population demographics is the area where people reside. Between about 2000 till 2010, a lot of people migrated from rural areas to work in the cities, which accounted for 80 percent of the growth in urban labour-force (Woetzel, 2012). Also McLoughlin et al. (2012) describe the consistent population migration from rural to urban areas over the past decades, having around 15-20 million people who moved[18].

The population migration from rural areas to urban areas has its effects on the urban cities which are growing rapidly. According to McLoughlin et al. (2012)[19] in 2011 there were 160 cities in China inhabiting more than 1 million people due to migration, whereas Europe accommodated 25 of these cities. These cities are mainly located in the eastern and southern regions of China. The expectation is that by 2025, 64 more cities in China will have more than 1 million inhabitants, and 24 megacities will arise accommodating more than 5 million people (McLoughlin et al., 2012). Schroeder (2014) writes that by 2020 about 850 million people, which is 60 percent of the population, will live in urban areas. It is a pressing concern how to feed all these urban people and how to secure a certain living standard in the cities.

### *Rural and urban income differences*

Due to the economic policy, the growing population in urban China is becoming increasingly wealthy, heightening up the spending patterns of urban consumers (Woetzel, 2012). However, there are strong differences between rural and urban consumption patterns[20]. Also in other countries within Asia this gap between urban and rural areas is clearly visible as reported by

[16] McKinsey consultancy report 2012.
[17] As also reported by other authors, as Mathews (2012).
[18] Other authors to report on the large-scale migration are for example Liu et al. (2009) and Mathews (2012).
[19] Schroeder (2014) gives similar estimations.
[20] According to Hubacek et al. (2009); Mathews (2012) and Del Giudice et al. (2012).

Zhao and Schroeder (2010). The consumers in rural areas have generally lower income levels. They have until a certain extent access to food and energy. Urban consumers in contrast have higher incomes and thus more money to spend. Wang et al. (2014) see the income gap in China between urban and rural citizens declining, due to improvements in the rural economy, and expect this trend to continue in the future. What are the effects of these rising incomes?

## Chinese consumption tendencies

Here the focus is on the effects of the rising incomes. The well-described trend in the literature as the upcoming of the new middle class and its consumption patterns is discussed. Furthermore as elaborated on in chapter 2 of this research, theory suggests that rising incomes are often followed with an increase in responsible consumption. The rise of responsible consumption in China is a topic which is elaborated on in the literature on China as well, and is therefore discussed next. The chapter ends with an overview of the changing consumer values.

### *The new middle class*

Many authors write on the upcoming of the new middle class, also known as the 'new global middle class'[21]. For 2006 it was estimated that Chinese consumers' purchasing power reached US 7.8 trillion dollar, placing China second in the world after the United States (World Fact Book, 2006. In: Xiao and Kim, 2009). Zhao and Schroeder (2010) argue it is estimated that by 2020 about 700 million Chinese will belong to this consumer class, compared to about 100 million today. Mathews (2012) claims incomes will continue to rise as the economy expands, mainly due to urban consumerism and investments in infrastructure.

It is thus widely known this new Chinese middle class will have more disposable income, which will most likely influence consumption patterns. How the consumption patterns will change is still an open question. Several authors write the consumption patterns on the new Chinese middle class are starting to look like western consumption patterns[22]. Guarin and Knorringa (2013) point in a different direction. They think it is still unclear how big the disposable income of the new middle classes will be, and that this income may not be enough to change consumption patterns radically. Whether or not the rising middle class in China is going to follow Western middle class consumption patterns is unclear. But, with such a fast growing middle class, you can wonder about the expanding consumerism and its associated environmental impact[23].

[21] As Zhao and Schroeder (2010), Pan et al. (2011), Zhang et al. (2012), Mathews (2012), Woetzel (2012), Guarin and Knorringa (2013), and Schroeder (2014).
[22] As Hubacek et al. (2009), Zhao and Schroeder (2010), Mathews (2012), and Schroeder (2014).
[23] The effects from consumption on sustainability are later on in this paper addressed more extensively.

### *Responsible Consumption*

Can we as the 'Western countries' tell developing countries as China to practice more sustainable consumption or is more responsible consumption already taking place in China?[24] Theory suggests rising incomes are often a sign for more responsible consumption behaviour[25], although norms and values in society play an important role in ethical consumption as well, and thus responsible consumption must be considered within a cultural context[26].

When looking at responsible consumption in China, Choi and An (2013) write that environmentally friendly consumption or green consumption in China is gaining popularity. Also, Driver et al. (2011) describe low-carbon diets are getting more popular in major Chinese cities, mainly among the young consumers. How big the support for low carbon lifestyles is, is unclear. Liu and Wu (2013) argue it is important to identify and label products with lower emissions to provide information for consumers to choose lower impact products and to thus increase responsible buying.

Not only the consumers in China change attitude towards responsible consumption, the retail is adjusting as well according to Driver et al. (2011). They describe that the retail, mainly the international companies, in China have implemented several sustainability schemes: Tesco recently achieved the 'Green Supply Chain Award', which entails improvements in energy-efficiency standards, environmental protection and green concepts. Carrefour focusses on local products, and tries to sell more local supply.

According to several authors[27], a slight interest in responsible consumption can thus be found among Chinese consumers but it is unknown how this interest will develop. Questions for the future SCP research agenda can be: Does China head towards sustainable consumption or will the upcoming middle class Chinese continue to consume more extensively? If responsible consumption extends within China, is this then a unique Chinese development without outside interference? What can we learn from China in regard to sustainable consumption?

### *Changing values*

Although it was argued that the ways of change for Chinese consumption remain unknown, others[28] write about current changes in consumption. Part of the literature focusses on changing consumer values in China due to economic growth and modernization. A shift from a more collectivist society towards more individualism is outlined, especially among the younger generations living in the coastal areas[29]. With this individualism, values as ambition, success,

[24] Zhang et al. (2012) and Guarin and Knorringa (2013) are among the authors to ask these questions.
[25] As described in chapter 2 of this research.
[26] As claimed by Driver et al. (2011) and Guarin and Knorringa (2013).
[27] Choi and An (2013) and Driver et al. (2011).
[28] As: Xiao and Kim (2009), Pan et al. (2011), Driver et al. (2011), Mathews (2012), and Chen (2013).
[29] Xiao and Kim (2009), Pan et al. (2011), Mathews (2012) and Chen (2013).

pleasure and wealth become more important and also materialism is gaining influence. However, a mingling from individualism and materialism with the more traditional values is also claimed to be observable (Choi and An, 2013). Other authors focus on the growing concerns among consumers about living healthy lives, well-being, luxury and brands due to the rise in incomes[30]. This trend is not only visible among female consumers but also among male consumers (Choi and An, 2013). Adding to this the food safety concerns increases the focus on health in China. The question for healthy food also has its influence on organic food demand[31].

Schroeder (2014) and Mathews (2012) write about the upcoming luxury market in China with the expectation for 2015 that China will become the biggest luxury market in the world. Due to growing interests in well-being and luxury products, brands to ensure these factors are gaining more influence in China. Due to overload in brand choice today, consumers rarely have any brand loyalty according to Mathews (2012). Many studies have been done on the brand purchase decisions of Chinese consumers, as the study by Xiao and Kim (2009). Most Chinese consumers perceive foreign brands as of higher quality and being more trustworthy than domestic ones, causing a growth in the demand and import of foreign brands (Xiao and Kim, 2009). The import of foreign brands shows that the Chinese economy is no longer constrained by what is available within the country (Hubacek et al., 2009).

With increasing welfare and changing lifestyles, consumers will constantly try to improve themselves and try to communicate their wealth, knowledge, social status, and beauty through consumption according to Mathews (2012). This is also visible in European countries[32]. Other authors report the need for more research on Chinese consumer behaviour[33] and describe the current strong western bias in this literature (Guarin and Knorringa, 2013). Also, Mathews (2012) writes the current academic literature has not been able to fully reflect on the fast economic and cultural changes happening at the moment in China. From the literature it thus appears that consumption values in China are changing, and more research on this topic is suggested.

## SCP policy developments in China

This section puts SCP policy developments to the fore since it is relevant for the SCP future which developments the policies undergo. First, specific policies that address SCP in China are addressed. Then, the current interest from the government in boosting consumption is outlined, followed by an emphasis in the literature on rising $CO_2$ emissions due to household consumption, although differing per region.

[30] Hubacek et al. (2009), Mathews (2012), Driver et al. (2011) and Choi and An (2013).
[31] For more on food issues, read the next chapter on food.
[32] Aaccording to Solomon et al. (2010) whom examine consumer behaviour in Europe.
[33] Guarin and Knorringa (2013) and Mathews (2012).

### *Circular Economy Law*

It appears sustainable consumption and production in China is mainly promoted through the Circular Economy Law which was implemented in 2007[34]. The Circular Economy Law entails stricter controls on emissions and waste, more energy efficiency in the industrial area and the re-use and recycling of water (Zhao and Schroeder, 2010). Zhao and Schroeder (2010) see great potential for the law, especially in the industry area. However, they argue unsustainable consumption practices so far are not clearly addressed at the national policy level, and the main focus of the law is on the industry. Also Liu et al. (2010) and Schroeder again in 2014, argue that the governance system for sustainable consumption and production in China is insufficient.

Mathews (2012, p. 42) refers to the 12th Five Year Plan which states "it encourages low carbon consumption models and lifestyles among the people and government. The development model should adopt resource reduction, recycling, remanufacturing, zero emissions and industry links and popularize the classical recycling economic model." According to Mathews (2012) these intentions are only discussed, and no detailed regulations are given.

There are more policies dealing with sustainable consumption behaviour, as for example the Plastic Bag Restriction Order that addresses the issue of unsustainable use and disposal of plastic bags[35]. Liu et al. (2010) describe the important role the government played in the promotion of organic food, ISO 14000 certification and eco-labelling. SCP policies are thus under way but the need to address unsustainable consumption practices remains since the policies are not strict and extensive enough as it seems from the literature.

### *Consumption led-economy*

Several authors write that boosting consumption has become a clear goal from the Chinese government to drive the economy[36]. Private consumption will replace investment as the major driver of GDP growth, and eventually will be the largest share of GDP as argued by Woetzel (2012). Also, the Chinese government is realizing policies that should narrow the gap between urban and rural incomes by lowering rural taxes, increasing consumption subsidies, and creating measures to enhance the rural social-security net and improve rural living conditions (Woetzel, 2012). This situation raises questions. On the one hand the government is pushing for more consumption, on the other hand they are trying to implement sustainable consumption (in the Circular Economy Law). What will the future path of the government be? Additionally, the environmental impacts due to growing household consumption are increasing, the worsening of

[34] From Mathews (2012), and Schroeder (2014).
[35] However, surveys discovered that the policy is insufficient to address the issue of increasing waste through plastic bags in the long term. The main obstacle often found is the unwillingness of consumers to change their purchasing behaviour (Zhao and Schroeder, 2010).
[36] Schroeder (2009); Thøgersen and Zhou (2011); Mathews (2012); and Woetzel (2012).

the air pollution in Chinese cities is just one of the examples (Schroeder, 2014). In the next section, the growing environmental impact of consumption is explained.

### *Regionalization of $CO_2$ emissions from households*

Many authors write on the effect of household consumption on $CO_2$ emissions[37]. Especially electricity and gas contribute to the $CO_2$ emissions from households according to Liu and Wu (2013) amongst others[38]. The main responsible areas within household consumption responsible for $CO_2$ emissions are food, housing and transport (Schroeder, 2014)[39]. Although consumption for all income groups has shifted markedly away from food, and towards housing, transport, and other discretionary items such as recreation, education and clothing (Guarin and Knorringa, 2013), food remains a main impact area. These $CO_2$ emissions from household consumption are not equally distributed throughout China, which is mainly due to the big differences within the country. There are significant regional differences in physical geography, regional economy, demographics, industry structure and household consumption patterns (Feng et al. 2012). The east coast of China is much more developed than the central and western regions, according to Feng et al. (2012)[40]. Zhao and Schroeder (2010) focus on the traditional Asian lifestyles, particular in rural areas, which have generally a less damaging impact to the environment. Also according to Guarin and Knorringa (2013) rural households are in contrast a relatively minor contributor to the $CO_2$ emissions in China. It thus appears from the literature just mentioned that especially the east coast urban areas and their household consumption influences the environment.

## Concluding: trends in sustainable consumption

This section provided an overview of historical and current developments in China, Chinese consumption trends and SCP trends, as concluded from the general consumption literature as visible in table 5. Although some themes were prominent such as rising incomes, a growing population, and for example the influence of foreign retail on consumers, other themes are on the rise in the literature or remain questionable such as whether or not the rising middle class in China is going to follow western middle class consumption patterns; or which path the government will take in sustainable consumption policies. For the future SCP research agenda it is important to take this into account and more research here is suggested. Finally, we should see if a more central form of government control (as in China) can have a positive effect on a faster transition towards sustainability and if/what other countries can learn from this.

[37] Liu et al. (2009), Liu et al. (2010), Zhao and Schroeder (2010); Feng et al. (2012); Liu and Wu (2013); Zhang (2013), Guarin and Knorringa (2013), and Schroeder (2014).
[38] Zhang (2013), Liu et al. (2009), and Woetzel (2012).
[39] Zhao and Schroeder elaborate more extensively on the impacts of food, transport and housing in China.
[40] Also Woetzel (2012), Liu and Wu (2013) and Guarin and Knorringa (2013) write on the diversity of China.

**Table 11: Overview categories and selected articles General**

| Category | Sub Category | Articles |
|---|---|---|
| **Trends and facts** | | Feng et al., 2009<br>**Driver et al., 2011**<br>**Zhao and Schroeder, 2010** |
| | Rising middle class | Yuan et al., 2011<br>Yuan et al., 2012<br>Reusswig and Isensee, 2009 |
| | New consumers | **Woetzel, 2012**<br>**Guarin and Knorringa, 2013** |
| | Environment | **Liu and Wu, 2013**<br>Liu et al., 2005<br>**Zhang, 2013** |
| **$CO_2$ market drivers** | | **Feng et al., 2012**<br>Guan et al., 2008<br>Driver et al., 2011 |
| **International policy and role China** | | Schroeder, 2009<br>**Mathews, 2012**<br>Carter and Mol, 2006 |
| **Sustainable consumption policy** | | Zhang et al., 2007<br>Liu et al., 2009<br>Cao et al., 2007<br>**Schroeder, 2014**<br>Wang et al., 2012 |
| **Consumer culture** | | Chan and Lau, 2000<br>**Xiao and Kim, 2009**<br>Chan, 2001<br>Sun and Wu, 2004 |
| | Buyer behaviour | Liu et al., 2012<br>Zhang et al., 2007<br>Chan and Lau, 2000<br>Xiao and Kim, 2009<br>Zhao et al., 2013 |
| **Consumer culture "Continued"** | Buyer behaviour | Zhu et al., 2011<br>Chan, 2001<br>**Wang et al., 2014** |
| | Attitude awareness | Cao et al., 2007<br>Chan et al., 2008<br>Chan and Lau, 2000<br>Wang et al., 2013b<br>**Chen, 2013** |
| | Values | Xiao and Kim, 2009<br>Harris, 2004<br>**Zhang et al., 2012**<br>**Pan et al., 2011**<br>Wei and Pan, 1999 |
| **Urban environment** | | **Hubacek et al., 2009**<br>Liu et al., 2012 |
| | Quality of life | Hubacek et al., 2007<br>**Choi and An, 2013** |
| | Households | **Liu et al., 2009**<br>Zhang et al., 2007 |
| **Systems of provision** | Sectors | **Liang et al., 2013** |
| **Production and consumption** | | **Liu et al., 2010** |
| **General social movements** | NGOS | Lehrack, 2006<br>Yang and Calhoun, 2007 |
| | Public participation | Martens, 2006 |
| **Consumers and labels for SCP** | Energy labelling | Zhan et al., 2011 |

## 5.2 FOOD TRENDS CHINA

Which topics and trends are mainly discussed in the literature on food consumption in China? This section gives foremost an overview of food systems in China thereby making a comparison with historical food developments to provide some background information. After outlining the food systems, attention is given to sustainable food, its supply and the consumer's intend to buy it. These topics are well addressed in the discovered SCP literature on food consumption in China, and it is therefore of interest to give an impression of these trends in sustainable food. For the section given here is can be roughly said that history and food security belong to the general trends, and from sustainable food, supply and demand on the focus on SPM is clearer. This outline of food consumption trends in China ends with a wrap up and input for the future SCP research agenda.

### Past and present changes of food systems in China

To give a good insight into food consumption in China, past and present changes of Chinese food systems are provided here, starting with a description of food security in China. Food security has always been important in China due to severe food scarcities in the past. Then, the impact of growing urbanisation, the need for import and the role of Genetically Modified Organism (GMOs) are outlined, all in relation with food security. Additionally, changes in the Chinese food culture are specified, giving historical trends and future estimates. Also, agriculture and the upcoming of green and organic food in China are addressed. This section ends by outlining the modernizations in the food retail.

#### *Food security in China*

Under Mao Zedong, Chinese agricultural land was redistributed among farmers in the 1960s, making them collectively produce food in communes. However, production yields were not high, leading to famine in China. Under Deng Xiaoping the land was brought back to the household level, the so-called Household Responsibility System, in which farmers were allowed to lease land (Sanders, 2006b). The entire surplus which was produced could be sold to the state or at the market. These measures caused a growth in production and increasing food security. Historically, China could feed over one fifth of the world's population with the use of only one-fifteenth of the world's arable land according to Driver et al. (2011).

Currently, with the growing Chinese population, it is more difficult for the food industry to supply enough food, and therefore also an increase in the import of food is needed[41]. Veeck (2013) writes that the government in China is committed to meet more than 95% of domestic

[41] Driver et al. (2011) and Veeck (2013) are among the authors to report on this.

food needs, but several scholars argue this is unrealistic[42]. At the moment, the farm sector is highly subsidized to stimulate the production of food. Also importing more food from abroad is among the measures to ensure national food security. McLoughlin et al. (2012) argue that the current trend in expanding cities is also bringing challenges to food security, since it is difficult where to locate the farms, the availability of farm workers is getting tougher, and changes in food demand are observable[43].

Also, Lang and Miao (2013) describe that urban food supply will be a key issue for cities in the coming decade. For China, the opening up of the market (since 1978) led to the selling of farmland which was needed for industry, roads, and shopping malls especially in the coastal regions, resulting in a shortage of available farmland to secure food. China's growing wealth and increasing dependence on international trade makes it even more difficult to be self-sufficient. Lang and Miao (2013) do argue China is better prepared for this than cities in the most developed countries, due to its history of controlling its own food security which was pushed by the Communist regime[44], and a relatively late industrial development. However, how this will help China to secure its future food is unknown according to Lang and Miao (2013).

Another factor which can contribute to food security in China is the production of GMO food. Due to its position as a large agricultural producer, the position of China on GM food is of worldwide importance. China has developed GM agriculture since the mid-1980s and to ensure safety, regulations were implemented on GMOs from 2000 on. However, concerns on GM food are still there and the debate in China on GMOs continues. According to Ho and Vermeer (2004) the government is cautious with its position on GMOs.

Many studies have been done on consumer perceptions of GMO food[45]. These studies found there is a lack of understanding of GMOs among many Chinese. Furthermore, outcomes seem to be contradicting: whereas Ho and Vermeer (2004) found negative positions towards GMOs, Lü (2006) discovered an optimistic attitude on GM foods and biotechnology from Chinese consumers. Qiu et al. (2012) and Driver et al. (2012) revealed that Chinese consumers are generally more supportive towards GM food than most other countries. Due to the contradicting outcomes from studies on consumer perceptions of GMOs the future position of China on GMOs so far, remains unclear.

### *A changing Chinese food culture?*

China has a rich tradition in preparing and eating food, often referred to as the Chinese food culture, with each region having its own specialities (Driver et al. 2011). Recently, however,

[42] In: Veeck, 2013.
[43] More on changing food demands can be found later on in this chapter.
[44] This is in contrast with the description given on declining food production in communist times at the beginning of this chapter.
[45] As by Ho and Vermeer (2004), Qiu et al. (2012) and Lü (2006).

traditional food culture is slightly changing, and shifts in the diet of Chinese consumers are becoming more obvious. Also, the demand for safe and high quality food rises due to past food scares in China as for example the melamine-tainted powdered milk scandal in 2008 and the toxic bean sprouts in 2011[46]. European products are especially associated with high quality and food safety standards, and therefore import of these products will grow. The demand for safe and high quality food is expected to rise in the future (Del Giudice et al., 2012).

The shifts in diets are mainly due to an increase in types and number of retail venues, greater variety of food products, and increased purchasing power of consumers[47]. Are these changes in diets causing a real shift away from traditional Chinese food behaviour? Grunert et al. (2011) are among the authors to write on this[48]. McLoughlin et al. (2012)[49] argue that traditionally, Chinese diets did not include dairy products. Currently there is a clear shift towards protein consumption[50] and now Chinese consumers are buying convenience products and are dining at Western style fast food chains[51]. Grunert et al. (2011) describe the more frequent visit of consumers to restaurants which they associate with increasing income and longer working hours.

The diet of the higher income urban population is outlined by Del Giudice et al. (2012) as rich and varied and including a substantial consumption of animal-based proteins as meat, eggs, fish and milk products. In rural areas the diet is based on home-grown products such as cereals and vegetables, and fish raised in ponds. Del Giudice et al. (2012) do stress in their article that the new demands in Chinese diets are integrated with the rich Chinese food tradition. Zhao and Schroeder (2010) see similar trends in the rest of Asia. Asian consumption is still relatively low when compared with the US or Europe. But, as the Asian incomes rise, meat and dairy consumption will increase as well.

Future estimates considering food consumption according to Veeck (2013) include dramatically higher per capita meat and sea food consumption[52] and growing imports. This will not only take place in urban areas, but also rural consumption is expected to grow due to government subsidy programs and elimination of almost all rural taxes leaving rural consumers with much more disposable income as Veeck (2013) writes. Guarin and Knorringa (2013) even expect that developing countries will become the largest consumers of animal proteins in the coming twenty years.

It thus appears that diets in China are changing, but in what way and to what extent the traditional food culture remains is uncertain. It is clear that due to rising incomes consumer

[46] Driver et al. (2011) are amongst others to write on the food safety concerns.
[47] These reasons for these shifts are clearly outlined by Grunert et al. (2011).
[48] McLoughlin et al. (2012), Driver et al. (2011), Del Giudice (2012) and Guarin and Knorringa (2013).
[49] Also described by Grunert et al., 2011 despite the value of freshness.
[50] As Zhang et al. (2012), Veeck (2013) and Grunert et al. (2011) also mention.
[51] Kentucky Fried Chicken (KFC) is opening a new restaurant every 13 hours according to McLoughlin et al. (2012).
[52] Fabinyi (2012) focuses more extensively on sea food consumption in China.

diets in China are changing towards more animal protein consumption. This growing consumption of more animal proteins is important for the sustainable consumption debate, since meat and dairy production and consumption produce a lot more $CO_2$ than the old traditional diets[53].

### *Chinese Ecological Agriculture and Green food*

In the late 1970s and early 1980s the Chinese government started with promoting Chinese Ecological Agriculture (CEA) to counter the negative environmental impacts of the growing use of chemicals in the Chinese agriculture[54]. Use of chemical fertilizers and pesticides became controlled. According to Sanders (2006a)[55] farmers had trouble with adopting CEA, and on the demand side, markets could not provide incentives to do so.

At the end of the 1990s the state dropped its promotion of CEA. A new initiative was thought of: green food, which was introduced in 1990 by the Ministry of Agriculture (MOA) and had more or less the same objectives as CEA (Lin et al., 2010). Green food was labelled and could therefore be sold with a price premium. At the same time, rapid economic growth and improvement of living standards caused an interest in food quality which was another motive for developing green food according to Lin et al. (2010). In the same year, China exported its first organically certified tea, certified by Dutch certifier SKAL[56].

In 1992 the China Green Food Development Centre (CGFDC) was founded, under the MOA, to be responsible for the national development and management of green food and in 1993 it joined the International Federation of Organic Agriculture Movements (IFOAM). In 1994 the State Environmental Protection Administration (SEPA)[57] established the Organic Food Development Centre (OFDC). In the same period the CGFDC had split green food certification into two grades, Grade A (use of pesticides, fertilizers and other agricultural chemicals is extremely restricted) and Grade AA (all chemicals are prohibited).

In 2001 the Ministry of Agriculture launched the Hazard-free Food Action Plan, to address the food safety crisis and the ongoing chemical contamination in the agriculture[58]. In 2002 the CGFDC achieved accreditation by the IFOAM and gained the right to certify organic products. In 2005 China introduced its own national organic product standards, former products were only certified by foreign standards as Scott et al. (2013) write. Green Food Grade AA is now

[53] Population and food consumption patterns in South Korea have already outrun the country's own land and water resources and is now heavily relying on import. In: Zhao and Schroeder, 2014.
[54] Sanders (2006a), Egelyng et al. (2010) and Scott et al. (2013) write more extensive on CEA.
[55] For a more detailed description I would like to refer to the article by Sanders (2006a) or Egelyng et al. (2010).
[56] In: Paull (2008) and Sirieix et al. (2011).
[57] Since 2008 the Ministry of Environmental Protection (MEP).
[58] For more on Hazard free food read: Scott et al., 2013; and Paull, 2008b.

consistent with organic international standards and both the green and organic food have bilingual logos, English and Chinese[59].

Lijuan (2003, p. 19. In: Paull, 2008b) argues the development of Grade A and AA laid very good foundations for the development of organic food. Paull (2008b) writes about green food as a "half-way house" between chemical food and organic food production. However, with the establishment of green food grade A and AA confusion arose among Chinese consumers, as well as in the export market, even with the new international organic standards. Some of the food is pesticide controlled, other pesticide free, and the distinction between green and organic food is not always clear. Important for the future SCP research agenda is that there are clearly different definitions of what counts as sustainable food. Sustainable food appears to be multi-dimensional, not unambiguous.

### *The modernization of the food-retail*

Lately, supermarkets in China do sell sustainable food[60]. The supermarkets appeared in the mid-1990s in urban China, which is seen by some scholars as the start of the modern food retail[61]. A few decades before retail used to be dominated by state-owned and collective enterprises, traditional wet markets and small shops. Currently, American Wal-Mart supercenters and 7-Eleven convenience stores are popping up everywhere in China. China has thus experienced a great increase in the types and number of retail venues, and in the variety of food products. When China formally joined the WTO in 2001, the expansion of supermarkets was only accelerated and in 2004 a five-year-plan was implemented to push the spread of supermarkets also to the rural hinterlands.

The emerge of the modern food-retail system is visible throughout all of Asia. Current discussions in Asia on the effect of the rise of the supermarkets on the traditional food shopping behaviour at wet markets and state controlled stores[62] are multiple. This discussion on the wet markets versus supermarkets is also clearly visible in the literature on SCP in China[63].

Bai et al. (2008) argue one may expect the wet markets sooner or later will disappear due to the emergence of super- and hypermarkets and also because of the food safety concerns caused by poor sanitary conditions. However, surprisingly, they discovered in their study in Qingdao (city in eastern China) that the emergence of the supermarkets and hypermarkets did not have a significant effect on shopping at the wet markets. The traditional wet markets still

[59] In this thesis green food grade A and AA, and/or organic food, are all referred to as sustainable food. To make the reading more fluently, but also because the distinction between the different food types is not always made clear in the literature.
[60] More on the supply of sustainable food in supermarkets later one in this chapter.
[61] For a detailed overview of the retail history and rise of the supermarkets, read for example: Hu et al. (2004), Bai et al. (2008) or Driver et al. (2011).
[62] Also known as fresh markets, or outdoor markets.
[63] Hu et al. (2004), Ho and Tang (2006), and Bai et al. (2008) are among many to write on this discussion.

function well in most cities where they are often moved indoor, and particularly in rural areas they function properly, as Bai et al. claim. They explain that Chinese consumers value freshness of food products and that wet markets are perceived by consumers as providing fresher products than supermarkets.

Other authors to report on this issue are for example Ho and Tang (2006). They describe the competition of super and hypermarkets with the local wet markets as well, especially in the fresh food retail where buying at the wet market has been a routine shopping ritual for decades. However, Ho and Tang (2006) see the competition of the wet markets declining. Supermarkets are transforming their fresh food departments to be more like the wet markets. But, unlike the wet markets, their fresh food departments are cleaner and more hygienic. This new strategy of supermarkets more than doubled their market share of fresh food retail in Hong Kong, and thus threatens the survival of the wet markets (Ho and Tang, 2006).

Hu et al. (2004) also see the transformation in the retail market. They mention a survey in 2004 by the AC Nielsen reported in M&M Planet Retail which states that supermarkets are even drawing consumers away from the wet markets with as many as 49% buying their fresh vegetables now in supermarkets in several large Chinese cities. Hu et al. (2004) furthermore describe the rapid growth of supermarkets has benefited from political decisions. Some local governments have transformed wet markets into supermarkets by closing down traditional street markets arguing the latter were unhygienic.

Although the research of Bai et al. (2008) found different results for the city of Qingdao, most of the authors in the literature mention the trend that supermarkets are leading consumers away from the wet markets. They are hereby stimulated by policies and the clean supermarket image. Especially young consumers like the image of the supermarkets, the older consumers prefer to remain purchasing their fresh food from the wet markets. The expectation is that the rapid spread of supermarkets will continue, also referred to as the supermarket penetration[64], which is elaborated on extensively in the literature on China and Asia. However, it is not clear yet what the exact role of the wet markets will be.

### Sustainable food, supply and demand

After providing an overview of current food systems in China, the focus here is on sustainable food. From here on the trends mentioned are more SPM related. On the one hand the position of the retail and the government for sustainable food are described. On the other hand, attention to the consumer is provided: where can they buy sustainable food and what are important factors for them in their purchase? This distinction can be related to the theory of social practices, as explained before in chapter 2 of this paper.

[64] Share of the retail food market.

### *Government support for sustainable food*

As was made clear in the chapter on general consumption trends in China, the Chinese government has an important role in top-down governing the country compared with other countries worldwide. Considering sustainable food, government support for this is important globally, including the rise in production of green and organic food in China[65]. Why does the government support sustainable food?

Scott et al. (2013) are amongst others[66] to argue that international demand and later on also domestic demand for green and organic food were the main reasons for the state support for sustainable food. How big is the demand for green and organic food in China? Different assessments on the market demand for sustainable food in China have been done. Lin et al. (2010) describe the great progress the green food industry has made, but that the total output of green food is still very low and not meeting the demand of safe agricultural products in China and overseas markets. They claim the main export is Grade AA green food which is sold as organic food. Yin et al. (2010) argue the domestic market for organic food remains relatively small. According to Scott et al. in 2013 on the other hand, the domestic market for organic food has boomed since the past 5-10 years, and since 2007 outweighed the export market, which is considered by them as a sign for the growing concern over food safety and quality and the rising purchasing power of the middle and upper classes in China.

The assessments done by the scholars reveal contradicting stories on the domestic and international market demand for sustainable food, and also between green and organic food. However, it can be concluded from the overview given that the absolute market demand for sustainable food is still small but growing.

### *Actors in the sustainable food market*

In what ways does the government support sustainable food production in China? How is the organic food chain organized? And who are the key actors here? Thiers (2005), Sanders (2006a) and Lin et al. (2010) clarify that organic production is mainly pushed by local governments, state farm managers, foreign buyers and export-oriented trading companies. Local governments decide for example which lands will be converted to organic production, provide investment capital, and organize marketing. Besides the encouragement of the governments to switch to green food production, the extra benefits gained through producing green food are an important reason for farmers to switch, as Sanders (2006a) argues.

Other authors describe the difficulties to produce organic food, as Sanders (2006a), Thiers (2005) and Egelyng et al. (2010). These authors write on the difficulties for small farmers

[65] This is confirmed for example by Thiers (2005), Sanders (2006a) and Lin et al. (2010).
[66] Sirieix et al. (2011); and Yin et al. (2010).

in getting technical assistance and organic inputs, and meeting quality, safety, packaging and labelling standards of traders or supermarkets. Scott et al. (2013) report difficulties for small farmers after the March 2012 revisions to the national organic standards by the CNCA (Certification and Accreditation Administration of the People's Republic of China). With the new standards a farmer cannot re-apply for certification for 3 years, making it more difficult especially for smallholders to produce according to the organic standard, resulting in a progressive exclusion of smallholders from certified and institutionalized systems (Scott et al., 2013).

Next to the small farmers, there are the 'dragon-head' enterprises, which are private or state-owned enterprises that are processing, manufacturing and marketing agricultural products on a large scale, with high economic benefits, strong local economy capacity and solid market competency as described by Scott et al. (2013). These enterprises account for one third of the entire food market and more than 80% of China's food exports and are encouraged to certify their food as hazard-free, green or organic by the state. The state encourages these enterprises to maintain high agricultural output and high quality food production through modern large-scale enterprises (Scott et al., 2013).

The outcomes of the research from the different scholars show that the key actors in the sustainable food markets are the small holders and/or the dragon head enterprises. Both are stimulated by the state, although the small farmers have difficulties following the strict organic standards. The Chinese state support for sustainable food differs from the West where sustainable food was mainly formed by bottom-up initiatives as stated by Schroeder (2014).

#### *Where to buy sustainable food?*

The above discussion was on the production of sustainable food. But where will green and organic food be bought? Does the modernization in the retail influence this? Some scholars write about the current supply of green and organic food[67]. According to Lin et al. (2010), green food is sold in many large cities in specialized shops, specialized counters in supermarkets, specialized whole sale markets and in specialized supermarkets. They mention for example Pukang Supermarkt for Green Farm Produce in Zhongshan City, and AIDI Green Food Concourse in Shenzhen. Although there is a rising demand for green food, there is still insufficient effective demand, which makes it difficult to lower the prices (Lin et al., 2010). Lack of effective publicity for green food and too high prices are thus hindering the development of green food markets[68].

Organic food is mainly available in the supermarkets; in the Chinese supermarkets Hualian Shiji and Nong Gong Shang, and also in the international big city supermarkets as

[67] As Lin et al. (2010), Paull (2008), and Kledal and Sulitang (2007).
[68] More on factors in the next section.

Carrefour and Wall-Mart[69]. Carrefour stores in Shanghai have bilingual (Chinese and English) banners that define organic food and its benefits, and there are also 'organic food' supermarkets available according to Paull (2008).

The literature thus reveals that the current supply of sustainable food is mainly located in the supermarkets in China. This insight, combined with the supermarket penetration, can be pointing to a future in which sustainable food is mainly bought in the supermarkets. However, as said, the role of the wet markets remains unclear and with it the distribution channels for sustainable food. A point for discussion and to consider for the future SCP research agenda, is if it is even possible to sell sustainable food at the wet markets.

#### *Factors influencing the buying of sustainable food[70]*

The amount of research done on the motivations of Chinese consumers to buy sustainable food is striking[71]. It is furthermore notable that the outcomes of these different studies show rather similar results. In this section, positive and negative influences on sustainable food consumption are discussed, and measures to improve sustainable consumption are given.

The main reason to purchase organic food is because of personal health, according to several scholars[72]. Chinese consumers value personal health, and sustainable food is considered healthier than conventional food. Another factor positively influencing the consumption of sustainable food is income. Higher income families are more likely to purchase organic food (Yin et al., 2010; and Chen, 2011). It is furthermore argued that also high education affects the consumption of organic food[73] and Zhang et al. (2012) claim younger consumers are advocators of sustainable food. However, Yin et al. (2010) say the intent to buy organic food is only slightly affected by factors such as education level, consumers' age, and concern about environmental protection. Sirieix et al. (2011) also discover that environmental concerns are only emerging as motives. Motives as support for local organic producers remain lacking as well according to Sirieix et al. (2011), where Driver et al. (2011) argue there are more people who buy their food products directly from the producer or from a local retailer. In western countries it are factors like supporting local producers, reducing use of animal products or environmental concerns, influencing the intent to buy sustainable food (Driver et al., 2011).

Next to positive factors for purchasing sustainable food, also barriers for consumption of this food type are discussed in literature. Firstly, Paull (2008b) and others[74] argue organic food is not so well known in China and that there is some distrust around it. This is mainly caused by

[69] As Paull (2008), Sanders (2006), Kledal and Sulitang (2007), Thøgersen and Zhou (2011) and Zhang et al. (2012).
[70] Note: the difference between green and organic food is not always clearly made in the articles.
[71] As was noted in general consumption trends the research on consumer behaviour in China is low.
[72] Such as Sirieix et al. (2011), and Yin et al. (2010).
[73] By Chen (2011), Zhang et al. (2012) and Zhu et al. (2013).
[74] As Thiers (2005), Lin et al. (2010), Yin et al. (2010), Chen (2011) and Scott et al. (2013).

the fact that standards for food have not been clearly communicated to consumers, and therefore there is a lack of public awareness about the different quality standards according to the scholars. Neither has the communication been sufficient to gather public trust in the food system. Paull (2008b) and Lin et al. (2010) claim green food is nowadays well represented, clearly labelled and easy to be found in food market places in China. Zhu et al. (2013), in contrast, describe the low intention to buy green food, and that purchasing convenience of green food should be improved. One important factor adding to this is the distrust in current eco-labelling. Green washing, confusing or conflicting environmental product claims, lack of consumer trust and corruption have held down the effectiveness of the labels according to Mathews (2012). The inspection and certification of green and/or organic food should be improved by the government and industry to assure trust several authors argue[75].

Another barrier for the purchase of organic food is the price. Organic food is more expensive which is a barrier to purchase according to Lin et al. (2010) and others[76]. The price for green food products in supermarkets and specialized shops is generally 30% higher than those of the same kind of conventional products. (Lin et al., 2010). Research by Yin et al. (2010) indicates that the majority of consumers has a higher willingness to pay (WTP) for organic food than for conventional food (also argued by Sanders, 2006a). However, the WTP remains lower than the market price of organic food, which means it is unlikely organic food will occupy a large share in regular consumption. The research furthermore shows consumers are willing to pay more for food which they consume more often and which contains less chemical residue (Yin et al., 2010).

Thøgersen and Zhou (2011) describe that reasons such as 'organic food is healthier', 'organic food tastes better and is better for the environment' are reasons for European consumers to buy organic food, whereas high prices and limited availability have a negative effect on buying organic. Basically the same reasons are found among Chinese consumers (Thøgersen and Zhou, 2011).

The research on factors affecting the motivation of Chinese consumers for buying sustainable food was quite consistent. Health and income influence the purchase positively, whereas low awareness and price are barriers for buying sustainable food. Factors such as environmental awareness, stimulating local farmers, and/or animal welfare were slightly or not present. These factors are more visible in Western countries. Another observation that can be made from the literature analysis is most of the studies that examine the consumer motivations to buy sustainable food only describe the attitude for the motivation, and do not examine the behaviour itself.

[75] Chen (2011), Mathews (2012) and Zhu et al. (2013).
[76] Yin et al. (2010), Chen (2011), and Sirieix et al. (2011)

## Concluding on food consumption

Past and present changes in food systems in China as well as the supply and demand of sustainable food were the topic of this section, as concluded from the articles used in table 6. Obvious were the big concerns on food security, the role of the government in the development of green food, the changes in food culture and food retail, and the factors influencing the motivation of Chinese consumers to buy sustainable food, such as health, income, awareness and price. The confusion between grade A and AA green food in the literature was a prominent topic as well. Furthermore, it was obvious that sustainable food in China is mainly sold via supermarkets. However, with the role of the wet markets remaining unclear, also the distribution channels for sustainable food are questionable. Other topics that remain open for discussion and future research are for example; how to secure enough food for the urban Chinese citizens, to what extent the traditional food culture will remain and what the impact will be from new ways of food consumption, such as more animal protein. Ensuring enough food will be a major topic for China in the coming decades. How to feed everyone in China and at a sustainable way remains the question.

**Table 12: Overview categories and selected articles Food**

| Category | Sub Category | Articles |
|---|---|---|
| **General** | Trends and facts | Biao and Xiarong, 2003<br>Hildebrandt and Turner, 2003<br>Kledal et al., 2007<br>**Lin et al., 2010**<br>**McLoughlin et al., 2012**<br>Paull, 2008a<br>**Paull, 2008b**<br>Sanders, 2006a<br>**Scott et al., 2013**<br>Sternfeld, 2009<br>Thiers, 2002<br>**Thiers, 2005**<br>Thiers, 2006<br>Veeck et al., 2008<br>**Veeck, 2013**<br>Wang et al., 2013a<br>Zhang, 2003 |
| | Definition of sustainable food | **Liu and Savenije, 2008** |
| | Market drivers for sustainable food | **Sanders, 2006a** |
| **Food cuisine/culture** | | **Del Giudice et al., 2012**<br>**Fabinyi, 2012**<br>Veeck, 2013 |
| **NGOs** | | Li and Davey, 2013 |
| **Marketing organic food** | | Lin, 2002<br>Zhang, 2003<br>Zhang, 2005 |
| **GMO** | | **Ho and Vermeer, 2004**<br>Jia, 2003<br>Lü, 2006<br>**Qiu et al., 2012** |
| **Aquaculture** | | Fabinyi, 2012 |
| **Animal Welfare** | | Li, 2000<br>Li and Davey, 2013<br>Roberts and Rundle-Thiele, 2007<br>Yin et al., 2010<br>Zhao and Wu, 2011 |
| **Organic agriculture** | | **Biao and Xiaorong, 2003**<br>Egelyng et al,. 2010<br>Hildebrandt and Turner, 2003<br>Jun and Xiang, 2011<br>Kledal et al., 2007<br>Liao, 2010<br>Lin, 2002<br>Prändl-Zika, 2008<br>Sanders, 2000<br>**Sanders, 2006b**<br>Scott et al., 2013<br>Sternfeld, 2009<br>Taylor, 2008<br>Thiers, 2002<br>Thiers, 2006 |
| **Food chains and key actors** | Retail/food shopping | **Bai et al., 2008**<br>**Ho and Tang, 2006** |
| | Food industry/Supply chain/food sector | Fan and Zeng, 2011<br>**Kledal and Sulitang, 2007**<br>Lin et al., 2010<br>**McLoughlin et al., 2012**<br>Sheng et al, 2009<br>Veeck et al. 2010<br>Yi et al., 2001 |
| | CSA | Shi et al., 2011 |
| | Green chain | Wang 2010-2012 |
| | Supermarkets | **Hu et al., 2004**<br>Zhang et al., 2005 |

| Category | Sub Category | Articles |
|---|---|---|
| **Food chains and key actors "Continued"** | Local food/short supply chain | **Sirieix et al., 2011**<br>Kledal and Sulitang, 2007 |
| | Labelling/certification/food safety regulation/food policy/law | Biao et al., 2005<br>Chen et al., 2013<br>**Egelyng et al., 2010**<br>Jia, 2003<br>Kim, 2013<br>**Paull, 2008b**<br>Shen, 2008<br>Xie et al, 2011<br>Yang et al., 2002<br>Zhao et al., 2010<br>Pei et al., 2011<br>Pagnattaro and Perice, 2010 |
| **Food safety/security** | | Chaumet and Desevedavy, 2009<br>Chen, 2013<br>Fan, 2010<br>**Kim, 2013**<br>Knight et al., 2008<br>**Lang and Miao, 2013**<br>Liu et al., 2013<br>Ortega et al., 2011<br>Qi et al., 2013<br>Scott et al., 2013<br>Zhang, 2005<br>Pei et al., 2011<br>Pagnattaro and Peirce, 2010<br>Xu and Wu, 2010 |
| **Food and Household** | | Jussaume, 2001<br>Veeck and Burns, 2005 |
| **Green consumption/ ethical food** | | Klein, 2009<br>Lü, 2006 |
| **Lifestyle** | | **Grunert et al., 2011**<br>Lobo and Chen, 2012 |

| Category | Sub Category | Articles |
|---|---|---|
| **Consumer culture** | Buyer behaviour | Chan and Lau, 2000<br>**Chen, 2011**<br>Chen and Lobo, 2012<br>Chen et al., 2011<br>Fan, 2010<br>Kim, 2009<br>Paull, 2008c<br>Roverts and Rundle-Thiele, 2007<br>Veeck et al. 2010<br>Wang, 2009<br>**Yin et al., 2010**<br>Zhang, 2003<br>Zhou et al., 2013<br>Zhu et al., 2011 |
| | Attitude | Lü, 2006<br>Ma et al., 2013<br>Marchesini, 2009<br>Qiu et al., 2012<br>Thøgersen and Zhou, 2010<br>**Thøgersen and Zhou, 2011**<br>Thøgersen and Zhou, 2012<br>Wang, 2009<br>Wu et al., 2011<br>Yin et al., 2010<br>Zhou et al., 2013<br>**Zhu et al., 2013** |
| **Fair trade** | | **Gomersall and Wang, 2011** |
| **Rural** | | Huang and Rozelle, 1998<br>Jiang and Davis, 2007<br>Prändl-Zika, 2008 |
| **Urban** | | Jussaume, 2001<br>Lang and Miao, 2013<br>Veeck et al. 2010 |

# 6. CONCLUSIONS AND RECOMMENDATIONS

The underlying idea of this master thesis on research on sustainable consumption in China was to help identify and characterize the field of current research on SCP in China, with the purpose of contributing to the development of the research networks and the future research agenda of SCP. This chapter reflects on the final outcomes from this study and comes with recommendations for further research.

## 6.1 CONCLUSIONS

By giving insights into the amount of literature discovered for both research fields (sustainable consumption, and food consumption), the main categories addressed and the authors involved, research question 1: "How can the state-of-the-art of scientific literature on China's sustainable consumption in general and on food consumption specifically, as conducted so far in the international field on SCP, be specified with respect to a and b (a= the categories to be derived from the literature overview, and b= the authors most prominent in the SCP literature on China)?" was answered. The amount of substantive literature found was (positively) striking. There were more articles available on sustainable consumption and food consumption in China than expected at the beginning of this research, however, the amount discovered was still manageable. Throughout the process, 45 articles on sustainable consumption remained and 95 on food consumption. The greater amount of food consumption research is probably due to the importance of food security and food safety in the country influencing the amount of studies.

From the categorizations done in this research it is found that the environmental impacts of consumption are a topic which is well explored and researched in the China related SCP literature. Furthermore, it is clear that consumer culture and behaviour (individual values, attitudes and awareness) get a lot of attention in the research for both sustainable and food consumption. Articles focusing on measuring environmental awareness and the use of the WTP method, show the influence of the socio-psychological and economic research field in the SCP literature. This indicates clearly the actor-side of the social practices model, in which agency, lifestyles, values and awareness are important components.

The research on the systems of provision side from the SPA model is less present in the literature compared to the actor side. The research is mainly around the role of the supermarkets in the supply of organic food, and the role of the government agencies in developing policies for sustainable consumption as well as food safety regulation.

Next to the categorizations done, the most prominent (lead) authors found from the SCP literature in China – both in the field of sustainable and food consumption - were outlined, showing the existence of a network of a core of authors.

Research question 2 focussed on trends and topics in the SCP literature: "What are central trends and topics in the literature on China's sustainable consumption in general and China's food consumption specifically?" The overview of trends and discussion points described in this research does not pretend to be extensive but gives anyway a good impression of current topics that are addressed in the fields, due to the approach from this research and the amount of articles used. The most important discussions in the literature for the future SCP research agenda remain on the following topics:

- Whether or not the rising middle class in China is going to follow western middle class consumption patterns
- Which path the government will take in sustainable consumption policies
- To what extent the traditional food culture will remain
- What the impact will be from new ways of food consumption (such as animal protein)
- How enough food can be secured for the urban citizens in China
- How everyone in China can be fed at a sustainable way

The above section gave answer to the research questions addressed. A final conclusion can be made here on the use of the consumption theories in relation with SCP literature in China. As was concluded from the categorizations made, the focus in the research lays more on the actor-side of the social practices model than on the systems of provision-side. Moreover, the conclusion can be made that the social practices theory so far is not prominent in the SCP literature on China, when compared to the research in Western countries. The reason for this is unknown and could not be concluded from this research. Is it a time issue, and do we need to give it some years for the SPM model to apply in China research? Or is it a typical western model with less relevance for China? The general trends and shifts as developed in chapter 2 of this research were applicable to the outcomes of this research, and also the other consumption theories mentioned came back in the literature. And it was for example interesting to discover that reasons for Chinese to buy sustainable food differ from Western countries.

## 6.2 RECOMMENDATIONS

As said, the outcomes of this research can be used to identify the field of SCP literature in China, as well as the areas were research is lacking. The clear overview of key authors in the literature for example gives a manageable overview when more research is planned to be executed. Further research can for example look into the connections between the authors; do they know each other? Do they cite one another? Can so-called research schools be identified? The same applies for the categories addressed and the trends and topics found. When looking at the conclusions from the category overview done, it was clear that research on systems of provision

in China is falling behind with the actor-side research of the SPM model. To gain more insight into SCP literature, it is proposed that more research is done to the systems of provision side and maybe also to develop and apply the social practices model for China and see the research shifting towards studying more consumption practices itself. It might as well be possible to develop and fill in the scheme on domains and practices belonging to the social practices model for China. Therefore, it is needed to research a more complete overview of SCP literature in China, including research on different consumption domains as food and housing. Also, more research on the discussion points mentioned is suggested to be able to get a clear overview on SCP in China in the future. Finally, more research could be done on how to develop and support transitions to sustainable consumption, via for example behaviour change, retail change and policy influences.

# 7. EPILOGUE

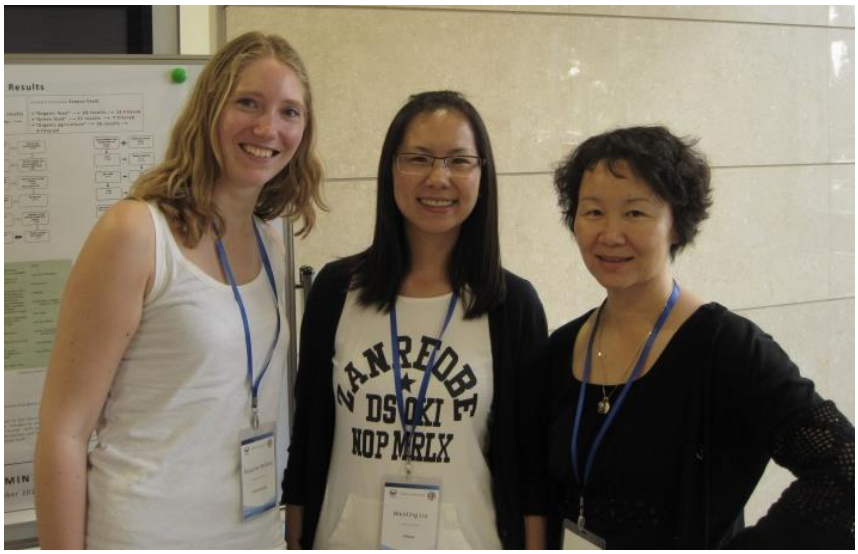
This study made clear that China, so far, has not been really visible in the knowledge and research networks on SCP, but also observed this is recently changing. One example of this is the Second Biennial Conference of the Global Research Forum on Sustainable Production and Consumption held in June 2014 at the Fudan University in Shanghai, China. SCP researchers from around the world gathered at the conference to discuss their studies with a focus on China specific SCP literature. For me the urge to explore the research in China, to combine the results, to identify the gaps and thus to outline the future research agenda for SCP (in China), was clear, and therefore the conference clearly showed me the relevance of my own research once more.

The research done here does not pretend to be extensive, the scope I aimed to explore was relatively big, and I did not reflect further on networks as for example SCORAI. However, my research does make a first exploration of the SCP China network identity, which can be used to take forward. This study reflected on English written literature on SCP in China. How biased is the English literature on China as found in this research? The focus on English-written literature is not considered as a main shortcoming in the study here, because from the list of authors as shown in chapter 4 of this research, it is obvious there are many Chinese authors on the list. This can mean Chinese articles are also translated into English, but it is also observable that Chinese researchers and American or European researchers work together in exploring SCP in China. Because of this mingling and presence of Chinese authors, this research expects to have overcome the language bias, unintentionally, but as long as the Chinese SCP literature itself is not explored, it remains unclear in how far Chinese articles have different results.

I would therefore recommend, as above, a follow-up of the research I started here, including Chinese literature on sustainable consumption, in order to develop the future research agenda on SCP in China even further. The time frame for the follow-up, however, is short. The growing urge to address unsustainable consumption and production practices was made obvious throughout the conference. Ashish Kothari argued that one's overconsumption is one's deprivation, showing the limits to consumption. This is already one reason to address unsustainable consumption, not even mentioning the environmental consequences of overconsumption. Taken everything into consideration I would suggest to keep developing the networks in order to establish more connections and to learn from each other. Especially with countries as India on the rise, addressing unsustainable consumption in China is only a beginning.

To finalize, it must be noted that, until now, there are a lot of discussion points found in the literature and future has to tell which way China is going. A wave of pessimism on China's future consumption is visible, but there are also positive voices to be heard. There is good hope that China will change towards a more sustainable path, it has a unique political system and the

society is currently in transition, the moment to take action. Other countries should see what they can learn from China in regard to SCP and its exclusive form of government control: will a more central form of government control (as in China) be able to create a faster transition towards a sustainable society?




*Me connecting with Wenling Liu and Lei Zhang at the conference in Shanghai, China*

*Keynote speakers, and final group picture of the conference.*

# 8. LITERATURE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# 9. ANNEXES

## Annex I: step-by-step search guide general

Here in Annex 1 the different word combinations and corresponding outcomes for sustainable consumption in general can be found. First the outcomes for Scopus are described, after the search in Google Scholar is outlined. With filtered articles is meant the articles which are put in Endnote for further research.

Scopus General

-"sustainable consumption" --> **20 filtered**

-"Sustainable lifestyles" --> **4 filtered**

-Chinese consumer values -> 12 hits -> **1 filtered**

-consum* AND sustain* AND behavior -> 21 hits -> **4 filtered**

**-**cons* AND green AND behavior NOT tea ->17 hits -> **9 filtered**

-Consumption OR consumer patterns (nothing relevant)

-Green consumer behaviour (already covered by other searches)

-Green purchase behaviour (already covered by other searches)

- "private consumption" --> 20 hits not so relevant.

-perception -> Searching with perception included does not achieve useful results.

**n=38** articles selected in total from Scopus, however some articles are included more than once, due to different search combinations. These duplicates will be filtered out later on.

Scopus continued search:

In this case I only added new articles, and did not add the duplicates too.

-Green AND consum* -> 298 hits

-Green AND consumption-> 223 hits

-Green AND consumer -> 73 hits --> **13 filtered**

-Consum* AND sustainab* -> 854 hits

-Consumer AND sustainab* -> 156 hits

-Consumption AND sustainab* -> 681 hits

-Consum* AND sustainab* AND behavior -> 38 hits --> **1 filtered**

-Consum* and lifestyle -> 335 hits
-Consum* and lifestyle And behavior-> 113 hits --> **6 filtered**

-household AND consum* -> 620 hits
-"Household consum*" -> 92 hits -> **4 filtered**
-household AND Consum* AND green -> 12 results, not relevant
-household AND Consum* AND sustainab* -> 61 results -> no new relevant articles

-NGOs AND consum* -> 2 hits ->**1 filtered**
-NGOs and lifestyle --> 0 hits
-green public sphere -> 2 hits
-NGO -> 81 hits -> Articles on NGOs and Food seem to be relevant. Nothing on consumption in general. Useful article: Analyzing China's NGO development system; Environmental civil society and governance in China.

-"middle class" AND consum* -> 46 selected **-> 3 filtered** (2 on food)
-New middle class, or rising middle class or consumer
-"middle class" AND sustainab* --> 9 selected. Relevant articles already included.

N=28 articles selected after second search, by only adding new articles

Google Scholar General
-"sustainable consumption" --> about 261 hits --> **33 results filtered** (these ones filtered all in an exception. Was just to see how many work it is. After only searches of around 100 were done)
-"Sustainable lifestyles" --> about 20 hits --> **7 filtered**

- green OR sustainable "consumer behavior" --> about 580 hits
- green sustainable (should be included) "consumer behavior" --> about 192 hits --> scanned the first four pages, no new articles not yet included, stopped the search.
-"Green consumer behaviour"--> 21 hits--> **2 new ones filtered**
–Green purchase behaviour --> 20 hits --> **filtered 1 new.**
(For "green consumer behavior" and "green purchase behavior" almost all the articles were already covered by other search terms and therefore not included again, only the new ones).

-Chinese "consumer values": about 90 hits -->
-green sustainable "consumer values": 15 results –> **5 filtered**

**n= 48** articles selected in total from Google Scholar, among which are duplicates.

Google Scholar continued search:

In this case I only added new articles, and did not add the duplicates too. Discovered I forgot to search on Chinese in the title, only included China. And did not search for behavior and/or behaviour.

-"intitle:Chinese" "sustainable consumption" -> 71 hits -> 0 new relevant articles
-"intitle:Chinese" “Sustainable lifestyles” --> 7 hits -> 0 new relevant articles
-"intitle:Chinese" "consumer behavior" green sustainable -> 81 hits -> **1 filtered**
-"intitle:Chinese" -“Green consumer behaviour”--> 4 hits -> not relevant for general
Behavior -> 10 hits -> no new relevant
-"intitle:Chinese" “green purchase behavior” ->18 hits -> **1 filtered**
Behaviour -> 7 hits -> no new relevant
-"intitle:Chinese" green sustainable "consumer values" -> 9 hits -> no new relevant.

-“intitle:China”: green OR sustainable "consumer behav**iou**r" -> 273 results”
-“intitle:China”: green sustainable (should be included) "consumer behav**iou**r” ->107 hits -> no new relevant
-"intitle:China" “Green consumer behav**io**r” -> 21 hits -> no new relevant
-“intitle:China" “Green purchase behav**io**r” -> 19 hits -> no new relevant

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“intitle:China” OR “intitle:Chinese”:
-Green AND consumption-> 14,700 hits
-Green AND consumer -> 8,090 hits

-Consumer AND sustainable -> 10,300 hits
-Consumer AND sustainability -> 4,590 hits
-Consumption AND sustainable -> 16,600 hits
-Consumption AND sustainability -> 8,060 hits
Also adding behavior or behaviour as third word does not lower the search outcomes.

(excluding energy and electricity for here on:)
-Consumption and lifestyle -> 6,880 hits
-Consumption and lifestyle And behavior->5,710 hits

Too much search outcomes.

-household AND consumption -> 15,800 hits
-“Household consumption” -> 2,300 hits
-household AND Consum* AND green -> 6,310 hits
Too much search outcomes.

-NGOs AND consumption -> 1,100 hits
-NGOs and lifestyle --> 276 hits
-green public sphere -> 1,370 hits
-green "public sphere" AND consumption -> 305 hits
Too much search outcomes.

-"middle class" AND consumption -> 2,350 hits
-"middle class" AND sustainable -> 1,020 hits
-"middle class" AND consumption AND sustainable -> 795 hits

The new search words delivered in Google Scholar too many outcomes. To make further combinations seems not relevant because the same search was done in Scopus already and also because hopefully the most relevant articles are selected by now due to other word combinations. Therefore, the search stops here.
N=2

## Annex II: step-by-step search guide food

In this annex the different steps taken during the research for articles on sustainable food consumption in China are visible. Its shows the amount of articles found per word combination, and the articles selected. First, the word combinations and outcomes found in Scopus are visible, after the same can be found for Google Scholar.

Scopus Food

"Organic food" --> 20 hits --> **15 filtered**

"Green food" --> 21 hits --> **7 filtered**

Green AND food -> 217 hits

"Sustainable food" -> 8 results -> **4 filtered**

sustainab* AND food -> 327 results

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From here on the articles of which I'm sure are already in the list are not included again.

"Consumer trust" AND food -> 7 hits -> **3 filtered**

"consumer trust" AND sustain* -> 1 hits -> **1 filtered**

"food label*"-> 21 hits -> **1 on GM label filtered**

food AND label* AND sustain* OR green -> 10 hits -> 0 relevant

food AND label* AND trust -> 4 hits -> **2 filtered**

food AND label* -> 127 hits -> **5 filtered** (decided to search in these outcomes since I thought there should be relevant articles included, normally I exclude searches from over 100 results).

food AND eco AND label -> 2 hits, already included.

Food consumption --> more than 300 hits

"food consumption behavior" -> 7 hits -> **4 filtered**

"green food consumption" -> 1 hits, already included.

green OR organic AND food AND consumption -> 116 hits

green AND food AND consumption -> 61 hits -> **1 filtered**

Green AND food AND buy* -> 4 hits, already included

Green AND food AND interest -> 7 hits, relevant already included

Organic AND food AND consum* -> 90 hits

organic AND food AND consumption -> 61 hits -> 0 selected

Green food consumption intention -> 2 hits, already included

“organic agriculture” -> 26 hits -> **4 filtered**
“sustainable agriculture” -> 149 results
“sustainable agriculture” AND behavior -> no relevant outcomes, wrong search words.
“sustainable agriculture” AND consum* -> no relevant outcomes

Organic AND purchase AND behavior -> 2 hits, already included
Organic AND purchase -> 4 hits, relevant already included.
Organic AND behavior -> 275 results

organic AND supermarket -> 5 hits, relevant ones already included.
organic AND retail -> 2 hits, relevant one already included.
green AND supermarket -> 9 hits, relevant ones already included.
supermarkets AND organic OR green -> now new relevant

Organic AND food AND availab* -> 52 hits, not relevant
"organic produc*" -> 30 results -> **2 new filtered**
organic AND produc* AND availab* -> 238 hits
organic AND produc* AND consum* -> 156 hits
“organic supply” -> no results
Organic AND supply -> 306 hits
Organic AND supply AND purch* -> no results
Organic AND supply AND behavi* -> no relevant results
“Organic demand” -> no results
Organic AND demand -> 155 results

Food purchase behavior AND organic -> 2 hits, no new.
Food purchase behaviour -> 20 hits **-> 2 filtered**

new food choices -> 16 hits -> **2 filtered**

<u>Scopus continued search:</u>
“Sustainable agriculture” and labelling/labeling -> 1 hit already included
Sustainable AND agriculture AND labelling/labeling -> same result
“Local food” -> 24 results -> **1 filtered**
“slow food” -> 0 hits

Short supply chain AND food -> 4 hits, but not relevant
short AND sustainable AND food -> 14, but not relevant mainly on sustainable agriculture
Farm* AND organic -> 476 results
"organic farm*" -> 39 results -> **1 new filtered**
Local AND farmer AND environment -> 66 hits
Local AND farmer AND food -> 36 hits, no relevant

“animal welfare” AND food -> 4 hits -> **1 filtered**
Food AND animal welfare -> 9 hits -> no new relevant
Animal welfare -> 62 hits -> **2 filtered**
“animal welfare” -> 39 hits, no new relevant

Consumer cooperation AND food -> 7 hits, no new relevant
“consumer cooperation” AND food -> none
Cooperation AND consum* AND food -> 11 hits, none relevant

Community based agriculture -> 51 results -> no new relevant
Community based agriculture AND organic food -> 2 hits, already included
“community based agriculture” -> 0 hits

“Urban agriculture” -> 12 hits, no new relevant

Google Scholar Food
From here on the articles of which I’m sure are already in the list are not included again.

“intitle:China” OR “intitle:Chinese”
"organic food" -> 683 hits
“organic food” AND consumption -> 483 results
“organic food” AND consumer -> 420 results
organic AND food AND consumer -> 2,990 hits

"organic food" AND "consumer behavior" -> 72 hits -> **12 filtered**
"green food" AND "consumer behavior" -> 51 hits -> **2 filtered**

"food labelling" AND organic -> 33 hits -> **5 filtered**
label trust "organic food" -> 105 hits -> **3 filtered**

"food consumption behavior" AND green -> 22 hits-> no new relevant

"sustainable food" AND supermarket -> 17 hits -> 0 new ones.
"sustainable food" AND buying -> 79 hits-> **1 filtered**

"organic food supply" AND supermarket -> 3 hits, no new ones
"organic food demand" AND supermarket OR retail -> no new ones
“green food demand” AND supermarket -> 0 results
Green food supply AND supermarket -> 884 results
supermarket AND "buyer behavior" -> 32 -> **2 filtered**

Food purchase behavior AND organic -> 2,390 results

green OR organic AND food AND consumption ->13,100 results
green AND food AND consumption -> 9,390 results
Green AND food AND buy -> 5,680 results
Green AND food AND interest -> 11,900 results
Green food consumption intention -> 2,910 results

“organic agriculture” -> 596 results
“sustainable agriculture” -> 3,080 results

organic AND "purchase behavior" -> 68 results -> **3 filtered**
Google Scholar continued search:
“Sustainable agriculture” and labelling -> 207
“Sustainable agriculture” and labelling and green -> 147 -> **9 filtered** (went through this till page 4, because there should be relevant articles included).
/labeling -> 247 hits
/ labeling AND green -> 160, relevant articles already included (checked pp. 1-4)

Sustainable AND agriculture -> 19,900 results
Sustainable AND agriculture AND labelling -> 1,580 hits

“Local food” -> 687 hits
“local food” AND farmers -> 416 hits
“local food AND green -> 290 hits

“local food” AND organic -> 199 hits
“local food” AND “slow food”-> 11 hits, no new relevant

“slow food” -> 30 hits, no relevant
“Slow food movement” -> 8 hits, no relevant

“Short supply chain” AND food -> 2 hits, not available
Short supply chain and food-> 5,300 hits
short AND sustainable AND food -> 9,280 hits
"organic farm" -> 89 results -> **2 filtered**
Local AND farmer AND environment -> 12,900 hits
Local AND farmer AND food -> 10,700 hits
Cannot find the relevant articles on local food

“animal welfare” AND food -> 347 hits
“animal welfare” -> 568 hits
“animal welfare” food, buying, green -> 90 hits, now new

Consumer cooperation AND food -> 9,720 hits
“consumer cooperation” -> 3 hits, not relevant

Community based agriculture -> 17,200 hits
Community based agriculture AND “organic food” -> 226 hits
“community based agriculture” -> 0 hits

“Urban agriculture” -> 349 hits

## Annex III: Literature list Table 11 General


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## Annex IV: Literature list Table 12 Food


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