

# **An inquiry into the impact of globalization on the potential for ‘sustainable consumption’ in households**

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## I. SUMMARY

This paper aims to determine whether and how globalization affects the sustainability of household consumption in industrialized countries. Our focus of inquiry arises from the existence of a tremendous gap between references to the influence of globalization on sustainable consumption in political and academic discussions on the one side and empirical evidence on the reality and strength of such an influence on the other. In order to prepare the ground for filling this gap, our paper inquires into the possibilities of a respective empirical study. Our specific focus of inquiry is on the three consumption clusters food, mobility, and energy.

In pursuit of its objective, the paper reviews the discussion and research evidence on the link between globalization and sustainable household consumption from the sustainable consumption and globalization perspectives. We identify both the relevant determinants of the sustainability of consumption in the three consumption clusters and the core elements of globalization. Based on this analysis, we delineate the various relationships between globalization and the sustainability of household consumption differentiating between direct and indirect influences of globalization. We review indicators for the sustainability of consumption in the three consumption areas and discuss potential approaches to empirically determining the extent and role of the elements of globalization. The paper concludes with a short delineation of core research areas future studies need to address in order to illuminate the influence of globalization on the sustainability of food, mobility, and energy consumption.

Empirical research has identified a range of determinants of the sustainability of consumption for the three consumption clusters. For each of the three clusters, socio-demographic and economic factors are important. For food, the additional relevant factors are agricultural production conditions, the burdens imposed by different sections of the product chain, the characteristics of the different food groups, and technology. For mobility, the additional determinants are living situation (urban form and dwelling characteristics), and transport options. Finally, for energy, the additional factors are dwelling characteristics, household technology, supplier characteristics, and climatic factors.

Considerable agreement exists on the core influences of globalization on the sustainability of consumption. In the sustainable consumption debate, the influence of globalization is being attributed to a handful of developments: trade integration and liberalization, capital concentration, shifts in political power, the diffusion of information, and increases in overall volume. From the globalization perspective, similar elements appear to be central. Again, the debate concentrates on trade, capital concentration, political power, and information. In addition, however, the globalization debate attributes some of the influence of globalization to the acceleration of technological innovation.

Linking those elements of globalization with the determinants of the sustainability of consumption in the three consumption clusters, we arrive at the following results. The direct influence of globalization exists for each of the three consumption clusters through the impact of the globalization of information flows on socio-demographic factors. Besides this direct influence that receives substantial attention in the

literature, however, indirect influences exist that appear to be at least as powerful. The indirect influences trickle down to the sustainability outcome of household consumption due to their influence on the supply of products and services from which households choose. For food consumption, this indirect impact of globalization primarily affects the sustainability of agricultural production and the environmental burdens imposed at other stages of the product chain such as food processing. For the sustainability of mobility patterns, globalization is particularly important for the availability and characteristics of transport options. Finally, the indirect influence of globalization on the sustainability of energy consumption occurs predominantly through supplier characteristics.

Numerous indicators for the sustainability of consumption in the three consumption clusters exist. In order to assure practical and political relevance, we select a few indicators on the basis of specific criteria. We ask that the indicators should relate directly to the micro level, i.e. household consumption, measure ecological input rather than output factors, and should go beyond assessments of economic development. For food, we select meat consumption and the market share of organic food. For mobility, we select indicators focusing especially on travel mode and purpose. Finally, the relevant indicator for energy is the share of renewable energy in household energy consumption.

For an assessment of the role and extent of the elements of globalization, further discussion and methodological development is necessary. While economic indicators, for instance, exist that capture some of aspects of these elements, further data gathering is necessary to arrive at a comprehensive evaluation. For trade, common measures such as volume of imports and/or exports, or terms of trade, need to be complemented by indicators of the pressures of liberalization and deregulation. With respect to capital concentration, the existing indicators such as measures of the market shares of firms need to be combined with broader measures of the economic power of corporations resulting, for instance, from their dominance over longer stretches of the supply chain. Evaluations of shifts in political capacity could rely on membership, agenda setting powers, and voting practices in international political bodies, but also need to consider the balance of "hard" and "soft" law. Finally, for ideas on measuring the acceleration of technological information due to globalization, one might be able to rely on investments in R&D or annual patents to approximate the speed of technological innovation.

Our original intention, when starting to write this paper, was to arrive at survey questions allowing us to empirically determine the influence of globalization on the sustainability of consumption. During the course of our analysis, however, we had to change direction. To a substantial extent, the influences of globalization on the sustainability of consumption take place before the household makes its decision. These are the impacts discussed above, which trickle down to the sustainability of household consumption through their influence on the spectrum of consumption choices available to households. Here, economic and political data are important. These can derive from statistical collections of "hard" economic data as well as expert interviews. For future analyses, we further suggest to go beyond the traditional discussion of how to prevent the negative influences of globalization, to specifically and explicitly consider the positive potential globalization holds.

Our analysis shows that many of the consumption areas identified as most in need of improvement are those most strongly influenced by globalization. In consequence, political and social decision-makers need to "think global" when designing policies for sustainable consumption. The elements of globalization cannot be controlled and modified by one government. Multilateral if not global strategies that directly address those elements are needed. Targeting the influence of globalization on the sustainability of food, mobility, and energy consumption thus goes beyond the influence of national and local policies for sustainable household consumption and creates a completely new set of political challenges for sustainable consumption policies.

## II. Introduction

In this paper, we aim to determine whether and how globalization affects the sustainability of household consumption in industrialized countries. Our focus of inquiry arises from the existence of a tremendous gap between references to the influence of globalization on sustainable consumption in political and academic discussions on the one side (Daly 1998, D. Mayer 1998, Ropke 1994, 1999) and empirical evidence on the reality and strength of such an influence on the other. In order to prepare the ground for filling this gap, our paper inquires into the possibilities of a respective empirical study. Specifically, we highlight (direct and indirect, suggested and neglected) facets of the relationship between globalization and the sustainability of household consumption, and discuss the potential of selected indicators to assess the strength of the relationship. Our specific focus of inquiry is on the three consumption clusters food, mobility, and energy.

The potential influence of globalization<sup>1</sup> on the sustainability of household consumption is of crucial importance. Sustainable consumption<sup>2</sup> is an integral part of sustainable development, and political, economic, and social decision makers need information on how to transform current consumption patterns and levels into sustainable ones (United Nations Commission on Sustainable Development (CSD) 1999). Understanding the implications of globalization is vital for the development of such strategies, if globalization plays the powerful role in influencing consumption patterns that the debate suggests.

Possibly, the gap between discussions of the influence of globalization on sustainable household consumption and empirical studies of the relationship can be explained by the historical evolution of the topic. Both academic and political developments in the 70s and 80s led to a "global" focus which concentrated on the influences of Northern consumption on the South. Thus, academic research in the early 70s about the "limits to growth" led to strong but separate environmental and fair trade movements. Likewise, while the Brundlandt report (WCED 1987) and even more the Earth Summit in Rio developed a common understanding of environmental and development issues as a challenge for a common global future<sup>3</sup>, the primary focus again was the influence of Northern (over)consumption on the ecological, economic, and social systems of the South. As a result, many Northern initiatives and concepts such as "think global act local," regional foci, or Local Agenda 21 movements

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<sup>1</sup> Globalization is commonly first thought of as the phenomenon of increasing trade volumes, capital flows, and the diffusion of information around the globe. As such, globalization is a process that started a long time ago. However, in contrast to periods such as the late 19<sup>th</sup> century, when trade integration, for instance, was similarly high, globalization has a distinctly different quality. Globalization is characterized by the power and pivotal role of multinational corporations (MNCs), which control the vast majority of these global flows of capital, goods and services, and information, possess and use global production, marketing, and distribution networks, and can no longer be associated with one specific "home" country.

<sup>2</sup> The Oslo Roundtable in 1994 defined sustainable consumption as "...the use of services and related products which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of further generations" (Ministry of Environment Norway 1994).

<sup>3</sup> The linkage of the two aspects is most visible in chapter 4 of Agenda 21 (United Nations 1993).

developed with this North-towards-South perspective at the core of their global agenda.

But as time progressed and especially with increasing local initiatives for sustainable consumption, the recognition grew that global dynamics do not just apply to the impact of Northern consumption on the South. Rather, academics and practitioners started to consider the impact of globalization on developments in the North. In the context of sustainable consumption in particular, the fear arose that achievements by local efforts would be limited compared to potential negative influences on the sustainability of consumption patterns by globalization. This feedback from the practical experience is now on the political and academic agendas. Increasingly, references to the implications of globalization for the sustainability of household consumption are appearing in the political debates and academic literature. The CSD, for instance, has stated explicitly that the implications of global forces for sustainable consumption need to be assessed (UN-CSD 1999).

Due to the recent development of the focus, however, much of the current discussion is still based on vague and general notions about how globalization influences the sustainability of consumption in the North. Empirical research which highlights and systematically assesses the different facets of the globalization-sustainable consumption relationship is still lacking.

In the meantime, a globalization debate has developed which focuses (predominantly) on the impact of globalization on the North. The implications of globalization for employment and economic welfare, and for the political capacity of governments, for instance, are being hotly debated in the literature. Unfortunately, this literature does not talk about sustainable consumption. Thus, by itself, it does not provide the empirical results missing in the sustainable consumption debate. In addition, as we will demonstrate, much of the globalization research focuses its inquiries at a very different level of analysis compared to the sustainable consumption literature. In consequence, the link between the two literatures is not automatic.

The present paper aims to establish this link and thereby induce some progress towards the potential for an empirical assessment of the implications of globalization for sustainable household consumption. Given the size and complexity of this task, our paper does not claim to provide a complete floor plan of the globalization-sustainable consumption house, but rather attempts to open some doors. Thereby, we hope to carefully poke the substance of some claims regarding the globalization-sustainable consumption relationship and to encourage corresponding research efforts.

Before setting out in pursuit of our objectives, a few conceptual and analytical issues, problems, and constraints require mentioning. One of the problems with the globalization-sustainable consumption debate, and actually with the sustainable consumption literature in general is the frequent lack of conceptual and methodological clarity. The discussion is still phenomenally mal-structured. In the literature, resource consumption, final consumption and household consumption frequently get mixed up, for instance. Furthermore, sustainable consumption has become a fashionable label under which a whole range of rather loosely (if at all) connected issues are being discussed (Cogoy 1999). This lack of structure and clarity in the debate also affects practical results, of course. Thus, while numerous scholars

and practitioners have made suggestions regarding the format of and path towards sustainable consumption (eg. Stern 1997, Lorek 1999, Vitterso, Strandbakken, and Sto 1999, Munskgaard, Pedersen and Wier 1999), little progress in improving the sustainability of consumption patterns has actually been achieved.

Some conceptual and methodological difficulties that are common in the literature also afflict our analysis. As the discussion will show, we struggle with establishing sound and systematic linkages between macro- and micro-level phenomena. The differences and complex linkages between these are frequently neglected in the literature. While this study does not neglect them, it neither can provide fool-proof solutions. In addition, our analysis has to admit to the common fallacy of talking primarily about ecological questions when referring to sustainable consumption. The reason for this focus is not, of course, that we do not consider the social dimensions important, but rather that the literature provides even less insight into the social implications of consumption. Thus, while scholars can find some agreement on per capita greenhouse gas emissions, for instance, as an (environmental) indicator of sustainable consumption, discussions about the meaning of employment conditions or development issues (in the North and/or South) for social indicators of sustainable consumption are barely beginning.

The paper is structured as follows. Section III reviews the discussion and evidence on the link between globalization and sustainable household consumption in the literature. This review is carried out from the perspectives of both the sustainable consumption literature (section III.1.) and the globalization literature (section III.2.).<sup>4</sup> Section IV attempts to provide an entry into analyses of the globalization-consumption relationship by systematically linking the findings from the two literatures. Specifically, this section delineates the various relationships between the core elements of globalization and the identified determinants of consumption for the three consumption clusters. Based on this analysis, we can then identify the important facets of the globalization-consumption relationship, including those reflected in the literature as well as those which have been neglected to date. In section V, we discuss possibilities for empirically assessing the impact of globalization on the sustainability of consumption. In a first step, we review indicators for the sustainability of consumption in the three consumption areas, and select the most promising and useful ones. Then, we discuss potential approaches to empirically determining the extent and role of the elements of globalization. Section VI concludes our paper with a short delineation of core research questions future studies need to address in order to illuminate the influence of globalization on the sustainability of food, mobility, and energy consumption.

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<sup>4</sup> The categorization of studies as belonging to the sustainable consumption literature and/or the globalization literature is somewhat arbitrary, of course. As criteria for this categorization a combination of emphasis in the article or book as well as place of publication were used. In cases, in which a study could be categorized in the sustainable consumption and the globalization literatures, we generally treated it in the context of the sustainable consumption literature. Moreover, while in principle almost every work on environmental matters is related to the topic of sustainable consumption and every work on trade and international finance related to globalization, we were rather strict in our selection of works and focused on research specifically studying sustainable consumption and/or globalization. In a few cases, we included supporting evidence from related works.

### **III. Globalization and Sustainable Consumption: The Fundamentals**

#### **III.1. The Sustainable Consumption Debate**

This section inquires into the relationship between globalization and sustainable household consumption from the perspective of the sustainable consumption perspective. In terms of approach, the section first identifies and discusses explicit references to globalization in the sustainable consumption debate. Then, we review research results on the determinants of consumption patterns in the three selected consumption areas, food, mobility, and energy, in order to use them as a basis for establishing points of influence of globalization. In addition, an overview of the range of determinants of consumption patterns identified in the general sustainable consumption debate is presented in the appendix, again with the aim to create a basis for the later identification of potential additional points of influence of globalization.

##### **III.1.a. Globalization in the Sustainable Consumption Perspective**

Numerous references to the influence of globalization exist in the sustainable consumption debate. However, most of these studies focus on the (negative) influences of (unsustainable) consumption patterns in the industrialized countries on the developing countries and neglect the fact that globalization is likely to have an impact on Northern consumption patterns as well (UNDP 1998, 1999; Heusinger, Reichert, Wöldecke 1999, Brown 1998, Brenkert 1998, Goodland 1998).<sup>5</sup> Inquiries into the effects of globalization on consumption in the North are less common. In so far they exist, they provide explicit arguments about the influence of globalization primarily for the supply side of consumption. It appears that the implications of globalization for the demand side are more subtle in the North, in contrast to the attention demand side dynamics receive in the North-South debate.

On the supply side, the sustainable consumption debate focuses primarily on a handful of facets of globalization: trade, capital concentration, shifts in political

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<sup>5</sup> One emphasis of this North-South focus is the global convergence of consumption patterns, as Southern consumers increasingly adapt to Northern consumption behavior. According to the scholars studying this phenomenon, the development is due both to the spread of more standardized and resembling sets of products and to global information flows. The latter are credited with fostering the diffusion of Western values such as individualism and consumerism, and also provide consumers with similar product "information" (Haake and Jolivet 1997, Brenkert 1998). The other emphasis of the debate are the economic and social consequences of overconsumption in the industrialized countries and of the international and economic system in general. Thus, Rees (1998) discusses the implications of the overextension of the national ecological footprints of the North. Other authors specifically highlight the negative consequences of global trade for land and community health. Carlsson-Kanyama (1997) points out that international trade may lead to the inability of rural peoples in the tropics to feed themselves. Similarly, Freyfogle (1998) raises the specter of people of wealth in distant communities outbidding local purchasers so that communities are left starving as local production concentrates on single export commodities. Daly postulates that capital and labor mobility destroys local communities (Daly 1998). Finally, authors argue that globalization favors only a small economic elite, leaving behind the economically weak and fostering a worsening income distribution (Haake and Jolivet 1997, Rees 1998).

power, information, and volume. These phenomena are linked, of course, but separate aspects are recognizable.

Trade is seen as an important determinant of consumption patterns and the sustainability of consumption (Carlsson-Kanyama 1997a, 1999, Daly 1998, Goodland 1998, D. Mayer 1998, R. Mayer 1998, Ropke 1994, 1999, WBCSD 1999). The majority of accounts perceives trade as detrimental to the sustainability of consumption due to the spatial and the informational distancing of production and consumption. The spatial distancing leads, of course, to transport and the associated energy consumption and greenhouse gas emissions. The informational distancing, in turn, affects the ability of the consumer to make environmentally and socially informed consumption decisions.

Consumers of expansive economies are more and more isolated from the consequences of their choices. They are left with little basis for their decisions beyond price. This isolation occurs in part through the separating of production and consumption decisions along four dimensions: geography, culture, bargaining power, and agency (Princen 1997, p.16).

This informational distancing due to international trade is strengthened by the international trade institutions. The GATT/WTO limits disclosure requirements for products (D. Mayer 1998). Indeed, it has accepted laxer environmental standards, for instance, as a legitimate source of comparative advantage. In consequence, international trade can be perceived a driving force behind unsustainable consumption: "The current regime of 'free trade,' which coincides with diminished regulatory power of nation-states, sets the stage for the ultimate binge of global overconsumption" (op.cit., p. 87).<sup>6</sup>

At the same time, trade holds the potential to lead to environmentally more efficient production conditions. This is particularly the case for agricultural production, of course, which depends on climatic conditions. Thus, Carlsson-Kanyama (1997a) highlights that tomatoes grown in Spain are environmentally superior to tomatoes grown in greenhouses in Sweden.

The second emphasis on globalization in the sustainable consumption debate is on capital concentration and mobility (Haake and Jolivet 1997, Goodland 1998, D. Mayer 1998). Again, the majority of participants in the debate see a detrimental effect on the sustainability of consumption originating in the growing market power of MNCs and their implications for national governments, smaller national firms, and local citizens. Statistics show that the largest corporations "consolidate their hold on the global economy" and dictate the direction of global business, as they control 70% of world trade, 1% of them owns half the total stock of foreign direct investment, and the largest 100 corporations are responsible for 75% of commercial TV (D. Mayer 1998). Observers perceive these MNCs (and their joint ventures and strategic alliances) to structure the market in their interest by creating barriers to entry, stifling local, sustainable economies, and racing to liquidate finite resources works against

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<sup>6</sup> Likewise, Daly (1998) argues that sustainable consumption will only be reached by backing away from free trade (and free capital mobility and migration) towards self-sufficiency.

any restraints to excessive consumption of natural resources.<sup>7</sup> The control of resources, thus, is in the hands of location independent MNCs and distant investors, rather than local citizens. Since the latter are presumed to be environmentally more responsible, the power and reach of MNCs means that consumption supply becomes less sustainable.

Capital concentration and the power of MNCs is directly related to the next globalization emphasis in the sustainable consumption debate: the shift in political power. A central aspect here is the decline in the power of national governments versus MNCs and International Organizations (Daly and Goodland 1994, Haake and Jolivet 1997, D. Mayer 1998).<sup>8</sup> Since national governments are presumed to be "more interested in directly caring for their citizens than a 'far away' institution or multinational firm" and more willing to foster the provision of public goods such as sustainability, this shift in political power is also perceived with concern in the context of sustainable consumption (Haake and Jolivet 1997, p. 6). Furthermore, scholars attribute unsustainable developments such as monoculture crop exports, which tend to fail to enrich exporting nations as much as environmental and social criteria, directly to the influence of international financial institutions and corporations.

The sustainable consumption debate also attributes the ever increasing volume of consumption (and production) to some extent to globalization (Haake and Jolivet 1997). One can recognize a global shift from underproduction to overproduction, and the associated need of suppliers to foster an increase in consumption levels (Princen 1999). The increase in the volume of commodity production, in turn, is associated with the increasing use of environmental resources on the consumption side (Cogoy 1999).

As pointed out above, the influence of globalization on consumption demand in the North appears to be more subtle and receives less attention in the debate. Among those scholars referring to such an influence, most concentrate on the role of information, especially advertising and other media influences, and highlight their negative consequences for the sustainability of consumption (Haake and Jolivet 1997, D. Mayer 1998, Ropke 1999, WBCSD 1999). Thus, globalization may be credited with increasing the interest in exotic/non-domestic food and the increasing consumption of prepared food as well as long distance holiday trips (Carlsson-Kanyama 1997, 1999, Quist et al. 1999).

Most of the discussion on the potential influence of globalization on the sustainability of consumption in the sustainable consumption debate then appears to perceive this influence to be negative. At the same time, however, potential positive influences exist as well. Thus, globalization may cause environmentally friendly consumption and production patterns to spread faster around the world (Haake and Jolivet 1997). Likewise, trade may foster environmentally superior conditions of production (Carlsson-Kanyama 1997a, 1999, Jungbluth 2000). Similarly some scholars argue that

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<sup>7</sup> Likewise, globally acting MNCs are seen as accelerating the environmental externality problem as they can relocate dirty industries to less regulated countries, or in general foster the degradation of an area and then "take their profits and move on" (Haake and Jolivet 1997, Mayer 1998).

<sup>8</sup> Looking specifically at the influence of globalization on the sustainability of consumption, Haake and Jolivet (1997) postulate the increase in importance and influence of multinational agreements, supranational regulations, and MNCs in concurrence with a reduction in national governmental power.

free trade gives consumers a greater opportunity to choose green products (for a brief overview of the arguments see Ropke 1994). Furthermore, they expect rising incomes due to globalization to increase ecological demand.

Finally, the importance of globalization becomes clear in the suggestions of strategies to pursue sustainable consumption authors make. Could an environmental United Nations change the "pay-off" structures in the Prisoner's Dilemma game of sustainable consumption (Reichert 1998)? Frequently, scholars advocate a cooperation between developed and developing countries with the former sharing most of the financial burden (Lemons 1998). As pointed out above, several authors suggest a reduction in trade through the use of tariffs, and a return to self-sufficiency (Daly 1998, D. Mayer 1998).<sup>9</sup>

### **III.1.b. Determinants of Sustainability in the Consumption Clusters of Food, Mobility, and Energy**

In this section, we highlight central findings from food, mobility, and energy studies in the sustainable consumption debate. The findings from these studies will later be used to determine the points at which globalization influences consumption patterns in these areas.

#### **Food**

A number of studies on sustainable consumption have focused specifically on food consumption due to its substantial environmental implications. As Jongen and Meerdink (1998) point out "close to half of all human impact on the environment, such as loss of biodiversity, is directly and/or indirectly related to food production and consumption" (see also Vitterso et al. et al. 1999). The adverse impact of the agricultural sector on the environment probably may exceed the impacts of all other sectors, even manufacturing and industry in many countries (Goodland 1998). Biesiot and Moll (1995) state that the life cycles of food products consumed by an average Dutch household contributed 15% of the total energy use (and CO<sub>2</sub> emissions) of the average Dutch household in 1990. In Germany, the food chain's share in energy and material consumption is at 20%, and the land use associated with agriculture (97.9% of which is intensively farmed) amounts to 56% of Germany's total land area (Lorek et al.1999 ). Furthermore, agriculture tends to cause substantial water pollution and eutrophication, and erosion and pesticides reduce soil quality (Burdick 1998). Finally, the output of greenhouse gases is significant. In order to feed Germany's 80 million citizens, for instance, 260 million tons of CO<sub>2</sub> equivalents are emitted per year, i.e. 3.2 tons per inhabitant (Enquete Kommission 1994).

Various developments in food consumption appear to be taken place, though the accounts of some are contradictory. In Finland, supply appears to have diversified while demand has become more homogenous (Pantzar, Rajjas, and Eeiskanen 1994).

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<sup>9</sup> Ropke (1994) adds that a strengthening of local economies would lead to such a reduction in trade. Finally, Robins (1999) postulates the necessity of effective international cooperation based on the co-evaluation of strategies, standards, and measures which affect each partner.

Jongen and Meerdink (1998), however, argue that consumers are becoming more demanding with respect to product diversity. Whether demand is becoming homogenous or not, the size of the market appears to be approaching its limits as the saturation point for caloric intake has been reached in some countries. Furthermore, scholars see a qualitative change from sales of raw materials and food ingredients to the sale of end products, reflected in the growing consumption of processed and frozen foods (Quist et al. 1999). In addition, consumers tend towards purchases of more high energy varieties and exotic vegetables. Finally, the consumer is getting better educated and more conscious about health related aspects, and that the perception of product quality increasingly includes production methodology (Jongen and Meerdink 1998).

The relationship between food and sustainability is complex. There are ecological, economic, and social aspects related to food consumption. Scholars, therefore, have inquired into different aspects of this relationship. Two approaches in food studies to sustainable consumption are prominent. On the one side, scholars inquire into the determinants of the sustainability of food products. On the other, they analyze the determinants of the consumption behavior of households with respect to food.

Studies on the sustainability of food products generally focus on the determinants of energy consumption or greenhouse gas emissions during the production or the entire life cycle of food products. Fundamentally, scholars agree that a shift toward a grain-based diet, away from the high consumption levels of meat would lead to a substantial reduction in environmental impact (Goodland 1998, Quist et al. 1999, Vitterso et al. 1999). Furthermore, since several studies have found fertilizers to be responsible for high levels of greenhouse gas emissions<sup>10</sup> (during to both production and application) and pesticides are know to lead to deteriorating soil quality (to say the least), scholars have argued for a shift to organic production standards (Faist, Kytzia, and Baccini 1999, Quist et al. 1999, Vitterso et al. 1999). Likewise, scholars recommend the consumption of more products grown in the open ground relative to greenhouse products (Kramer et al. 1998).

Beyond such general statements, however, the determinants of the sustainability of food products are complex. The previously presumed fact that transport leads to a reduction in the sustainability of food products, for instance, can no longer be uniformly accepted. Several studies have pointed out that regional products are not always environmentally superior and that it is sometime more efficient to import food than to produce it locally (Carlsson-Kanyama 1999, Jungbluth 2000).

Scholars have tried to compare the greenhouse gas emissions of different food groups: bread, pastry, and flour products; potatoes, vegetables and fruit; beverages and products containing sugar; oils and fats; meat, meat products and fish; diary products; and other food products (Kramer et al. 1998). They found that within each of these groups large differences in terms of environmental impact exist. Likewise, integrated analyses of various agricultural crops show that total emissions of greenhouse gases per kg crop strongly vary among the agricultural crops and growing methods (Carlsson-Kanyama 1999, Kramer, Moll, and Nonhebel 1999).

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<sup>10</sup> Kramer et al. (1999) for instance, report that total N<sub>2</sub>O emissions from synthetic nitrogen fertilizer make up a significant share of total greenhouse gas emissions in the life cycle of agricultural food products.

These findings highlight that agricultural production conditions in terms of farms structures and intensity of cultivation matter (Faist, Kytzia, and Baccini 1999, Kramer, Moll, and Sandhebel 1999). Crops produced from large scale agriculture for the food processing industry tend to emit more greenhouse gases per ton crop than crops intended for direct consumption, which generally tend to come from small scale agriculture (op.cit.). Large scale production farms also tend to use more fertilizers (N<sub>2</sub>O emissions) and pesticides and rely more on mechanical equipment (CO<sub>2</sub> emissions). Similarly, animal density and the amount of purchased fodder need to be taken into account.

Furthermore, the sustainability of a product depends on its combined environmental burden at different stages of the production chain. Beyond the agricultural production itself, the sustainability of a food product is influenced by the combination of transport, processing, storage, distribution, packaging, and eventually the handling of the food in the household (Carlsson-Kanyama 1999, Faist, Kytzia, and Baccini 1999).

A complete evaluation of the sustainability of different food products in general thus appears impossible. The number and variability of influences of energy consumption and greenhouse gas emissions is too large. Nevertheless, the cited studies have provided important insights into the determinants on the sustainability according to which strategies to improve food sustainability will have to be designed.

On the demand side of food consumption, scholars have identified a range of determinants as well. Since consumers are responsible for 32% of the food system's total energy demand, studying the factors influencing food consumption choices clearly is important (Faist, Kytzia, and Baccini 1999). Furthermore, studies have highlighted that consumers have a substantial influence over the total energy consumption and emissions associated with food production, since their consumption choices do have an impact on the production phase (Lorek and Spangenberg 1999, 2001).

Similar to the situation on the supply side, the relationship between food and sustainability on the demand side appears to be complex. The reason for this complexity is that food fulfills more than one function. It is a source of nutrition as well as a source of enjoyment (Sleeswijk et al. 1996). As Pantzar et al. (1994) state food needs to be served in the form and places and time in which food is served have to correspond to our cultural expectations, in order for it to be considered as a meal.

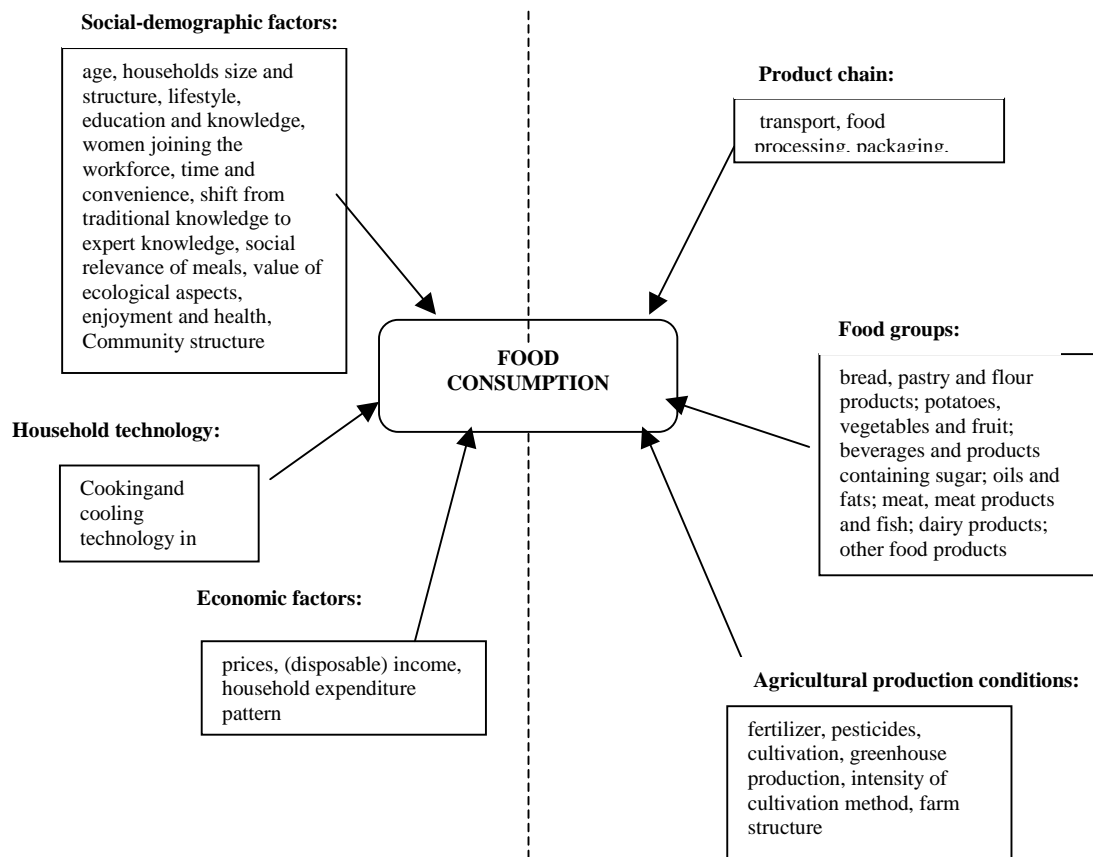
Empirical research has identified economic factors such as income, expenditure patterns, and prices to be a strong determinant of food consumption choices. Kramer et al (1998, 1999) find household expenditure patterns to be correlated with energy requirements, and CO<sub>2</sub> emissions from household food consumption (but not with CH<sub>4</sub> and N<sub>2</sub>O emissions). Jungbluth (2000), likewise, highlights the role of economic factors such as income and prices. He points out, however, that newer studies do not find the relationship between GDP and animal protein intake proclaimed by previous studies.

Besides income, socio-demographic factors such as age, education and knowledge, household size, the increasing joining of the workforce by women, and time

constraints are also significant (Jungbluth 2000, Wielting and Biesiot 1998). Studies have demonstrated the importance of changing values in terms of a decreasing social relevance of meals, and increasing value of ecological aspects and consumption habits in terms of upbringing, health concern, and life style (Jongen and Meerdink 1998, Dürrenberger and Patzel 1999, Moll 1999, Jungbluth 2000)). Scholars find, for instance, that behavioral changes have the potential to lead to larger reductions in energy consumption than technological improvements (Dürrenberger and Patzel 1999). Likewise, lifestyle choices in terms of dining out can have a tremendous influence on the sustainability of household food consumption. Moll (1999), for instance, argues that dining out sometimes requires ten times the energy compared to dining at home, due to transport, high space consumption requiring heating and lighting, long operation times of kitchen appliances, and the waste of food ingredients. Stagl and O'Hara (1999) point out the importance of community structures arguing that face-to-face interaction is necessary for the success of community based agriculture and therefore the availability and purchase of regional products. Moreover, Jungbluth (2000) notices an increase in the importance of expert knowledge in evaluating the sustainability of food choices due to the generally increasing distance and a decreasing information flow between production and consumption.

Finally, scholars have identified technology as an important determinant of the sustainability of household food consumption. Studying direct and indirect energy consumption of Swiss households, Dürrenberger and Patzel (1999) find that technology still holds a substantial reduction potential. The following figure summarizes the determinants of the sustainability of food consumption choices by households as they have been identified in the sustainable consumption literature.

**FIGURE 1: DETERMINANTS OF THE SUSTAINABILITY OF FOOD CONSUMPTION**



## Mobility

Mobility has received substantial attention in the sustainable consumption literature as well.<sup>11</sup> Household mobility, overall, contributes a substantial share to the environmental burden of energy use and emissions; it has been found to contribute 13% to the total direct and indirect energy requirements of Dutch households (Vringer and Blok 1995), 27% to total emissions in Denmark, or 21% to the total ecological footprint of an average Canadian household (Wackernagel and Rees 1996). Given that mobility is still perceived as one of the most rapidly growing sectors, the interest in mobility in the sustainable consumption literature can easily be understood.

Scholars report a number of trends for household mobility. First, they point out an immense increase in private car use, and fewer numbers of passengers per car. In addition to an increase in average distances traveled, the reasons for driving have changed dramatically. Today, individuals travel more for miscellaneous purposes, such as social contacts or shopping. Carlsson-Kanyama and Linden (1999) report that more than 50% of all travel today is related to leisure time activities. This change in travel purposes reflects a lifestyle change. Global trends associated with the multi-media evolution may further change physical mobility because it may reduce the need to physically change places (Wolf 1999). The trend also may lead to greater flexibility of time management (*op. cit.*).<sup>12</sup>

Several empirical studies have tried to establish the most important determinants of household mobility. Frequently, scholars focus on similar factors. Interestingly, these factors often turn out to differ in their importance in different studies.<sup>13</sup> Furthermore, they appear to differ in their importance in different contexts, i.e. for different dependent variables (travel distance, mode of travel, frequency of travel, etc.). The most important influences found by these studies can be categorized as socio-demographic and economic variables, living situation, and transport options and infrastructure.

In terms of socio-demographic variables, most studies have identified sex/gender, age, education, and household composition (size and number of children) as important variables<sup>14</sup> (Knapp 1998, Carlsson-Kanyama and Linden 1999, Carlsson-Kanyama, Linden and Thelander 1999, Dürrenberger and Patzel 1999, Hoyer and Holden 1999, 2000, van Diepen and Voogd 1999). Lifestyle factors, values, and attitudes are also influential (Kitamura et al. 1997, Dürrenberger and Patzel 1999, Hoyer and Holden 1999, Wolf 1999).<sup>15</sup> Ligteringen (1998a) as well as Noorman and Schoot Uiterkamp

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<sup>11</sup> Mobility in this context is, of course, means individual mobility without fright. There is wide recognition by now that transport does not equal mobility. Indeed, high levels of mobility can be achieved with more or less transport (von Diewitz, Klippel, and Verron 2000).

<sup>12</sup> Wolf (1999) claims that this trend holds significant reduction potentials for future mobility.

<sup>13</sup> The literature itself, however, points out that comparisons between different countries are difficult. The situation in the United States, for instance, can hardly be compared with the situation in the densely populated Netherlands.

<sup>14</sup> Van Diepen and Vogel 1999 found household composition not to be significant, however. Carlsson-Kanyama, Linden, and Thelander attribute the influence of gender primarily to different employment sectors, holding of drivers licenses, and access to cars.

<sup>15</sup> Indeed, Dürrenberger and Patzel (1999) see a larger potential for an improvement towards sustainability in lifestyle changes than in technological innovation.

(1998) point out that social changes related to a reduction and increasing flexibility of work hours have had an impact on household mobility as well.<sup>16</sup>

Among the economic variables, disposable income is extremely important. Carlsson-Kanyama and Linden (1999) find disposable income to be highly determinant of mobility patterns, and numerous other studies support this finding (Hamerslag et al. 1988, Noorman and Schoot Uiterkamp 1998, van der Wal and Noorman 1998, Wilting and Biesiot 1998, Hoyer and Holden 1999, van Diepen and Vogel 1999). Studies of the likely change in mobility due to changing incomes found income elasticities of 0.2 for public transportation and 0.6 for car travel (see Coenen, Fuchs, and van der Peppel 2000).

Consumer prices are the other side of the coin. Again, scholars emphasize their importance, which is also reflected in the role of subsidies (Spangenberg 1997, van der Wal and Noorman 1998, Wolf 1999). Significantly, the increase in mobility since the 1950s has been accompanied by a significant decrease in price per service unit (Linderhof and Korreman 1998). Different estimates of price elasticities exist. Commuter traffic has its own price elasticity of -0.5 (public transport) to -0.1 (car). In the case of other modes of transport, studies report own price elasticities of -1.2 (train) to -0.6 (car).<sup>17</sup>

Another important cluster of variables relates to questions of the living situation, in other words the house and its structural surroundings. Scholars find households in city centers, and urban versus peripheral, or urban versus rural and inner city neighborhoods to be important determinants of household mobility (Hoyer and Holden 1999<sup>18</sup>, van Diepen and Vogel 1999). Likewise, they assess the influence of dwelling characteristics such as size and type, and the availability of outdoor space and their impact on household mobility patterns (van Diepen and Vogel 1999). Factors of urban form and size, such as the availability of services in proximity to the dwelling, building density, the amount of open space, and general administrative spatial planning are significant as well (Bannister 1992, Farthing et al 1996, Bannister et al. 1997<sup>19</sup>, Kitamura et al. 1997, van Diepen 1997, Knapp 1998, Dürrenberger and Patzel 1999, Hoyer and Holden 1999, Wolf 1999).<sup>20</sup>

The next cluster of determinants concerns transport options and infrastructure. Car ownership appears to be a significant determinant of private mobility (Carlsson-Kanyama and Linden 1999, Hoyer and Holden 2000). Furthermore, infrastructure, as well as the efficiency and availability of public transport plays a pivotal role (Newman and Kenworthy 1989, Wolf 1999). This cluster appears to be interrelated

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<sup>16</sup> Likewise, the latter authors highlight the influence of a growing differentiation between work and home and an increase in leisure time.

<sup>17</sup> De Wit and van Gent (1986) voice the expectation that a price increase in fuel prices would have a greater effect on car ownership than on distances traveled by car, while van Staalduinen and Rouwendal (1994) find a price elasticity for car use of -1.0.

<sup>18</sup> Interestingly, Hoyer and Holden do not find distance to the city center to be significant in Forde in contrast to Oslo.

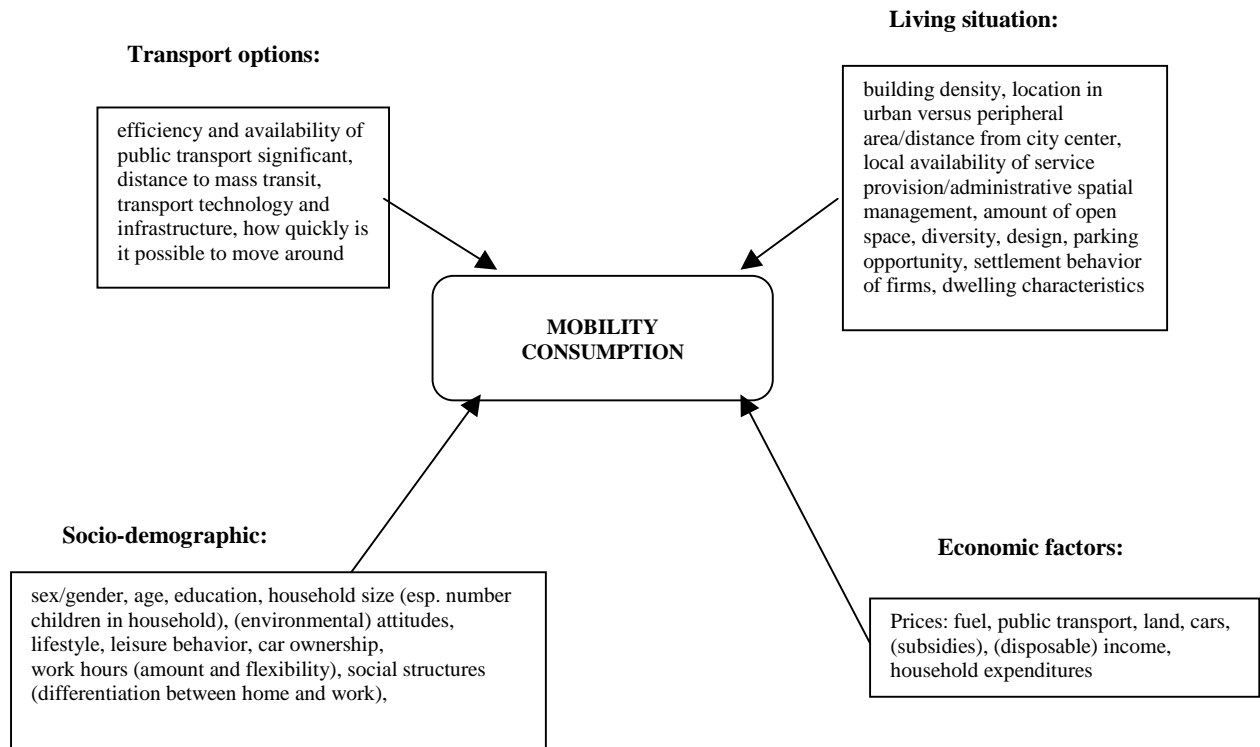
<sup>19</sup> Bannister et al. even find building density to be a more important determinant of household mobility than socio-economic factors.

<sup>20</sup> Again, the findings contradict each other sometimes. In contrast to Kitamura et al who find urban form a significant factor of private mobility in the San Francisco Bay area, Cervero and Kockelman studying the same local area find no such evidence.

with the factor of technology, since a main determinant of mobility choices appears to be "how quickly it is possible to move around."

In sum, scholars have identified a range of determinants of private household mobility. The following figure summarizes these findings:

**FIGURE 2: DETERMINANTS OF THE SUSTAINABILITY OF MOBILITY**



## Energy

Direct energy use by households (excluding energy use for mobility) is a third important consumption cluster. Trends in direct energy use have been continuously upward due to a range of factors. To a substantial degree, scholars attribute increasing per capita energy demand to the increasing number of (single) households and the increase in per capita living area (van Diepen 1998a, 1998b). Furthermore, the trend appears to be towards detached houses. In addition, studies have found that the income-price ratio for energy has risen by 50% since the 1950s, and that given higher efficiency and quality of products the price per service unit of domestic appliances has fallen further (Linderhof and Kooreman 1998, Van der Wal and Noorman 1998). Given the importance of income and price as determinants of energy consumption (see below), the increase in household energy consumption should not come as a surprise.

Scholars focus primarily on economic and socio-demographic factors when analyzing direct (and indirect) energy consumption by households as well as on the influence of dwelling characteristics. In terms of economic factors, disposable income appears to be one of the most important determinants of energy consumption (Schmoranz 1994, Gatersleben and Vlek 1998, Van der Wal and Noorman 1998, Wilting and Biesiot 1998, Gatersleben 1999, Hoyer and Holden 1999). Estimated income elasticity for energy consumption is 0.1 to 0.4, reflecting that higher incomes lead to higher energy consumption (Coenen, Fuchs, and van der Peppel 2000).<sup>21</sup>

Again, consumer prices are the other side of the income coin and important as well (Schmoranz 1994, Van der Wal and Noorman 1998). Energy, though, is a "necessity" with a comparatively inelastic demand. Price elasticities generally range from 0.2 to -0.1, meaning that higher prices only cause a moderate reduction in demand (Coenen, Fuchs, and van der Peppel 2000). Besides consumer prices, scholars have identified the availability of credit (e.g. difficulties of financing investments in dwelling improvements), ownership structures, and spending patterns as important determinants of household energy consumption (Schmoranz 1994, Wilting and Biesiot 1998).

Among the socio-demographic variables, household size appears to be one of the most important factors (Gatersleben and Vlek 1998, Wilting and Biesiot 1998, Dürrenberger and Patzel 1999, Gatersleben 1999).<sup>22</sup> With the move from a one-person to a two-person household a 20% reduction in direct energy use can be achieved (Dürrenberger and Patzel 1999). Household composition and age also play an influential role (Gatersleben and Vlek 1998, Gatersleben 1999, Hoyer and Holden 1999, 2000). In addition, behavioral factors, lifestyle and attitudes, as well as knowledge and information matter (Schmoranz 1994, Bus 1999, Gatersleben 1999, Hoyer and Holden 1999, 2000).<sup>23</sup>

Dwelling characteristics form the third important set of determinants of direct energy consumption by households. The most fundamental dwelling characteristics are, of course, per capita floor space, dwelling type and age, and the structural surroundings of the dwelling (Van der Wal and Noorman 1998, Dürrenberger and Patzel 1999, Hoyer and Holden 1999, 2000). In addition, construction characteristics such as the presence of insulation, and other governmental building regulations have been found to be significant (Ligteringen 1998, Bus 1999, Dürrenberger and Patzel 1999). Besides the characteristics of the dwelling itself, the penetration of the household with electrical appliances needs to be considered (Gatersleben 1999).

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<sup>21</sup> Gatersleben (1999) finds that income is the strongest predictor of household energy consumption besides household composition (see below). Other studies, however, emphasize the difference in energy consumption within each income group (Van der Wal and Noorman 1998, Vringer and Blok 1995).

<sup>22</sup> Interestingly, Van der Wal and Noorman (1998) found no general correlation between household size and direct energy requirements, however.

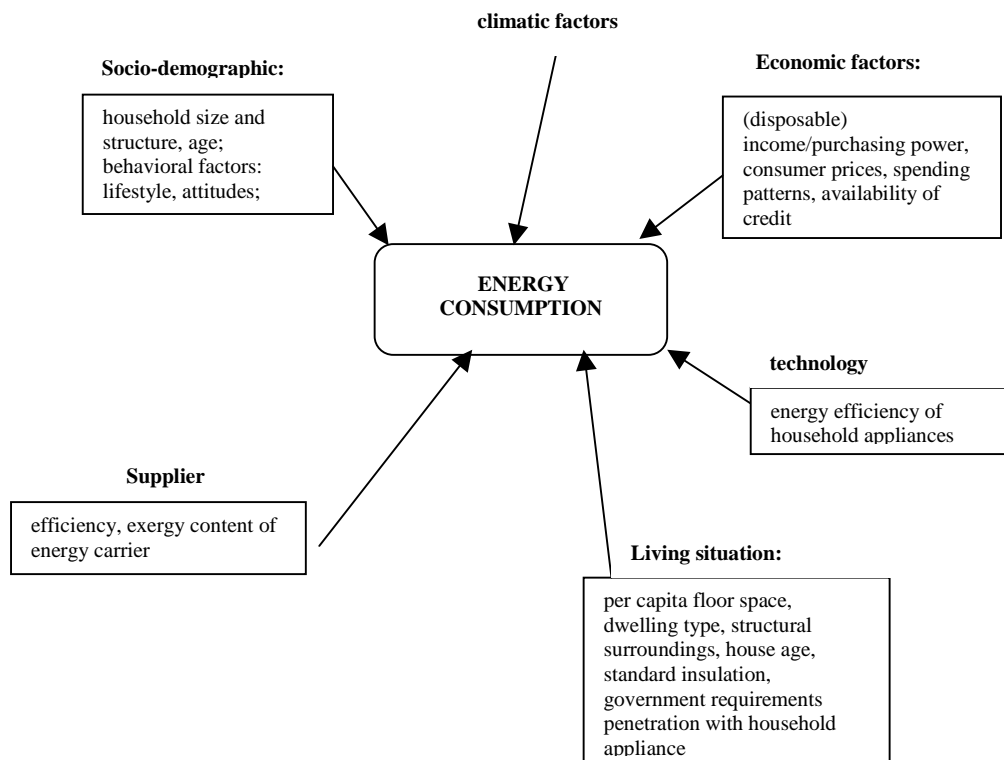
<sup>23</sup> Similar to the findings for food and mobility, Dürrenberger and Patzel (1999) claim that a change in lifestyle holds more reduction potential for energy consumption than technological innovation. Gatersleben (1999) points out the importance of habit and convenience. In her empirical study of Dutch household behavior, she finds that when households possess a particular good it soon becomes a "necessity." She concludes that policy intervention may be most feasible and productive before households obtain a higher consumption level.

Scholars also have studied the influence of supplier characteristics. Schmoranz (1994) argues that the efficiency of energy provision and the exergy content of the energy carrier matter. With the increasing liberalization of energy markets, supplier characteristics are likely to become even more important. This applies to the choice between renewable and non-renewable energy sources in particular.

While technology influences supplier characteristics, it also matters in terms of energy requirements for heating, cooking, washing, and the use of other household appliances (Van der Wal and Noorman 1998, Dürrenberger and Patzel 1999). Dürrenberger and Patzel (1999) find that technology is a more important as a source of reduction potentials for energy consumption than for food and mobility.

Finally, the climatic conditions confronting the household influence its energy consumption as well, of course. The following figure summarizes the determinants of direct energy consumption by households found by previous research:

**FIGURE 3: DETERMINANTS OF THE SUSTAINABILITY OF ENERGY CONSUMPTION**



## III.2. The Globalization Perspective

The second part of section III pursues a similar purpose as part one, only from the perspective of the globalization literature. Specifically, we inquire about references to the core aspects of the phenomenon of globalization and its implications for sustainable consumption. Our analysis focuses on the specific political, economic, and cultural changes brought about by globalization, and explores what these changes mean for sustainable consumption.

In general, the important aspects of globalization delineated by the globalization literature can be categorized as follows: shifts in political capacity, capital concentration, trade liberalization, increased diffusion of information, and technological innovation.<sup>24</sup>

One of the central foci in the globalization perspective is a shift in political power (Cerny 1990, 1998, Strange 1994, 1996, Beck 1996, Zürn 1998, Kalb et al. 2000). Many scholars perceive the power of nation states to be declining vis-à-vis MNCs and International Organizations. Public and private international law are becoming blurred as international economic actors increasingly dominate agenda setting, policy design, and implementation (Cutler 1999, see also Hurd 1999). Likewise, international law is increasingly relying on nonbinding legal instruments with non-state actors playing an ever greater role (Clapp 1998, Weiss-Brown 1999). Evaluations of these changes range from the view that the "decline of the nation state" is a desirable consequence of international economic integration to the assertion that

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<sup>24</sup> Scholars in the food literature also stress the impact of globalization on the South. While the focus of our paper is on sustainable consumption in the North, the consequences of globalization on the South indirectly matters as well, since they influence the sustainability of products consumed in the North. For a while, scholars have pointed out that the declining commodity prices due to agro-exporting debt-servicing strategies advocated by international organizations have led to prosperity for food traders but falling incomes in the South (McMichael 1997). Likewise, the switch from the production of staple foods to unseasonal or 'exotic' crops or animal feedstuffs for the North is a well-known phenomenon with sometimes dire consequences for the populations in the South (Ward and Almas 1997). The financial power relations along the food chain also give rise to changes in land ownership in the South, often with negative social implications (Fine 1994). Overall, some scholars suggest that globalization may increase income inequalities in the world and progressively exclude poorer societies (Group of Lisbon 1993).

Interesting accounts of the influence of globalization on sustainable consumption also come from Eastern Europe. While Eastern European countries cannot easily be compared to Western or Northern European ones, these accounts might provide some telling insights. After all, Eastern Europe only recently opened itself to the global economic system. Thus, the influence of globalization may be particularly noteworthy. However, only a few NGO based accounts exist. It is therefore necessary to treat the evidence carefully. CEE CAP (1998) reports the emergence of affluent and status linked consumption as the dominant life style model which has replaced more frugal and conserving practices. The report notices the stretching of distribution channels between suppliers, producers, and consumers, the increasing importance of the maximization of profit as business goals, and a surge in promotional advertising. CEE CAP asserts that patterns of financial flows have developed which induce and perpetuate unsustainable patterns of production and consumption. On the side of the consumer, status, identity, the perfect body image, and the communication of achievement have become dominant determinants of consumption choices. Overall, CEE CAP postulates that the overwhelming trend has been away from sustainable development in terms of changes in consumption patterns.

political authority and legitimacy are threatened when "corporations rule the world" (Korten 1995, Ohmae 1995).

Some scholars point out that the state is not being led, but is neither a leader nowadays, acknowledging that the decline of the national market as a strategic economic space relative to the global economic space threatens one of the previous foundations of the nation-state (Group of Lisbon 1993, p. 21). They conclude that the dependency of the state on corporations leads to constraints on political strategies:

Local states act to support local multinationals since, as the key strategic actors governing the world economy, their success at this level is a prerequisite for the achievement and preservation of the country's technological and economic autonomy (p. 87).

In the food industry, global private and public authorities gaining leverage over policy and institution building threaten state sovereignty (Lowe et al. 1994, McMichael 1997). Thus, one may argue that GATT negotiations exemplify the strengthening of global regulatory mechanisms that compromise national sovereignty. By allowing multinational corporations to challenge nationally based regulations, the GATT has increased the power of these corporations vis-à-vis nation states (Ward and Almas 1997). Drawing the link between globalization and consumers in the food sector, Tonner (2000) argues that globalization limits the possibilities for national states to autonomously handle their affairs and to care for their consumers.

In the energy sector, the influence of coal, nuclear, and electricity businesses in international political discussions receives increasing criticism (Lovins and Henneke 1999). Business communities provide the majority of members of the World Energy Council, which strongly influences the world energy discussion. Some scholars consider a global energy policy comparable to the global regulation of climate relevant emissions designed with the help of existing global (UN-) institutions as a possible balancing mechanism for the growth in political influence of economic interests (op.cit.). Even that, however, may imply a reduction in the power of the individual national government.

Consequences of the shift in political capacity for the consumer need to be considered as well. Thus, although the Codex Alimentarius is steering international food safety standards (R. Mayer 1998), such global consumer guidelines and standards may not be effective in guiding daily policies (Tonner 2000). Even worse, some scholars fear that international agreements such as TRIPS may undermine specific consumer protection initiatives (for a discussion of this aspect see R. Mayer 1998). Moreover, similar to previous national regulations, consumer protection and environmental protection at the international level are regulated by separate bodies of law (Tonner 2000). In addition, some scholars highlight the inability of supra-national entities to be responsive to consumers' preferences.<sup>25</sup>

The "decline of the nation state" may not be a uniform development, development. While the power of national governments may have been reduced in some areas, it

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<sup>25</sup> Hedemann (2000), for instance, points out the existence of a gap between the regulatory ability of the EU and the ecological concern of consumers.

has actually increased in others. While the quality of regulation may change, some issues will always be regulated by states (Clayton and Pontusson 1998, 90f). Furthermore, in specific issue areas such as telecommunications, regulation has actually increased, as liberalization requires complex "reregulation" under a strong state (Vogel 1996). Moreover, up to the late 1990's, government spending in relation to GDP was still on the rise in the OECD countries (Garrett 1998). Finally, while some mechanisms and traditional policy instruments may have been weakened, e.g. Keynesian and monetarist demand management, other government tools such as supply-side policies, maintaining social consensus and coalition building have been enhanced (Hirst and Thompson 1992).<sup>26</sup>

With respect to the role of the public, one may perceive different facets to changes brought about by globalization. On the one side, the public may be "disappearing" in so far as it previously played a role as a critical observer and check on political and economic actors (Kratochwil 1997). On the other side, the public has the potential to play a much more important role due to the rise of new issues onto the global political agenda, such as environmental, social, and human rights issues (Wapner 1995, Lipschutz 1996, 1997, Price 1998). Such evaluations of the potential role of the public are associated, of course, with assumptions about the availability and transfer of information. For the consumer, scholars see a decline in information availability. Similar to Princen's "distancing" argument, Johnstone (1995) points out that the spatial separation of consumption and environmental consequences masks the relationship.<sup>27</sup> Continuing globalization dynamics may yet change the role of the public, however. To some extent recent developments appear to restore the initiative to local communities (McMichael 1997)<sup>28</sup>. Thus, what is true with respect to globalization in general also applies to the shifts in political capacity induced by globalization: Globalization is an ongoing process, the final results of which are not yet recognizable.

The question of a shift in political capacity is closely related to the second emphasis in the globalization perspective: the phenomena of capital concentration and capital mobility. The two factors together are the source of the rise in political influence of corporations. Discussions of the influence of capital concentration and mobility primarily take place with respect to the food sector. Accelerated capital mobility and global financial integration have fostered the geographic extension of production-consumption networks with increasingly complex, flexible, and geographically spread sourcing strategies of transnational corporations (Bonnano et al. 1994, Lowe et al.

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<sup>26</sup> Hirst and Thompson, for example, insist that in the food sector the nation state has not lost its role due to globalization as national macro-economic management continues to provide a viable means of steering national economic welfare. In the views of these scholars, the economy is not fully globalized but international in character with national policy responses supporting enterprises, which themselves struggle with globalization. Even in this constellation, however, we might detect a conferring of social legitimacy on enterprises which is accompanied by public resource transfers and, in the end, amounts to a privatizing of the organizing and governing of the world economy (Group of Lisbon 1993, p.93).

<sup>27</sup> Likewise, Fine (1994) states that the structural separation between the commercial world and the household weakens the relationship between the production of food and its consumption. Hedemann (2000) stresses the consumers' lack of information about trade-environmental trade-offs and their associated inability to sufficiently take environmental considerations into account when making consumption decisions.

<sup>28</sup> In fact, McMichael points out that current opposition to the global agro-food industry is both locally based and globally coordinated and informed.

1994, Ward and Almas 1997).<sup>29</sup> Indeed, capital concentration appears to have taken place in most sectors of the food industry, including both farming and non-farming sectors of the agro-food system:

In the farming sector, the number of farm businesses has steadily diminished, while the share of total output produced by the largest farm businesses has continually increased... the concentration of market power in those (upstream) sector supplying agriculture with technical inputs and in those (downstream) sectors which process, distribute and sell food (Ward and Almas 1997, p. 613).

Large multinational corporations have come to dominate the farm sector, the food processing industry, exports, the retail industry, the fast food industry, as well as marketing and advertizing (Handy and MacDonald 1989, Bonnano et al. 1994, Busch and Juska 1997, Goodman 1997, Howes 1996, Ward and Almas 1997, Humphrey 1998).<sup>30</sup> Interestingly, while processes of capital concentration can also be noted in the car industry, for instance, the globalization literature pays little attention to them. In the energy sector, capital concentration is also taking place, albeit more on a regional if not national basis at this point.

The consequences of processes of capital concentration in the food sector are multiple. Since access to finance determines the position of agricultural producers, small farm businesses have little opportunity to compete with these large and financially powerful actors (Fine 1994). In addition, the dominance of multinational corporations in the food-processing industry leads to the turning out of homogenous food products throughout the world, in particular new products for affluent markets, and the spread of processed food (Fine 1994, Goodman et al. 1994, Busch and Juska 1997). Furthermore, capital concentration is blamed for declining farm employment, squeezed farm incomes, increasing capital requirements of farm-based production, as well as the restructuring of economic sectors, labor forces, and nation states in the interest of global investors (McMichael 1997, Ward and Almas 1997).

Other important consequences of capital concentration in the food sector apply to the power relationships between the different actors and the sustainability characteristics of food products. It appears that the concentration has led to a displacement of production for use by production for the market, and to a tendency to minimize the organic content of the food system (Fine 1994). Due to capital concentration, input suppliers have obtained more influence over farm businesses through the development of credit links, and the provision of combined packages of technologies and specialist advisory (Ward and Almas 1997). By seeking to gain control over a greater

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<sup>29</sup> While the topic of capital concentration is extremely prominent in the food literature, substantial disagreement exists about its extent and role. Some scholars question this account of industry structure. At the end of the 80s, Handy and MacDonald (1989) reported that food manufacturers were still much less "globalized" than non-food manufacturers and maintained far weaker trade links with their affiliates. Likewise, Hirst and Thompson argue that globalization has not led to a qualitatively new stage in the food sector as there are few global organizations without specific national identity.<sup>29</sup> Goodman (1997) finally states that the productive organization of food commodities is much simpler than, for example, that of the automotive industry. Independent, stand-alone production locations still exist and compete internationally, in contrast to the image of a global intra-firm division of labor.

<sup>30</sup> Moreover, Fine (1994) argues that even the relationships between the agriculture industry, wholesaling and retailing are increasingly monopolized and have a powerful influence on conditions of supply and demand.

proportion of the production process, large agro-food companies have come to influence the direction of technological change, and especially promoted biotechnologies (op.cit.).

Trade liberalization and the pressure on states to deregulate different industrial sectors form a third element of globalization (Kahler 1992, Qureshi 1996, Stiles 1996, Uvin and Biagiotti 1996, Porter 1999). For the consumer, the lowering of tariffs and quota restrictions leads to a widening selection of products and, frequently, to a reduction in prices (Hedemann 2000). Trade is responsible for the availability of exotic and seasonal food products year round in the supermarkets of the North, for instance (Friedland 1994). Furthermore, trade influences income, although scholars fail to agree on how. Neoclassical economic theory argues that international trade increases the "pie." It does not say anything about the distribution of the overall gains from trade, however.

Another consequence of trade liberalization, however, is the potential effect on environmental, social, and consumer standards. On the one side, it is conceivable that free trade undermines consumer protection standards and constrains the use of eco-labels by interpreting them as barriers to trade (Nader 1991). On the other side, one may argue that free trade promotes a leveling upward of consumer standards (Vogel 1995). Indeed, some scholars argue that trade considerations have not forced the weakening of any consumer protection measure (R. Mayer 1998).

The pressure of trade liberalization on national regulation affects all areas, including investment regulations, banking laws, environmental and employment protection, reductions in social entitlements and subsidies (McMichael 1997).<sup>31</sup> The airline market is increasingly being deregulated. Likewise, the energy market is experiencing liberalization and deregulation, which has led to concerns about the future of renewable energies (Mazmanian, Fuchs, and Roseman 1995, Midtun 1997, Arentsen and Fuchs 2000, Schoot Uiterkamp 2000). National subsidies for public transport are increasingly under pressure as well. The globalization of trade thus has impacts on sustainability besides transport and distancing.<sup>32</sup>

A fourth emphasis of the globalization debate is on cultural globalization, especially the diffusion of information and values, and the role of the media. With respect to consumption, the globalization literature notes the internationalization of consumer tastes, especially in the area of food (Bonanno et al. 1994, Lowe et al. 1994). North American food consumption patterns in particular are fostering the displacement of traditional and seasonal foods with mass-produced more durable foods based on the establishment of a common popular taste worldwide (Ward and Almas 1997, Warde

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<sup>31</sup> This pressure to deregulate is reflected in the difficulty to reregulate if nation states desire to do so. Tonner (2000) blames deregulation pressures for the limited success to date of eco-taxes. European regulations with respect to genetically modified food are being challenged by the WTO. The taxation of kerosene in the aviation industry also confronts challenges of political feasibility due to deregulation pressures.

<sup>32</sup> These impacts exist whether trade is indeed global or as Hirst and Thompson (1992) claim predominantly a function of regional blocs. A discussion of these impacts, however, should not be viewed as a celebration of the previous status quo. As Goodman et al. (1994) point out previous intense national regulation via price supports and import controls was what created the agro-food commodity chains as they exist today. Furthermore, these rules and institutions led to excess production in agricultural commodities.

1997). The globalization of the food chain also reveals itself in the mass consumption of exotic/foreign dishes and restaurant chains (Howes 1996).

In the mobility sector, diffusion of information and values is reflected in increasing travel to distant places. In addition, car purchases are influenced by the "information" provided by global marketing and media networks on the one side and changes in consumer values on the other.<sup>33</sup> Likewise, the global entertainment sector influences consumers' concepts of desirable living situations, in terms of house size, for instance, as well as "necessary" appliances (Frank 1999, Schor 1999).

Finally, technological innovation is clearly influenced by globalization. In general, globalization is likely to be associated with an acceleration in the speed of technological innovation. This may foster the development of more environmentally friendly technologies, but also that of environmentally problematic ones.<sup>34</sup> In the food sector, technological innovation in the form of biotechnologies is likely to affect agriculture, processing as well as consumption, and appears to be particularly relevant for innovation in space and time procession (Bonnano et al. 1994, Fine 1994, Murloch 1996).<sup>35</sup>

As pointed out before, globalization is a process that is by no means complete. Thus, final results of the impact of globalization cannot be determined at this point. It is unclear, currently, to what extent counter-pressures against globalization and capital concentration are likely to develop (Ward and Almas 1997). Furthermore, a lot of heterogeneity remains, for instance in the characteristics of agriculture, such as farm production practices, as well as production-consumption linkages (van der Ploeg 1990). Yet, scholars studying globalization appear to agree that shifts in political capacity, capital concentration, trade liberalization, the diffusion of information and values, and accelerated technological innovation are the main characteristics of globalization as we are currently witnessing it.

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<sup>33</sup> Thus, Veen-Groot et al. (1999) postulate that globalization will lead to the spread of consumer preferences for environmental quality in the mobility sector.

<sup>34</sup> Veen Groot et al. (1999), for instance, expect globalization to foster the development of more environmentally friendly technologies in the mobility sector.

<sup>35</sup> Johnstone (1995) expects that globalization will lead to a displacement of crop varieties due to more similar global task structures (as well as preferences).

## **IV. Globalization and Sustainable Consumption**

This section seeks to establish an overall picture of how globalization influences the sustainability of consumption. The approach is as follows: Our analysis starts out with the determinants of sustainable consumption for the three consumption clusters identified above. The next step will suggest influences of globalization on these determinants based on the previous discussion as well as determinants that do not receive sufficient attention in the academic debate. Finally, the last step will select the most important relationships. These will provide the basis for the discussion of methods of empirical assessment in the next section.

The selection of relationships is based on the extent of the impact of globalization on the respective determinants of consumption patterns. We differentiate between more direct and more indirect influences. The direct influences are those affecting socio-demographic characteristics, including lifestyles, tastes, and knowledge. These factors are closely linked to household consumption choices. The indirect influences are those affecting the sustainability of household consumption before the household ever makes a decision. While these indirect influences receive less attention in the sustainable consumption literature we find that a substantial part of the impact of globalization on the sustainability of household consumption occurs in this way, i.e. by influencing the supply of products and services and thereby the spectrum of consumption choices available to households. Therefore, we highlight the most important of those relationships.<sup>36</sup>

The most important determinants of consumption in the three consumption clusters were identified in section III.1.. For all of the three clusters, socio-demographic and economic factors are important. For food, the additional relevant factors are agricultural production conditions, the burdens imposed by different sections of the product chain, the characteristics of the different food groups, and technology. For mobility, the additional determinants are living situation (urban form and dwelling characteristics), and transport options. Finally, for energy, the additional factors are dwelling characteristics, household technology, supplier characteristics, and climatic factors. How does globalization influence these factors? The following discussion will analyze these relationships individually for each of the consumption clusters.

### **IV.1. Globalization and the Sustainable Consumption of Food**

As pointed out above, the relevant determinants of the sustainability of food consumption are agricultural production conditions, the burdens imposed by different sections of the product chain, the characteristics of the different food groups, socio-

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<sup>36</sup> Quite simply, the more arrows point towards an indicator, the more elements of globalization appear to affect that indicator. One could argue, of course, that a larger number of arrows indicates that the relationships have already been studied and that future research needs therefore exist with respect to those factors for which fewer influences have been identified so far. However, we believe that for many of the arguments about globalization made in the literature sufficient empirical support is still lacking. Therefore, those relationship supported by arguments should be assessed empirically.

demographic factors, economic factors and technology. Agricultural conditions refer to the intensity of cultivation, the use of fertilizer and pesticides, and the farm structure, for instance. The product chain points to the importance of environmental burdens imposed for processing, packaging, transport, and storage. The categorization of food groups differentiates between bread, pastry, and flour products; potatoes, vegetables and fruits; beverages and products containing sugar; oils and fats; meat, meat products and fish; dairy products; and other food products. The important socio-demographic factors are household size and structure, age, education and knowledge, lifestyle, and women's roles, as well as values attached to food and meals. Economic factors, in turn, related to disposable income, prices, and household expenditure patterns. Finally, household technology refers primarily to technological capacity and efficiency in cooling and cooking.

The challenge now is to link globalization to these determinants. The important elements of globalization, in turn, are trade, shifts in political power, capital concentration, the acceleration of technological innovation, and the diffusion of information and values according to the globalization and the sustainable consumption literatures. Figure 4 pictures the relationships between these elements of globalization and the determinants of sustainable food consumption.

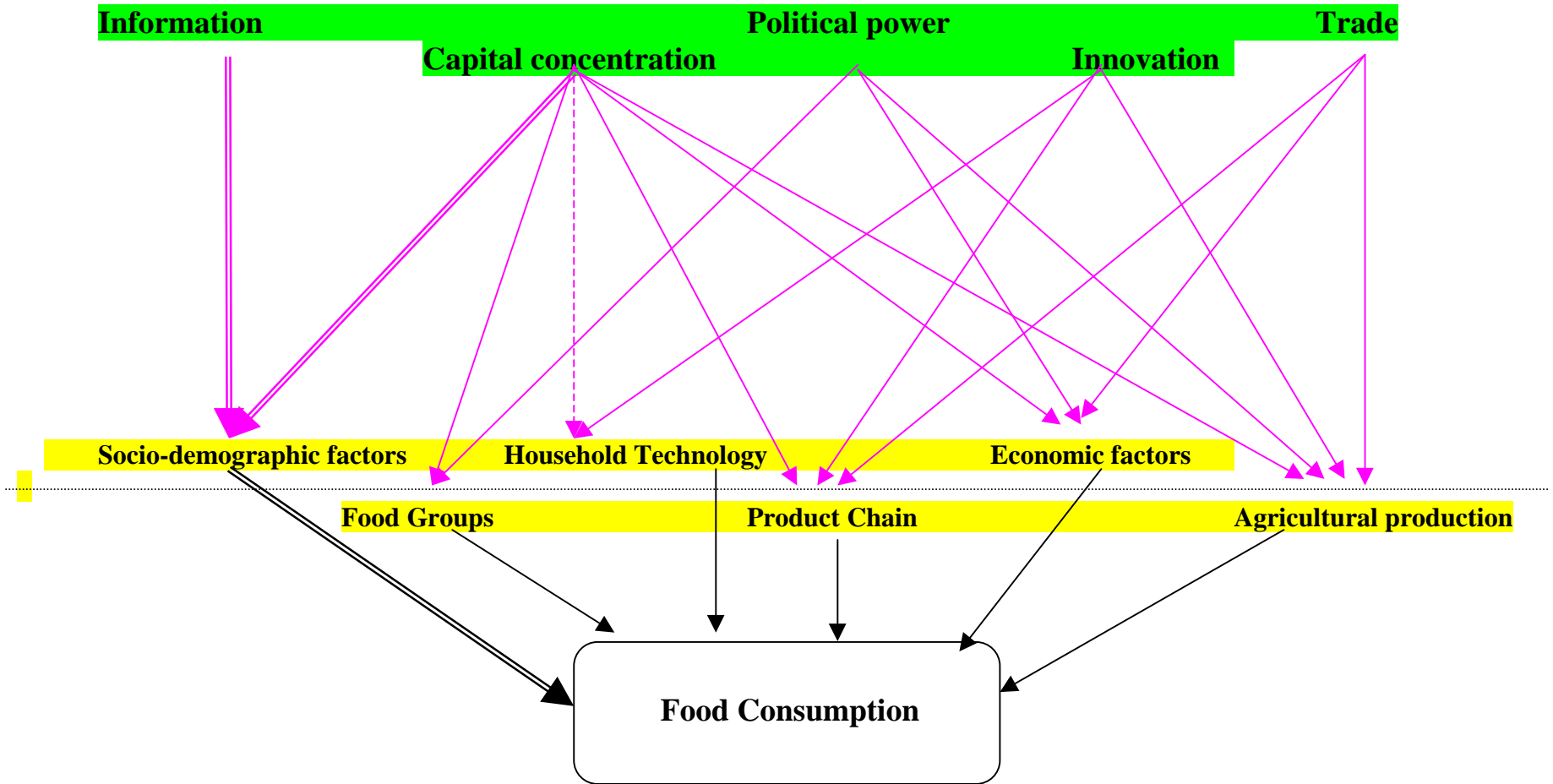
The figure is organized as follows. Towards the bottom, the yellow fields identify the relevant determinants of the sustainability of food consumption. At the top, the green fields list the elements of globalization likely to have an influence on the sustainability of consumption.<sup>37</sup> The pink arrows between these fields reflect the specific relationships discussed above. Numerous arguments can be made for most of these relationships. Some of the central ones are delineated below.

The density of arrows in the picture shows that the elements of globalization each influence most of the determinants of consumption. This density is a function of the extent of previous research on the topic of food, but also of overlap between the determinants of the sustainability of food consumption identified in the debate. The factors agricultural production conditions, product chain, and food groups obviously all partly cover similar aspects. Given the number of relationships between globalization and the determinants of food consumption discussed in the literature, there was not much need (and hardly any room) for the identification of additional relationships which the debate may have neglected to date. Most importantly, however, the variety of relationships identified above highlights the need for future research on globalization and sustainable consumption to select the most relevant of these relationships in order to be able to study them in depth.

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<sup>37</sup> This presentation is not meant to suggest that the elements of globalization are exogenous factors and that the influence goes only in one direction. In this paper, however, we focus only on the direction from globalization to determinants of the sustainability of consumption.

**FIGURE 4: GLOBALIZATION AND THE SUSTAINABLE CONSUMPTION OF FOOD**



Globalization characteristics  
 Determinants of food consumption patterns

Influences of globalization on the determinants of food consumption found in literature  
 Additional potential influences

Turning to the specific arguments for the identified relationships, the influence of the diffusion of information and values indicates, for instance, the internationalization of consumer tastes brought about by globalization. This is an example of a direct influence of globalization on sustainable consumption behavior of households. In particular, the increasing replacement of traditional foods by mass-produced durable foods reflects this influence of globalization. Furthermore, the diffusion of North American consumption patterns is leading to an increased reliance on processed food, produced to create and serve a common popular taste worldwide. Global information and value flows also have implications for consumers' concepts of meals, of the role of women, and of the structuring of lives between home and work. Thus, rising consumption of exotic/foreign dishes as well as the trends towards going out are being fostered by the diffusion of specific information and values.

In addition, global information flows also have implications in terms of the type of information that is spread. Some information contents may be favored over others. Global information flows do not necessarily help the consumer to know more about all of the characteristics of a product, for instance. While marketing and advertising is very capable of spreading its messages globally, information on the environmental and social characteristics of products, especially those related to the production process, are often left behind. Although the internet gives individuals or groups relatively cheap and easy access to information highway, it is still far away from providing a true democratization of information flows.

An additional direct influence of globalization on household consumption decisions results from the impact of capital concentration, i.e. from the dominance of MNCs in marketing and advertising. Relying on global marketing networks, MNCs spread their messages worldwide. Due to their financial capacity they purchase a huge share of commercial time on TV. The concentration of network stations in a handful of global media companies by itself means that capital concentration favors the global diffusion of certain values and information over others.

Besides these direct influences of globalization on the sustainability of household consumption, however, the figure depicts numerous indirect relationships, which trickle down to the sustainability of household consumption through the supply of goods and services. The relationship between capital concentration and economic factors results from declining farm employment and squeezed farm incomes for instance. While not explicitly discussed in the literature, capital concentration is also likely to influence the prices of food products for producers and consumers. In addition, capital concentration tends to primarily favor the economic interests of investors, and thereby leads to a changing income distribution within and between countries.

Capital concentration does not only influence economic factors, however, but also the sustainability characteristics of the product chain and food groups, and especially the agricultural production conditions. Indeed, capital concentration has been linked to the increasing intensity of cultivation due to heavier uses of fertilizers, pesticides and heavy machinery, and to a decrease in the organic content of food. Likewise, capital concentration is responsible for the increasing dominance of corporations over input choices by producers and especially to the promotion of biotechnology. The global sourcing of MNCs also influences the sustainability characteristics of food in terms of

transport, of course. Finally, capital concentration is extremely important for the latter stages of the product chain such as food processing and retailing, since these stages have a substantial influence on consumers' choice sets.

The acceleration of technological innovation due to globalization affects almost all determinants of the sustainability of food consumption according to scholars. Clearly, technological innovation influences the sustainability characteristics of agricultural production as well as other phases in the product chain. Innovation in biotechnologies affects crop varieties and characteristics, and technologies of space and time compression influence transport and storage, for instance. On the side of the household, technological innovation affects cooking and cooling technologies.

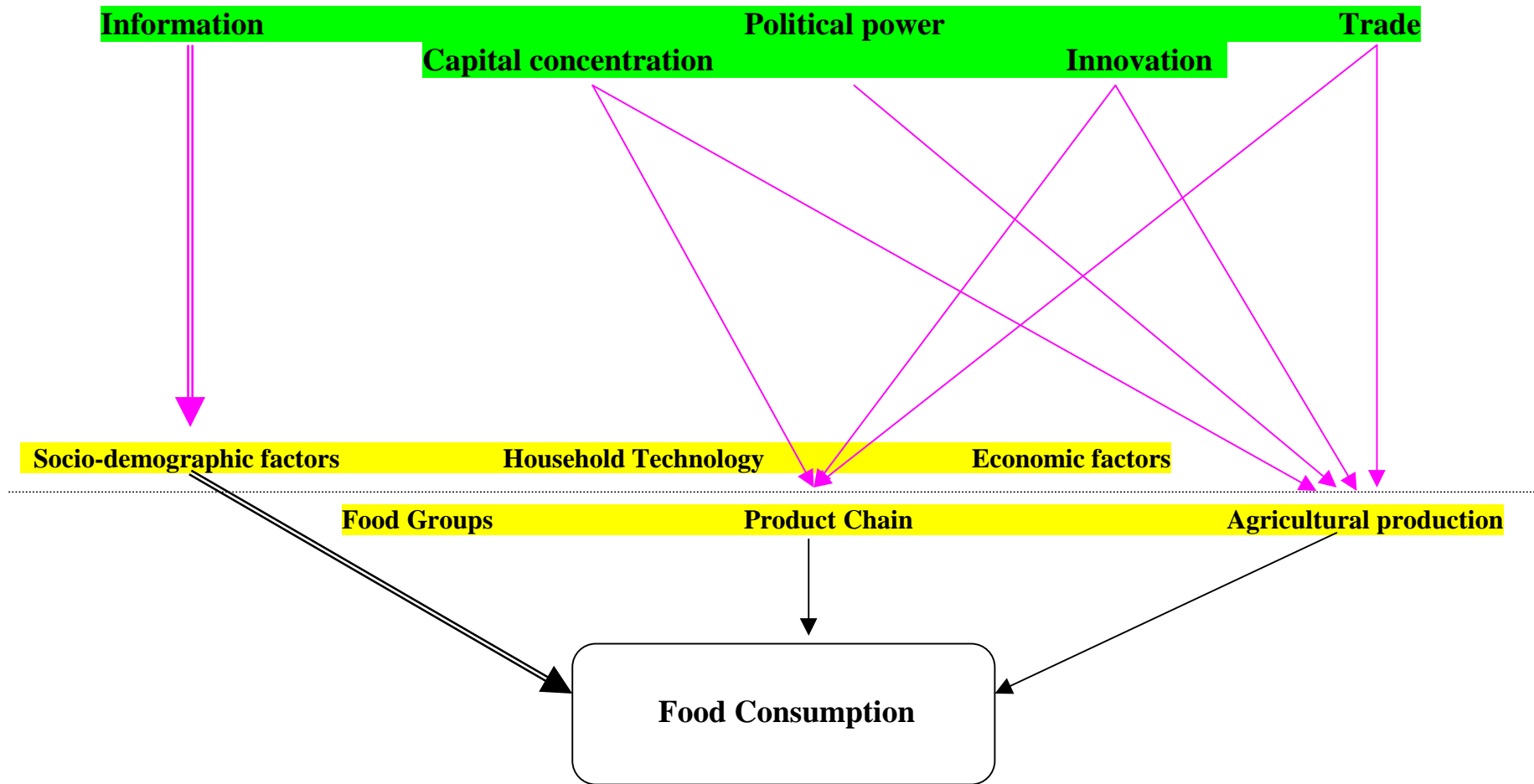
Trade liberalization and associated deregulation pressures have implications for the supply side of the sustainability of food products as well as on economic factors. The opening of markets for certain products such as genetically modified food due to WTO regulations, for instance, as well as the prohibition of process standards by the WTO impact the sustainability characteristics of food products supplied in the market. At the same time, trade can allow the relocation of production to environmentally more efficient places. Most fundamentally, trade has the potential to change prices of food. Less clear is the influence of trade on incomes. While standard economic theory proclaims that trade leads to a bigger "pie" for all, it says little about the distribution of income changes.

The role of the WTO in trade liberalization is related to the shift in political power, of course. Thus, international organizations (including international financial organizations) have an increasing influence over the types and characteristics of food exports and imports. The IMF and World Bank, for instance, are well-known for advocating mono-crop agriculture for export from developing countries for decades, although they now may be modifying their position due to persistent criticism of such practices. Clearly, the shift in political power also affects economic factors, in so far as the increasing inability of national governments to provide public goods and to support the redistribution of income affects household budgets.

As pointed out above, the number and variety of influences of globalization on the determinants of the sustainability of food consumption clearly forces a selection of the most relevant of these influences if research is to make much progress. In the view of our analysis, indirect influences of globalization on the sustainability of household food consumption should not be neglected. Among the indirect influences, the most relevant relationships are those between globalization and agricultural production and the product chain in general. Research needs to study the path from the influence of the elements of globalization to agricultural production and the product chain in order to identify those areas where political intervention would be most promising. Figure 5 summarizes the influences of globalization on the sustainability of food consumption on which future research should focus.

Another potential point of inquiry would be capital concentration itself since it influences all of the determinants of the sustainability of food consumption. Yet, capital concentration as such represents a topic that is somewhat removed from the sustainable consumption perspective and approach. Still, it might be so decisive a factor that sustainable consumption cannot ignore its overall impact.

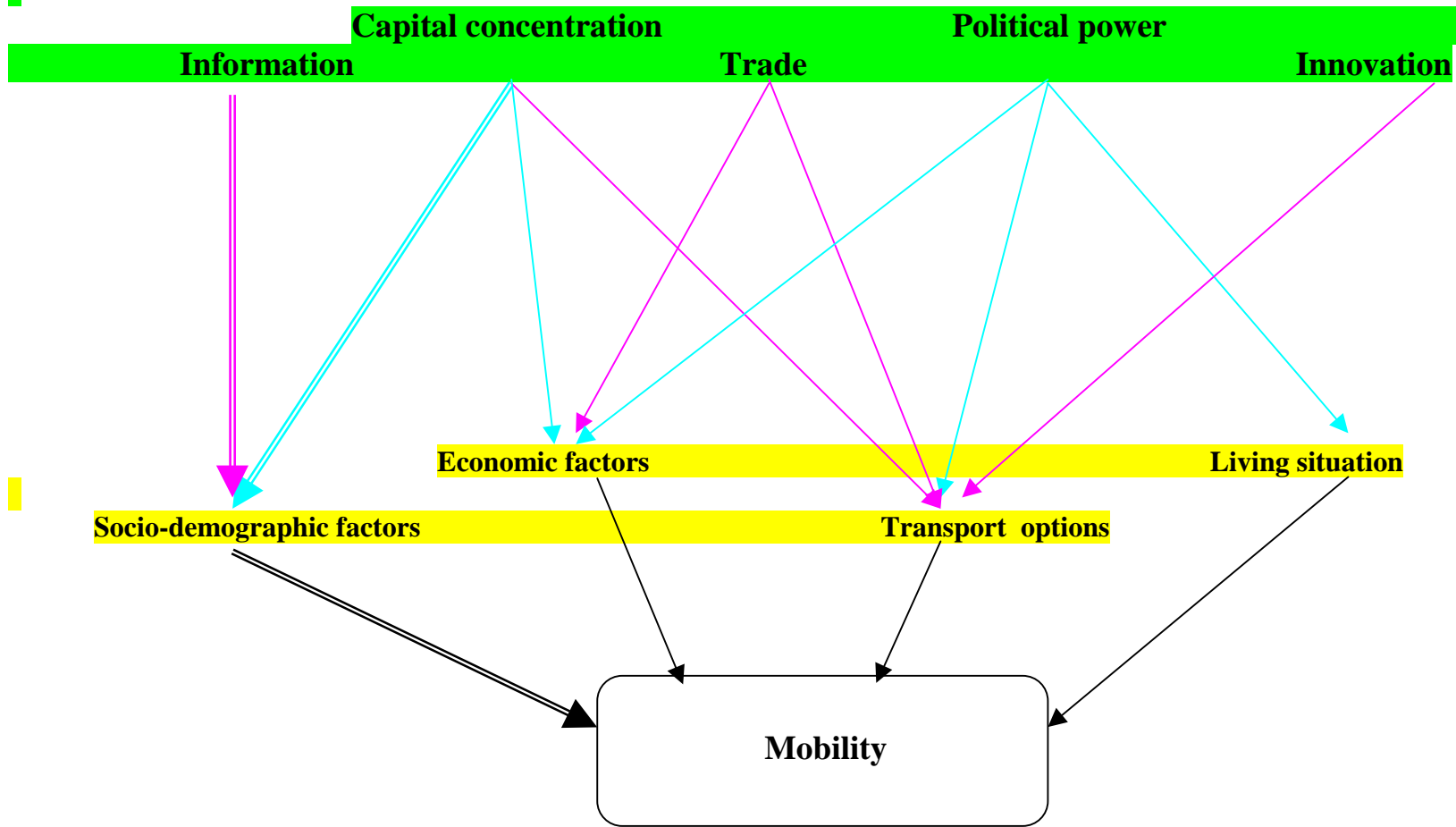
**FIGURE 5: GLOBALIZATION AND THE SUSTAINABLE CONSUMPTION OF FOOD: RESEARCH NEEDS**



Globalization characteristics  
Determinants of food consumption patterns

Globalization influences on the determinants of food consumption to be researched

**FIGURE 6: GLOBALIZATION AND THE SUSTAINABLE CONSUMPTION OF MOBILITY**



Globalization characteristics  
Determinants of mobility patterns

Influences of globalization on the determinants of mobility consumption found in literature  
Additional potential influences

## IV.2. Globalization and the Sustainable Consumption of Mobility

Figure 6 depicts the influences of globalization on the sustainability of mobility consumption. The figure is organized similar to Figure 4 with the only difference that the blue arrows indicate relationships that we consider to be potentially important in addition to those already discussed (pink arrows). The elements of globalization are the same. The determinants of the sustainability of mobility consumption (yellow), of course, differ to some extent. Again, the determinants include the economic factors of disposable incomes, prices, and expenditures patterns. The relevant socio-demographic factors include gender, age, education, household size, lifestyle and leisure behavior, environmental attitudes, work patterns, as well as car ownership. The determinants summarized as "living situation" refer to dwelling characteristics and urban form, such as building density, and location in urban centers versus peripheral neighborhoods or rural areas. Finally, transport options and infrastructure such as the efficiency and availability of public transport form the fourth important cluster of determinants of the sustainability of household mobility.

Recent discussions address only a limited number of influences of globalization on these determinants of mobility. The global diffusion of information and values via the media clearly has implications for socio-demographic determinants of the sustainability of mobility consumption. The media influence consumers' perceptions of the appropriate mode of travel, especially desirable cars, but also of desirable living situations. Trends to move into the countryside or ideas of the "appropriate" living space frequently are a function of the spread of information and values through global media. This role of the diffusion of information also reflects the power of capital concentration, which dominate global marketing and commercial media time. Finally, the global diffusion of information influences holiday travel to distant destinations.

Again, numerous indirect influences of globalization exist, as well, which affect the sustainability of household mobility through their impact on the sustainability of products and services offered to households. In the globalization debate, for instance, the influence of trade on economic factors is a topic of debate. Besides the question of how trade affects incomes, the pressure to deregulate due to trade liberalization is affecting the prices of transport options. Recent pressures to decrease subsidies for public transport are paralleled by demands for the introduction of private competition. Similarly, the deregulation of the airline market has affected the costs of air travel. Trade liberalization and the associated deregulation pressures do not only affect prices, however. National subsidies for public transport, for instance, may also determine the general availability of transport options as well.

The acceleration of technological innovation due to globalization affects transport options, of course. Especially, since one of the most influential determinants of mobility choices is "how quickly one can move around," technological innovation is of crucial importance. Currently, the technological innovation most prevalent is in the area of individual private transport and fast long distance transport, as this where

money can be made. In addition, technological developments in other areas such as the multi-media evolution are likely to change physical mobility needs.

Besides these relationships, we also perceive a potential effect of globalization on the sustainability of mobility consumption through the impact of shifts in political power on living situation and the impact of capital concentration on economic factors and transport options. Thus, shifts in political power may influence the extent to which sustainability characteristics rather than private economic interests will be considered in urban design.

The influence of capital concentration on economic factors is similar to that discussed for food, in that capital concentration changes the income distribution within and between countries. Furthermore, it has implications for the prices for car and air travel. Likewise, capital concentration may affect transport options in general, especially international air travel and to some extent car mobility.

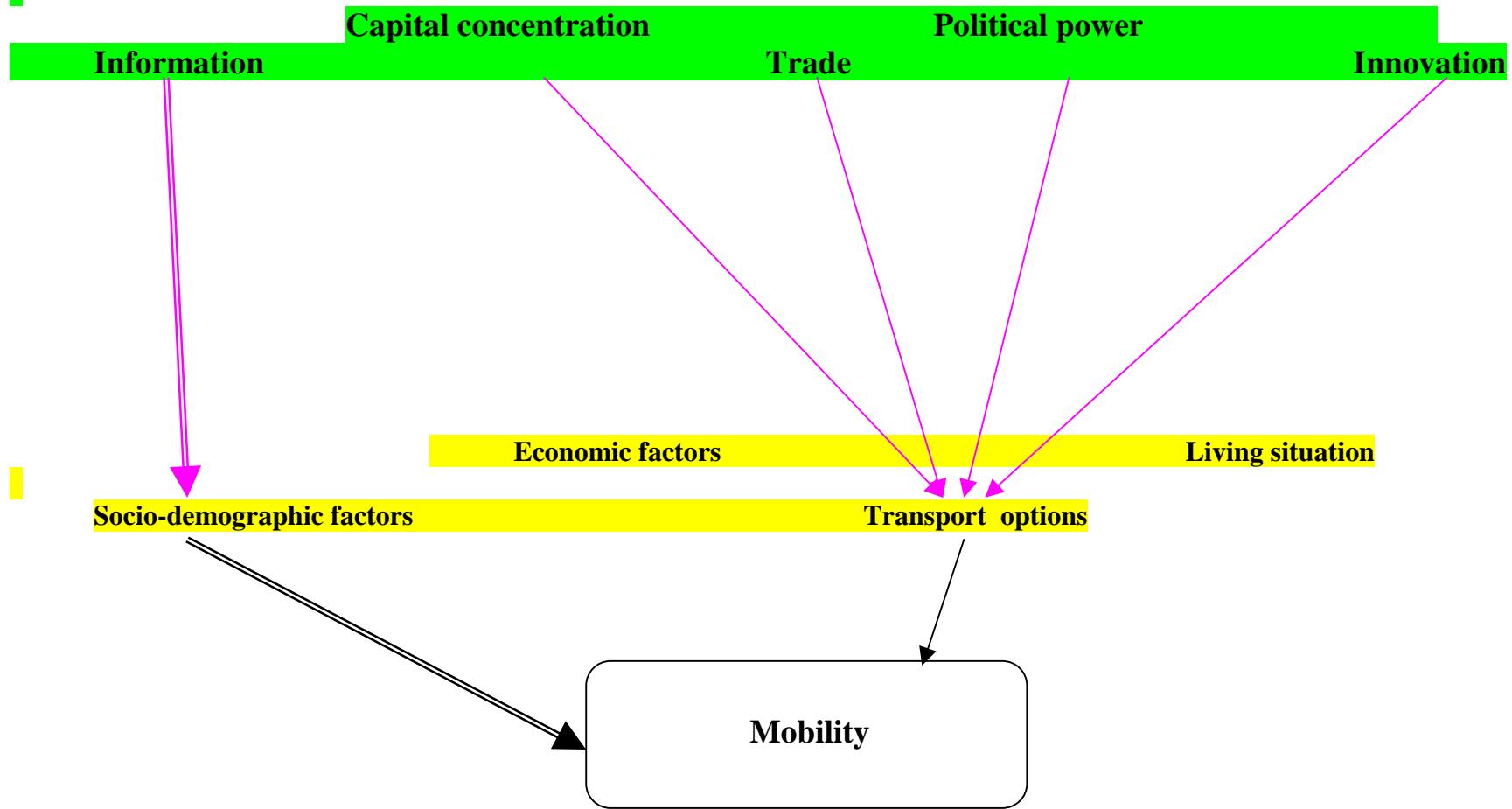
It is also important to note that the influences of trade discussed above can also be attributed to shifts in political power. Here, the interaction between these two elements of globalization is very clear. Just as trade liberalization is related to demands for deregulation and the abandonment of subsidies for different modes of transport, the shift in political power underlines the shrinking ability of governments to protect public transport systems.<sup>38</sup> Thus, the shift in political power also affects economic factors and transport options.

For the selection of the most important relationships between globalization and the sustainability of household mobility, again, both direct and indirect influences need to be considered. Direct influences might be even more important for this consumption cluster than for food and energy consumption, since the dramatic growth in household mobility is predominantly a function of socio-demographic changes. Among these various indirect influences of globalization on the sustainability of mobility consumption, the effects on transport options appear the most relevant for future research. According to our analysis, transport options are affected by capital concentration, shifts in political power, technological innovation and trade. The exact nature of these relationships, however, has yet to be empirically specified. Figure 7 depicts the direct and indirect impacts of globalization on the sustainability of mobility future research needs to analyze.

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<sup>38</sup> The same applies to private airlines by the way, which, of course. From the perspective of sustainable consumption, the abandonment of such protection might be desirable, of course.

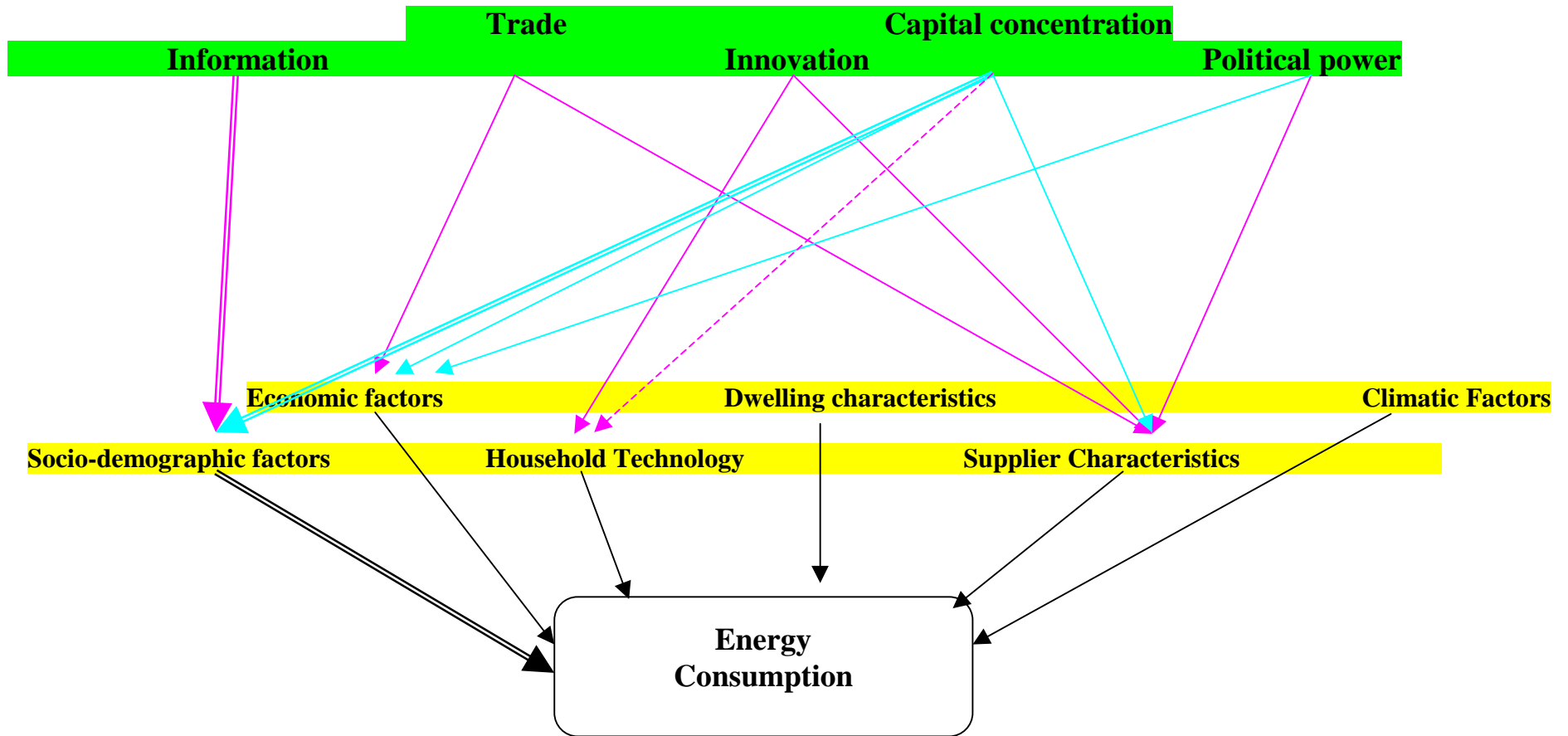
**FIGURE 7: GLOBALIZATION AND THE SUSTAINABLE CONSUMPTION OF MOBILITY - RESEARCH NEEDS**



Globalization characteristics  
Determinants of mobility consumption patterns

Globalization influences on the determinants of mobility consumption to be studied

**FIGURE 8: GLOBALIZATION AND THE SUSTAINABLE CONSUMPTION OF ENERGY**



Globalization characteristics  
 Determinants of energy consumption patterns

Influences of globalization on the determinants of energy consumption found in literature  
 Additional potential influences

### **IV.3. Globalization and the Sustainable Consumption of Energy**

For the energy consumption cluster, our paper follows the same procedure as for the clusters of food and mobility. Figure 8 presents the initial assessment of the influences of globalization on the determinants of energy consumption. The relevant determinants of energy consumption are socio-demographic factors, economic factors, dwelling characteristics, household technology, supplier characteristics, and climatic factors.

Socio-demographic factors here include household size and structure, age, behavioral factors and lifestyle, attitudes, as well as knowledge and information. Economic factors, in turn, include disposable income, prices, and spending patterns, but also the availability of credit and ownership structures. Dwelling characteristics refer to per capita floor space, dwelling type and age, its structural surroundings, insulation and governmental construction and energy efficiency regulations, and the penetration with household appliances. Supplier characteristics are important because of questions of technological efficiency and energy sources, and household technology matters in terms of the energy efficiency of household appliances. Finally, climatic factors influence household energy consumption.

In the energy cluster, a direct influence of globalization on the determinants of the sustainability of energy consumption exists due to the implications of the diffusion of information and values again. This spreading of information and values affects people's concepts of adequate living space, i.e. the appropriate size of the house or flat, or the "need" for a waterbed or swimming pool, as well as the desirable household structure. Furthermore, consumers' choices of electricity sources may be influenced by information flows and exchanges about values. Although a recent development, increasing liberalization of energy markets within Europe (as in the United States), also leads to a stronger relationship between capital concentration and socio-demographic factors. Since consumers now can choose their energy suppliers in many countries, the large electricity corporations are investing substantial amounts in advertising. Thus, again, consumers receive selected information from large corporations trying to influence them, while small suppliers have a hard time competing. Marketing and advertising may not be as important in the energy sector yet as it is in the food sector or for car producers, but it certainly has begun to enter the game.

In terms of indirect influences, which influence the sustainability of household energy consumption via the spectrum of consumption choices available to households, the literature identifies the influence of trade on supplier characteristics, for example due to the recent liberalization of energy markets, the implications of trade for the sustainability of energy production are being widely discussed. Trade as well as the ongoing shift in political power also influences supplier characteristics in terms of efficiency standards or demand-side management requirements. The importance of shifts in political power here is signified by the role and membership of the World Energy Council.

Both trade and capital concentration affect economic factors. Trade influences the prices of energy, of course. This is the general relationship between trade and product prices as discussed in the literature. Capital concentration, the role of which does not receive as much attention in the academic energy literature, affects income levels and distributions as discussed above, and also has the potential to affect prices. As large corporations have more market power and can also balance different cost structures within their firms, they are more flexible in their price policies than small suppliers.

The acceleration of technological innovation affects technology on both the supplier and the consumer side, of course. Thus, the relationships between innovation and household technology on the one side and innovation and supplier characteristics on the other need to be considered. While the supplier may be more immediately influenced by technological innovation, household appliances and end use technologies eventually adjust to technological change as well.

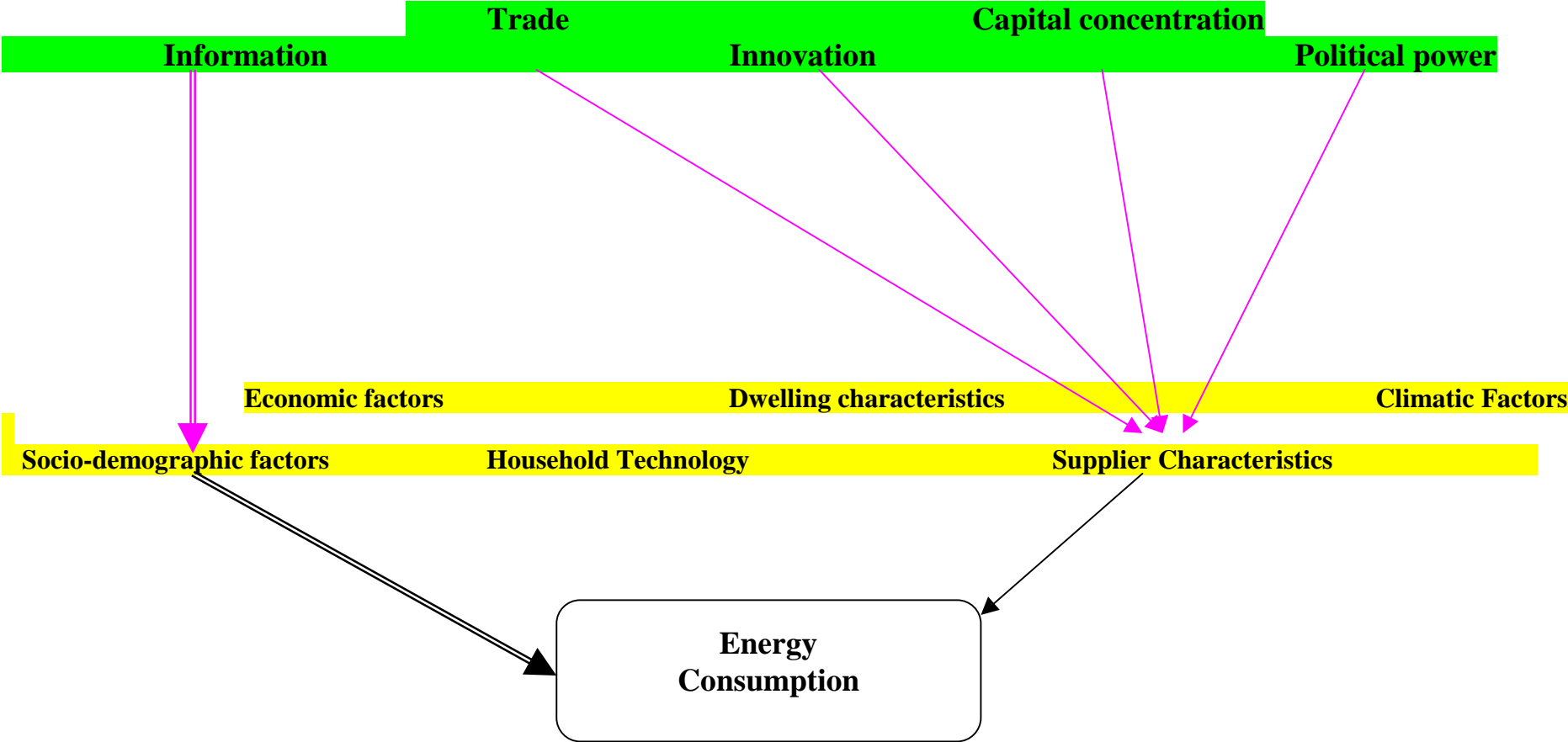
In addition to the above relationships, the impact of capital concentration on supplier characteristics needs to be considered. Big corporations are at a very different position regarding technological choices. Moreover, they can foster or hinder the development of different sources of energy. Thus, the entering of big corporations like Siemens and especially BP Amoco in the production of solar cells created a substantial impetus for solar technology.

Moreover, as discussed above, shifts in political power have an impact on economic factors. This is particularly clear in the energy sector where governments have traditionally used taxes and subsidies to pursue the chosen energy policy. Furthermore, governments frequently have used policy means to ensure a basic energy supply for their populations. A reduction in the influence of national governments, and the increasing influence of oil, coal, nuclear, and electricity businesses in (international) energy policy design, therefore, is likely to have significant influences on the sustainability of energy consumption.

Based on this analysis, again, it become clear that studies of the relationship between globalization and the sustainability of energy consumption should not neglect indirect influences. Among those, supplier characteristics appear to be the determinant most influenced by globalization. Besides the influence of information and values on household consumption choices, we suggest that future research should assess on the influence of trade, capital concentration, shifts in political power, and innovation on supplier characteristics. With the increasing liberalization of energy markets supplier characteristics are only going to become more important.

Figure 9 depicts the relevant relationships between globalization and the sustainability of energy consumption future research needs to focus on.

**FIGURE 9: GLOBALIZATION AND THE SUSTAINABLE CONSUMPTION OF ENERGY - RESEARCH NEEDS**



Globalization characteristics  
Determinants of energy consumption patterns

Globalization influences on the determinants of energy consumption - to be researched

Besides the relationships and determinants identified as the appropriate focus of future research, it is noteworthy that the influence of globalization on economic factors plays an important role for all of the consumption clusters as well. Trade, capital concentration, and shifts in political power influence income levels and distributions as well as prices. Income and consumer prices, in turn, almost always are crucial determinants of consumption behavior (Fuchs 1999). Due to time constraints, however, we did not analyze the role of economic factors further. The influence of globalization on these economic factors is too large and controversial a field to receive adequate treatment in the context of this paper.

Our readers may also be surprised that socio-demographic factors have not been identified as the unequivocally most pressing factors for future research. Since most studies of sustainable consumption are by social scientists, the latter might feel that the most important factors are being ignored. However, the interesting finding of this analysis is that other factors and relationships may be as important as socio-demographic variables and that the predominant focus on socio-demographic variables by social scientists leads to a neglect of the importance of these other factors. The importance of other factors besides education, attitudes, and values is supported by empirical research such as Gatersleben's work. Gatersleben (1999, 2000), after all, emphasizes the central role of income, and the unwillingness of the majority of individuals to cut back on consumption that they have gotten used to. Moreover, a shift of attention to other determinants of the sustainability of consumption besides socio-demographic factors relieves consumers of some of the pressure and responsibility. Instead, the shift suggests a further targeting of the supply side to create market structures conducive to the sustainability of consumption pattern.

## **V. Measuring the Influence of Globalization**

How can one measure the influence of globalization on the sustainability of consumption in the three consumption clusters, food, mobility, and energy? Indeed, how does one measure globalization on the one side and the sustainability of consumption on the other? Where do we find the necessary data, and/or how can we go about obtaining them?

Let us start with the easier one of these questions. Indicators for the sustainability of consumption in the three consumption clusters exist in the literature. We have gathered those indicators and highlight the most useful ones among them.

Indicators of globalization also exist to some extent. Economic indicators such as trade have been gathered for years. Yet, even for those elements of globalization for which some indicators exist, they tend to be incomplete for our purposes. We are not only interested in trade volumes, for instance, but also in legal changes in trade law and the pressures for deregulation associated with trade liberalization. For other elements of globalization identified in our discussion no indicators exist to our knowledge. Thus, indicators for globalization, at least in our context, require some further discussion and methodological development.

### **V.1. Indicators of the Sustainability of Consumption**

As pointed out above, scholars have developed various indicators to assess the sustainability of food, mobility, and energy consumption. These indicators range from the environmental impact of a country to the impact of households to per capita impacts. Most of the indicators assess environmental burden in terms of energy use or greenhouse gas emissions. Others focus on rates of possession and use of certain equipment. A list of the various indicators is presented below. In general, we noted that studies frequently are not sufficiently explicit about their dependent variables and their operationalization. We often found it difficult to figure out whether a study measuring "per capita energy consumption" used the total energy consumption of a country or the energy consumption of private households as a basis, for instance. Citations of research in the list of indicators below, therefore, reflect our best understanding of the indicator choices by the respective studies.

**TABLE I: EXISTING INDICATORS OF THE SUSTAINABILITY OF CONSUMPTION**

<b>Food-Indicators</b>	<b>Source</b>
Emissions (per meals), expressed in g CO2 equivalents, including non-energy related greenhouse gases methane, nitrous oxides, hydrofluorcarbons and fluorcarbons	Carlsson-Kanyama 1998
greenhouse gas emissions, CO2, CH4, and N2O, related to Dutch household food consumption	Kramer et al. 1998
greenhouse gas emissions (CO2, CH4, N2O) related to Dutch agricultural crop production using a life cycle analysis	Kramer et al. 1999
Daily per capita caloric intake	(UN-DESA 1998)
Weighted average source points (WASP) and Weighted average source distance (WASD)	Carlsson-Kanyama 1997
Food transport	(Lorek 2001)
Organic products (% market share of food products)	(Lorek 2001)
Meat consumption	(Lorek 2001)
Per capita consumption of meat and dairy products	(UN-DESA 1998)
Market share of more sustainably produced food	(UN-DESA 1998)
Per capita consumption of processed foods	(UN-DESA 1998)
per capita energy use for food consumption by product categories	Dürrenberger and Patzel 1999

<b>Mobility-Indicators</b>	<b>Source</b>	<b><sup>39</sup></b>
Energy consumption in connection with mobility	Hoyer and Holden 1999	A
Per capita fuel consumption	Hoyer and Holden 1999	A
Possession and use of cars	Gatersleben&Vlek 1998, Gatersleben 1999, Linderhof & Kooreman 1998,	C
Passengers per car	Carlsson-Kayama et al	C
Number of passenger cars	(Lorek 2001)	C
Average energy consumption of new cars	(Lorek 2001)	C
Passenger car stocks in % equipment w. catalytic converters	(OECD 1999)	C
Passenger car stocks in % of cars older than 10 years	(OECD 1999)	C
Number of passenger cars per capita	(OECD 1999)	C
Road traffic by passenger cars in vehicle-km	(OECD 1999)	D
Leisure travel as percentage of total passenger-km	(OECD 1999)	D
Transport distances for leisure and vacation	(Lorek 2001)	D
Household consumption expenditures on recreation	(OECD 1999)	E
Fuel price taxation	(UN-DESA 1998)	E
Revenues form tourism/recreation as % of GDP	(UN-DESA 1998)	E
Spending on recreation as share of disposable income	(UN-DESA 1998)	E

<sup>39</sup> Grouping: A= Allgemein, C=car, D= distance, E= economic, MS= modal split, O= output, T= tourism



<b>Mobility-Indicators cont.</b>	<b>Source</b>	
Energy consumption by transport by mode and type of fuel	(OECD 1999)	MS
MJ per person km (km traveled by mode of transportation, energy consumption by vehicle)	Carlsson-Kanyama and Linden 1999	MS
Share of public transport in % of total mode	(OECD 1999)	MS
Modes of transport for shopping and recreation purposes	(Lorek 2001)	MS
Per capita car miles travelled	Hoyer and Holden 1999	MS
Per capita air miles travelled	Hoyer and Holden 1999	MS
Proportion of travel by public transport	Hoyer and Holden 1999	MS
Per capita energy consumption for car/air, and bus mileage	Dürrenberger and Patzel 1999	MS
Modes of transport for vocational purposes	(Lorek 2001)	MS
Share of air travel form holiday mobility	(Lorek 1999)	MS
Per capita emission of CO2	Carlsson-Kayama, Thelander, and Linden 1999	O
Air emission from passenger transport	(OECD 1999)	O
International tourist receipts an real term	(OECD 1999)	T
Share of alternative tourism over all tourism	(UN-DESA 1998)	T
Time paid on leisure, paid and unpaid work, and travelling	(UN-DESA 1998)	

<b>Energy-Indicators</b>	<b>Source</b>
Energy intensity	Ropke 1999
Intensity of energy use	(UN-DESA 1998)
Annual energy consumption (per capita)	(UN-DPCSD 1996), (UN-DESA 1998), Dürrenberger and Patzel 1999,
Energy prices	(UN-DESA 1998)
Share of consumption of renewable energy resources	(UN-DPCSD 1996)
Share of renewable energy in total energy consumption	(UN-DESA 1998)
Energy consumption by households	Van der Wal and Noorman 1998, Wilting and Biesiot 1998, Van der Wal 1999
Residential energy use per household	(UN-DESA 1998)
Energy consumption for heating per square meter of living area	Hoyer and Holden 1999, Dürrenberger and Patzel 1999
Energy consumption for heating	(Lorek 2001)
Heating energy consumption	(Lorek 2001)
Possession rates of household appliances	Linderhof and Kooreman 1998, Gatersleben and Vlek 1998, Gatersleben 1999
Use of household appliances	Linderhof and Kooreman 1998, Gatersleben and Vlek 1998, Gatersleben 1999
Air emission from residential energy use	(OECD 1999)
CO2 emissions by households	Van der Wal, Noorman 1998, Van der Wal 1999, Munksgaard et al.1999,

The above list demonstrates that a vast variety of indicators of the sustainability of food, mobility, and energy consumption exists. All of these indicators are important in the academic discussion. Especially, the sophisticated indicators developed for the sustainability of food products and meals by Kramer et al. (1998) and Carlsson-Kanyama (1999) allow comprehensive assessments of the environmental implications of the consumption of specific products and meals. In order to compare the actual impact of a particular food product with its perceived impact in the popular discussion or the particular burdens imposed at a specific stage in the supply chain, for instance, scientific in-depth studies of the sustainability of individual food products are necessary. Likewise, per capita emissions for mobility purposes is a useful indicator for one aspect of the actual environmental burden imposed by mobility consumption.

For the practical and political discussion, however, we consider these indicators too complicated to be politically relevant. In order to be applicable and expressive, such indicators need to be relatively simple and clear (for a similar perspective see Carlsson-Kanyama 1999). From the above list, we have therefore selected the indicators listed below as the most useful for our purposes. As selection criteria, we asked that the indicators

- 1) should relate directly to the micro level, i.e. household consumption. Therefore, indicators like “annual energy consumption per capita” which include industry consumption and other aspects of energy use are not chosen.
- 2) do not measure ecological output, as these would be correlated with input factors (Lorek 1999). The factors behind growing output, however, are measured more precisely by behavioral indicators (air emission versus modes of transport).
- 3) do not just measure general economic development, since it is not clear which direction of changes in these indicators would indicate a move towards sustainability. Is increasing spending for vacation travel good or bad?

Based on the above criteria, we think that the indicators below are superior politically relevant indicators of sustainable consumption for the consumption clusters food, mobility, and energy.

<b>Selected Indicators</b>
<b>Food</b>
1. Meat consumption
2. Market share of organic food
3. Per capita consumption of processed foods <sup>40</sup>
<b>Mobility</b>
4. Energy consumption for transport by mode, type of fuel and purpose
5. Transport distances by purpose
6. Share of air travel for holiday mobility
7. Number of passenger cars per capita
<b>Energy</b>
8. Share of renewable energy sources in household energy consumption
8. Energy consumption for heating per square meter of living area
9. Residential energy use per household by purpose

Our reasons for this evaluation are as follows. The food indicators address the three (rough) determinants of food sustainability on which general agreement exists. While high levels of meat consumption *ceteris paribus* are an indicator of the unsustainability of food consumption patterns, a large market share of organic food would reflect developments towards more sustainable consumption patterns. While the sustainability characteristics of processed food are slightly more controversial, scholars also appear to be inclined to argue that higher levels of per capita consumption of processed food indicate the deteriorating sustainability of household food consumption. Therefore, we have included indicator 3 as a potential third choice.

The strength of the mobility indicators originates in their ability to combine the different relevant aspects of mobility behavior, such as distance, mode, energy efficiency, and purpose. Air travel for holiday mobility is an important indicator because it reflects developments in the sector of mobility that shows the fastest growth. Moreover, we consider the number of passenger cars per capita to be a useful measure of the sustainability of consumption, because empirical studies have shown that car ownership is one of the most important determinants of car use. Environmental attitudes frequently translate into the decision to own or not own a car. Once individuals own a car, however, they are likely to use it.

Finally, we consider the selected indicators of energy consumption to be particularly useful because of their focus and ability to allow differentiated assessments. The share of renewable energy sources in household energy consumption relates to both the environmental burden imposed by the production of the energy consumed by household as well as to the decrease of finite resources. Energy consumption for

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<sup>40</sup> Future research needs to develop an indicator that combines quantitative with qualitative considerations for processed foods.

heating purposes per square meter of living area captures the biggest share of household energy consumption. Residential energy use per household by purpose, in turn, provides insight into the share of energy use for the different household activities such as cooking, washing, and leisure behavior. The latter two indicators are placed in parentheses, however, since we do not consider them as much under the influence of globalization as the others.

Based on the above analysis, we are quite satisfied that well-performing indicators of the sustainability of food, mobility, and energy consumption exist. The same, unfortunately, cannot be said for globalization.

## **V.2. Indicators of Globalization**

The elements of globalization whose development and influence on determinants of the sustainability of consumption we would like future research to assess are trade, capital concentration, the acceleration of technological innovation, and shifts in political power, as well as the diffusion of information and values. At first glance, indicators for some of these elements appear to exist and be well established. Looking more closely, however, it becomes clear that the existing indicators capture only a small part of the actual dimensions of the elements and the dynamics associated with them. Furthermore, most of these indicators are highly controversial both in academic and political discussions and books have been written about the questions of their usefulness and reliability. We can only provide a brief overview of some of the possible methodological approaches and considerations here. Future research will need to conduct in-depth assessments of methodological considerations associated with the specific element of globalization relevant for the purpose of the given study.

As pointed out above, the existing indicators for trade are plentiful and suitable at first glance, but leave a lot to be desired when looked at more closely. Common trade measures are volume of imports and/or exports, terms of trade, or measures of openness of the economy (volume of imports and export/GDP). While these indicators can provide some insight into developments in the overall volume of trade or the vulnerability of an economy to developments in world markets, they fail to assess the more subtle political dynamics associated with the globalization of trade. These indicators, for instance, fail completely in the assessment of deregulation pressures associated with trade liberalization.

A better assessment of trade as an influence on the sustainability of consumption, therefore, would need to try to capture such dynamics. Some of the movements to deregulate can be directly linked to international trade laws. Given the impossibility of knowing the exact content of thousands of trade regulations, for example by the WTO, this fact highlights the need for studies of the influence of globalization on the sustainability of consumption to adopt a product specific focus. Other pressures for deregulation, however, are political rather than legal, and are even more difficult to determine empirically. Here, future research will need to rely on policy network analysis, including expert interviews with politicians, trade representatives, and members of the relevant business sectors.

With respect to capital concentration, the existing indicators appear to be more useful for our purposes. Measures of market shares of firms or the common market share of a number of firms exist and are widely cited. In order to capture the actual influence of capital concentration in a market or country, both international and national market shares should be calculated. Capital concentration has more subtle sides as well though, which cannot be as easily expressed in numbers. The power of corporations is not only a function of their market share for a given product at a given stage of the supply chain, but also influenced by the combination of business activities within a corporation or a corporation's role over longer stretches of the supply chain. These aspects need to be taken into account when assessing the overall influence of capital concentration.

Shifts in political power can only be approximated or assessed indirectly. Membership in international political bodies is, of course, one indicator of the distribution of power, which, however, has to be complemented with assessments of the actual rules of the game in terms of agenda setting powers or voting practices, for example. It is also possible to compare the number and growth in international and national "hard law" and "soft law" created by business or civil society organizations. Quantitative data, however, only provide part of the picture. It is also necessary to look at the degree and extent of compliance with such treaties or standards, as well as their role in the political discussion. For a comprehensive assessment of shifts in political power, therefore, expert interviews with representatives from international and national governmental organizations, business, and the relevant NGOs are absolutely necessary.

The acceleration of technological information due to globalization appears to be difficult to measure in our view. Again, neither of us has an engineering background, so techniques of measuring such dynamics may well exist that we are not aware of. Possibly, one could rely on investments in R&D or annual patents to approximate the speed of technological innovation. In the absence of such methods, we would utilize expert interviews in this case as well.

Finally, the implications of the global diffusion of information and values for the sustainability of consumption may be similarly more difficult to assess, but this again may be a function of our particular expertise. Volumes of information flows can be measured in one way or another. Furthermore, the content of information flows can be assessed (with considerable investments in time and energy) by content analysis. Data on commercial time, its sponsors and costs provide an indirect indication of content as well, and information on access to TV or the internet and time spent watching TV or on the internet is being collected widely. However, the more subtle context of information flows, especially the diffusion of values, is more difficult to empirically determine in our view. Here, scholars of sociology and psychology may be able to offer some methodological suggestions.

In sum, empirical assessment of developments in the elements of globalization requires further methodological inquiries. With such inquiries, however, we are confident that empirical studies of the dynamics associated with these elements are feasible and useful for determining the influence of globalization on the sustainability of consumption.

## **VI. Conclusion: Assessing the Influence of Globalization on the Sustainability of Consumption**

Our original intention, when starting to write this paper, had been to arrive at survey questions allowing us to empirically determine the influence of globalization on the sustainability of consumption. During the course of our analysis, however, we had to change direction. Having determined that socio-demographic factors are probably not the only and often not even the primary path through which globalization influences the sustainability of household consumption, we realized that the appropriate empirical methods would not just be surveys of households. Survey questions offer substantial insights into the influence of socio-demographic factors such as age, education, and lifestyle on consumption choices. Likewise, they can be helpful with assessing the influence of economic factors such as disposable income, and, to some extent, prices.

Many of the influences of globalization on the sustainability of consumption that our analysis determined to be the most relevant for future research, however, take place before the household makes its decision. Here, economic and political data are most important. These can derive from statistical collections of "hard" economic data, but, as pointed out above, also have to be gathered through expert interviews. The following discussion, then, identifies research questions for assessing the influence of the elements of globalization on the identified relevant determinants of food, mobility, and energy consumption. In our presentation, we concentrate on questions allowing an assessment of the indirect influences of globalization on the sustainability of household consumption, due to the lack of attention the latter receive in the literature. These indirect influences should by no means be neglected in studies of sustainable household consumption, since in the end, they do have an important effect on the sustainability of household consumption due to their impact on the existing spectrum of consumption choices for households.

In the case of the consumption cluster of food, we found that globalization strongly influences agricultural production and other stages of the product chain. The relevant aspects of agricultural production concern primarily the intensity of cultivation, in terms of the use of fertilizers and pesticides, the use of animal food stuffs, the density of animals, greenhouse production, and the farm structure (as an influence on the use of chemical inputs and heavy machinery). Based on the environmental burdens associated with these aspects, the two general recommendations for increasing the sustainability of food consumption are (still) to increase per capita shares of the consumption of organic food products and to reduce meat consumption.<sup>41</sup> Our selected indicators of the sustainability of food consumption also highlight these aspects.

In consequence, two central questions for future research are:

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<sup>41</sup> We ignore here the distance versus greenhouse production complexities that are currently being analyzed in the empirical literature. As long as no agreement on the associated ecological trade-offs exists, we consider it too early to analyze the influence of globalization on these factors.

1. How can the influences of globalization be structured and used to increase the share of organic food products consumed by households?
2. How can the influences of globalization be structured and used to reduce levels of meat consumption?

For the increase in the share of organic food consumption, some of the interesting sub-questions in a respective study would be:

with respect to the influence of trade:

1. Which trade laws and processes inhibit an increasing market share of organic production?
2. Which political mechanisms exist to modify trade laws in favor of organic production?

with respect to the influence of capital concentration:

3. Which structural or cultural factors inhibit an increasing share of organic production in the context of agro-business corporations and how can they be overcome?
4. If positive examples of the influence of capital concentration on organic production exist, how can they be supported and transferred to other cases?

with respect to the influence of shifts in political capacity:

5. Which power constellations inhibit an increasing share of organic production?
6. How can political coalitions be built and used to foster an increase in the share of organic production?

with respect to the influence of the acceleration of technological innovation:

7. Which current technological developments promise to induce an increase in the share of organic production? How can political means be used to support the global diffusion of these developments?

Finally, any analysis in this field will have to inquire into the role of households with respect to the above dynamics. How can households be involved in strategies to foster the positive impacts of globalization on the sustainability of their consumption choices? To what extent are policy measures to modify the negative impact of globalization on the sustainability of household consumption acceptable to households?

An important aspect of the suggested approach is that it goes beyond the traditional discussion of how to prevent the negative influences of globalization (i.e. shrimp-turtle or dolphin-tuna trade-offs), to specifically and explicitly consider the positive potential globalization holds.

With respect to the reduction of levels of meat consumption, the situation may actually be more difficult than with respect to the share of organic produce consumption. A reduction in sales is difficult to integrate with the interest of agro-business to put it nicely. Still, research needs to study the influences of capital

concentration, trade, shifts in political power and technological innovation on the sustainability of meat production to identify promising intervention points for political strategies.

In terms of the supply chain, we identified, for instance, the per capita consumption of processed food as an important indicator. As pointed out above, this is a purely quantitative indicator that ideally needs to be supplemented by a qualitative component. Here future research needs to inquire how globalization can be utilized to reduce per capita consumption of processed foods (or improved the quality of processed foods consumed). Likewise, obstacles to such a change in consumption patterns due to globalization need to be assessed.

For mobility, the core research questions relate to public transport. Agreement exists that a reduction in private mobility and a shift to public transport are necessary for the development of more sustainable consumption patterns. Thus, the combination of modes of transport with distances traveled provides an important sustainability indicator. As our analysis has shown, transport options in turn are highly influenced by globalization. The forces of globalization currently affect mobility patterns dominantly in favor of private car mobility and high speed long distance travel. Local or regional commuter systems, furthermore, are increasingly under pressure to adapt to market mechanisms. Being economically "efficient" becomes more important than the mobility needs of the population.

Finally, for energy the core question has to concern the influence of globalization on supplier characteristics. Due to the increasing liberalization of energy markets, increasing the market share of renewable energy is particularly important. Future research, therefore, should concentrate on the influences of capital concentration, technological innovation, shifts in political power, and trade on the consumption of energy from renewable sources. A particular interesting question relates to the implications of capital concentration for the market share of renewable energy, since, as pointed out above, some large corporations have made substantial investments in renewable energy. Overall, however, the energy market in Europe is still dominated by corporations with sunk investments in fossil fuel technology and nuclear power plants while providers of wind and solar energy tend to be smaller businesses. In Europe, the core question is how to structure and use the regionalization (rather than globalization) of the energy market in order to foster more sustainable supplier characteristics.

In concluding, let us emphasize one point. The lack of improvements in the sustainability of consumption and the paralysis scholars and practitioners feel in the face of globalization should come as no surprise. As our analysis has shown, many of the consumption areas identified as most in need of improvement are those most strongly influenced by globalization. In consequence, political and social decision-makers need to "think global" when designing policies for sustainable consumption. The elements of globalization identified in this analysis cannot be controlled and modified by one government. Multilateral if not global strategies that directly address those elements are needed. Targeting the influence of globalization on the sustainability of food, mobility, and energy consumption thus goes beyond the influence of national and local policies for sustainable household consumption and

creates a completely new set of political challenges for sustainable consumption policies.

The flip side of the coin relates to the question of the feasibility of national or local political strategies to pursue sustainable consumption in general. Are such strategies still feasible, or are multilateral if not global political approaches uniformly necessary? A separate study will have to inquire into the research foundations for answering that question. The analysis presented in this paper demonstrates that particular multilateral or global strategies may be feasible and productive.

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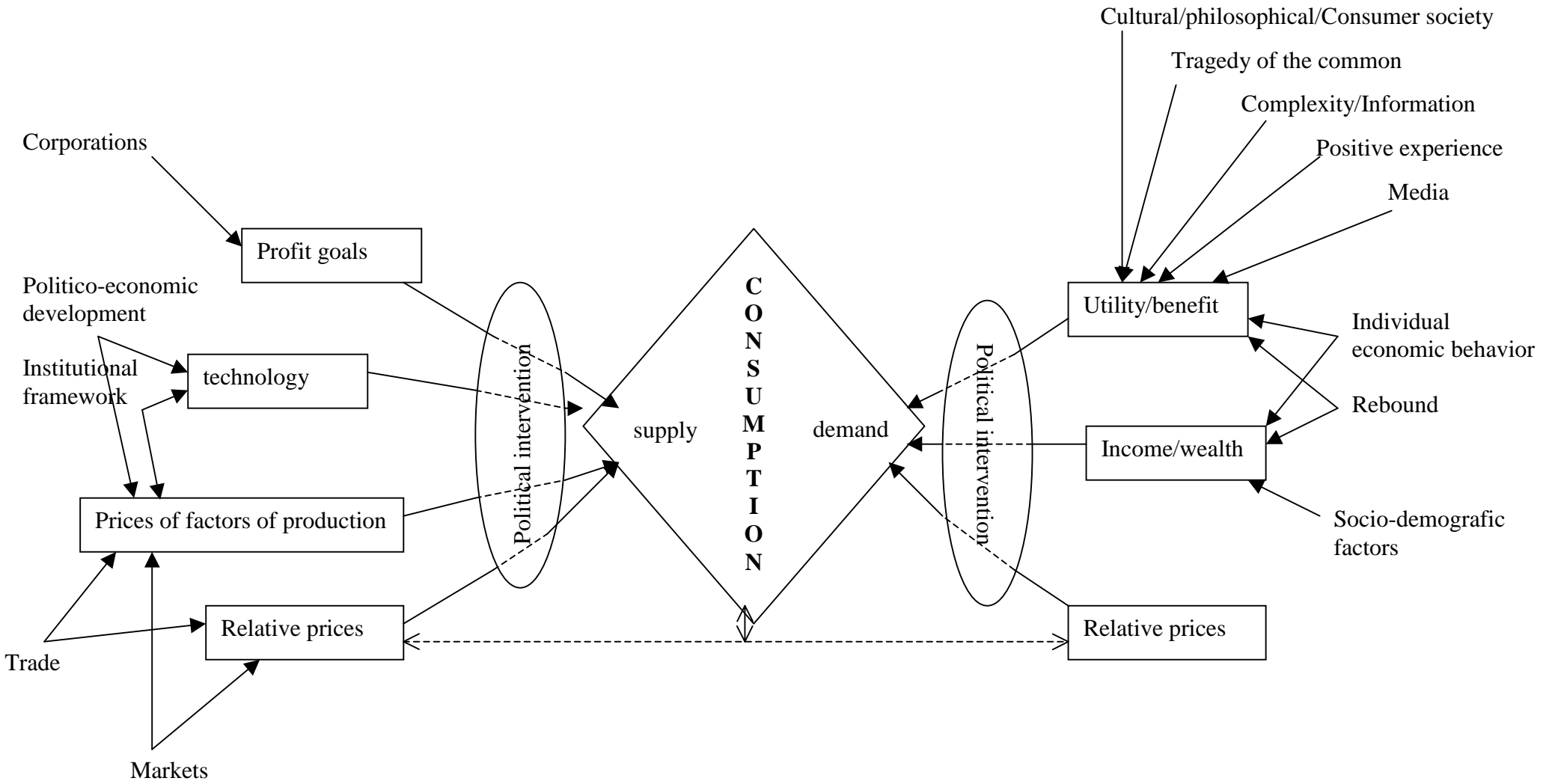
## VIII. Appendix

### **Determinants of (Sustainable) Consumption in the General Sustainable Consumption Literature**

Other determinants of consumption patterns identified in the general sustainable consumption literature will only be briefly mentioned here. These determinants are only important in this context, in so far future research may utilize them to identify additional points of influence of globalization. Therefore, the following discussion provides only a very short overview.

The determinants of consumption patterns identified in the sustainable consumption literature can be categorized as biological/psychological factors, sociological factors, technology, demographic factors, and politico-economic factors. Figure 10 depicts the influence of these factors on consumption. The graph is organized as follows: In the core diamond, consumption is depicted as the interaction of supply and demand. With this presentation, the graph rejects the notion of absolute consumer sovereignty, i.e. of the uni-directional influence of demand on supply. Rather the graph aims to emphasize the responsibility of both supply and demand in determining (the sustainability of) consumption. In the inner circle around the consumption diamond, the central elements of economic models of demand and supply are shown (Woll 1993). Since these economic models are clearly incomplete from a social science perspective on consumption, the categories/factors identified by sustainable consumption studies as important for consumption have been integrated in the figure. Finally, needs are located in the background, since we perceive them to be causes behind consumption behavior that primarily translate into actual consumption decisions through sociological filters (Fuchs 1999). Each of the categories of determinants of sustainable consumption consists of several sub-categories which are listed in more detail in the tables below. The work of numerous scholars has contributed to the identification of these factors. Some of the central works are listed in the tables as well.

**NEED**



# Determinants of consumption

## I. Fundamental Causes

### Biological and psychological factors

<p><b>Needs</b> Bergh et al. 2000, Michaelis 2000, Jager et al. 1999, Ropke 1999a, Vlek et al. 1999</p> <ul style="list-style-type: none"> <li>• physiological, cognitive, aesthetic, self-actualization (most: more is better)</li> <li>• Survival (food and shelter)</li> <li>• Serenity, space, direct access to Nature</li> <li>• Love and belonging</li> <li>• Safety</li> <li>• Fun and creativity</li> <li>• Power and ambition</li> <li>• Freedom</li> <li>• Identity/self-expression</li> <li>• Need for variety and change</li> <li>• Privacy/autonomy</li> </ul>	<p><b>Influenced by globalization</b> 42</p>
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<p><b>“Human nature”</b> Ropke 1999a, Vlek et al. 1999</p> <ul style="list-style-type: none"> <li>• Insatiable wants</li> <li>• Restlessness</li> </ul>	<p>X X</p>
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## II. Influences on Consumption Patterns<sup>43</sup>

### Sociological

<p><b>Complexity</b> Jager et al. 1999, Ropke 1999a, Cogoy 1997, 1999</p> <ul style="list-style-type: none"> <li>• complexity woven into everyday life</li> <li>• integrated consumption process</li> <li>• Uncertainty/lack of information about (among others) potential for technological change; actors' intentions; ecological impacts and complexities</li> </ul>	<p>X X</p>
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<p><b>Positive experience</b> Bucholz et al. 1998, Ropke 1999a, Princen 1999</p> <ul style="list-style-type: none"> <li>• Experience of benefit from raised lifestyle</li> <li>• Enjoyment derived from use</li> <li>• Consumption is pleasurable</li> </ul>	<p>X</p>
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<sup>42</sup> Since we perceived needs to be behind consumption decisions but filtered through the influences on consumption patterns below, we concentrate on how globalization affects those influences rather than needs themselves.

<sup>43</sup> Summary Indicator: TEDIC (Opschoor 1989, Vlek et al. 1995, Jager et al. 99)

<b>General cultural and philosophical factors</b>	<b>Influenced by globalization</b>
<p>Hirsch 1976; Haake et al. 1997, Belk 1988; Lears 1989; Wilk 1996; Bressers et al. 1998, Carlsson-Kanyama 1998; Freyfogle 1998; Mayer D. 1998; Noorman and Schoot Uiterkamp 1998, Reichart 1998; Sagoff 1998; Vlek et al. 1998; Westra 1998; Georg 1999; Ropke 1999a; Thogersen 1999; Vlek et al. 1999; Michaelis 2000; Prose 2000, Veblen;</p>	
<ul style="list-style-type: none"> <li>• Anthropocentric world view, not valuing nature for itself</li> </ul>	
<ul style="list-style-type: none"> <li>• Life enjoyment as culturally determined function</li> </ul>	
<ul style="list-style-type: none"> <li>• Individualism, individualistic view of self, self + present orientation, rational self-interest</li> </ul>	X
<ul style="list-style-type: none"> <li>• Breakdown of class hierarchies, continuous redefinition of social groups, increasingly set free from social bonds</li> </ul>	X
<ul style="list-style-type: none"> <li>• Relaxation of religious constraints against conspicuous consumption</li> </ul>	
<ul style="list-style-type: none"> <li>• Lack of community</li> </ul>	
<ul style="list-style-type: none"> <li>• Emulation of local elites</li> </ul>	X
<ul style="list-style-type: none"> <li>• Trend towards cultivating health + self improvement</li> </ul>	X
<ul style="list-style-type: none"> <li>• Changed eating habits</li> </ul>	
<ul style="list-style-type: none"> <li>• Norms of behavior</li> </ul>	
<ul style="list-style-type: none"> <li>• Daily routines</li> </ul>	X
<ul style="list-style-type: none"> <li>• Divergence between attitude and behavior</li> </ul>	X
<ul style="list-style-type: none"> <li>• Democracy, individual choice</li> </ul>	X
<ul style="list-style-type: none"> <li>• Motivation/habit/compulsion</li> </ul>	
<ul style="list-style-type: none"> <li>• Belief in technical solutions</li> </ul>	
<b>Consumer society</b>	
<p>Belk 1988; Howarth 1996, Biesiot et al. 1999; Frank 1999, Georg 1999; Jager et al. 1999; Ropke 1999a; Vlek et al. 1999; Bergh et al. 2000</p>	ALL
<ul style="list-style-type: none"> <li>• Solving problems with material consumption</li> </ul>	
<ul style="list-style-type: none"> <li>• Consumption has become end not means</li> </ul>	
<ul style="list-style-type: none"> <li>• Conspicuous consumption, social emulation, positional goods,</li> </ul>	
<ul style="list-style-type: none"> <li>• Derive meaning, identity, status, belonging from material consumption</li> </ul>	
<ul style="list-style-type: none"> <li>• Lock in of consumption patterns, habit</li> </ul>	
<ul style="list-style-type: none"> <li>• Compulsive buying, consuming passion</li> </ul>	
<ul style="list-style-type: none"> <li>• Behavioral changes (transport, vacations)</li> </ul>	
<ul style="list-style-type: none"> <li>• Consumption lifestyles</li> </ul>	
<ul style="list-style-type: none"> <li>• Specialized replacement of multi-functional products</li> </ul>	
<ul style="list-style-type: none"> <li>• Lack of happiness</li> </ul>	
<ul style="list-style-type: none"> <li>• Societal reward for visible consumption</li> </ul>	
<ul style="list-style-type: none"> <li>• Hedonism (pleasure as a way of life)</li> </ul>	
<ul style="list-style-type: none"> <li>• Ethic of instant gratification</li> </ul>	
<ul style="list-style-type: none"> <li>• Perceived welfare depends on relative consumption</li> </ul>	

**Technology**

<p>Vlek 1995, Jager et al. 1999, Michaelis 2000</p> <ul style="list-style-type: none"> <li>• Innovation</li> <li>• Efficiency</li> <li>• Scale and scope</li> <li>• Trajectories</li> </ul>	<p><b>Influenced by globalization</b></p> <p>ALL</p>
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**Socio-demographic**

<p>Biesiot et al. 1999, Ropke 1999a, Michaelis 2000</p> <ul style="list-style-type: none"> <li>• Aging populations</li> <li>• Size of population</li> <li>• Income classes</li> <li>• Age and size of households</li> <li>• Gender</li> <li>• Education</li> </ul>	<p>X</p>
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**Politico-economic**

<p><b>Economic/political preconditions</b>          Biesiot et al. 1999, Ropke 1999a</p> <ul style="list-style-type: none"> <li>• Availability of cheap fossil fuels → today: availability of cheap energy</li> <li>• Ability to externalize environmental and social costs</li> <li>• Division of labor, urbanization, industrialization, appropriation of resources from the South</li> <li>• Consumption-production interdependence</li> </ul>	<p>ALL</p>
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<p><b>Institutional</b>          Haake et al. 1997, Freyfogle 1998, Ligteringen 1998, Mayer R. 1998, Westra et al. 1998, Lintott 1999, Vlek et al. 1999, Bergh et al. 2000, Michaelis 2000</p> <ul style="list-style-type: none"> <li>• Free speech rights of corporations</li> <li>• Government - corporate nexus</li> <li>• Government's growth dependence</li> <li>• Uncertainty</li> <li>• Sovereignty of countries over production within borders</li> <li>• Dominant economic theory (indicators, consumer sovereignty, liberal paradigm, efficiency criterion)</li> </ul>	<p>ALL</p>
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<p><b>Tragedy of the Commons/ Collective Action</b>          Kahn 1966, Vermeersch 1988, Pantzar et al. 1994, Reichart 1998, Vlek et al. 1999</p> <ul style="list-style-type: none"> <li>• Tyranny of small decisions</li> <li>• Tit-for-tat not possible, because of monitoring and enforcement problems</li> <li>• Free rider phenomenon</li> </ul>	<p>ALL</p>
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<p><b>Economy</b>  Haake et al. 1997, D. Mayer 1998, R. Mayer 1998, Carlsson 1999a, Cogoy 1999, Jolivet et al. 1999, Princen 1999, Ropke 1999a, 1999b, Ekins 2000, Wackernagel 2000, Zaccai 2000,</p> <p><i>Volume</i></p> <ul style="list-style-type: none"> <li>• Volume of commodity production</li> <li>• Product innovation instead of process innovation</li> <li>• Rebound effects</li> </ul> <p><i>trade</i></p> <ul style="list-style-type: none"> <li>• Longer transportation</li> <li>• International trading system (Terms of trade, Free trade, WTO)</li> <li>• Distancing of information</li> <li>• Unlink market scarcity from ecological scarcity</li> <li>• Lengthening supply chain</li> </ul> <p><i>Corporate structure</i></p> <ul style="list-style-type: none"> <li>• Bottom line of companies</li> <li>• Shareholder value</li> </ul> <p><i>markets</i></p> <ul style="list-style-type: none"> <li>• Lack of markets/prices/ (not so) free markets</li> <li>• Competition , pressure on prices and production costs</li> <li>• Relative prices - sectoral shifts</li> </ul> <p><i>Individual behaviors</i></p> <ul style="list-style-type: none"> <li>• Work hours</li> <li>• Valuation of unpaid work</li> <li>• Increasing shift of activities into the market place</li> <li>• Availability of credit (credit cards)</li> <li>• Work and spend dynamic</li> <li>• Miscalculation of costs and benefits of consumption</li> </ul>	<p><b>Influenced by globalization</b></p> <p>ALL</p>
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<p><b>Media</b>  Durning 1992, Leach 1993, Brenkert 1998, Mayer D. 1998, Ropke 1999a, Schor 1999, Dickson 2000, Michaelis 2000,</p> <p><i>advertising</i></p> <ul style="list-style-type: none"> <li>• Expanding potential audience of customers</li> <li>• Distribution of resources for advertising</li> </ul> <p><b>Entertainment media</b></p> <ul style="list-style-type: none"> <li>• Lifestyle advertising</li> </ul> <p><b>Internet</b></p> <ul style="list-style-type: none"> <li>• e-commerce</li> <li>• telecommuting</li> </ul>	<p>ALL</p>
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