

**Archive of the Population-Environment Research Network (PERN)  
Cyberseminar Discussions on Population, Consumption  
and Environment Dynamics: Theory and Method<sup>1</sup>  
17-31 May 2004**

**Date:** Thu, 13 May 2004 17:19:32 -0400 (EDT)  
**From:** PERN Lists Manager <pern-m@ciesin.columbia.edu>  
**To:** pernseminars@ciesin.columbia.edu  
**Subject:** [PERNSeminar\_PCE] Population, Consumption and Environment  
Cyberseminar, 17-31 May 2004

Dear pernseminars list member,

As you may be aware, our next cyberseminar will begin this coming Monday, 17 May, and run through the end of the month. The purpose of this seminar is to explore a research agenda for studying the linkages between population, consumption and environment. A background paper is available for downloading from the Cyberseminars page of the PERN website: <http://www.populationenvironmentresearch.org/seminars.jsp>. In addition, the following individuals have kindly agreed to serve as expert panelists:

1. Marina Fischer-Kowalski, Sociologist, Institute of Interdisciplinary Studies of Austrian Universities . Social Ecology Group
2. Drthe Krmker, Psychologist and Research Scientist, Center for Environmental Systems Research, University of Kassel, Germany
3. Louis Lebel, Political Scientist and Director, Unit for Social and Economic Research (USER), Changmai University, Thailand
4. Sylvia Lorek, Household Economist and Vice President, Sustainable Europe Research Institute (SERI), Germany
5. Thomas Parris, Research Scientist and Executive Director, Boston Office, ISciences LLC
6. Richard York, Assistant Professor, Department of Sociology, University of Oregon, USA

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We look forward to what we anticipate will be a stimulating discussion on a vitally important research topic.

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<sup>1</sup> See <http://www.populationenvironmentresearch.org/seminars.jsp>

Sincerely yours,

Alex de Sherbinin  
PERN Coordinator  
<http://www.populationenvironmentresearch.org>

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**Date: Mon, 17 May 2004 09:00:45 -0500**  
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**To: [pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)**  
**Subject: [PERNSeminar\_PCE] Welcome message from Alex de Sherbinin and Sara**

Dear Colleagues,

Welcome to this, the seventh of PERN's cyberseminars on important population-environment research topics. In this seminar we will be discussing the overlaps in the population-environment and consumption-environment literatures. The background paper suggests the possibilities for building on the commonalities to further advance research in both fields. Below you will find a brief abstract of the background paper that we produced as fodder for discussion. We encourage you to download the full background paper at [www.populationenvironmentresearch.org/papers/PCE\\_discussion\\_paper.pdf](http://www.populationenvironmentresearch.org/papers/PCE_discussion_paper.pdf) <[http://www.populationenvironmentresearch.org/papers/PCE\\_discussion\\_paper.pdf](http://www.populationenvironmentresearch.org/papers/PCE_discussion_paper.pdf)>.

Over the next two weeks we will have invited contributions from the following researchers who are leading thinkers on the consumption-environment nexus:

1. Marina Fischer-Kowalski, Sociologist, Institute of Interdisciplinary Studies of Austrian Universities – Social Ecology Group
2. Dörthe Krömker, Psychologist and Research Scientist, Center for Environmental Systems Research, University of Kassel, Germany
3. Louis Lebel, Political Scientist and Director, Unit for Social and Economic Research (USER), Changmai University, Thailand
4. Sylvia Lorek, Household Economist and Vice President, Sustainable Europe Research Institute (SERI), Germany
5. Thomas Parris, Research Scientist and Executive Director, Boston

Office, ISciences LLC  
6. Richard York, Assistant Professor, Department of Sociology,  
University of Oregon, USA

We are thankful that they have agreed to make these contributions, and will also be available for interactions following their respective postings.

It is probably unnecessary to convince anyone on this list of the importance of research in this area. Although our background paper focuses heavily on research approaches, it is with an understanding that population and consumption represent the most important drivers of global environmental change, and that there is an urgent need to find policy solutions. According to leading IGBP scientists in the March 2004 Global Change Newsletter (Wallström et al. available at [www.igbp.kva.se](http://www.igbp.kva.se) <<http://www.igbp.kva.se/>>), “In recent decades many environmental indicators have moved outside the range in which they have varied for the past half-million years. We are altering our life support system and potentially pushing the planet into a far less hospitable state.” Noting that the global population has tripled since 1930 and that the global economy has increased more than 15-fold since 1950, the authors conclude that “global environmental change challenges the political decision-making process by its uncertainty, its complexity and its magnitudes and rates of change.” They argue that in light of the risks, the precautionary principle must be applied, and that large-scale (and not incremental) changes are required in technologies and natural resource management across all economic sectors, as well as changes in lifestyles. Clearly such changes must be guided by scientifically sound research, and we hope this seminar will spawn new thinking and also new collaborations among researchers from all parts of the world.

For those who are new to PERN cyberseminars, we ask that you review the standards of conduct at the bottom of the Cyberseminars page of the PERN website. Note that attachments are not permitted on this discussion list, but if you have a document you would like to share you may send it to us at the email address below and we will ensure that it is sent to all participants.

Hispano parlantes: La discusión es en inglés; pero puedes enviar sus contribuciones de 3 párrafos o menos a la email abajo y lo traduciremos. Por favor, ponga su nombre y título.

Francophones: La discussion est en anglais, mais vous pouvez envoyer votre contribution de 3 paragraphes ou moins a la adresse électronique en bas et nous allons faire une traduction. Mettez votre nom et titre, svp.

We encourage you to participate actively, and look forward to a lively

discussion!

Sincerely,

Alex de Sherbinin  
PERN Coordinator.

Sara Curran  
Assistant Professor, Dept. of Sociology, Princeton Univ

## BACKGROUND PAPER ABSTRACT

### Completing the Picture: The Challenges of Bringing “Consumption” into the Population-Environment Equation

The paper begins by exploring some of the reasons why the population-environment and consumption-environment research agendas have progressed along separate tracks. The fundamental reasons for this include the types of questions the two literatures have sought to answer, and the fact that the former has tended to focus on developing country rural areas (farmers, fisherfolk, etc.), whereas the latter has largely focused on consumption patterns among industrialized countries and urban dwellers. The paper then explores three consumption-environment research agendas: household-level analyses of energy, food, housing, and transportation consumption; ecological footprints; and values, attitudes, behaviors and lifestyles. In each of these we note areas of overlap with the population-environment literature, and ways in which the p-e literature might benefit from further conceptual or methodological approaches in the consumption-environment literature. We also propose ways in which consumption research might be integrated into the largest (in terms of funding) of the population-environment research agendas, land-use and land-cover change research. In the concluding section we present a conceptual framework for understanding the population-environment literature that incorporates production and consumption into the model, and we propose some population-consumption-environment (PCE) research areas to which the population-environment research community could make significant contributions.

Wallström, Margot, Bert Bolin, Paul Crutzen, and Will Steffan. 2004. “The Earth’s Life-support System is in Peril,” Global Change Newsletter, No. 57, March 2004.

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**To: [pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)**  
**Subject: [PERNSeminar\_PCE] Panel Contribution by Richard York, Assistant  
Professor, Department of Sociology, University of Oregon, email: [roryork@darkwing.uoregon.edu](mailto:roryork@darkwing.uoregon.edu)**

Panel Contribution by Richard York

Refining Population, Consumption, and Environment Research

Comments by Richard York, Assistant Professor, Department of Sociology,  
University of Oregon,  
email: [roryork@darkwing.uoregon.edu](mailto:roryork@darkwing.uoregon.edu)

The environmental sciences have developed substantially over the past few decades. Although social scientists have not played as central a role in this development as natural scientists, the environmental social sciences are increasingly contributing to the maturation of research on the environment. Social science research on the environment is, of course, vital, since the most prominent environmental problems we face - e.g., global climate change, biodiversity loss - are primarily driven by anthropogenic forces. In their background paper for this cyberseminar, de Sherbinin and Curran discuss many of the important issues that need to be considered in order to further research on population, consumption, and the environment. Since my own research is focused in this area, I have a great many thoughts on the topic, but, due to space limitation, I will focus here on discussing two important theoretical and methodological issues: (1) the need for more refined measures of environmental conditions and human impacts on them and (2) the need for more precisely specified models of the anthropogenic forces driving environmental impacts.

Measuring environmental impacts

In the modern world-system, where the sites of production and consumption are rarely geographically coterminous - i.e., a growing share of goods and services consumed by a population come from global, rather than local, markets - assessing a population's impact on the environment is particularly challenging. Whereas with traditional societies - e.g., the Maring people of New Guinea studied in Rappaport's

(1984 [1968]) classic work - a population's impact on the environment was rather clear and direct since the vast majority of resources consumed came from, and wastes produced went to, the immediate environment. In the modern world-system, forests may be cleared in one nation to meet the consumption demands of other nations. Therefore, to assess the environmental impact of a population, we must look beyond its immediate environs. When assessing environmental impacts in a nation, such as deforestation, we should not assume that the primary explanation for those impacts lies exclusively, or even primarily, in that nation. Furthermore, when we note that environmental conditions are improving in some nations, we should not necessarily assume that these improvements indicate that those nations are reducing their impacts on the environment - they may, in fact, simply be shifting them beyond their borders.

Another problem we face in trying to assess environmental impacts is the fact that new technologies often lead to qualitative changes in the types of impacts generated by production and consumption. The second half of the twentieth century saw the widespread application of many new types of technologies with concomitant environmental impacts - e.g., those stemming from plastics, nuclear power, chemical fertilizers, and so forth. How are we to compare the tradeoffs between these different impacts - e.g., how does the impact associated with cutting trees for fuel wood compare to the impact of nuclear waste generated at nuclear power plants?

Given these considerations, we need to develop and refine measures that include the full range of impacts a society generates, regardless of where they occur. De Sherbinin and Curran point to the prominence of the "ecological footprint" (EF) concept in contemporary environmental debates for good reason. The EF is the first serious attempt to both incorporate a diversity of impacts in a single indicator and link those impacts to the sites where consumption takes place. Although there are many legitimate criticisms of the specific methodology used to calculate the EF, the concept remains of central importance if we are to understand the demands humans place on the environment and the prospects for sustainability. Therefore, it is vitally important that measures like the EF continue to be developed and refined.

### Modeling environmental impacts

Coupled with more refined measures of environmental impacts, we need more precise models of the human factors responsible for environmental degradation. De Sherbinin and Curran point to the relevance of the IPAT model which remains central to population-environment debates. This is a valuable model as a heuristic

devise, but as de Sherbinin and Curran suggest, we need to expand efforts to analyze and model the consequences of population and consumption on the environment. As my colleagues Dietz and Rosa (1994) argued a decade ago, and de Sherbinin and Curran recognize at various places in their paper, particularly in their discussion of households as units of analysis, breaking apart population, affluence (consumption), and technology into their components can help further our understanding of how societies impact the environment. Furthermore, we need to develop modeling techniques that let us go beyond simply saying that factors like population growth and economic growth drives resource consumption, and be able to precisely indicate how these forces affect impact.

This has been the focus of my work with Gene Rosa and Tom Dietz (Dietz and Rosa 1997; Rosa, York, and Dietz forthcoming; York, Rosa, and Dietz 2002, 2003a, 2003b, 2003c). We have found that population size as a key component is driving impacts of all types (including the ecological footprint), but that age structure, urbanization, and geographic distribution of a population also have important influences on a society's impact on the environment. Furthermore, we have found that the effect of affluence is typically non-linear and depends substantially on the type of impacts examined, although we find no evidence of a "consumption transition" in wealthy nations, at least with respect to the ecological footprint and other indicators of global impact.

Although our work, and that of others (e.g., Shi 2003) has helped to more precisely specify the effects of population and consumption on the environment, much more remains to be done. In particular, further disaggregation of demographic and economic factors could further refine our understanding of these effects. Also, although a growing body of work focuses on cross-national analysis (such as my own), less work has been done on smaller units (notable exceptions include Cramer 1996, 1998; DeHart and Soulé 2000; Soulé and DeHart 1998). Further research at various levels - global, national, and subnational - will be necessary to develop a precise and comprehensive theory of human-environment interactions.

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**Subject: [PERNSeminar\_PCE] Pollution and Geographic "Carrying Capacity" -  
from Fresno, David Pepper MD, UCSF-Fresno Asthma Education Program**  
**Date: Mon, 17 May 2004 10:26:23 -0700**

Excellent thoughts here - One major factor we've seen play "against us" here - in  
California's central valley is geography.

Our Valley is a huge bowl, with the Sierra Mountains rising over 10,000 ft/  
3,000 m to our East, the 1,000 meter coastal range to the west, and a range  
to the south. Pollution pours in, or trucks/trains/cars ag/factories  
generate it here, and then here it sits. Wind patterns year round are  
relatively flat (10mph winds are "high") and the population bakes in the  
heat of the summer, and under the fog/inversion of the winter.

Yes, the Clean Air initiatives speak to production limits and cleaning the  
burning - but what about geographically challenged areas such as our?  
Where is the consideration of special zones, and areas that have less  
carrying capacity?

Los Angeles, with 5 times the population and one quarter the land mass has  
similar air quality issues to us. The geographic multiplier of the area  
appears to make up the rest since its not all differences in agriculture  
between the two areas. Rather, coastal breezes and the cleansing out daily  
by coastal breezes would seem to helping the LA Basin.

Is anyone aware of "measures" of this type of geographical  
disproportionality that some areas face?

David R. Pepper MD, MS - Asst Clinical Fac UCSF, [drpepper@ucsfresno.edu](mailto:drpepper@ucsfresno.edu)

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**From: Xiaoying Zheng <[xzheng@pku.edu.cn](mailto:xzheng@pku.edu.cn)>**  
**Subject: Re: [PERNSeminar\_PCE] Panel Contribution by Richard York,**

**Assistant Professor, Department of Sociology, University of Oregon,  
email: rfyork@darkwing.uoregon.edu**

Dear Friend,

Thank you very much for your information. Our team now is doing the work but we don't have final results. Please give us more your information. We would like to involve your work and research.

Regards,  
xiaoying

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**Subject: [PERNSeminar\_PCE] Panel Contribution by Marina Fischer-Kowalski**

The increasing spatial rift between consumption and environmental pressures: a challenge for research designs, indicators and analysis.

Contribution by Marina Fischer-Kowalski, Sociologist, Professor for Social Ecology at Klagenfurt University, Institute for Social Ecology, Vienna, Austria, E-mail: [Marina.Fischer-Kowalski@uni-klu.ac.at](mailto:Marina.Fischer-Kowalski@uni-klu.ac.at)

The population-environment equation, with or without focusing on consumption, relies on a basic proximity between people, their needs and deeds, and a natural environment they draw benefits from and exert pressures upon. This assumption is perfectly valid for a context of subsistence agriculture, for example: be it in history or under present conditions in remote areas of developing countries, we find local communities that sustain their socio-economic metabolism, in terms of energy and materials, more or less completely upon their local environment. In this case, changes in population numbers, household composition and household consumption will be more or less directly related to and reflected in impacts upon the local environment. Under more developed and industrial conditions, though, this – often implicit – assumption of spatial proximity does not hold. Thus a research design focusing on the interaction between a local population and its environment (as is most often used in land-use-land-cover studies) is inherently inadequate. Let me give you some examples:

Krausmann (2004) compared land-use and socio-economic metabolism for three villages in Austria between 1830 and 1990. In terms of energy, in 1830 not even 1% was “imported” from outside; 100% of the energy used was drawn from harvest and local forest. In 1990, the energy input from outside amounts to 20%. In terms of the nitrogen cycle, less than 1% entered from other areas. In 1990, though, 40% of all nitrogen used was imported from outside. So we may conclude that a substantial part of the environmental impact of this local community occurs somewhere else. At the same time, they do not only import, but also export energy and materials, and so bear the environmental load of somebody else’s consumption. As there typically is an asymmetrical division of labor between various actors (in our case: producers of mineral fertilizers versus producers of foodstuff), the environmental impact of “imports” and “exports” will also differ.

The World Resources Institute (Matthews et al. 2000) presents data on “domestic processed outflow” for six major industrial economies, an indicator that summarizes all wastes and emissions in tons. According to these data, it is the global atmosphere that increasingly has to absorb the largest part of those outflows. By 1996, the proportion – in terms of weight – of atmospheric emissions amounts to 88%, most of which is CO<sub>2</sub> that impacts upon global climate change and does not harm the local or regional environment at all.

Weisz and Amann (2003) demonstrate a stagnation (or even reduction) of per capita material input as measured by the MFA-indicator “domestic material consumption” into the European economies (EU15) during the last decade. This would imply a relative dematerialization of European per capita consumption in the face of substantial economic growth. During the same period, the amounts traded increased; as practically all European countries, in terms of weight, have higher imports than exports, we may expect a mere “externalization” of materially intensive processes, and therefore of environmental impact, and not the “dematerialization” hoped for.

The “ecological footprint” indicators do capture a certain aspect of externalization of environmental impact. (As far as comparisons between different points in time, and different scale levels are concerned, this indicator may also be misleading sometimes, see (Haberl et al. 2001).) But they fail in two respects: on the one hand, they capture “imports” but not “exports”. If you compare the ecological footprint of two communities, a community that consumes all imports and does not generate any exports (say, a community of old age pensioners in Florida) will have the same footprint as a community with the same imports and internal land use, but large exports. On the other hand, the classic footprint indicator does not allow to localize environmental impact, it

just informs about the amount of “overflow” of demand. There are some promising attempts, though, to calculate “actual land demand” of import flows that can be allocated to a specific country (Erb 2004).

Another path towards dealing with such spatial rifts derives from economy-wide material flow accounting: A way of consistently dealing with imports, exports and domestic extraction on an equal footing has been proposed by Eurostat as “Raw material Equivalents”. Raw material equivalents (RME) equal the “up-stream indirect flows of the imported or exported products. The RME is the used extraction that was needed to provide the products.” (Eurostat 2001) RME allows for embodying the raw materials required in traded goods, in the same way as they are measured by DE (domestic extraction) domestically. A proper calculation of RME requires adequate physical input-output analyses for traded commodities. Similar to what already exists in the field of energy requirement, international data bases would have to be built up to facilitate comparability of calculations. This would be an important future innovation, but for the time being there exist only isolated attempts at generating indicators for RME (Weisz and Amann 2003).

The solutions considered so far all deal with data generated on some aggregate level (usually the nation state) and divided on a per capita base. If we really measure household consumption as such, does one have to deal with problems of spatial rift at all? One does, I would say, as soon as one attempts to correlate population numbers and household consumption with the state of some local environment across different modes of reproduction. The impact of the above mentioned subsistence farmers upon their local environment, as they draw practically all their resources from it, will of course differ completely from the impact of, say, the inhabitants of a small town that “import” all their consumer goods from a regional supermarket, with production occurring anywhere else in the world.

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**Date: Wed, 19 May 2004 09:31:17 -0700**  
**Subject: [PERNSeminar\_PCE] Consump & environ-anthropology references**  
**From: Josiah Heyman <[jmheyman@utep.edu](mailto:jmheyman@utep.edu)>**  
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Hello to all the participants. Congratulations on the important topic, background paper, and postings. Please forgive me for being egocentric, but I am sending some references (below the cut-line) to my work from the perspective of field-based anthropology which may be of interest to people here. I recommend that people consult the Cohen and Murphy, ed., book as a whole (cited below). I also recommend that you do bibliographic searches for the work of Richard Wilk and James Carrier.

I am pleased to see that several of my favorite points about consumption are now being made in the ecological economic literature: (1) the need to look at large and costly goods (houses, etc.) as well as smaller but more visible items (cell phones, etc.)--see Carrier and Heyman, below; (2) the notion that consumers are "locked in" on consumption in important ways, by the logics of time, space, technology, the production of daily life (reproductive production), etc. I call this "organizational logic" in one of the publications below (also see the exploration of "consumer proletarianization"--loss of ability to self-supply). There is also a need to widen our vision of policy responses

beyond price incentives and moral persuasion (see the item in Cohen & Murphy, ed.)

The encyclopedia entry cited below is on the web (in draft form) and is a usefully compact, methodologically oriented summary for anthropologists and others researching consumption, especially in developing societies.

There is a huge need for field-based (ethnographic) research in this arena, especially research that is aware of the specific class and societal placement of the consumers (e.g., urban working class households in the first world, in the third world; middle classes in each of those settings; peasant-worker (migrant) households, etc., etc.). There is also a need for ethnographic and other methods of research on the entities that are direct "polluters" (e.g., utilities, consumer goods producers) in the commodity chain with consumers (who often are **\*\*indirect\*\*** "polluters"). (Polluters in scare quotes as short hand for all kinds of environmental effects.) Let's do some good work!

Joe Heyman

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All references are authored by Josiah McC. Heyman, except as noted:

Forthcoming <sup>3</sup>The Political Ecology of Consumption: Beyond Greed and Guilt,<sup>2</sup> in Susan Paulson and Lisa Gezon, eds., Political Ecology Across Spaces, Scales and Social Groups, Rutgers University Press, 2004.

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<<http://dizzy.library.arizona.edu/ej/jpe/consumpt.htm>>

1997 James G. Carrier and Josiah McC. Heyman, <sup>3</sup>Consumption and Political Economy,<sup>2</sup> The Journal of the Royal Anthropological Institute, N.S., 3(2): 355-73.

1994 <sup>3</sup>Changes in House Construction Materials in Border Mexico: Four Research Propositions about Commoditization,<sup>2</sup> Human Organization, 53(2):132-42.

\*1994 <sup>3</sup>The Organizational Logic of Capitalist Consumption on the Mexico-United States Border,<sup>2</sup> Research in Economic Anthropology, 15:175-238.

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**To: <[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>**  
**Subject: [PERNSeminar\_PCE] Material flows analysis - indicators**  
**Date: Wed, 19 May 2004 15:06:16 -0400**

With Marina's permission, I'm posting below a short paper she wrote describing the various indicators used (and proposed) for material flows analysis (MFA). This may provide a useful introduction to the topic for those of you who, like myself, are not familiar with this literature.  
-Alex

Indicators of natural resource use and consumption from economy-wide material flow analysis (MFA)

Marina Fischer-Kowalski (IFF Social Ecology, Vienna)

One of the strengths of economy-wide MFA is the systemic approach associated with thermodynamics: it seeks to cover all raw materials taken from nature for socio-economic purposes, and to follow their life cycle until they are finally disposed back to the environment. As a result, MFA provides a biophysical account on the level of national economies in analogue to economic accounting (GDP), but respects the fundamental equation of Input =

Output in terms of weight. (For an early conceptualization of the relation of MFA and economic accounting see Ayres and Kneese (1969).)

MFA keeps track of all materials that enter and leave the economy within one year applying the mass balance principle. These flows comprise extracted or imported materials to be used within the national economy, and all material released to the environment as wastes and emissions, exported to other economies or added to societal stocks.

This framework had emerged in the late 1960s (Ayres and Kneese 1969; Gofman et al. 1974; Wolman 1965), and then re-appeared in the 1990s in publications from the Wuppertal Institute (Bringezu 1993), the Institute for Social Ecology in Vienna (Steurer 1992; Fischer-Kowalski et al. 1994; Japan Environment Agency 1992). It was later elaborated for international comparison by the World Resources Institute (Adriaanse et al. 1997; Matthews et al. 2000). While several European countries started to include MFA reporting in their environmental statistics, the statistical office of the European Union undertook a concerted effort at harmonization, leading to a methodology guide (Eurostat 2001a) on the one hand, data compendia for the European Countries (Eurostat 2001b; Weisz et al. 2004a) on the other hand. So in the meantime, material flow accounting on the national level can be considered a fairly mature methodology (Fischer-Kowalski and Hüttler 1999).

In MFA the economy usually is treated as a black box (except for net additions to societal stocks which are accounted for to close the mass balance equation). The boundary of the physical economy is defined in a fashion compatible to the system of national accounts (SNA) as far as possible to facilitate integrated monetary and biophysical analysis (Eurostat 2001b). A detailed MFA database normally comprises flow data for several hundred different input materials. From this, highly aggregated national material flow indicators can be derived. MFA, thus, provides a comprehensive description of the physical economy in the form of a huge consistent database and it provides highly aggregated indicators.

The rationale of this approach rests on several assumptions. The first assumption is that the sheer size, the scale (Daly 1973) of resource use and consumption exerts pressures on the environment. MFA rejects the idea that a clear distinction between environmentally harmless and harmful materials can be made. In principle, environmental impacts generated by material flows can be conceptualized as the product of the size times the specific impact of material flows (Steurer 1998). However, the knowledge of specific environmental impacts is quickly changing, ambiguous, and often lagging behind. When it comes to quantifying specific environmental impact, expert consensus is difficult to achieve. In contrast, it proved to be fairly easy to agree on the weight of different materials processed by

society, and this agreement will be stable across countries and over time. Weight as a unit of measurement is not subject to fluctuating exchange rates and relative prices as is money value, nor to competing expert opinions as is the assessment of specific environmental impacts. So the use of weight as a unit of measurement in MFA (and also in other physical accounting tools) is a consequence of its feasibility, transparency and stability, and last but not least by the lack of alternatives. These and some other criteria (Fischer-Kowalski 1998; Schandl et al. 2002; Eurostat 2001a; Ayres and Ayres 1998) guided the establishment of the MFA accounting framework and have been widely accepted.

Less consensus has been achieved concerning highly aggregated MFA derived indicators. Measuring in tons is one thing, adding all tons up is another. Originally, the rationale behind MFA derived indicators was the assumption that reducing overall material throughput *ceteris paribus* would reduce environmental pressure (Ayres and Schmidt-Bleek 1993; Weizsäcker et al. 1997). It was expected that a simple highly aggregated indicator comparable to GDP could be derived from MFA and would get more public attention than a large number of more specific environmental indicators. Such an aggregate indicator should allow monitoring success toward sustainability or dematerialization of entire national economies quite easily.

In accordance with the methodological guide published by Eurostat (2001a), we will now describe MFA based indicators on material consumption and discuss their relevance. What generally can be derived from the MFA framework for a country respectively for a national economy is a number of flow aggregates for a certain time period (usually a year), expressed in metric tons. For the generation of indicators, these (extensive) flow aggregates have to be related to certain reference scales. The most important reference scales are population (intensity indicators of the dimension t/c), size of territory (dimension t/km<sup>2</sup>) and size of the economy (dimension t/\$).

#### DOMESTIC MATERIAL CONSUMPTION - DMC

DMC measures the annual amount of raw materials extracted from the domestic territory (DE), plus all imports minus all exports (both in tonnes). With “domestic material consumption”, there are some ambiguities of interpretation. It does correspond to “apparent consumption” in economic accounting. But the term consumption intuitively relates to final consumption. This is misleading in interpretations, particularly if one talks about per capita material consumption. From the point of view of consumption, an imported commodity is functionally equivalent to a domestically produced commodity. In DMC, though, these functional equivalents lead to great differences. Equally, producing a commodity for export, intuitively is not related to the domestic consumption of materials at all – but according to the makeup of DMC, all wastes occurring in the

course of this production process are a component of domestic consumption. Thus, DMC can be better interpreted as ‘domestic waste potential’ and refers to all materials used and consumed both in production and consumption processes. (Weisz et al. 2004b). What we can observe now, both in Europe and Japan where these indicators are collected according to a common protocol, is that DMC has been more or less stagnating over the past decade – while the economies kept growing. In the same period, an increasing proportion of DMC was due to imports. It may be that the apparent “stagnation” of DMC has to be interpreted as no more than an externalization of material flows, and the associated environmental pressures, to developing countries ((Muradian and Martinez-Alier 2001), (Fischer-Kowalski and Amann 2001)).

#### RAW MATERIAL EQUIVALENTS - RME

It is not trivial to define – on the national level – indicators for natural resource use and consumption that would not be distorted by differences or changes in international trade. One way of consistently dealing with imports, exports and domestic extraction on an equal footing has been proposed by Eurostat as “Raw material Equivalents”. Raw material equivalents (RME) equal the “up-stream indirect flows of the imported or exported products. The RME is the used extraction that was needed to provide the products.” (Eurostat 2001a) RME allows for embodying the raw materials required in traded goods, in the same way as they are measured by DE (domestic extraction) domestically. (Weisz and Amann 2003) A proper calculation of RME requires adequate physical input-output analyses for traded commodities. Similar to what already exists in the field of energy requirement, international data bases would have to be built up to facilitate comparability of calculations. This would be an important future innovation, but for the time being there exist only isolated attempts at generating indicators for RME (Weisz and Amann 2003).

Derived indicators (Weisz and Amann 2003)

Raw material equivalents of imports (RME<sub>imp</sub>) indicates the material extraction undertaken in other territories in order to produce and transport the commodities imported by the country observed.

Raw material equivalents of exports (RME<sub>exp</sub>) expresses the part of DE that is due to the provision of raw materials and commodities for export.

Raw material domestic consumption (RMDC) is equivalent to  $DE + RME_{imp} - RME_{exp}$ . It would be the best indicator for the materials use of an economy, clearly related to domestic materials consumption. Basically, this indicator could be used in a similar fashion, in some ways as a substitute, as now DMC is used.

Raw material trade balance (RTB) finally balances environmental pressures associated with trade. A negative RTB would indicate that the domestic environmental pressure to satisfy foreign demand exceeds the environmental pressure effective elsewhere to satisfy domestic final demand and vice versa. To put it short, negative RTB means net internalization of environmental pressure and positive RTB means net externalization of environmental pressure.

Gaps in knowledge and research needs

- Further development of the applicability and use of physical Input-Output tables, calculation and analysis of RME, calculations for NAS
- Relations to transport and time use
- Addressing of issues such as sustainable consumption, material standard of living, quality of life

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Greetings,

What follows is a study released last year that the heat and pollution rising from large cities is

affecting precipitation patterns.

This study deals with the west coast of the US but the same thing is happening in Australia. In the past 30 years it has been raining less on the Eastern Sea Board where all the large cities are located and it is raining more in the Kimberleys in Western Australia.

I consider this study to be the most significant finding that has emerged in the population environment debate, because it proves a direct link between the volume of human activity and changes in the environment.

Heat, Pollution Changing Precipitation  
Sat Dec 13, 6:49 AM ET

By ANDREW BRIDGES, AP Science Writer

SAN FRANCISCO - The massive amounts of heat and pollution that rise from the world's cities both delay and stimulate the fall of precipitation, cheating some areas of much-needed rain and snow while dousing others, scientists said.

The findings support growing evidence that urbanization has a sharp and alarming effect on the climate, and those changes can wreak havoc with precipitation patterns that supply life's most precious resource: water.

"These are going to become big issues," said Steve Burian of the University of Utah.

Details were presented Thursday and Friday at the fall meeting of the American Geophysical Union.

In California, eastward-blowing pollution induces a precipitation deficit across the Sierra Nevada mountain range equal to about 1 trillion gallons of water a year, said Daniel Rosenfeld of Hebrew University in Jerusalem.

The Sierra Nevada is a major source of water for much of California, which relies on it to supply its cities and farms.

"It amounts to significantly less amounts of water," said Rosenfeld, who has noted similar pollution-linked deficits in Israel.

The warmth and grit generated in urban areas can have the opposite effect on local precipitation and actually boost rainfall levels in large cities like Atlanta and Houston.

During the past 60 years, while Houston has grown to become the nation's fourth-largest city, scientists have measured increased amounts of rain in areas downwind of the urban core during hot, humid summer months, Burian said.

"The majority of evidence is pointing to some sort of urban modification," he said, adding that more research is needed.

Cities produce large amounts of a class of pollutants called aerosols, which include tiny particles of dust and the byproducts of the combustion of diesel and other fossil fuels.

Atmospheric levels of the pollutant are closely tied to levels of human activity. In New York City, measurements made between June and September 2001 showed that aerosol levels regularly grew during the work week, with a noticeable spike on Wednesdays, then decreased on the weekend, said Menglin Jin of the University of Maryland at College Park. She attributes the midweek spike to a sharp increase in diesel truck traffic.

When hoisted skyward, the microscopic pollutants act as multiple surfaces on which the moisture in clouds can condense to form tiny droplets. That can prevent or delay the formation of larger raindrops that more readily fall from the sky as rain.

In Southern California, a 24 percent decrease in the amount of rainfall measured since 1890 in the town of Cuyamaca appears linked to aerosol pollution wafting from San Diego, roughly 40 miles to the southwest, Rosenfeld said.

Cities also generate and trap tremendous amounts of heat and are on average one to 10 degrees warmer than surrounding undeveloped areas. That heat also changes the dynamics of clouds.

In more humid cities, urbanization appears to invigorate summer storm activity by allowing clouds to build higher and larger before unleashing torrential rains, Burian said. That appears to be the case in Houston.

The relative contributions that urban heat and pollution make to altering the climate remains unclear, scientists said. It's also unclear what, if any, effect smaller cities might have.

"How big does a city need to be? We don't know. The answer is still out there," said Marshall Shepherd, a NASA research meteorologist.

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**Subject: RE: [PERNSeminar\_PCE] Panel Contribution by Marina Fischer-Kowalski**  
**Date: Thu, 20 May 2004 10:56:37 -0400**

Dear Colleagues,

We recognize that the background paper is a bit intimidating in length (~12 pages of text), and that some of you, particularly in the US and Europe, may be experiencing end-of-semester burnout. Please do not assume that you need to read the background paper in order to post comments.

In an effort to stimulate some discussion on this important topic (about which I am sure many of you have thoughtful contributions to make!), I provide here some thoughts (and further questions) related to the statements by Richard York and Marina Fischer-Kowalski.

1. Richard and Marina make similar points, which is that apart from subsistence societies, environmental impacts are rarely in the geographic proximity of where people live. Ecological Footprints and Material Flows Analysis attempt to address this problem by developing national-level measures that take into account imports and exports of goods (or material). However, as Marina mentions, these measures also have a weakness - because they aggregate to the national level, they do not sufficiently locate environmentally significant consumption patterns in space. Unless flows of materials/goods are tracked within countries, there is no way to produce sub-national EF and MFA indicators (though there may be close proxies such as per capita income). One question is, how important is it to locate environmentally significant consumption in space? Is it important to know where the end users are, or is it sufficient to know where the environmentally damaging activities (mining, deforestation, manufacturing, etc.) are taking place? (From a policy perspective, I would think that it does matter, since you will not be able to deal with the extractive/polluting activity without mitigating demand for the product, which occurs where the product is consumed.)

2. Marina states in her piece on Material Flows Analysis (MFA) that "MFA rejects the idea that a clear distinction between environmentally harmless and harmful materials can be made. In principle, environmental impacts generated by material flows can be conceptualized as the product of the size times the specific impact of material flows (Steurer 1998). However, the knowledge of specific environmental impacts is quickly changing, ambiguous, and often lagging behind. When it comes to quantifying specific environmental impact, expert consensus is difficult to achieve. In contrast, it proved to be fairly easy to agree on the weight of different materials processed by society, and this agreement will be stable across countries and over time." This argument seems to be similar to those put forth in our paper in favor of energy as a consumption indicator: it is useful because it comes in uniform units and is easy to measure. However, unlike energy, units of weight cannot be consistently tied to environmental impacts. However, is it really true that the impacts of different materials are incommensurable? Is it not possible to establish at least order of magnitude differences between different materials? Marina's criticisms notwithstanding, Perhaps the EF is a better measure because at least it converts all consumption to some consistent metric, presumably assigning greater impact to some kinds of material consumption than others. Related, is it possible to do an MFA for a household? How would one go about doing this short of weighing everything that comes in and out of a home?

3. I think that it is important to understand that the questions that land-use/land-cover (LUCC) research have sought to answer have typically not had much to do with the total impact of household consumption bundles. The questions have focused on how household- or farm-level decisions affect land

conversion (usually from forest) and use, and how household and land characteristics affect those decisions. The interest is often driven by the fact that the local actors -- whether or not they are the ultimate source of demand for a given product, be it meat or timber -- are having an impact on ecosystem functioning. Both Richard and Marina are right in saying that local-level analyses often miss the bigger picture of globalization and trade. What we propose in our paper is that LUCC research can inform consumption research by bringing a greater focus on household dynamics and decision making processes, and that consumption research could help to broaden LUCC research by looking in more detail at external drivers of LUCC (though many studies build this in; see Geist & Lambin 2002 for example). One strand of LUCC research not mentioned by our paper is that of Gerhard Heilig (1993), who looked at how the consumption of non-food items impacts land-cover. He estimates that more than 214 million hectares are used for the production of lifestyle-related products, such as stimulants, sugar, tobacco, oilseeds, and soy (which is used primarily for animal feed). Including the unknown area in illicit drug production, he suggests that up to 20% of the world's arable land area may be used for such non-food crops. There has been research on shifting consumer tastes away from meat, but less research on other "luxury" or non-essential products, the environmental impacts of their production, and exploration of means to reduce their consumption.

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## Sustainable Consumption in a Globalizing World

Contribution by Doris Fuchs, Professor of International Relations, Institut for Social Sciences, University of Stuttgart, E-mail: [doris.fuchs@po.pol.uni-stuttgart.de](mailto:doris.fuchs@po.pol.uni-stuttgart.de) and Sylvia Lorek, Household Economist and Vice President, Sustainable Europe Research Institute, E-mail: [Sylvia.Lorek@t-online.de](mailto:Sylvia.Lorek@t-online.de)

It is an open question whether and how globalization affects the sustainability of household consumption in industrialized countries. A tremendous gap exists between references to the influence of globalization on sustainable consumption in political and academic debates on the one side and empirical evidence on the existence and strength of such an influence on the other. Most studies dealing with globalization and sustainable consumption discuss the (negative) influences of (unsustainable) consumption patterns in industrialized countries on developing countries and neglect the fact that globalization is likely to have an impact on Northern consumption patterns as well. Inquiries into the effects of globalization on the sustainability of consumption in the North are less common.

Accordingly, we suggest an urgent need to empirically study the relevant relationships. To allow for meaningful results, respective analyses should focus not on consumption as a general phenomenon but on the settings and dynamics in specific consumption clusters. Specifically, the three consumption clusters that previous research has identified as those with the highest impact on sustainability should be considered: food, mobility, and energy.

In previous work, we have developed a conceptual schema for exploring the impact of globalization on the sustainability of consumption in industrialized countries (Fuchs and Lorek 2001, 2002). Reviewing the discussion and research evidence on the link between globalization and sustainable household consumption from the sustainable consumption and globalization perspectives, we have identified 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 delineated the various relationships between globalization and the sustainability of household consumption differentiating between direct and indirect influences of globalization.

The most important determinants of the sustainability of consumption for the three consumption clusters overlap, but additional specific determinants can be identified for each cluster as well. For all three clusters, socio-demographic and economic factors are pivotal. For food,

the additional relevant factors are agricultural production conditions, the burdens imposed at different stages of the product chain (specifically food processing, packaging, and transport), and technology.<sup>1</sup> For mobility, the additional determinants are living situation (urban form and dwelling characteristics) and transport options. For energy, finally, the additional factors are dwelling characteristics, household technology, supplier characteristics, and climatic factors. The core elements of globalization exercising an influence on these determinants include trade integration and liberalization, capital flows and concentration, shifts in political capacities between actors, the diffusion of information, and the acceleration of technological innovation.

Linking those elements of globalization with the determinants of the sustainability of consumption in the three consumption clusters, we arrived 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 of household consumption due to their influence on the supply of products and services from which households choose. For food consumption, for example, this indirect impact of globalization primarily exercises itself through the sustainability of agricultural production and the environmental burdens imposed at other stages of the product chain. 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 through supplier characteristics, for instance.

To a substantial extent, then, the influences of globalization on the sustainability of consumption take place before the household makes its decision. These are the impacts that affect the sustainability of household consumption through their influence on the spectrum of consumption choices available to households. These influences urgently require in-depth empirical analysis. For future research, we further suggest to go beyond the traditional discussion of how to prevent the negative influences of globalization, to also consider the positive potential globalization holds.

Finally, we suggest that the relationships and influence depicted need to be considered in the development of political strategies for improving the sustainability of consumption. Our previous analyses showed 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.

#### Footnotes

1. Earlier empirical studies had also discussed the impact of the different food groups. Lately, however, scholars have pointed out that the differences within each food group are so large that using "food group" as a determinant of the sustainability of consumption may not be a sensible choice.

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**Date:** Thu, 20 May 2004 17:41:34 -0700  
**Subject:** [PERNSeminar\_PCE] Book series  
**From:** Josiah Heyman <[jmheyman@utep.edu](mailto:jmheyman@utep.edu)>  
**To:** <[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>

Hello to all,

Allow me to inform the participants that Richard Wilk and I are editing a book series with AltaMira Press (which has an excellent environmental studies list) on "Globalization and the Environment." Single author

monographs are preferred but tightly edited collections can be considered. I pasted the series thematic guide below and can send a guide for book prospectus submission if you contact me. More informal inquiries to the editors are encouraged, also.

The first book in the series is Alf Hornborg's important *The Power of the Machine*, with which some of you may be familiar.

Joe Heyman

\*\*\*\*\*

GLOBALIZATION AND THE ENVIRONMENT  
A NEW BOOK SERIES FROM ALTAMIRA PRESS

EDITED BY RICHARD WILK AND JOSIAH HEYMAN

Altamira Press announces a new book series, *Globalization and the Environment*. The series emphasizes the global spread of environmental problems, the effects of cultural and economic globalization on the environment, and the global institutions and movements that regulate and change human relations with the environment.

The series will include detailed case studies, innovative multi-sited research, and theoretical questioning of the concepts of globalization and the environment. At the center of the series is an exploration of the multiple linkages that connect people, problems, and solutions at scales beyond the local and regional.

Topical monographs are preferred, but well-focused and comprehensive edited collections will be considered. The editors welcome works that cross boundaries of disciplines, methods, and locales, and which span scholarly and practical approaches.

The series editors welcome book proposals and manuscripts, which should be submitted to Rosalie Robertson at Altamira Press, 1630 North Main St #367, Walnut Creek, CA 94596 (rrobertson@altamirapress.com). Initial inquiries should be directed to Richard Wilk (wilkr@indiana.edu; Anthropology, 130 Student Building, Indiana University, Bloomington IN 47405), or Josiah Heyman (jmheyman@utep.edu; Sociology/Anthropology, University of Texas at El Paso, 500 W. University Ave., El Paso, TX 79968).

THE DETAILS

A global perspective has been growing remarkably slowly among both environmental scientists and activist communities. Even today, when global warming is an established scientific reality, most environmental studies and

groups continue to work at local, or at most national or regional levels. Research on global environmental issues has been dominated by climatologists and model builders who have little interest social, cultural, and political globalization, the essential context for environmental change. In the meantime there has been a flood of scholarship in all the social sciences on globalization, which rarely connects with environmental and ecological science. We believe that linking the social processes of globalization to environmental issues is a crucial step; it is essential for building sound environmental science, in creating a foundation for realistic policy making, and a more thorough understanding of the links between humans and nature.

We propose a book series that will make this essential connection between disciplines, perspectives, and levels of analysis. We see this terrain as an exciting frontier, already thinly settled but highly disorganized. This is a crucial time where a book series can play a fundamental role in creating a focus and identity for a new area of research and debate.

We have divided this new frontier into three zones which follow natural features of the intellectual landscape.

1. Studies and commentaries on the global nature of environmental problems. Many of these problems, for instance climate change, air pollution, and the depletion of fisheries, are inherently not limited to a particular place and they are the direct result of international and global processes. Many very large scale human activities like the growth of financial markets, tourism, and trade, have had direct ecological effects, but often in the global system causes and effects are very indirect and take place in different parts of the world. Pursuing these connections and linkages, following flows of money, commodities, and influence, will typically take the form of local studies of global phenomena (the effects of food imports on farming methods for example), and more general work on the global spread of social and cultural practices that create common environmental problems (the worldwide diffusion of sushi bars, and the depletion of pelagic fish for example).

2. Studies of the global nature of environmental governance, movements, and activism. Environmental action has itself become thoroughly globalized at many different levels. Governments cooperate through trade agreements and international conventions on issues as diverse as world heritage sites and bilge pumping from oil tankers. As businesses have globalized, they have brought dramatic environmental change and policies that connect many distant parts of the world. Ethnic movements, conservationists, anti-WTO activists, and fair-trade consortia have all built global networks which challenge multinational corporations and government policies from a truly internationalist standpoint. In this area we expect to publish work on topics like the struggles over regulation of whaling, the successes and failures of multinational green business campaigns, and comparative work on

green movements in different countries.

3. Conceptual and theoretical questioning of the concepts of globalization and environment. Here we include commentaries and criticism of the way problems are framed, policy is made, and environmental problems are perceived and understood. For example, it is almost a cliché that around the world people have developed a global consciousness about the limits of resources. But is this really true? And how do environmental policy makers as a group really understand globalization? Some scholars are not writing about competing political visions of globalization, and increasing heterogeneity and diversity in the world, rather than homogenization. Similar critiques have been leveled at the way the environment<sup>1</sup> appears in many different guises, often within particular political agendas. In this area we expect to publish critical and questioning work that explores and even challenges the very terms with which we have framed the book series.

\*\*\*\*\*

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**Date:** Mon, 24 May 2004 01:48:05 -0700 (PDT)  
**From:** Landis MacKellar <[landismac@yahoo.com](mailto:landismac@yahoo.com)>  
**Subject:** [PERNSeminar\_PCE] Consumption and environment: some comments.  
**To:** [pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)

Having been travelling last week, I read Sara and Alex's background paper belatedly. As Sara pointed out in her talk at the PAA, the low representation of economists in the population-environment literature, and the population-consumption debate, is striking.

Yet this is surely one of the important social science research perspectives. Without claiming to speak for the discipline, let me jot down a few points informally:

1. Consumption is a function of income, prices, and tastes. You can substitute values, class, gender, history or whatever you like for the latter, so long as it corresponds to a preference ranking. “Lock-in” notwithstanding, tastes are amenable to advertising, marketing, and moral persuasion. I would judge that American consumers purchased larger cars and larger houses over the last decade because their income rose, energy prices fell (until Iraq) and whatever changes in their tastes occurred did not offset their inclination for greater material comfort. Ten years is not very long when it comes to shifting tastes, so we shouldn’t be surprised. But tastes do change and new values are inculcated when they seem to make sense. Witness the shift in attitudes, some of them cited by Sara and Alex, toward drunkenness, tobacco consumption, sexual harassment in the workplace, and other things.

2. Environmental quality, as we are reminded by the Kuznets curve, can be purchased at a price, if you have enough income in your pocket. As income rose over the long term and the technology of maintaining environmental quality improved, people demanded more of it, and the needed policy regimes (regulations, taxes, etc.) were forthcoming through the ballot box.

3. Over the long term, the answer to the environment versus consumption dilemma is to raise income high enough that the demand for environmental quality begins to make inroads on the demand for material consumption. The problem is that in getting to that point, the potential is present for huge environmental disruption – readers of this will be familiar with statistics about what would happen if everyone in the world drove as many passenger miles as Americans, etc. We see a foretaste of this in the current raw materials boom being fuelled by China. I would argue, as an economist, that demand will elicit supply so long as the price system is permitted to operate, however, I am also comfortable with the argument that

a global natural resource economy running smoothly on full throttle is less secure than one operating comfortably at half-speed.

4. Technological progress can certainly de-link consumption and pollution; witness the de-carbonisation of energy consumption documented (and projected) by researchers like Arnulf Gruebler and Jesse Ausubel. But technological progress is not a deus ex machine, it is produced by research and development, which itself represents a costly investment (requiring, in turn, foregoing current consumption, so we are back to consumption again).

5. All this would suggest that, in the near term, advertising, advocacy and the like need to be strong to inculcate environmental “values, attitudes, behaviour, and lifestyle,” to quote from a section heading in the paper. If consumers are aware of environmental impacts, runs this argument, they will balance the value of material consumption today versus a weakened environment tomorrow and the Kuznets transition from consumption of materials to consumption of environmental quality will be accelerated. The problem, as I see it, is that we are already bombarded with advocacy, yet results are modest, and not just in the U.S. Schumpeter once said that a budget is government stripped bare of ideology, and low current budgetary allocations to provision of environmental public goods speak for themselves. To cite a back-of-the-envelope calculation from Tom Schelling: Americans spend more on cat food than they do on abating climate change. I like cats and am a bit of a climate-change fatalist -- I think adaptation, not mitigation, is the order of the day -- so I can sympathise. But I am still concerned on a wide range of issues from depletion of fish stocks to rampant species extinction that there has been little change in attitudes. If there had, we would have seen more effective policy actions.

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**Date: Mon, 24 May 2004 09:21:48 -0500**

**From: pern-m <pern-m@ciesin.columbia.edu>**

**To: pernseminars@ciesin.columbia.edu**

**Subject: [PERNSeminar\_PCE] Panel Contribution by Doerthe Kroemker**

Embedded Consumers – Some Thoughts from the Value & Attitudes Research Area

Contribution by Doerthe Kroemker, Psychologist, Center for Environmental Systems Research, University of Kassel, Germany, email: kroemker@usf.uni-kassel.de

In their background paper Alex de Sherbinin and Sara Curran structure the ongoing research into three research agendas and develop important ideas how these fields could be linked. I would like to add some thoughts to the value and attitude agenda from an action theory approach and explore how the change of consumption could be addressed in future research.

Although it is an complex task to figure out what kind of factors influence what kind of consumption, it is to a certain degree very simple from a psychological point of view: people consume what they value and what the situation advises them to consume. The focus on consumers is clearly only one perspective among many needed and the realm of this perspective is local and specific. However, this is an often neglected, but very important level of analysis because (possible) large scale solutions are likely to fail if they are not accepted and supported by the users and some changes only might start from “bottom-up”. The household level of analysis as de Sherbinin and Curran point out I also think is very important. Additionally, for some consumption fields it might even be necessary to consider specific subgroups within a population and also within a household (teenagers, women, working, non-working persons). It would be a research task to identify for which kind of consumption which kind of “target group” would be the most suitable.

To be able to identify more elaborated driving factors behind the above stated value-based and situational factors, it should first be clarified how consumption and how a consumer could be defined. Based on Stern's (1997) definition I would like to become more specific inspired by the action theory approach:

Consumption

Consumption from this point of view is a human action embedded in routines of daily life that consists of transformations of materials and energy which have negative outcomes for human societies and natural

systems. As Stern (ibid.) points out, not all consumption is undesired in this respect. It remains an important task in more detail to agree on, most likely with the help of life cycle analysis and ecological footprint approaches, which kind of consumption is good and which is bad for the aim of a “sustainable development” considering environmental, social (e.g. (north-south, intergenerational) justice) and economic (e.g. growth?) impacts of consumption. Additionally, it is important to consider that actions of consumption – apart from their centrality for individual values - are not the same in respect to their “psychological” functions. This depends on how important specific consumption is for a specific daily life situation (it might be easier for people without children to use public transports), how easily behaviour could be changed given the external situation (car use in suburban area vs. car use in cities) and whether the behaviour is a daily routine or a one-time action (daily consumption of meat vs. improvement of the insulation of the house). Thus, for the identification of “seeds of change” each field of consumption (e.g. mobility, housing, nutrition) (e.g. Stern, 2000, Scott et al., 2000) should be analysed separately and its embedding in daily life routines should be considered. Further it makes a difference whether the respective consumption should be substituted, reduced or abandoned.

## Consumer

A consumer, from this point of view, is an acting individual who is member of diverse social groups (e.g. household, life style group) which, in turn, are embedded in social (e.g. ethnic, religious), economic (e.g. capitalist, wealthy), political (e.g. democratic system, institutions, community system) and physical (e.g. climate, infrastructure) situations or contexts. The individual consumer is regarded as an analytical entity which represents socio-cultural practises (Rogoff & Angelillo, 2002) of societal collectives (Moscovici, 1995). Therewith people are not only consumers but also members of social groups (e.g. citizens) with an array of different interests. In order to understand consumption, it is necessary to analyse both psychological driving forces which can be measured on the individual level but represent societal collectives, and the contextual factors.

## Driving forces and the KAP-Gap

Starting with the analytic entity “individual consumer”, several factors can be identified with the help of psychological actions theories (e.g. Ajzen, 1991; Bagozzi & Kimmel, 1995; Rogers, 1997; Schwarz, 1981) that influence peoples’ decisions to consume goods and energy. These factors encompass values, knowledge, attitudes, beliefs about efficacy, social and personal moral norms, internal and external barriers. These models

work quite well in predicting and explaining behaviour. The problem of the KAP-Gap also addressed by de Sherbinin and Curran (Knowledge, Attitude, Practice) usually disappears from this point of view for two reasons: First, it seems that often the gap is observed because people were asked for general attitudes such as “It is positive/important to protect the environment or to protect the climate”. However, often the reported behaviour of interest is very specific, such as driving cars, or living in big houses which need quite an amount of energy or switching off lights. Psychological theories state that we can only expect a correlation between attitude/knowledge and behaviour if this is observed at the same level in respect to action, target, context and time. Thus, usually we would find that most people who do so like to live in big houses and to drive cars instead of using public transport. For sure, as it is shown in many general survey studies (e.g. Dunlap et al. 2000) many people also would like to protect the environment but often not by abandoning the actual life style. Consequently, it is a matter of conflicting values or priority for certain values which is reflected in the actual consumption behaviour.

Second, the gap is observed because it is overlooked that behaviour is not only influenced by values, attitudes and knowledge and that people have multiple aims at the same time. For instance, a person for whom it is very important to live in harmony with nature (value) will be more likely to show a positive attitude towards installing an energy efficient heating system for instance, than a person for whom this value is less important. However, the heating technique must be available on the market, must be affordable (potential barriers), gets harder to install if relevant others expect the person to spend money for other valued important things (social norm), and the person would probably not like to invest this if she/he would not live for a longer period in that specific house (another attitude). Thus, changing values and attitudes by education, for instance, is very important indeed but not sufficient because still many factors are not addressed. From this point of view the “KAP” paradigm should be extended with further factors (emotions for instance could not be addressed here) and especially “practice” should be considered more comprehensively.

### Contextual Factors

Not only these primarily agent-based factors influence people’s action. As de Sherbinin and Curran point out there are many contextual factors that shape an agent's behavior. Most of the psychological factors introduced are linked to the contextual factors. This is very obvious, for instance, in case of external barriers or restrictions which are often given through insufficient institutional designs or infrastructural impediments which, in turn, are beyond individual

control: if no adequate public transport systems are available, they can't be used, or if no residential energy programmes are offered, it is very difficult for home owners to undertake the necessary steps to implement the respective technologies. This sounds trivial but is important because external barriers must be lowered as much as possible to facilitate the desired behaviour for the presumable very big group of people without specific intentions for respective consumption. However, people are not determined by the situation, this is why I prefer "embedded in" and not "locked in" (Sanne, 2002). Based on values and attitudes they interact differently with the situations (e.g. those with strong environmental values and attitudes are more likely to overcome barriers (e.g. Schahn, 2000).

Often things become less obvious, and it is still a challenge to integrate this into action theories if the diverse societal contexts are considered. Many of the actions of consumption are not intended to spoil natural systems but serve several socio-culturally accepted aims (being successful, having an exciting life, etc.). Thus, they are well established and considered absolutely "normal" in the respective social group (e.g. buying new goods although the "old ones" still work perfectly well, drive cars with a very high consumption of fuel, eating meat). Therefore they are likely to be maintained. Usually people belong to a socially distinct group and long for a social identity that can also be expressed by "life styles", which can be understood as patterns of distinguishable identificatory outfits linked to specific sense and meaning, on the one hand, and to specific status characteristics (education, income, age, family), on the other hand (Schuster, 2003). Thus, if consumption should be changed either individual agents must be ready to exchange the social reference group, or the collective sense of the social groups must be addressed. Still, Social Marketing (Kotler & Roberto, 1991) offers comprehensive strategies to change behaviours by taking into account many of the factors touched here.

According to the perspective proposed, strategies for changing consumption should be:

(i) tailored because people are not the same, behaviours are not the same, contexts are not the same

(ii) multi-layered, and address contextual and psychological driving forces at the same time because they interact with each other (no "three-liter-car" without a "three-liter-mentality" and vice versa).

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**Date: Mon, 24 May 2004 09:08:04 -0700**  
**Subject: [PERNSeminar\_PCE] !!**  
**From: Josiah Heyman <[jmheyman@utep.edu](mailto:jmheyman@utep.edu)>**  
**To: <[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>**

Thank you, Landis, for offering a provocative contribution. I have a few comments but this is not to dismiss the role of economics, even of simplifying classical and neoclassical economic assumptions, but rather to strengthen the dialogue. Comments follow Landis's paragraphs.

Joe Heyman

On 5/24/04 1:48 AM, "Landis MacKellar" <[landismac@yahoo.com](mailto:landismac@yahoo.com)> wrote:

- > Having been travelling last week, I read Sara and
- > Alex's background paper belatedly. As Sara pointed
- > out in her talk at the PAA, the low representation of
- > economists in the population-environment literature,
- > and the population-consumption debate, is striking.
- > Yet this is surely one of the important social science
- > research perspectives. Without claiming to speak for
- > the discipline, let me jot down a few points
- > informally:
- >
- > 1. Consumption is a function of income, prices, and
- > tastes. You can substitute values, class, gender,
- > history or whatever you like for the latter, so long
- > as it corresponds to a preference ranking. ?Lock-in?
- > notwithstanding, tastes are amenable to advertising,
- > marketing, and moral persuasion. I would judge that
- > American consumers purchased larger cars and larger
- > houses over the last decade because their income rose,
- > energy prices fell (until Iraq) and whatever changes
- > in their tastes occurred did not offset their
- > inclination for greater material comfort. Ten years
- > is not very long when it comes to shifting tastes, so

- > we shouldn't be surprised. But tastes do change and
- > new values are inculcated when they seem to make
- > sense. Witness the shift in attitudes, some of them
- > cited by Sara and Alex, toward drunkenness, tobacco
- > consumption, sexual harassment in the workplace, and
- > other things.

The key point I want to address is lock-in. It is best seen on a longer time scale or in more dramatic consumer-technological changes. For example, in my work in Mexico I have looked at people's lock-in to electricity, piped water, and propane (or butane) fuel--going from not using these "utilities" at all to using them, albeit conservatively. The comment above about house size and especially vehicle size assumes that people are already committed to specific technologies (cars, interior lighting, central heating and cooling, etc.). Each question is significant: how are people locked in and how do they increase resource use within a given technological arrangement? (By the way, I discuss technology below.)

Let me also point out that individual consumer preferences are not the only object of study in terms of consumption technology. Let us contemplate, for instance, a car-reliant metropolitan transportation system, with poorly developed mass transportation and high risk of death to bicycle riders (like my home city, but I personally walk to work). In such a situation, people's preferences tend to be constrained to consuming more or less gasoline using private vehicles (and this is also shaped by income, of course). The point Landis makes about preferences for gas-guzzlers remains well-taken, but only at one level of analysis. Another level of analysis is collective consumption decisions such as mass transportation, highways, and urban housing planning. We can take urban sprawl as an expressed preference of consumers in the U.S. (vs. Copenhagen, say) but one still cannot ignore the intervening political elements involved in collective consumption decisions--these are undeniably the proximate variables (build/no build a new highway, subdivision, etc.). A more forceful assertion might be that individual preferences are ignored and manipulated at this level by "urban growth coalitions." This should be a subject of both research and political action.

Finally, I do want to say that the point about significant examples of value change is indeed well-taken.

- >
- > 2. Environmental quality, as we are reminded by the
- > Kuznets curve, can be purchased at a price, if you
- > have enough income in your pocket. As income rose
- > over the long term and the technology of maintaining
- > environmental quality improved, people demanded more

- > of it, and the needed policy regimes (regulations,
- > taxes, etc.) were forthcoming through the ballot box.

This comment also applies to the paragraph below. I strongly, strongly want to caution readers that we do **\*\*not\*\*** know that increasing income to a high enough level results in a decreased household footprint (or any other measure you want to take--weight, energy, CO2, etc.). It might alter public opinion poll type of stated preferences but what about performance (revealed preferences times income)? Do we have a suitable comparison of poor households in Japan versus wealthy ones? In the U.S., in Europe? How about extremely marginal rural Mexican day laborer households versus \$100 average weekly income urban Mexican households versus my average \$1500 a week income household right across the border in the U.S.--walking, environmental values, and all!

- >
- > 3. Over the long term, the answer to the environment
- > versus consumption dilemma is to raise income high
- > enough that the demand for environmental quality
- > begins to make inroads on the demand for material
- > consumption. The problem is that in getting to that
- > point, the potential is present for huge environmental
- > disruption ? readers of this will be familiar with
- > statistics about what would happen if everyone in the
- > world drove as many passenger miles as Americans, etc.
- > We see a foretaste of this in the current raw
- > materials boom being fuelled by China. I would argue,
- > as an economist, that demand will elicit supply so
- > long as the price system is permitted to operate,
- > however, I am also comfortable with the argument that
- > a global natural resource economy running smoothly on
- > full throttle is less secure than one operating
- > comfortably at half-speed.

- >
- > 4. Technological progress can certainly de-link
- > consumption and pollution; witness the
- > de-carbonisation of energy consumption documented (and
- > projected) by researchers like Arnulf Gruebler and
- > Jesse Ausubel. But technological progress is not a
- > deus ex machine, it is produced by research and
- > development, which itself represents a costly
- > investment (requiring, in turn, foregoing current
- > consumption, so we are back to consumption again).

This point is well-taken and I would add that technological change has to involve the domain of collective consumption as well as everyday household

technology. It has to effectively resolve household problems of self-provisioning within serious constraints not only of income but also of time pressures in contemporary urban capitalist formations. Especially in the area of collective consumption, both research and implementation are strongly political matters, and again for this reason Landis is correct that technology is not a deus ex machina but takes genuine struggle and collective resolutions.

>

> 5. All this would suggest that, in the near term,  
> advertising, advocacy and the like need to be strong  
> to inculcate environmental ?values, attitudes,  
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> already bombarded with advocacy, yet results are  
> modest, and not just in the U.S. Schumpeter once said  
> that a budget is government stripped bare of ideology,  
> and low current budgetary allocations to provision of  
> environmental public goods speak for themselves. To  
> cite a back-of-the-envelope calculation from Tom  
> Schelling: Americans spend more on cat food than they  
> do on abating climate change. I like cats and am a  
> bit of a climate-change fatalist -- I think  
> adaptation, not mitigation, is the order of the day --  
> so I can sympathise. But I am still concerned on a  
> wide range of issues from depletion of fish stocks to  
> rampant species extinction that there has been little  
> change in attitudes. If there had, we would have seen  
> more effective policy actions.

I do agree with this, and the point about low revealed preferences for environmental change is well-taken. But besides advertising and advocacy aimed at individual preferences, there must be work at collective levels if the analysis of lock-in is correct (hard to change as an individual, except for smaller versus bigger internal combustion engines, etc.), and likewise of larger collective consumption forms.

Joe

\*\*\*\*\*

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**To: <Undisclosed-Recipient:[@ciesin.columbia.edu](mailto:@ciesin.columbia.edu)>**  
**Subject: [PERNSeminar\_PCE] Conference**  
**Date: Sat, 22 May 2004 19:13:07 +0300**

The Cairo 9th International conference on energy and environment will be held in Sharm El Sheikh, Sainai , Egypt on March13-17, 2005.  
The conference is organized jointly by the Supreme council for Scientific Research in Egypt and Wayne State University in Detroit, Mi, USA.

The details about the theme, program, accomodation and registration package are available on the website :<http://ee9.sat-eng.com>  
For any questions or details please contact us.

Conference Chairman  
Prof. Abdullatif El Sharkawy

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**Date: Wed, 26 May 2004 02:30:01 +0100 (BST)**  
**From: Ramakrishnan Narayana<[ramky2020@yahoo.co.uk](mailto:ramky2020@yahoo.co.uk)>**  
**Subject: [PERNSeminar\_PCE] Over consumption Vs. less consumption**  
**To: [pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)**

Dear All,

I feel that at present the focus of the ongoing discussion is mainly on nexus between 'over-consumption' and the environmental issues. However, the nexus between 'less consumption' and environment in developing countries needs to be explored rigorously. A large number of studies in development economics has demonstrated how the 'vicious circle' between poverty and environmental degradation in developing countries has set in in many of the resource dependent countries. However, we have not yet got any realistic solution to deal with this vicious circle effectively. Some serious thought on this issue is warranted for.

Ramkrishnan.

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**Date:** Tue, 25 May 2004 22:35:03 -0700 (PDT)  
**From:** ALHAJ HAJHAMAD <[sahdcg@yahoo.com](mailto:sahdcg@yahoo.com)>  
**Subject:** [PERNSeminar\_PCE] comment  
**To:** [pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)

Hi all,

It is very interesting so far. However, I think we need to have more debates on how to develop a more holistic methodology that goes beyond the fun of mathematical, econometric modeling, as well as the empiricist social reductionist approach, including geographical patterns of consumption. The American way of life is the finance capital framework, it is quite earthly and will change equally like its predecessors, the private ownership modes of production. Fortunately this contemporary regime while so destructive to the common natural habitat, it has created the means for rational rehabilitation and sustainability. Society is more organized and has the means to act quicker than any time in history. So it is the problem of how to integrate technical, theoretical methods to improve on environmental sustainability without influencing the welfare of the rich or the poor.

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**Date: Wed, 26 May 2004 10:17:20 -0400 (EDT)**  
**From: Alex de Sherbinin <[asherbin@ciesin.columbia.edu](mailto:asherbin@ciesin.columbia.edu)>**  
**To: [pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)**  
**Subject: Re: [PERNSeminar\_PCE] !!**

Adding to the discussion of Joe's response to Landis' points 2 and 3  
(on income effects)...

The Kuznets curve seems most applicable to issues such as environmental remediation (cleaning up air and water supplies) at the national level. As incomes rise air and water quality tend to get better. But I'm not sure that we can speak of an individual Kuznets curve, least of all for environmentally significant consumption. We cite a study by Lutzenhiser in California which clearly shows that energy consumption increases with increasing income (the paper inadvertently omitted the citation; it is in the Stern et al. volume). At the high income end of the spectrum there is more space to heat, more demand for air conditioning, more hot tubs and saunas, etc. I do not buy the argument that people with higher incomes will inevitably start to purchase passive solar housing, more efficient furnaces, and hybrid vehicles. Maybe a small minority will, but under current conditions (absent more widespread environmental awareness) the vast majority of high income consumers will not necessarily opt for more environmentally benign forms of consumption. And even among the environmentally conscious consumers, my sense is that environmental consciousness tends to affect a subset of purchases or daily decisions in which the impact of making an environmentally conscious purchase has a relatively modest impact on their utility (or wellbeing), and may even result in a certain prestige value. But ask them to give up vacations in exotic places to save on jet fuel, and you will find reluctance if not resentment at the suggestion. This is not to say that the "green" purchasing by consumers is meaningless - but to argue that a more profound shift in societal values and willingness to compromise on individual (or household) utility will need to take place if we want to see a real

sustainability transition.

(Note: I am not pointing my finger at anyone. I count myself among those who would find it difficult to take environmental considerations into account across a broad range of activities and lifestyle choices I currently take for granted.)

-Alex

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**Date: Wed, 26 May 2004 11:27:04 -0400 (EDT)**  
**From: "Marina Fischer-Kowalski" <[Marina.Fischer-Kowalski@uni-klu.ac.at](mailto:Marina.Fischer-Kowalski@uni-klu.ac.at)>**  
**To: <[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>**  
**Subject: [PERNSeminar\_PCE] discussion**

There is three arguments I would like to make.

1. refers to Sheribin's (20/5) questioning of the need to "locate" the environmental impacts of consumption in space. maybe it is not always important to locate them in space, but for any comparison it is necessary to unambiguously attribute them to a certain system. Be the system a household: as with national economies, the easiest way for a household to have less impact is by "externalization": keep children in kindergartens, teenagers in boarding schools, the old and sick in hospitals, and the adults at their workplace all day, so you will have much less need for food, water, energy supply, cleaning and repair, and what not, at the household level. As soon as you seek to compare any two households in their consumption patterns and levels, you have to be very aware of that. You have to deal with functional differentiation between different institutions: by integrating housewives in the labour market, for example, they will be supplied not only with a warm home, but also with a warm and lighted workplace. By this process alone (which I am certainly not opposed to), consumption levels must have risen substantially in the past decades. You also, of course (as both Doerthe Kroemker and Josiah Heyman refer to), have to deal with the distinction of private and public consumption: for example, water supply and sewage systems for regions of urban sprawl are materially and energetically much more costly than in densely populated areas. The material and energetic expenditure for movement across increasing distances (losses from water pipes, losses in energy supply systems, fuel for vehicles) again may be divided between private and public consumption, and the proportions of this division may vary widely. Maybe people feel I am too obsessed with matters measurement. But I feel, if you do not have a clear yardstick to distinguish between the better and the worse, you cannot evaluate the effectiveness of any interventions considered.

2. Once again. why is there a need to "locate" environmental impact of consumption? Landis McKellar's Kuznets curve argument provides an excellent example why. With rising incomes, so it reads, people develop a preference for environmental quality. Environmental quality \* where? At the mining sites, where they get their metals from, or in their back garden, the district where they live? Environmental quality of course is better in rich living quarters than in poor, and expenditure on pollution prevention rises with income. But this certainly does not mean that the global environmental impact of the consumption of rich people(s) is lower than the impact of poorer people(s). Heyman has objected to the validity of the Kuznets argument already, but I would take an even stronger position on this: it is not that we do **\*\*not\*\*** know whether environmental quality gains in the end, with incomes high enough. I would claim that we **\*\*know\*\*** they do not, as soon as you draw the system boundaries wide enough. With CO2 emissions, there is plenty of literature to show that. With other indicators (such as EF, or overall material consumption), there is no indication of the validity of the Kuznets function. Rising income is associated to increasing consumption of energetically and materially intensive commodities, even if the proportion spent on (maybe less environmentally intensive) services is increasing. I do not think there exists a "transition from consumption of materials to consumption of environmental quality"(Landis McKellar). I would strongly support Josiah Heyman's suggestion to try to empirically investigate environmental impacts of consumption by income groups.

3. My last argument again refers to Sheribin and his question of the "incommensurability of impacts of different materials". What I had been trying to say in my first statement was that it was hard to agree on the "impact intensity" of different materials, because this depended on the problem one is focussing. According to a recent study by van der Voet (2003), so-called bulk material flows such as animal produce (milk, meat etc.) and construction materials have the most detrimental impact on land use and a whole variety of other negative environmental impacts. This contrasts strongly to conceptions of impact oriented at toxicity, for example. So I am still convinced that with materials, as with energy, the overall **\*\*scale\*\*** of consumption is relevant (for which you should add up all materials by their simple weight), but at the same time \* depending on the environmental problem focused \* more specific impact indicators should be developed, using different weighing schemes according to purpose.

marina fischer-kowalski

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**From: "David Pepper" <drpepper@ucsfresno.edu>**  
**To: <pernseminars@ciesin.columbia.edu>**  
**Cc: "David Lighthall" <david@relational-culture.com>**  
**Subject: [PERNSeminar\_PCE] Imported environmental impacts**  
**Date: Wed, 26 May 2004 08:46:00 -0700**

Prof. Marina Fischer-Kowalski IFF - Social Ecology - raises interesting points.....

This argument is not always just local.  
With Regards to location of environmental impacts, some are "imported".....(many even)  
They are not always fixed, nor equal - nor only academic.  
consider this real story

Fresno County - Central Valley California.  
Fruit and Vegetable capital of the world (10% of the worlds fruits and nuts)

So a farmer/family lives here, grows here and raises their children. He hires local workers to pick his apricots. Uses local water. Sells them across the US/world.  
Now a Chilean farmer grows apricots, ships them to LA - where diesel trucks pick them up, and drive them through the Central Valley - polluting as they go, and then compete against those same central valley apricots in underselling to Nebraska, Iowa and the rest of the United states. It's a double hit for the people living here - not only are they undersold by cheap labor, but they are polluted on as the trucks pass. The air they breath is fouled and the dust and pollution created helps kill their apricot crops.  
The farmer/farmworker develops asthma, the poor local health care system has to pay for it....and on it goes.....

So is an "air tax" on imported items fair?  
What would it look like (eg bigger trucks = more tax, older engines = more tax, etc)  
Does the local population have that right?  
How do we balance air pollution if not locally?  
And how do we level the playing field, locally, nationally and internationally?

Dr David Pepper  
UCSF-Fresno

Asthma Education and Management Program  
Community Hospitals of Central California

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**Date:** Thu, 27 May 2004 13:17:11 -0400 (EDT)  
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**To:** [pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)  
**Subject:** [PERNSeminar\_PCE] Yale University Poll on the Environment (fwd)

Here is a poll of Americans that reflects environmental concern, though it apparently did not address issues such as willingness to pay for products produced in a sustainable manner or to alter lifestyles. It seems to reflect a somewhat typical position that "the government should be doing more about these problems" rather than "individuals bear a responsibility for environmentally relevant decisions," but it is a start.

-Alex

#### Yale University Releases National Poll On The Environment

New Haven, Conn. -- A Yale School of Forestry & Environmental Studies survey of 1,000 adults nationwide shows Americans are seriously concerned about the country's environmental health and want more political action on the environment, particularly at the national and international levels. A wide majority of voters say a candidate's stance on the environment will be a factor in how they decide to vote in November. Voters -- especially younger voters -- want the candidates for president to talk more about their plans for the environment.

While the country is profoundly divided when it comes to national politics, Americans of all political persuasions are as troubled by the problems of air pollution and toxic contamination of soil and water as they are by the much higher-profile issues of jobs and the cost of gas. There is also a new environmental concern in post-9/11 America: bio-terrorism and the security of the country's food and water supply.

According to Gus Speth, dean of the Yale School of Forestry & Environmental Studies, "This poll underscores that Americans are concerned about the environment, and they want the federal government to take action to protect it. It shows that the positions the presidential candidates

hold on the environment will likely be a significant factor in the voting behavior of Americans this November." Eighty-four percent of those polled say the environment will be a factor in their vote in November; 35% consider it a "major factor."

Results of the poll indicate that nearly three out of five (59%) Americans rate the quality of the country's environment overall as "only fair" or "poor," while just 3% say America's environment is "excellent." Americans are not optimistic about the immediate future of the environment. Just 16% say that the quality of the environment in the United States is getting better, while 50% say it is getting worse.

The results are even more striking when Americans are asked about global environmental conditions. Three-fourths rank global conditions as "only fair" or poor, and 63% say conditions are getting worse.

"There's a real concern on the part of the majority of Americans when it comes to the overall quality of our environment," said Speth, "and people are genuinely concerned that it's only going to get worse. Moreover, the public perceives a huge deficit between its aspirations for environmental protection and what our politics actually delivers."

Yale Professor Dan Esty, who took the lead in developing the poll with nationally recognized polling firm Global Strategy Group, said, "Political pundits usually dismiss the environment as an issue that affects elections because they think people don't listen when politicians talk about it. Clearly, that's not the case. In this presidential campaign, at least so far, neither candidate has spent much time talking about his positions on the environment. This poll indicates they might want to start talking about it â€ˆ soon."

According to the poll, fully two-thirds (67%) of Americans say the United States government does not do enough about the environment and should do more. "Americans want concrete efforts taken to protect the environment," notes Esty.

The combination of strong concerns over the state of the environment and an expectation that the federal government could do more to address pollution and natural resource-management challenges translates into a "desire on the part of most Americans to hear the candidates for president talk more about their plans to protect the environment," according to Esty. A majority of Americans (56%) say that the candidates should talk more about their plans for the environment. A significant percentage of the electorate (37%) wants the candidates to talk "much more" about environmental issues.

And the public wants action as well as talk. Eighty-four percent believe the United States should enact stricter emissions and pollution standards for business and industry. This reflects substantial majorities of Democrats (92%), Independents (90%) and Republicans (68%).

The poll also indicates that Americans are concerned about the price of gasoline and the issues of jobs and the economy. But Americans view protecting the country's water and food supply from terrorists as just as serious a problem; fully 87% of Americans rate protecting the country's water and food supply from terrorist attack as a very serious problem.

Esty said, "That's a relatively new phenomenon, but not a surprising one. Just about every day since 9/11, the American people have been reading, hearing and seeing on television, news stories regarding public officials' concerns that terrorists will target a major source of water or food. After awhile, those news stories have an effect, and it's clear that they've had an impact on peoples' opinions."

In the end, said Esty, "the environment remains an issue of concern for most Americans – in one way or another. One of the hallmarks of our country has always been that one generation has passed on to the next generation a better life: better jobs, better technology and a better standard of living. To a certain extent, the price of that has been the health of our environment – and now people are saying, 'I'm worried about the environment, we need to take better care of it, and it's part of what makes for higher quality of life.'"

The survey was conducted for the Yale School of Forestry & Environmental Studies by Global Strategy Group from April 26 to May 3, 2004. The survey was conducted using professional phone interviewers. The nationwide sample was drawn from a random digit dial (RDD) process. Respondents were screened on the basis of age, i.e., to be over the age of 18. The survey has an overall margin of error of  $\pm 3.1\%$  at the 95% confidence level. That is, if the same survey were conducted among similar respondents, the results would fall within the range of  $\pm 3.1\%$  in 19 out of 20 cases.

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**Subject: [PERNSeminar\_PCE] Demographic Trends, needs, and supply systems**  
**Date: Fri, 28 May 2004 10:50:04 +0200**  
**From: "Alexandra Lux" <[lux@isoe.de](mailto:lux@isoe.de)>**  
**To: <[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>**

With this posting, we would like to introduce another view in the =  
discussion on population, consumption, and environment from the research =  
project "Supplying the Population - Demographic trends, needs, and =  
supply systems" (demons). Within this interdisciplinary project, we seek =  
to provide a conceptual framework for analysing supply systems as =  
subject in socio-ecological research.

Every society faces the problem of supplying its people with basic goods =  
such as water, food, energy, and housing, transport, traffic, social =  
security, medical care etc.. This task needs to be fulfilled in a way =  
that, on the one hand, basic needs are satisfied, quality of life is =  
warranted, so that productive living is possible, while, on the other =  
hand, environmental conditions do not deteriorate.

During the time, in every region populated by humans, specific =  
structures have been developed to provide people with goods; we call =  
these structures supply systems. They may be seen as parts of life =  
support systems meaning any natural or human-made system that furthers =  
the life of the biosphere in a sustainable fashion" (Becker 2002; Sage =  
2001: 1xv). The main character of life support systems is that together =  
they provide the basis for the reproduction and continuation of life. =  
These needs go far beyond biological and physiological requirements. =  
Life support systems establish ecological, economic and social minimum =  
conditions for the continuation of societal life. Human life and =  
societal development depend strongly on the functioning of a highly =  
complex set of interacting natural and social systems. Thus, supply =  
systems for water, energy and food are embedded in a fragile natural =  
environment, which requires intelligent regulation in order to satisfy =  
the needs of a growing population now and in the future.

"Supply system" is a rather compromising term for a lot of interactions =  
within the nature-society-nexus. As components of life support systems =  
they mediate between society and nature. Hence, their analysis has to =  
be inter- and transdisciplinary and must contain aspects of social =

science and natural science.

In a conventional perspective, the notion of supply system is often too much restricted to technical aspects. Related problems, so far, are mainly described either as problems of infrastructure or as problems of one specific sector (water, energy, housing, consumption...). However, different supply systems are linked with each other and cannot be analysed in an isolated manner. This becomes obvious in, for instance, the relation of "water", "food" and "health". Food supply systems, for example, are again closely linked with the globalized economy and can therefore not be analysed without taking that into account.

Supply systems are determined by needs, necessities and demand. As human needs and equally demand change, supply systems are and must be variable; furthermore they are dependent on the respective historical and socio-economic contexts. This means, research has to take specific social differentiations (gender, income, specific needs of women, elder people, migrants, ...) into account. The wide range of forms into which supply systems can evolve may be seen as the result of different historical developments in different regions. Thus, statements concerning any particular region's supply systems cannot simply be transferred into other contexts. Nowadays, as they are very much influenced by processes of globalisation, more and more elements and processes are linked to each other on a technical level, for instance. With this increasing connectivity, the possibility of mutual influences and dependencies, and thus also the susceptibility for any kind of disturbances and critical developments, is growing.

In contrast to the IPAT-model, supply systems tasks and performances depend on the populations' needs, lifestyles, and consumption patterns thus the demography sets a framework for supply systems and vice versa. Currently the satisfaction of basic human needs is threatened in many parts of the world. This may lead to social-ecological problems, which can intensify to a critical point. As a consequence of this, the question of interactions between demographic trends and supply systems features more and more on the political, social and scientific agenda.

One of the projects aims is to structure supply systems as subjects of social-ecological research and to demonstrate specific inherent problems. The project demonstrates concentrates on those supply systems where production, distribution, use and consumption of physical goods which are based on natural resources, are concerned. In order to analyse the effects of different demographic developments we investigate supply systems with both global importance and various shapes on a regional level. Additionally, the selected supply systems are linked with others in order to demonstrate interactions.

All this applies strongly to food and water - both are goods serving

basic needs, they are increasingly threatened and/or currently in transition. Food and water are closely connected: Problems in one area are inevitably linked with difficulties of the other. Several aspects can be identified in the overlapping of both supply systems: the fundamental role of water as a basic food item itself, irrigation as an important means of food production, and the concept of "virtual water". In the food supply system like in the water supply system, aspects of feeding mingle with more symbolic ones, aspects of consumption merge with aspects of pleasure. Thus, in a comprehensive view, one can state that a food supply system must be seen as "a system of provision, the chain of activities connecting initial production to final consumption" (Fine 1994: 520). When analysing food supply systems, two types of distinctions seem to be important: first the one between the bio-physical level on the one hand and the socio-cultural on the other, then the one of production, usage, and distribution of food against access, preparation, and consumption of food. These distinctions are also more or less valid again for the water supply system, too.

Globally seen, the total population is constantly increasing - although most countries' population's growth rates are declining. This is a result of the so-called "population momentum" (Lutz et al. 2004). According to the UN medium variant, global population is expected to rise from currently 6.3 billion to 9.3 billion in 2050. Therefore future development must expect a rising need for food and water. The increase of food production obviously necessary could either be achieved by its intensification or by extensification. Both, however, are possible only at the expense of serious ecological consequences. Expansion of the agriculturally productive land, for instance, is hardly possible and only conceivable on use of further resources, e.g. water. Intensification of the cultivation procedures often leads to soil degradation, desertification and thus to a reduction of arable land.

Besides the ongoing, but declining growth of global population numbers we face, however, a decreasing birth and mortality rate, an older-aged population because of increasing life expectancy, and more migration and urbanization. This is part of what has commonly been described as the "new international population order". Due to the rising divergence between and within regions, heterogenous and sometimes disperse population dynamics moving in opposite directions are to be considered. As far as their relation with supply systems is concerned, research has to differentiate between very complex demographic trends in different regions and also on a different scales.

In industrialized countries the demographic development concerns almost any aspects of supply systems. Apart from regions with a population decrease because of migration and/or reduced fertility rate, often a

change in household composition and in the number of people per household can be observed. Here, the perception towards basic goods has undergone profound changes. While their sheer availability is more or less secured and taken for granted, in particular the quality of goods (like food) increasingly becomes an issue of individual luxury. Problems in quality are often much more important than difficulties of quantity.

The population growth is mainly taking place in developing countries. There, food security depends among other things on technological developments, on the geographical conditions, on the political situation and on infrastructure. Rising incomes and a better living standard change for their part the demands for food. Increasing urbanisation and changes in utilisation are both relevant to food and water supply systems. For most developing countries self-sufficiency will not be achieved in the near future, i.e. the countries will remain dependent on food imports. However, acquiring a more appropriate share of the global food market presupposes economic growth. Although aspects of food and water quality are certainly important, in developing countries and in water-poor regions, problems of quantity and of the access to food and water are of high priority. Especially concerning aspects of supply, however, it is hardly possible to talk about "the industrialized countries" vs. "the developing countries". The differences within the group of developing countries, for instance, seem to be bigger than those between developing and industrialized countries.

Access is an important issue in connection with supply systems. Numerically, an increase in the number of people corresponds to a decrease in the per-capita availability. However, one has to differentiate between the potential and the actual availability of food and water. This becomes very clear in the example of food supply: not the potential yield but the access determines the scope for population dynamics. So far, research has very much been restricted to the potential side. Concentrating the focus on mere quantitative aspects of population dynamics would certainly not be sufficient for the analysis, "the sheer number of people does not on its own explain the dire state that many ecosystems are in - how people and institutions use those resources, the technologies used to extract them, and policies influencing consumer behaviour are important" (PERN 2003: 2). A Malthusian concept of scarcity does not reflect institutional arrangements, access, the importance of power, and other social, political, or psychological issues.

There are, as it has been stated, several important similarities in food and water supply systems. One of the main differences, however, is the fact that water supply is, in most cases, based on a net of grid lines (canal, pipeline, pipes,). In phases of a decrease in population such as

net-based supply systems come under pressure, if the existing material = infrastructure cannot be adapted to this change. This clearly = demonstrates the need for demand orientated supply systems and = management. Not satisfying a future need extrapolated from an existing, = fixed, current one is the future's main challenge but opens = possibilities to satisfy a highly flexible demand. This also applies to = any basic goods, but becomes a major task in such ones (like water) = distributed in a material net system. Here, it is, moreover, important, = to establish purpose-differentiated supply systems. The over-all goal to = be pursued is to supply the population (as well as the other water = consumers such as agriculture and industry) with a good that is, in = terms of quality, adapted to the respective customers' requirements. For = drinking purposes there are certainly higher requirements than for other = purposes.

The aim of the demons project is to provide the basis for a more = detailed conclusion about the significance of population dynamics on the = one hand, and the analysis of the interactions of water and food supply = systems on the other hand.

Dr. Diana Hummel, Dr. Christine Hertler, Cedric Janowicz, Alexandra Lux, = Dr. Steffen Niemann

Contact:

Dr. Diana Hummel  
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www.demons-project.de

Literature:

Becker, Egon (2002): Transformations of Social and Ecological Issues = into Transdisciplinary Research. In: UNESCO (Ed.): Knowledge for = Sustainable Development. An Insight into the Encyclopedia of Life = Support Systems. Volume 3. Oxford: UNESCO / EOLSS Publisher

Fine, Ben (1994): Towards a political economy of food. Review of = International Political Economy, Vol.1, No.3, Autumn, 519-545

Lutz, Wolfgang / Sanderson, Warren C. / Scherbov, Sergei (2004): The End = of World Population Growth in the 21. Century. New Challenges for Human = Capital Formation & Sustainable Development. London

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Summary (www.populationenvironmentresearch.org)

Sage, Andrew P. (2001): Introduction to the Encyclopedia of Life Support = Systems. In: Tolba, Mostafa K. (Hg.): Our Fragile World. Challenges and = Opportunities for Sustainable Development. Vol. 1. Oxford, 1xv-1xxxii

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**Date: Fri, 28 May 2004 02:38:35 -0700 (PDT)**  
**From: bola okuneye <b\_okuneye@yahoo.com>**  
**Subject: Re: [PERNSeminar\_PCE] Demographic Trends, needs, and supply systems**  
**To: pernseminars@ciesin.columbia.edu**

Dear Alexandra,  
Thanks a lot for this piece of work. It will be useful for the study we are doing for PRIPODE in Nigeria. We have gone far in data collection and analysis has commenced. After completing the study we would with the permission of PRIPODE, send to you a copy of the report.  
Prof. P. A. Okuneye,  
University of Agriculture, Abeokuta, NIGERIA.

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**Date: Fri, 28 May 2004 08:56:22 -0400 (EDT)**  
**From: Alex de Sherbinin <asherbin@ciesin.columbia.edu>**  
**To: pernseminars@ciesin.columbia.edu**  
**Subject: [PERNSeminar\_PCE] extending the PERN cyberseminar**

Dear Colleagues,

In light of the long weekend in the Europe and the US (Pentecost and Memorial Day respectively), we would like to extend the discussion on population, consumption and the environment until Wednesday, June 2. We

welcome further contributions to the seminar, especially from late-comers.  
What better way to spend your time around the barbeque than to print out  
and read the background paper?

Cheers,  
Alex de Sherbinin  
PERN Coordinator

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**From:** Fred Meyerson <[fmeyerson@prb.org](mailto:fmeyerson@prb.org)>  
**To:** [pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)  
**Subject:** [PERNSeminar\_PCE] Reply to Landis MacKellar  
**Date:** Thu, 27 May 2004 20:15:28 -0400

In reply to one of Landis MacKellar's points:

"3. Over the long term, the answer to the environment versus consumption dilemma is to raise income high enough that the demand for environmental quality begins to make inroads on the demand for material consumption. The problem is that in getting to that point, the potential is present for huge environmental disruption - readers of this will be familiar with statistics about what would happen if everyone in the world drove as many passenger miles as Americans, etc. We see a foretaste of this in the current raw materials boom being fuelled by China."

If that is the problem, then what Landis suggested - (raising everyone's income to the point that they demand (i.e., can afford) local environmental quality) - can't possibly be the answer, particularly on a global scale. The other issue is that per capita consumption tends to plateau and stay high - there are few cases that I am aware of where a country's per capita consumption level has decreased except in the face of economic down-turn. (See the York and Dietz plasticity writings.)

If there are such cases, I'd be interested in hearing about them. (excluding the "substitution" cases, such as North Sea oil and gas for U.K. coal; lousy East German factories for better-run West German industries - those increase efficiency, but don't really decrease consumption)

Best - Fred

Frederick A.B. Meyerson, Ph.D., J.D.  
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**From: "Salonius, Peter" <[psaloni@nrcan.gc.ca](mailto:psaloni@nrcan.gc.ca)>**  
**To: "'pernseminars@ciesin.columbia.edu'"**  
**<[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>**  
**Cc: "Salonius, Peter" <[psaloni@nrcan.gc.ca](mailto:psaloni@nrcan.gc.ca)>**  
**Subject: [PERNSeminar\_PCE] Meeting Everyone's Demands**  
**Date: Fri, 28 May 2004 10:18:19 -0400**

Frederick Myerson refers (far below) to Landis MacKellar's suggestion that the solution "to the environment versus consumption dilemma" is to raise everyone's income to the point that they demand (i.e., can afford) local environmental quality.

Myerson suggests that " per capita consumption tends to plateau and stay high".

Neither MacKellar nor Meyerson appear to be familiar with the impending and all important phenomenon of 'PEAK OIL' for the world economy. As production from large oil fields diminishes and future discoveries from smaller, deeper and further-offshore pools fails to meet the increasing demands from an exponentially growing population and continuing expansion of global fossil-fuelled global trade -- then Meyerson will most certainly see the " permanent economic down-turn" which will affect a decrease in the per capita consumption level of all countries.

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and then clicking on and speed reading AT LEAST the first few pages (the

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REVIEW "Oil-based Technology and Economy - Prospects for the Future at:

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will give a very good introduction to the importance of petroleum in the world economy and the impossibility of sustaining this economy at ANYTHING LIKE present levels.

Another sobering trend can be seen in the lower yield of all-important petroleum for each barrel expended for its extraction, production and distribution to the marketplace:

-- 1950s --50 barrels of oil for every one needed for extraction and production

--1990s -- 5 barrels of oil for every one needed for extraction and production

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-- then we will be forced toward what is left of fissionable nuclear fuels and long-term sustainable renewable energy. You can find reference to this phenomenon in Jay Hanson's paper at:

<http://www.dieoff.com/page175.htm>

Quoting from the first few pages of the >100 page REVIEW

"Oil-based Technology and Economy - Prospects for the Future" which can be accessed at:

[http://www.ida.dk/oilconference/Oil-based\\_Technology\\_and\\_Economy.pdf](http://www.ida.dk/oilconference/Oil-based_Technology_and_Economy.pdf)

[Most] "scenarios for the future development are prepared under an axiomatic assumption that economic growth at a rate averaging at least 2% p.a. will continue worldwide , unrestricted by eventual constraints in the supply of oil and natural gas. The reason for this is not that there is empirical evidence that such growth is sustainable. The reason is that without such an economic growth axiom the future becomes incalculable, because nobody can foresee the disruptive consequences that zero or negative economic growth over a long period of time will have in the capitalistic market economy."

"A smooth technological transition to an economy less dependent on oil implies the initiation of technological shifts well ahead of the peak in oil production. If oil-based technologies remain the cheapest alternatives until the production peak occurs, the continued increase in demand will shorten the time until the peak occurs and make the gap between demand and

production wider and the decline in production steeper. The world economy will become technologically more and more dependent on oil as the cheap-oil era comes to an end. This unfortunate development appears in all the different scenarios published by energy agencies and the industry. Only the estimated time and height of the peak and the subsequent decline rate differs from one scenario to another."

from: Oil-Based Technology and Economy: Prospects for the Future  
December 10, 2003, Conference Report, Copenhagen  
The Society of Danish Engineers <http://www.ida.dk/oilconference>

I do hope that this reading material may bring an element of reality to the discussion which does not seem to have factored in the tremendous importance of abundant and cheap energy to the historical growth of the world's population (which has multiplied six fold) and economy (which has multiplied much more) since the mid 1800s and the impossibility of maintaining EVEN the size of the present population and the size of the present global economy.

Albert Bartlett states that "modern agriculture is the use of land to convert petroleum into food". We have used a series of increasingly concentrated exhaustible geological energy sources to expand the total human enterprise during a few centuries. In essence we have been EATING PETROLEUM to fuel this expansion. In retrospect this was not a very good idea.

As 'peak oil' is reached and we begin the slide toward a much smaller total human enterprise that is fuelled by the sustainable solar energy (upon which we were almost completely dependent until exhaustible coal, oil, gas and fissionable nuclear material created the consumerism of the temporary 'OIL INTERVAL') --- we will see population shrinkage and a decline to a much smaller STEADY STATE economy whose size will be regulated by the efficiency with which we are able to harvest energy from the sun.

Peter Salonijs  
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Canada

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**Date: Fri, 28 May 2004 07:39:30 -0700 (PDT)**  
**From: Landis MacKellar <landismac@yahoo.com>**  
**Subject: Re: [PERNSeminar\_PCE] Reply to Landis MacKellar**  
**To: pernseminars@ciesin.columbia.edu**

Re Fred Myerson,

Well, what I meant was that, while demand for materials doesn't go down (unless clearly superior substitutes are developed for one reason or another), demand that the residuals of production and consumption be better dealt with goes up. Hence, less pollution. Southern Californians don't drive less than they did in the nineteen fifties, but their demand for air quality has gone up and they have the income in their pocket to purchase it, through appropriate policies, regulations, etc.

The one exception to this, as I think someone pointed out in this forum, seems to be CO2. Most people just don't seem to recognise this as a noxious pollutant, although attitudes may change if they see this new blockbuster movie.

Best,  
Landis

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**From: "David Pepper" <drpepper@ucsfresno.edu>**  
**To: <pernseminars@ciesin.columbia.edu>**  
**Cc: "Michael Becker" <mikebe@csufresno.edu>, "David Lighthall" <david@relational-culture.com>**  
**Subject: RE: [PERNSeminar\_PCE] Reply to Landis MacKellar**  
**Date: Fri, 28 May 2004 07:54:26 -0700**

Landis,

>From the central valley of California where "heavy particles and compounds" (like CO2) tend to sit up against the Sierra, I've long been concerned about CO2 as a noxious agent in human health. I have found only a few articles

relating to "CO2 islands" and the potentiating effect they have with pollen on adverse human health.

Are you familiar with this literature? Is anyone?

If in fact CO2 is more noxious to humans, we should add CO2 to the EPA's hit list (which currently only has CO) and it would have major implications as to oils consumption. SUV's would no longer be "cleaner vehicles", and the roughly 12-15 # of pollutants (mostly CO2) per gallon of gas could then be seen in their true costs.

I agree with your assertions that we (the western world as we know it) are an oil economy. What will drive us to other (conservation - mass transit, bicycle, solar, wind, et) forms of energy remains to be seen, and given the "status quo in the US, and our current administrations tie to big oil I'm not holding my breath.

Pepper

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**Subject: Re: [PERNSeminar\_PCE] Reply to Landis MacKellar**  
**To: [pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)**  
**From: [re@popact.org](mailto:re@popact.org)**  
**Date: Fri, 28 May 2004 11:12:57 -0400**

I think the distillation of these points may be that the Kuznets Curve mostly applies to governmental and/or corporate environmental remediation efforts in relatively wealthy jurisdictions with well-functioning institutions and healthy economies. These institutions react to socially or politically well-accepted environmental threats after the consumption (which itself is not really affected by the curve) has already produced considerable pollution due to rising population and increasingly intense per-capita consumption. The environmental benefits of the Kuznets curve are often exaggerated, especially given the general rule that prevention is environmentally preferable to remediation.

Carbon dioxide may be the most obvious exception to the curve, but I'm not sure it's unique. The curve's application appears to me to be uneven to non-existent relative to certain other greenhouse gases (chiefly complex industrial molecules that are rare in the atmosphere but powerful heat trappers) and to toxic and/or hormonally disruptive chemicals -- basically

to any pollutant or rgeenhouse gas not yet regulated. Moreover, biodiversity loss has a questionable relation to the curve. You could say that wealthy societies attempt to save endangered species. But do they succeed? Witness the failure of such fisheries as cod to respond to well-intentioned remediation efforts by wealthy societies. Is the California condor saved because we have kept a few alive, when it does not appear to be able to survive in the shrinking American "wild?" Given that the main drivers of biodiversity loss are human domination of ecosystems through habitat conversion, direct resource capture and the introduction of predatory exotic species, I don't have high hopes that wealthy, populous, intensively consuming societies would be likely to preserve most of the earth's natural genetic diversity into future centuries and millennia.

So far neglected in this discussion, it seems to me, is the potential promise of a global population peak and eventual gradual decline. People may not want to consume less, but they certainly do want to have fewer children, later in life, than their grandparents and parents did. It would be a positive step if those whose concern is long-term sustainability and a smaller human ecologic footprint raised their voices against the wave of fear about population aging and decline that is emerging in Europe, Japan and even the still rapidly growing United States. This debate about the tradeoffs between the economic costs and the environmental benefits of population aging and decline is an important one that can only grow more intense as -- or, better said, IF, because there is no certainty about either of these -- population growth rates continue to fall and environmental problems become more ubiquitous and urgent.

Thanks for the interesting dialogue, all.

Bob  
Robert Engelman  
Vice President for Research  
Population Action International  
1300 19th Street, N.W., Second Floor  
Washington, D.C. 20036  
202-557-3403  
Fax: 202-728-4177  
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**From:** Fred Meyerson <fmeyerson@prb.org>  
**To:** pernseminars@ciesin.columbia.edu  
**Subject:** [PERNSeminar\_PCE] Re: Landis MacKellar  
**Date:** Fri, 28 May 2004 15:57:30 -0400

Re: Landis, et al. -

Yes, that's my point as well - so consumption doesn't decrease, but pollution per unit of consumption does decrease, and perhaps only locally. So you may be cleaning up locally, but polluting globally (to mangle an old saying).

And I agree with the other comment - that the end of oil reserves will change everything - though I suspect the first move (and it may be a long, painful period) will be towards coal, which is already happening in the US (see the DOE energy projections to 2025) and in China.

I have to run - this is very interesting, and I'll read more later.  
Best - Fred Meyerson (note the spelling of my last name!!)

Frederick A.B. Meyerson, Ph.D., J.D.  
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**Date:** Sat, 29 May 2004 00:18:35 +0200 (CEST)  
**From:** =?iso-8859-1?q?TraoreMetahan?= <metahan74@yahoo.fr>  
**Subject:** [PERNSeminar\_PCE] PEC SEMINAIRE  
**To:** pernseminars@ciesin.columbia.edu

Le thème est très intéressant puisqu'il est d'actualité. La problématique de la population et le développement ne peut se faire sans la consommation. L'Afrique est le continent qui est gravement touché par la dégradation de l'environnement. Les populations s'appauvrissent en dégradant l'environnement. La croissance démographique contribue à accroître le processus de destruction de l'environnement. Donc la

consommation est à la base de cette destruction. Mais il faut remarquer que les pays pauvres dégradent moins l'environnement que les pays développés, mais ils sont plus victimes de la destruction de l'environnement. La meilleure solution à la dégradation de l'environnement dans les pays pauvres est de changer les modes de consommation et accélérer le développement.

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**From:** "Salonius, Peter" <[psaloniu@nrcan.gc.ca](mailto:psaloniu@nrcan.gc.ca)>  
**To:** "'[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)'"  
<[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>  
**Subject:** RE: [PERNSeminar\_PCE] Reply to Fred Meyerson  
**Date:** Sat, 29 May 2004 07:07:08 -0400

Frederick Meyerson refers (below) to Landis MacKellar's suggestion that the solution "to the environment versus consumption dilemma" is to raise everyone's income to the point that they demand (i.e., can afford) local environmental quality.

Meyerson suggests that " per capita consumption tends to plateau and stay high".

Neither MacKellar nor Meyerson appear to be familiar with the impending and all important phenomenon of 'PEAK OIL' for the world economy. As production from large oil fields diminishes and future discoveries from smaller, deeper and further-offshore pools fails to meet the increasing demands from an exponentially growing population and continuing expansion of global fossil-fuelled global trade -- then Meyerson will most certainly see the " permanent economic down-turn" which will affect a decrease in the per capita consumption level of all countries.

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from: Oil-Based Technology and Economy: Prospects for the Future  
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Peter Saloni  
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**From: "Joe Shead" <[Joe@sheadprogramming.com](mailto:Joe@sheadprogramming.com)>**  
**To: <[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>**  
**Subject: RE: [PERNSeminar\_PCE] Re: Landis MacKellar**  
**Date: Sat, 29 May 2004 16:00:55 -0500**

Fred and Landis,

I have been enjoying this immensely, except for the paucity of discussion, and I appreciate your manglement -- "cleaning up locally, but polluting globally" -- because I think it speaks directly to the mantra I keep hearing, "Think globally, but act locally". It also hits the topic of this seminar right on the head, namely, that we when we consume locally, we are not consuming locally. We are consuming globally, and that consumption involves industrial and other production processes that pollute both locally in other places, and globally via systems that are not conceivably localizable, e.g., the atmosphere, groundwater, and oceans.

The Kuznet's curve seems to apply primarily to local, or regional, anti-pollution measures. As such, it could never lead to a global solution, because those who are affluent are necessarily in the minority in a capitalist "free" world. The notion that acting locally in the wealthy countries will somehow trickle down into the poor countries is absurd. How could the effect ever be significant?

Think globally -- act both globally and locally.

Joseph Shead  
Very Upset Student of Anthropology

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**From: "KEVIN NEWMAN" <[shadow\\_knight59@msn.com](mailto:shadow_knight59@msn.com)>**  
**To: [pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)**  
**Subject: RE: [PERNSeminar\_PCE] Reply to Fred Meyerson**  
**Date: Sat, 29 May 2004 22:54:31 +0000**

Present rates of consumption of fossil fuels world wide can not be sustained at present levels. The question is how to affect world wide changes in the consumption levels? True we can each do our part by lowering our personal use and thereby having a smaller ecological footprint. But what can we do to engage the rest of the world in this sort of downturn in levels of consumption? True disaster movies like "Day after tomorrow" may make some people stop and think for a little bit. The key is to get them to act as

well as think. This is the problem I think.

Kevin Newman  
MA candidate

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**Date: Sat, 29 May 2004 18:44:43 -0700**  
**To: [pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)**  
**From: Dell Erickson <[ricks@tc.umn.edu](mailto:ricks@tc.umn.edu)>**  
**Subject: RE: [PERNSeminar\_PCE] Reply to Fred Meyerson**

Two comments.

1. Although oil production appears to have peaked or is clearly in the process of eminent peaking, oil depletion/exhaustion can be dealt with (if societies have the will). The changed paradigm is that society must adapt to declining petroleum supply and increasing costs. Within less than twenty years society must accommodate 80% less oil energy.

The change should be understood with all its ramifications: the termination of the era of cheap oil (which built today's societies), is the most crucial event in the history of human civilization.

However, it is natural gas that is in crisis --notably for the U.S. and Canada. Without the overall mild summers and winters of the previous two years, the U.S. and Canada would have experienced brown and blackouts on par with California three years ago.

The reasons are that U.S. natural gas production peaked decades ago and Canada's two years ago. Unlike the roughly bell-curve of oil production, natural gas production goes over a cliff of rapidly falling production.

IOW, brown and widening blackouts will soon become a way of life for Canadians and Americans.

IMO, the rapid construction of coal-gasification plants is called for.

For more see <[http://www.mnforsustain.org/energy\\_natural%20\\_gas.htm](http://www.mnforsustain.org/energy_natural%20_gas.htm)>.  
Also see ASPO, Association for the Study of Peak Oil & Gas <

<http://www.peakoil.net/> >.

The effects on agriculture and food production will be widespread. Given the world's production of food peaked in 1997, the lack of natural gas and decreasing oil is no minor concern.

2. Raising income raising energy. Energy growth can be moderated --even reduced, by reducing consumption or populations with population reduction the key in developed nations. In Minnesota for example, each unit of additional population requires 2.3 units of electricity. The implication is that each reduction in population (or growth) is 2.3 times more important, reduces or avoids 2.3 units of electricity (production/pollution).

A final note. The Cairo plan of "empowering women", i.e., making them feel good about child bearing and life in general, seems more of a romantic notion than dictated by the need.

The world will have exhausted its natural gas and oil long before the Cairo plan could have its intended effect.

Dell Erickson  
Minneapolis

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**From: "Eric Kemp-Benedict" <[eric@kb-creative.net](mailto:eric@kb-creative.net)>**  
**To: <[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>**  
**Subject: [PERNSeminar\_PCE] Modified IPAT-type calculation**  
**Date: Sun, 30 May 2004 07:23:38 -0400**

Hello Everyone,

I have been enjoying reading the background paper and the contributions. =  
Reading the background paper, I was struck mainly by two things:

1. That household size is significant in explaining changes in =  
consumption
2. That core consumption categories, like housing, food and =  
transportation, are the main components of environmentally-significant =  
consumption

This suggests to me a possible modification of IPAT calculations. The modifications are in line with those proposed by Waggoner and Ausubel with their ImPACT identity (<http://phe.rockefeller.edu/ImPACT/>).

One part of my proposal is that the effect of household size can be treated as a separate factor. A general rule of thumb that is used, e.g., when setting consumption poverty lines, is to scale household consumption by the square root of the household size to get consumption per person. This is consistent with the remark at the bottom of page 3 of the background paper that a fourfold increase in household size leads to a factor of 1/2 improvement in per capita consumption (1/2 = square root of 1/4). This suggests a modified IPAT formula:

$$I = 3D P \times A / (\text{HHindex}^{0.5}) \times T,$$

where HHindex is an index of household size, and A captures changes in "affluence" (or consumption) independent of changes in household size.

The second part of my proposal is that core consumption categories could be broken out and studied explicitly. Identifying consumption for a particular consumption category (e.g., "Construction and Housing", "Food and Nutrition", "Transport and Mobility") and resource use by category and resource (e.g., energy use for construction and housing), the IPAT formula could be rewritten:

$$I_{ij} = 3D P \times A_i / (\text{HHindex}^{0.5}) \times T_{ij}$$

where i is a category index and j is a resource index.

If anyone would like to play around with a toy model based on these ideas, I've taken them and put them into an IPAT-S script. IPAT-S is a scenario scripting language. The script can be run using the free IPAT Studio software, available from <http://ipat-s.kb-creative.net/>. (Go to "downloads" and follow the link to download the installation file.)

I've put the script at the bottom of this e-mail. To run it, copy the script and paste it into the IPAT Studio "Main" tab, "Save As" to a filename of your choice, and then choose the "Indicators" tab. There are several options for viewing graphs on the indicators tab. (Note that the numbers in the script were all invented by me.)

Best regards,  
Eric

---

Eric Kemp-Benedict, Ph.D.  
KB Creative

c: 617-590-5436  
h: 617-661-8170  
eric@kb-creative.net

#####

##### Start of script

#####

base year 2000

scenario years 2010 2020

dimension resource 'Land' 'Energy'

dimension category 'Construction & Housing' 'Food & Nutrition' =  
'Transport & Mobility'

# Population

summvar P =3D 275, 300, 320

# Change in household size (as an index)

ratio HHsize =3D gr(<-0.5%>)

ratio C{category}, T{category, resource}

# Index of per-household consumption, at constant hh size

C{category=3D'Construction & Housing'} =3D gr(<1.0%>)

C{category=3D'Food & Nutrition'} =3D gr(<0.2%>)

C{category=3D'Transport & Mobility'} =3D gr(<1.5%>)

# Index of resource use per unit of consumption

ditto category=3D'Construction & Housing':

T{" , resource=3D'Land'} =3D gr(<0.2%>)

T{" , resource=3D'Energy'} =3D gr(<-0.3%>)

ditto category=3D'Food & Nutrition':

T{" , resource=3D'Land'} =3D gr(<-0.5%>)

T{" , resource=3D'Energy'} =3D gr(<0.2%>)

ditto category=3D'Transport & Mobility':

T{" , resource=3D'Land'} =3D gr(<0.1%>)

T{" , resource=3D'Energy'} =3D gr(<-0.2%>)

# Impacts, by category and resource, in the base year

# NOTE: These are assigned so they add up to 100 for each resource

# in the base year

summvar I{category, resource} Itot{resource}

ditto category=3D'Construction & Housing':

I.0{" , resource=3D'Land'} =3D 10

I.0{" , resource=3D'Energy'} =3D 40

ditto category=3D'Food & Nutrition':

I.0{" , resource=3D'Land'} =3D 85

```
I.0{" , resource=3D'Energy'} =3D 5
ditto category=3D'Transport & Mobility':
I.0{" , resource=3D'Land'} =3D 5
I.0{" , resource=3D'Energy'} =3D 55
```

```
##
## Scenario calculation
##
:: P >> (HHsize ^ -0.5) * C * T -> I
```

```
report I as "Impact"
summarize I as Itot
report Itot as "Total Impact"
```

```
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**From: "Eric Kemp-Benedict" <eric@kb-creative.net>**  
**To: <pernseminars@ciesin.columbia.edu>**  
**Subject: Re: [PERNSeminar\_PCE] PEC SEMINaIRE**  
**Date: Sun, 30 May 2004 08:05:48 -0400**

Hello Everyone,

I think that Traore Metahan raises an interesting point vis-a-vis the Kuznets curve idea. Presenting the African experience, he is reporting from the low-income, upward-tending, part of the curve. From that perspective, he presents a paradox:

- The impact by people on the environment is low in poor countries, but
- The impact of environmental degradation on people is high

Thus, to the extent that the Environmental Kuznets Curve hypothesis is correct (and it is highly problematic, as the discussion in the seminar indicates), at the low-income end of the Kuznets curve, while the environmental impact may be low, the human impact might not be. This calls for another factor in the equation that translates an environmental impact into its impact on the population.

On another note, I find the recommendation that "La meilleure solution à la dégradation de l'environnement dans les pays pauvres est de changer les modes de consommation et accélérer le développement" to be somewhat vague.

Whose consumption should change? Those in the developed or the poor countries? And in what way? I suspect that consumption patterns in both developed \*and\* poor countries must change, especially given the comments in this seminar to the effect that developed countries export their environmental pressures to poor countries. I strongly agree that accelerating development is part of the solution, with or without environmental Kuznets curves. However, I would suggest with Munasinghe (Ecological Economics 29: 89-109, 1999) that there must be some way to "tunnel through" the Kuznets curve, if it exists, in order to limit the impact at the peak. This seems to me to require a proactive stance.

Best regards,  
Eric

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**From:** "Salonius, Peter" <psaloniu@nrcan.gc.ca>  
**To:** "'pernseminars@ciesin.columbia.edu'"  
<pernseminars@ciesin.columbia.edu>  
**Subject:** RE: [PERNSeminar\_PCE] Reply to Kevin Newman  
**Date:** Mon, 31 May 2004 06:20:55 -0400

Newman asks " The question is how to affect world wide changes in the consumption levels?"

TAXATION IS ONE AVENUE. Read on.

One of the impediments to energy taxation schemes proposed in the past has been the fear of individual nations that such levies, applied unilaterally, would put them at an economic disadvantage with others that did not impose such taxes -- given the importance of energy in the cost of production.

My scheme, starting with very gradual and modest escalation of taxation in

the countries with the (presently) lowest tax rates, is designed to ultimately include all of the trading partners such that SOME of the usual fears about major losses of market competitiveness may be dampened.

The PROPOSAL (below) is among several articles featured in the October issue (No. 34) of THE ASSOCIATION FOR THE STUDY OF PEAK OIL AND GAS Newsletter.

The entirety of the ASPO Newsletter, No. 34, AND all previous issues that form an accumulating documentation about the approaching end of the 'Petroleum Interval', can be accessed at:

<http://www.asponews.org>

#### ITEM 257

#### Modifying Human Excess with INTERNATIONAL NON RENEWABLE ENERGY TAXATION

The labyrinthine political maneuvering that has been associated with the Kyoto Protocol and the regulatory maze that this process will engender, both within nations and internationally, in response to Kyoto's very modest goals indicates that another approach is necessary.

An international agreement, similar to the 1987 Montreal Protocol that addressed the effect of CFCs on stratospheric ozone depletion, should be sought to increase the cost of finite energy (FOSSIL and NUCLEAR) in an orderly fashion.

The starting point for discussions about the implementation of International Non Renewable Energy Taxation would be to take as a BENCHMARK the highest taxation rates for energy, presently imposed by the federal governments of countries with more than 35 million people. Each country with lighter energy taxation rates would be asked initially (year 1) to agree to raise its Non Renewable Energy Tax rates by FIVE PERCENT OF THE DIFFERENCE BETWEEN ITS

PRESENT RATE AND THE BENCHMARK. This taxation increase on non-renewable energy would be most politically acceptable if it were to be revenue neutral so that income from other federal taxes decreased by the same amount as the new non renewable energy taxes increased income (tax shifting). In this manner countries such as the United States, which has the lowest energy taxes on the planet, would raise federal Non Renewable Energy Taxes by the greatest (though rather modest) amount in the first year, while countries which are already at the BENCHMARK or close to it would not have to alter their energy taxation at all initially.

After a number of annual renewals (perhaps 20) of the International Agreement on Non renewable Energy Taxation, when all countries had finally reached similar tax levels for exhaustible energy, then future annual conferences could focus on how rapidly taxation rates should be escalated

for all signatory countries in unison so as to achieve climate mitigation and required shifts to renewable energy sources.

This process of international gradualism is designed to effect as orderly a transition as possible from fuel sources that will unquestionably be exhausted, toward those renewable energy sources upon which humanity will ultimately be dependent. Slowly escalating non renewable energy costs will encourage research, development and market intrusion of sustainable renewable energy sources that have very little chance of competing in the present marketplace where all energy is priced according to its cost of production as opposed to its impending scarcity.

The transition to renewables would be orchestrated by the MARKET forces of trillions-upon-trillions of purchase decisions based on PRICE as opposed to the COMMAND AND CONTROL arrangements that have proved largely unacceptable in connection with the Kyoto process.

Peter Saloniun , Canadian Forest Service , P.O. Box 4000 , Fredericton, New Brunswick Canada E3B 5P7

email: psaloniun@nrcan.gc.ca

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**To:** "'pernsseminars@ciesin.columbia.edu'"  
<pernsseminars@ciesin.columbia.edu>  
**Subject:** RE: [PERNSseminar\_PCE] Reply to Dell Erickson  
**Date:** Mon, 31 May 2004 07:59:26 -0400

1.Erickson says "the rapid construction of coal-gasification plants is called for".

Having made the historically understandable mistake of ramping up the human population and its economy by the use of non renewable geological energy, without considering how to sustain this level of enterprise as the temporary supplies dwindle -- it would seem more sensible to begin the transition to sustainable renewable energy, as opposed to finding new ways to become even more reliant on resources like coal whose production will ultimately fail to keep up with the demands of an exponentially growing population and the mushrooming energy use by its escalating global trading patterns. Putting off rational remedies will simply make the catastrophic scarcity even more unmanageable.

2.Erickson says "Energy growth can be moderated --even reduced, by reducing consumption or populations with population reduction the key in developed nations."

Reduction of (per capita) consumption is anathema to neoclassical economists and the governments they advise -- these folks believe that open ended GROWTH is possible and necessary.

Population attrition in developed nations -- that are responsible for much of the environmental destruction either directly or through usurious trade that trashes the environment of nations that must non sustainably extract resources to gain 'hard' currency -- is not likely in countries like the United States, Canada, Australia and New Zealand whose governments are enamoured with the economic stimulation offered my massive immigration, as they set up the 'bogeyman' of future economic hardship resulting from shrinking human numbers brought about by decreasing domestic birth rates. While citizens behave (vote) appropriately by lowering their reproductive rate on planet with limited carrying capacity, their patriarchal governments continue the 'frontier mentality' that supposes endless GROWTH to be good.

Peter Salenius  
SCIENTIST FOR POPULATION REDUCTION  
<http://www.scientists4pr.org>

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**From: "Eric Kemp-Benedict" <[eric@kb-creative.net](mailto:eric@kb-creative.net)>**  
**To: <[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>**  
**Subject: Re: [PERNSeminar\_PCE] PEC SEMINaIRE**  
**Date: Mon, 31 May 2004 12:22:36 -0400**

Here's my rough translation:

The theme is very interesting in the present situation. The problem of population and development cannot be resolved without considering consumption. The African continent is gravely touched by environmental degradation. Populations impoverish themselves while degrading the environment. Demographic growth contributes to processes to increase environmental destruction. Therefore consumption is at the root of this destruction. But note that the poor countries degrade the environment less

than the developed countries, but are more often the victims of environmental destruction. The best solution to environmental degradation in the poor countries is to change modes of consumption and accelerate development.

Eric

----- Original Message -----

From: "Joe Shead" <Joe@sheadprogramming.com>  
To: <pernseminars@ciesin.columbia.edu>  
Sent: Sunday, May 30, 2004 2:14 PM  
Subject: RE: [PERNSeminar\_PCE] PEC SEMINaIRE

Say, could someone translate this for me.

Joseph Shead  
At Large in Austin, TX  
(Sorry about GW, but I didn't vote for him.)

-----Original Message-----

From: owner-pern@ciesin.columbia.edu  
[mailto:owner-pern@ciesin.columbia.edu]On Behalf Of Traore Metahan  
Sent: Friday, May 28, 2004 5:19 PM  
To: pernseminars@ciesin.columbia.edu  
Subject: [PERNSeminar\_PCE] PEC SEMINaIRE

Le thème est très intéressant puisqu'il est d'actualité . La problématique de la population et le développement ne peut se faire sans la consommation. L'Afrique est le continent qui est gravement touché par la dégradation de l'environnement. Les populations s'appauvrissent en dégradant l'environnement . La croissance démographique contribue à accroître le processus de destruction de l'environnement. Donc la consommation est à la base de cette destruction. Mais il faut remarquer que les pays pauvres dégradent moins l'environnement que les pays développés , mais ils sont plus victimes de la destruction de l'environnement. La meilleure solution à la dégradation de l'environnement dans les pays pauvres est de changer les modes de consommation et accélérer le développement.

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**From: "Joe Shead" <Joe@sheadprogramming.com>**  
**To: <pernseminars@ciesin.columbia.edu>**  
**Subject: RE: [PERNSeminar\_PCE] PEC SEMINaIRE**  
**Date: Mon, 31 May 2004 14:32:03 -0500**

Thankyou, Eric, et merci, Traore.

I think what I'm hearing is someone pointing out that impoverished regions are struck doubly by population/consumption/environment processes. (1) The wealthier nations make irresponsible economic demands on their resources, and (2) the production processes implemented by impoverished people are not environmentally state of the art, and lead, as in the case of Haiti (in the news lately), to particularly environmentally destructive modes of production; e.g., moving up the hillsides to cut wood, or to do agriculture by processes originally developed on more level ground.<sup>1</sup>

An added dilemma is, as I get from the gpgNet (gpgNet.net) forums, that feeding the consumption of developed nations is perceived as an avenue out of poverty.

Si non pouvez-vous lire ceci, Traore, je puis essai translater a la mon Francais-Anglais dictionnaire, vaille que vaille. Qui est mon traducteur!

1. Note, I do not touch upon the complex cultural, political, economic, and demographic causes of such movements.

Joseph Shead  
Student of Anthropology

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**Date: Tue, 01 Jun 2004 09:53:30 -0700**  
**Subject: [PERNSeminar\_PCE] Bringing in politics**

**From: Josiah Heyman <jmheyman@utep.edu>**  
**To: <pernseminars@ciesin.columbia.edu>**

Hello to all,

I'd like to suggest to the seminar that some people start to look at case studies of the politics of threats to/declines in consumption. I've thought of doing this work myself, but honestly, I am more focused on studies of borders and the movement of people and goods. It speaks to important concerns expressed here in the cyberseminar. It is central to policy change. For example, would there be politically powerful resistance to various policies that impinged on maintaining/increasing consumption, such as CO2-oriented fees or taxes? What about the politics of expensive investments in cleaner (you define it) collective consumption, eg., mass transit? Restrictions on growth? Individual consumption? There may be some public opinion polls out there but I wonder if answers will be reflective of the actual playing out of political scenarios. We might look at cases that are not directly related to the environment but might tell us something about the dynamics of consumption politics--massive structural adjustment/devaluations, inflation, stagflation, gasoline price increases (OK, so that is consumption), etc.

I suspect that the findings will be discouraging to either environmentalists or Marxists (and similar radicals)--that consumption politics will prove as a rule to be strong (often stronger than labor-based class politics) and prone to right-wing populism. But I am guessing, and maybe there are counter examples and counter strategies.

Does anyone know of work of this sort that has been done already? I ventured a few ideas in my work on Mexican working class consumption in the biblio I sent out a bit ago. But these were just preliminary thoughts, and were shaped by a specific case without developing a comparative, more generalizable inquiry.

I hope this is stimulating to someone out there.

Joe Heyman

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**From:** "David Pepper" <drpepper@ucsfresno.edu>  
**To:** <pernseminars@ciesin.columbia.edu>  
**Cc:** "Michael Becker" <mikebe@csufresno.edu>,  
"David Lighthall" <david@relational-culture.com>  
**Subject:** RE: [PERNSeminar\_PCE] Bringing in politics  
**Date:** Tue, 1 Jun 2004 09:37:12 -0700

Joe,

Excellent suggestion.

In working in our polluted Central Valley (with 50% SUV buyers, large houses, urban sprawl,etc) I'm convinced it must be a "cost" to people. Just doing it because it's the right thing to do won't work.

While I agree with the tax for use idea, how do you use the taxes - and mass transit is one obvious one.

A group here (Medical Advocates for Healthy Air) has sued 8 times now on related Air issues, but one is on sprawl, arguing that a development fee should be much higher - reflecting the true "costs" (eg poor air) for those of us living here already. Its been a tough fight - with the Right wing (no taxes) sentiment strong here.

Somehow the connection between consumption and "cost" (eg health impacts) needs to be quicker. Having a 16% Asthma rate hasn't done it. So my thought is that we need a more direct message to carry - and I'm not sure what it is.

David Pepper

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**Date:** Tue, 1 Jun 2004 17:43:15 -0400  
**From:** eric@kb-creative.net  
**To:** pernseminars@ciesin.columbia.edu  
**Subject:** Re: [PERNSeminar\_PCE] Bringing in politics

Hello, everyone,

This proposal is quite interesting to me, and is in line with some of the things I have been thinking about. It brings to mind three different strands of

research that might be relevant to the question of politics in environmental issues:

First, the role that mental models of environmental processes play in the popular support or opposition to environmental proposals (e.g., the commonly-held notion that global warming happens because UV radiation gets in through a hole in the ozone layer).

Second, the processes by which the population at large becomes aware of issues, considers them and comes to "judgement," as outlined in the book "Coming to Public Judgement", by Daniel Yankelovich.

Third, an interesting modeling approach that has been applied to foreign relations and that might be of some use to contested issues like environmental protection. The approach uses game theory to track different negotiating rounds, examining the tradeoff between the desire to prevail vs. the desire to be part of the "winning coalition" through compromise. The approach is outlined in Bruce Bueno de Mesquita's "Predicting Politics." I am not at all sure that this can be applied to domestic environmental politics, but it might be relevant in international negotiations.

As an aside, there's this puzzle: the environment is generally ranked highly by people in the US in polls as a concern (I think this is true...), but it's practically death to a politician to run on it as an issue. Why? I suspect that it's because everyone has concerns about local environmental problems, but "the environment" is too abstract to generate much concern over.

Eric

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**From:** "Laura Murphy" <[lmurphy2@tulane.edu](mailto:lmurphy2@tulane.edu)>  
**To:** <[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>  
**Subject:** [PERNSeminar\_PCE] Networks of consumption/production  
**Date:** Wed, 2 Jun 2004 13:23:12 -0500

Networks of consumption/production

A major question for this seminar topic is: How can we link relevant = population-consumption behaviors (in one place) to relevant significant = environmental impacts (in other places--far away)? What are the real = spatial dimensions?

As a complement to the background paper-which I found a useful overview = and summary of literature in this area, new for me-I'd like to (1) = introduce three additional concepts and (2) suggest their contribution = to the research agenda. This is admittedly ill-developed . (but it's now = or never).

### 1) The Network as unit of analysis:

The paper introduces the household as an appropriate unit, which is = useful: I suggest we need to go beyond administrative borders which = house these physically bounded units, and capture flows of material and = energy (and values) across space in networks (of production and = consumption of different forms).

### 2) Consumption by consumers and producers

The discussion around consumption suggests it is something individuals = ('consumers') do, reflecting preferences, but all production is = consumption, and much consumption is productive, and they are responsive = (in different ways) at all levels to preferences (including by changing = values), policies in an interactive system. Perhaps we cannot separate = them. They participate and function in networks (economies) which are = increasingly remote in distance from each other. (ref Princen, T et al = 2002: Confronting Consumption)

### 3) Space of flows/space of places

Manuel Castells (in his 1997 The Information Age trilogy) introduces = (among many ideas) the notion of the 'space of flows' and the 'space of = places' to capture the layered spatial dimensions of globalization in = the information age. The space of places is the everyday physical world = where we live-provider of raw materials, absorber of wastes, captured in = a 'footprint' or watershed. The space of flows is a virtual but real = network of data, information, power connected through information and = communication technologies. The space of flows connects world cities and = marginalizes the disconnected in ways that span administrative = boundaries and standard data sources.

Two examples of consumption-environment networks...

Shrimp farming in SE Asia (consumption of mangroves, inputs, water = quality to generate relative wealth) and shrimp eating in New Orleans = ('over-consumption' not simple sustenance)

Soybean farming in Bolivian Amazon (consumption of bio-diversity, trees, = forest ecosystems, habitat.) for soy oil and animal feed (consumption of = meat/fat in urban Brazil.)

These are networks of production-consumption reflecting and = incorporating population growth, migration and consumption grounded in = space but communicated across space (through international market and = financial flows).

What are the methodological implications for P-E? Perhaps we need to = draw from a wider range of methods and develop new techniques of = analyzing flows across networks (i.e. social network, commodity chains = analysis). We need to maintain the idea/vision of ecological footprint = as a measure of cumulative impact (production and consumption for = humans) but realize it across human and social scales, which = increasingly are not bounded in an area. They span vast distances of = earth, entail enormous and inequitable flows of true (not simply = financial) wealth and well-being as well as harm and ill-being. These = impacts disproportionately effect not the 'developed' (poor) vs = 'developing' (affluent) countries; but those who are connected in = varying degrees to the space of flows, within cities, regions, and = nations.

Thanks for a thought-provoking seminar.

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**Subject: [PERNSeminar\_PCE] Some reflections on our seminar**  
**Date: Wed, 2 Jun 2004 14:33:12 -0400**  
**From: "Curran, Sara" <[curran@opr.princeton.edu](mailto:curran@opr.princeton.edu)>**  
**To: <[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>**

Dear all. I am pasting below and attaching some of my thoughts regarding the PERN cyberseminar.

Thank you all for a very thought provoking two weeks of discussion.

Sincerely,

Sara Curran

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To: PERN May 2004 cyberseminar participants  
From: Sara Curran  
Re: Brief response to your productive discussion

I have followed with great interest cyberseminar participants' responses to each other and to our first take on characterizing a field of research. I have learned a great deal from the discussion and consequently think this has been a remarkably productive discussion from both a political and scientific standpoint. The careful introduction of evidence and explanation from a variety of perspectives from each participant represents has meant that the entire seminar has helped to

more comprehensively define a research agenda and the state of our knowledge. In addition, there have been tantalizing claims to how one might realistically affect social change and policy, many of which are grounded in empirical evidence put forth by the participants. Consequently, I am inspired to propose to the group of participants and PERN that we might consider broaching the possibility of establishing a research interest group on this topic to the MacArthur Foundation with the justification that this relates to human security and human well being and that there is an emergent field in a number of disciplines represented by a variety of scholars that could very productively engage in a cross-fertilization of ideas, empirical investigation, and policy formation. As Heyman suggested, perhaps one research agenda is to be explicit about investigating the political economy of PCE and then linking the resulting paradoxes to the realities of human security - in the current climate.

That said, let me summarize the various contributions and provide a few reactions. I've organized these comments under four headings: clarifying the model, grappling with the unit of analysis, choosing a focus, and policy interventions. At the end I provide a listing of the many and important references contributed by the participants. In advance, please accept my apologies if I have inadvertently misattributed ideas or omitted respondents' contributions.

I'd like to appropriate the suggestion of Shead and propose a re-titling of our discussion - How do we get to there? Thinking Globally - Acting Globally and Locally.

Clarifying the components of the model:

Firstly, MacKellar reminds us that consumption is a function of income, price, and tastes (which are a bundle of factors). This suggests an important set of intervening variables in our model between production and consumption. Several of the contributors suggested modifications of the model, or greater attention to central elements of the model. Kroemker highlights the importance of contextualized psychological factors. In particular, she suggests focusing upon how infrastructures create barriers to "responsible" consumption and/or hide individual's capacity to see connections between incompatible value positions. Kroemker begins to propose a research agenda that focuses on the contexts under which individual consumer's values and consumption choices narrow or widen or are inconsistent.

Finally, Heyman proposes that the PCE research agenda might be best linked to real solutions if there was explicit attention to the political economy of PCE. Who are the stakeholders, what is their power, how effective are they towards influencing PCE related systems or resisting moves towards sustainable consumption. In a related realm, Heyman and Pepper suggest that making this linkage and tying it to human security issues may be the most important focus of a PCE research agenda.

Grappling with the unit of analysis, measures, and attributing cause:

In our paper we place a lot of attention on the household as a unit of analysis. By implication we were suggesting taking into account the variability across class, race, and many other social categories. Many of the participants called for explicit attention to the variability between and within social units according to race, class, gender, ethnicity, and many other social categories that are systematically related to behavior. I completely agree with this call for greater empirical investigation. Similarly, York's comment calls attention to accounting for flows and causality, comparability of impact assessment units, disaggregating grand concepts into component parts and determining which components are most important in which contexts. Pepper's response to York regarding the attention to the special geographic contours that exacerbate environmental outcomes and human well being - also suggests the importance of interactions and nonlinear relationships.

Fischer-Kowalski proposes greater attention to measurement and brings to the cyberseminar a wealth of references about how the ecological footprint can be improved

upon and/or how RME/MFA can substitute for EF measures. Importantly, she suggests that one avenue of future research is to explore how scaling up and down of any of these measures has consequences for our understanding of the PCE relationship. Fuchs and several others consistently identify the difference between direct and indirect effects. By implication, they suggest that indirect effects may be just as important as direct effects. I translated their observations about indirect effects into sociological terminology and view them as the contexts within which we observe PCE - these contexts can have interactive or nonlinear effects on the PCE relationship and consequently it is vitally important to conduct comparative research.

Finally, and related to the latter point, a critical contribution of the cyberseminar discussion was the concept of "lock-in." In fact, Kroemker's contribution had mentioned this, but had not used the term concept. I found this term to be very important for advancing my thinking and ideas about empirical investigation. It generated the following questions: how can we better understand and measure lock-in? How does lock-in variably impact social units or types of consumed =

goods? How does lock-in affect the mutability or elasticity or thresholds of consumption? Choosing an analytic focus for empirical investigation and more empirical investigation:

Fuchs makes a call for a more detailed, comprehensive and systematic analysis of the full range of complexities and variabilities across contexts. The challenge she sets forth is to conduct research that is both global and comparative. Hummel et al. suggested that rather than focusing on globalization, empirical investigations should be systemically oriented - i.e. towards food, water, energy. Other research agendas included greater attention to the psychological and anthropology of consumption, particularly how individuals embedded within certain contexts accommodate, learn, resist, and overcome inertia vis-a-vis values and consumption. There was some debate about the population versus income cause of consumption and a particularly relevant question emerged from one participant - What does/can it mean when population growth slows and a population ages? This simple, but intriguing question bears investigation. It was also clear from the debate that more empirical investigation is needed to understand the full range of outcomes along the income/consumption relationship - from poor to very rich across

multiple contexts. Energy "consumed" considerable airtime during the cyber seminar. Again, these discussions indicated both a field with data and one that still merits considerable empirical investigation. Of particular interest was the relationship between income and substitution patterns (not only at the individual level) (Meyerson and MacKellar debate). I wondered whether the focus on energy implies a consensus about how this is a fundamental relationship, which under girds all other systems and/or that "locks-in" all other sets of interrelationships?

Finally, as mentioned earlier, the latter contributions suggested that the fundamental "element" for understanding the PCE relationship is the political economy of those relationships.

Policy Interventions:

There were many different policy suggestions and many of them were grounded in empirical evidence. Fuchs suggested global political accountability for addressing systemic imbalances. MacKellar and other suggested that tastes might be shifted through a variety of means, including taxation (Salonius). Heyman also suggested that the "lock-in" effect demands political solutions. And, similarly, Heyman suggested greater attention to stakeholders and decision makers and ultimately, power. This suggests to me that one group missing from our seminar that might be considered for future inclusion are scholars of politics or power (broadly defined). Although we had some contributors from the global south who importantly reminded participants of the full range of PCE relationships and the double burden born in some communities, future PCE discussions would be vastly enhanced with more of their contributions. Importantly, many of the proposals either for research or policy are resource demanding.

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**From:** "Salonius, Peter" <[psaloniu@nrcan.gc.ca](mailto:psaloniu@nrcan.gc.ca)>  
**To:** "'[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)'"  
<[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>  
**Subject:** RE: [PERNSeminar\_PCE] Networks of consumption/production  
**Date:** Wed, 2 Jun 2004 15:50:03 -0400

Laura Murphy asks "How can we link relevant population-consumption behaviors (in one place) to relevant significant environmental impacts (in other places--far away)?"

I have been reading (and listening to) Graciela Chichilnisky, Columbia University, who is interested in the relationship between population-consumption and environmental impacts. Chichilnisky has a lot to say about property rights: when resources are held as common property (as they are in much of the developing world) then there is little computation of replacement cost to do with natural resource extraction which results in a "tragedy of the commons"---- resource prices are lower for common property resources (developing/south) than for private property resources (industrialized/north) --- a phony impression of abundance is created as the south over extracts and the north over consumes.

I think Chichilnisky's work is pertinent to the discussion of Murphy's "networks of consumption/production" and I recommend one of her fairly approachable (she is a mathematician) recent papers which can be accessed at:

<<http://www.chichilnisky/pir/pdfs/>>

<http://www.chichilnisky.com/pir/pdfs/papers/177.pdf>

Peter Saloni

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**From: "Alex de Sherbinin" <[adesherbinin@ciesin.columbia.edu](mailto:adesherbinin@ciesin.columbia.edu)>**  
**To: <[pernseminars@ciesin.columbia.edu](mailto:pernseminars@ciesin.columbia.edu)>**  
**Subject: [PERNSeminar\_PCE] Conclusion of PCE cyberseminar**  
**Date: Thu, 3 Jun 2004 07:50:55 -0400**

Dear Colleagues,

I would like to thank all of you, and particularly the invited panelists, for a very productive cyberseminar. In the coming weeks Sara Curran and I will be sifting through the many valuable contributions to integrate these in a revised paper on population-consumption-environment linkages which we plan to submit for publication. It goes without saying that we will acknowledge the cyberseminar contribution to our thinking. We are also likely to cite a number of specific postings.

Just to give you some advanced notice, we plan to hold a cyberseminar this fall on the spatial expansion of urban areas (aka "sprawl"). We hope you will join us at that time. Please contact me if you know of anyone who is doing particularly valuable work in that area of research.

Best wishes,  
Alex de Sherbinin  
PERN Coordinator

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