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翻译  
施涵

Translated by  
Shi Han

## 《产业生态学报》

2005 年冬, 第 9 卷第 1-2 期, 19-36 页

**题目: 用得更少, 过得更好: 可持续消费能一举两得吗?**

作者: Tim Jackson

**关键字:** 消费行为, 消费选择, 消费文化, 进化生理学, 产业生态学, 符号联系主义

**摘要:** 产业生态学重在提高生产系统的效率。此外, 消费对降低人类社会的环境影响同样至关重要, 并由此提出了可持续消费的概念, 但可持续消费只有在综合消费和消费者行为的大背景下才认识得清楚。本文就此展开了讨论, 引出了一个关于可持续消费的最基本的最常见的问题, 即消费是否或在多大程度上对我们有益。某些研究认为增加消费或多或少地等同于改善福利。另一些较为激烈的论断认为现代社会的消费规模既不利于环境也不利于人类心理健康, 我们可以在不影响生活水平的前提下大幅削减消费。后者指出可持续消费可以一举两得: 即过得更好同时用得更少, 并把环境影响变得更小。最后, 本文认为双赢的方案是存在的, 但这需要全社会的协调努力。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 19-36

**Live Better by Consuming Less? Is There a “Double Dividend” in Sustainable Consumption?**

Tim Jackson

**KEYWORDS:**

consumer behavior, consumer choice, consumer culture, evolutionary psychology, industrial ecology, symbolic interactionism

**SUMMARY:**

Industrial ecology has mainly been concerned with improving the efficiency of production systems. But addressing consumption is also vital in reducing the impact of society on its environment. The concept of sustainable consumption is a response to this. But the debates about sustainable consumption can only really be understood in the context of much wider and deeper debates about consumption and about consumer behavior itself. This article explores some of these wider debates. In particular, it draws attention to a fundamental disagreement that runs through the literature on consumption and haunts the debate on sustainable consumption: the question of whether, or to what extent, consumption can be taken as “good for us.” Some approaches assume that increasing consumption is more or less synonymous with improved well-being: the more we consume the better off we are. Others argue, just as vehemently, that the scale of consumption in modern society is both environmentally and psychologically damaging, and that we could reduce consumption significantly without threatening the quality of our lives. This second viewpoint suggests that a kind of “double dividend” is inherent in sustainable consumption: the ability to live better by consuming less and reduce our impact on the environment in the process. In the final analysis, this article argues, such “win-win” solutions may exist but will require a concerted societal effort to realize.

## 《产业生态学报》

2005 年冬, 第 9 卷第 1-2 期, 37-50 页

**题目: 可持续消费与减少工作时间****作者: Juliet B. Schor****关键字:** 经济学家, 企业, 政策干预, 可持续消费, 技术进步, 减少工作时间**摘要:** 本文认为通过削减工时这一尚不为生态学家和经济学家所正视的方法可在发达国家成功稳定消费, 实现可持续发展。本文给出了许多国家工作时间减少的数据, 讨论了企业层面上工时缩减受挫的例子及对其进行政策干预的必要, 并探讨了缩减工时可能受到消费者的欢迎。文章最后认为单纯的技术进步无法实现可持续消费模式; 此外, 必须克服以提高工资换取更长工作时间这一扩大消费规模的趋向。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 37-50

**Sustainable Consumption and Worktime Reduction**[Juliet B. Schor](#)**KEYWORDS:**[economists](#), [firms](#), [policy intervention](#), [sustainable consumption](#), [technological change](#), [work-hour reductions](#)**SUMMARY:**

This article argues that in the global North a successful path to sustainability will entail a stabilization of consumption through reductions in hours of work, a solution that neither ecologists nor economists have addressed seriously. The article presents data on the slowdown of hours reductions in many countries and discusses the need for policy intervention to counter firm-level disincentives to reducing hours of work. It then discusses the potential popularity of work-hour reductions with consumers. It ends with an argument that technological changes will be insufficient to achieve sustainable consumption patterns and that averting continued increases in the scale of consumption through trading income for time is imperative.

## 《产业生态学报》

2005 年冬, 第 9 卷第 1-2 期, 51-67 页

**题目:** 减缓消费: 对产品寿命和“一次性社会”的反思**作者:** Tim Cooper**关键字:** 生态效率, 生命周期思想, 废弃, 产品耐久性, 产品寿命, 可持续消费

**摘要:** 工业国家家庭废物产生得越多, 可持续消费就越难实现。这一趋势与家用产品的寿命有关。本文在回顾现有研究的基础上, 指出了产品寿命对可持续消费的重要意义, 并进一步发展了生命周期的思想。文章通过一个理论模型阐述了较长的产品寿命如何有助于改进消费总量和效率, 从而逐步实现可持续消费。随后根据英国的实例分析了消费者态度和行为与家用产品寿命的关系以及影响耐用消费品市场的因素。文章最后讨论了关于产品寿命的未来研究方向以及几个具体的研究课题。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 51-67

**Slower Consumption: Reflections on Product Life Spans and the “Throwaway Society”**

Tim Cooper

**KEYWORDS:**

eco-efficiency, life-cycle thinking, obsolescence, product durability, product life spans, sustainable consumption

**SUMMARY:**

Sustainable consumption is unlikely to be achieved as long as the quantity of household waste generated in industrial nations continues to rise. One factor underlying this trend is the life span of household goods. This article contributes to recent advances in life-cycle thinking by highlighting the significance of product life spans for sustainable consumption and exploring the current state of research. A theoretical model is developed to demonstrate how, by contributing to efficiency and sufficiency, longer product life spans may secure progress toward sustainable consumption. Empirical research undertaken in the United Kingdom on consumer attitudes and behavior relating to the life spans of household products is reviewed and factors that influence the market for longerlasting products are discussed. A need is identified for further research on product life spans and some themes are proposed.

## 《产业生态学报》

2005年冬, 第9卷第1-2期, 69-84页

## 题目: 走向一体化区域物流会计模型

作者: Philip Sinclair, Eleni Papathanasopoulou, Warren Mellor, Tim Jackson

关键字: 可持续消费, 材料流分析(MFA), 区域可持续性, 环境输入输出, 非物质化, 质量平衡

摘要: 实现区域可持续的一项关键挑战在于减少该区域内经济和家庭活动的直接和间接环境影响。为此必须首先认清该区域中有哪些物流、它们如何随时间变化。

本文描述了一体化区域物流会计模型框架的一些初步进展。该框架基于一个综合了物料与经济的多区域投入产出模型, 通过较易获得的经济与物流数据以及运输和后勤保障信息, 详细解析产品与物流, 以评估英国任一区域内的家庭物流情况。模型还能根据一些特定的社会经济标准如收入水平、户主职业等进行物流分析。与有关能量和生命周期评价信息结合起来, 模型能进一步描述与这些物流相关的直接和间接环境影响。

这一方法可极大地减少人们对下列问题不确定认识, 包括(1)家庭代谢和区域内家庭废物产生的情况, (2)产业选址以及其它局部和地区规划的预期环境影响, (3)不同物料和产品需求类型的环境影响变化。本文最后认为这一集成评价工具对深入讨论区域可持续性非常有效。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 69-84

## Towards an Integrated Regional Materials Flow Accounting Model

Philip Sinclair, Eleni Papathanasopoulou, Warren Mellor, and Tim Jackson

## KEYWORDS:

sustainable consumption, materials flow analysis (MFA), regional sustainability, environmental input-output, dematerialization, mass balance

## SUMMARY:

A key challenge in attaining regional sustainability is to reduce both the direct and the indirect environmental impacts associated with economic and household activity in the region. Knowing what these flows are and how they change over time is a prerequisite for this task.

This article describes the early development of an integrated regional materials flow accounting framework. The framework is based on a hybrid (material and economic) multiregional input-output model. Using readily available economic and materials data sets together with transport and logistics data, the framework attempts to provide estimates of household resource flows for any U.K. region at quite detailed levels of product and material disaggregation. It is also capable of disaggregating these flows according to specific socioeconomic criteria such as income level or occupation of the head of household. Allied to appropriate energy and lifecycle assessment data sets, the model could, in addition, be used to map both direct and indirect environmental impacts associated with these flows.

The benefits of such an approach are likely to be a considerable reduction of uncertainties in (1) our knowledge of the household metabolism, and hence our predictions of regional household waste generation; (2) our assessment of the impacts of contemplated changes in industrial process siting, and there by on other aspects of local and regional planning; and (3) our understanding of the impacts of changes in the pattern of demand for different materials and products. It is concluded that the use of such an integrated assessment tool has much to contribute to the debate on regional sustainability.

## 《产业生态学报》

2005年冬, 第9卷第1-2期, 85-98页

题目: 消费与反弹效应的产业生态学分析

作者: Edgar Hertwich

**关键字:** 回火效应, 共同利益, 能源经济学, 反弹效应, 溢出效应, 可持续消费

**摘要:** 许多环保措施往往会产生一些意料之外的社会后果: 人类行为的变化会抵消部分环境收益, 这被称为“反弹”效应。在能源经济研究领域, 回跃效应指的是由于能效改善、费用降低而导致的一些行动的或系统的反弹。站在产业生态学的角度, 要考虑的不仅是能量使用的问题。任何能效改进措施都会带来一些环境影响, 这些影响的变化趋势也各不相同。解决任何一种特定的环境问题都必须考虑相关措施的同利效应和溢出效应。由于环境是一种免费的投入, 所以在此没有基于价格的反弹效应, 但其它与价格无关的间接效应, 如某些环境行为的出人意料的副产品却不能忽视。如果产品的总的环境影响是良性的, 那么降低产品成本和环境影响带来的“反弹”将是正向的和有益的。此外, 本文还进一步确定了技术的副作用。在家庭环境影响评价和生态效率评价中考虑到了反弹效应, 但许多具有正面意义的其它效应则研究和认识得不深。因此, 本文认为现有的单纯关注反弹效应的研究过于狭隘, 必须给予同利效应、溢出效应及副产品效应给以足够的重视。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 85-98

**Consumption and the Rebound Effect: An Industrial Ecology Perspective**

Edgar Hertwich

**KEYWORDS:**

backfire effect, co-benefits, energy economics, rebound effect, spillover effect, sustainable consumption

**SUMMARY:**

Measures taken to protect the environment often have other, unintended effects on society. One concern is that changed behavior may offset part of the environmental gain, something that has variously been labeled “take-back” or “rebound.” In energy economics, the rebound effect encompasses both the behavioral and systems responses to cost reductions of energy services as a result of energy efficiency measures. From an industrial ecology perspective, we are concerned about more than just energy use. Any given efficiency measure has several types of environmental impacts. Changes in the various impact indicators are not necessarily in the same direction. Both co-benefits and negative side effects of measures directed to solve one type of problem have been identified. Environment is often a free input, so that a price-based rebound effect is not expected, but other indirect effects not connected to the price, such as spillover of environmental behavior, also occur. If the costs and impact of products that are already environmentally friendly are reduced, the “rebound” can be in the opposite, desired direction. Furthermore, I identify technical spillover effects. Hence a number of related effects, often producing positive results, are not as well understood. Household environmental impact assessments and eco-efficiency assessments take into account the rebound effect, but they do not necessarily take into account these other effects. The analysis hence indicates that the current focus on the rebound effect is too narrow and needs to be extended to cover co-benefits, negative side effects, and spillover effects.

## 《产业生态学报》

2005年冬, 第9卷第1-2期, 99-114页

**题目:** 可持续食品消费: 一个用于描述饮食结构变化的情景分析框架

**作者:** Faye Duchin

**关键字:** 饮食与环境, 饮食与健康, 生命周期评价(LCA), 投入产出分析(IOA), 情景分析, 世界贸易模型

**摘要:** 本文描述了一种结合生命周期评价和新世界经济投入产出模型的分析框架, 可用于分析未来不同饮食结构的环境与经济影响。产业生态学家研究了欧洲诸国的食品生产与消费的能耗和土地使用情况, 营养学家确定了几个可能反映肥胖和其它慢性病的饮食参数。在此基础上, 本文认为以植物为主的地中海式膳食所代表的饮食情景在各方面表现都不错, 若转换为美国现今的饮食情景则可能对农业和农民政策产生很大的冲击。文章纵览了各个国家饮食结构变化的各种可能分支, 这些研究尚存一定不足, 但可通过一个描述全球食品消费、生产、贸易以及各种物理限制和作用关系的框架下加以解决。分析不同饮食情景的经济与环境影响有助于促进各方的深入对话、讨论与行动。世界卫生组织正在国家、企业和社会团体中推进其食品与健康战略, 本文的相关分析可望与该战略行动实现互补和双赢。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 99-114

**Sustainable Consumption of Food: A Framework for Analyzing Scenarios about Changes in Diets**

Faye Duchin

**KEYWORDS:**

diet and environment, diet and health, life-cycle assessment (LCA), input-output analysis (IOA), scenario analysis, world trade model

**SUMMARY:**

This article describes the integration of life-cycle assessment methods with a new input-output model of the world economy to analyze the environmental and economic implications of alternative future diets. The article reviews findings by industrial ecologists about the energy and land required for the production and consumption of alternative foods and diets in several European countries. It also reviews attributes of foods and diets identified by nutritionists as reducing the risks of obesity and major chronic diseases related to the diets of the affluent. The predominantly plant-based Mediterranean-type diet emerges as a dietary scenario that could satisfy both sets of concerns. The likely implications for agriculture and for farm policies of a shift toward this diet from the current average diet in the United States are discussed and shown to be substantial. The one-country studies reviewed in the article provide substantial insights into the potential ramifications of dietary change. Many of the limitations of these studies could be overcome by conducting the analysis in a global framework that represented the relationships among consumption, production, and trade and the physical constraints within which they operate. Analysis of the environmental and economic implications of alternative scenarios describing healthy diets can help stimulate more intensive dialogue, debate, and action among the interested parties; such analysis can both benefit from and contribute to initiatives such as the World Health Organization's global strategy on diet and health, which intends to enlist the support of governments, corporations, and civil society.

## 《产业生态学报》

2005 年冬, 第 9 卷第 1-2 期, 115-128 页

题目: 市场运动: 非政府组织影响全球生产与消费的策略

作者: Dara O'Rourke

关键字: 倡议运动, 认证, 消费者, 跨国公司(MNCs), 可持续消费

**摘要:** 本文分析了非政府组织(NGO)试图改变全球消费与生产模式的“市场运动”。该运动所涉及的产品十分广泛, 包括纸、鞋和计算机等。运动倡议者计划用消费者的关注来影响生产者, 同时扩大和深化消费者对可持续产品与服务的需求。NGO 一方面对一些顶尖品牌展开批评, 另一方面又帮助一些改良的产品开拓新市场。该市场运动的成功之处在于寻求全球生产与贸易体系中一些关键点, 协助参与者建立起网络关系, 组织协调研究、揭示、品牌协商及其它直接活动, 确定解决方案, 推动利益相关方制定新的标准、监控和认证系统, 建立非政府规章制度, 并偶而加强政府制度等等。通过对三大知名厂家 Staples、耐克和戴尔的研究, 本文探讨了市场运动的性质、功用, 评价了其核心的战略战术, 并分析了它们的实际效果。本文最后论述了这些运动对产业生态学的相关性和参考价值, 以及产业生态学如何支持推进可持续生产与消费的问题。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 115-128

**Market Movements Nongovernmental Organization Strategies to Influence Global Production and Consumption**

Dara O'Rourke

**KEYWORDS:**

advocacy campaigns, certification, consumers, multinational corporations (MNCs), sustainable consumption, sweatshops

**SUMMARY:**

This article analyzes nongovernmental organization (NGO) "market campaigns" that seek to motivate changes in global consumption and production patterns. Through campaigns targeting products as diverse as paper, shoes, and computers, advocacy groups seek to use existing concerns of consumers to influence producers, and simultaneously, to expand and deepen consumer demand for more sustainable products and services. NGOs deploy both negative information to critique leading brands, and positive information to help build new markets for improved products. Successful market campaigns construct networks of actors that identify points of leverage within global production and trading regimes; coordinate research, exposure, direct action, and negotiations with brands; identify solutions; advance new multi-stakeholder standards and monitoring and certification schemes; build new nongovernmental regulatory institutions; and occasionally attempt to strengthen state regulation. Through an assessment of three market campaigns focused on Staples, Nike, and Dell, this article describes the nature of these campaigns, discusses how they function, assesses their central strategies and tactics, and analyzes whether they are actually having an impact. The article concludes by discussing the relevance and implications of these campaigns for the field of industrial ecology, and how industrial ecology might support future efforts to advance more sustainable production and consumption.

## 《产业生态学报》

2005 年冬, 第 9 卷第 1-2 期, 129-145 页

**题目:** 通过分析耗时数据研究日常生活中渐增的能量需求**作者:** Mikko Jalas**关键字:** 消费, 能源, 家庭, 产业生态学, 投入产出分析 (IOA), 时间

**摘要:** 产业生态学家已经建模深入分析了产业系统的物质基础, 但对于产品需求和系统结构变化的驱动力还关注不多。本文基于以下认识: 即在没有特定家庭活动作为输入变量的情况下, 商品本身并不构成效用的直接来源。因此除金钱花费外, 时间耗费数据对解释经济变迁所处的日常生活环境亦十分重要。本文所述的方法还有助于在分析生产系统时引入人的因素。文章利用了芬兰的时间耗费、经济成本和产业部门单位价值产出的能耗密度数据, 首先通过联系消费者的时间花费和直接间接能耗需求评估了各类活动的能量密度; 其次揭示了芬兰 90 年代私人能耗需求的变化。尽管同类活动在单位时间内的能耗需求有所增加, 芬兰人仍趋向于能量密度较低的日常生活。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 129-145

**The Everyday Life Context of Increasing Energy Demands: Time Use Survey Data in a Decomposition Analysis**

Mikko Jalas

**KEYWORDS:**

consumption, energy, household, industrial ecology, input-output analysis (IOA), temporal

**SUMMARY:**

Industrial ecologists have modeled with precision the material foundations of industrial systems, but given less attention to the demand for products and the drivers of structural changes in these systems. This article suggests that time use data complement data on monetary expenditure and can be used to elucidate the everyday life context in which the changes in the economy take place. It builds upon the claim that goods are not direct sources of utility, but enter specific household activities as inputs. A second argument for the proposed approach is that it can be used to introduce and foster human agency in analyses of production systems. The article uses Finnish time use survey data, consumption expenditure data, and data on the sectoral energy intensities of financial output in the Finnish economy. First, a measure of the *energy intensity of activities* is derived by relating consumer time use and the required direct and indirect energy requirements. Second, the results include a decomposition of changes in the energy requirements of private consumption in Finland during the 1990s. It is shown that although the same activities on average require increasing energy inputs per unit of time, Finns have simultaneously changed the structure of their everyday life toward less energy-intensive activities.

## 《产业生态学报》

2005 年冬, 第 9 卷第 1-2 期, 147-168 页

**题目:** 荷兰个人消费的环境负荷及其对荷兰以外的环境损害**作者:** Durk S. Nijdam, Harry C. Wilting, Mark J. Goedkoop, Jacob Madsen**关键字:** 生态足迹, 环境负荷, 温室效应, 投入产出分析 (IOA), 生命周期评价 (LCA), 贸易

**摘要:** 本文描述了一种确定荷兰个人消费环境负荷的方法, 可提供与消费相关的环境影响的详细信息。文中研究了荷兰消费调查所包含的 360 种消费支出的家庭直接和生产过程间接的环境负荷, 其中计算间接环境负荷的投入产出表包含了全世界的生产与贸易数据, 而单位欧元产出的环境负荷则与消费者支出相联系。利用该方法可量化单位消费支出和单位生产区域的几类环境负荷。荷兰个人消费的最主要环境负荷来自食品生产、住房采暖和交通用车。除二氧化碳排放和交通噪音外, 荷兰个人消费对外国的环境影响大于本国。各种环境影响中, 土地使用多发生在非经合组织国家, 而大量的污染排放则发生在经合组织(OECD)国家。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 147-168

**Environmental Load from Dutch Private Consumption: How Much Damage Takes Place Abroad?**

Durk S. Nijdam, Harry C. Wilting, Mark J. Goedkoop, and Jacob Madsen

**KEYWORDS:**

ecological footprint, environmental load, greenhouse effect, input-output analysis (IOA), life-cycle assessment (LCA), trade

**SUMMARY:**

This article describes a method for determining the environmental load of Dutch private consumption. The method generates detailed information about consumption-related environmental impacts. The environmental load of households (direct) and production (indirect) was determined for 360 expenditure categories reported in the Dutch Expenditure Survey. The indirect environmental load was calculated with linked input-output tables covering worldwide production and trade. The environmental load per Euro turnover of industries was linked to consumer expenditures. With this method we can quantify several types of environmental load per expenditure category and per economic production region. It was found that food production, room heating, and car use are the most important elements in the environmental load of Dutch private consumption. The impacts taking place abroad were—except for emission of greenhouse gases and road traffic noise—found to be larger than domestic impacts. Most land use was found to take place in developing (non-OECD) countries, whereas most emissions occur in industrialized (OECD) countries.

## 《产业生态学报》

2005年冬, 第9卷第1-2期, 169-185页

**题目:** 利用投入产出法分析不同空间尺度下消费的环境压力**作者:** Jesper Munksgaard, Mette Wier, Manfred Lenzen, Christopher Dey**关键字:** 二氧化碳(CO<sub>2</sub>), 消费, 数据封装分析(DEA), 环境指标, 生命周期思想, 结构经济学

**摘要:** 投入产出模型是分析消费活动环境影响的有效工具。它可以追溯来自生产过程乃至贯穿整个经济体的影响, 因而与具体的生命周期环境高度相关。本文说明了投入产出方法如何用于分析可持续消费模式的问题。在调研各种文献(包括作者自身研究文献)的基础上, 文中给出了家庭、城市乃至国家尺度上的二氧化碳排放值, 进一步分析了其它的环境影响, 并引入了包含投入产出建模和数据封装分析的环境效率的概念。本文最后讨论了相关的政策。研究表明与其它数据如贸易信息、外部投入产出和环境数据以及家庭消费统计结合起来, 投入产出模型在生命周期分析领域将具有广阔的应用前景。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 169-185

**Using Input-Output Analysis to Measure the Environmental Pressure of Consumption at Different Spatial Levels**

Jesper Munksgaard, Mette Wier, Manfred Lenzen, and Christopher Dey

**KEYWORDS:**carbon dioxide (CO<sub>2</sub>), consumption, data envelopment analysis (DEA), environmental indicators, life-cycle thinking, structural economics**SUMMARY:**

Input-output modeling is a useful tool for tracing environmental impacts of consumption. Because it includes impacts originating from production layers of infinite order (capturing the entire economy), input-output modeling is highly relevant for studies operating in a life-cycle context. In this article we show how the input-output approach can be used to enumerate the problem of sustainable consumption. Based on a literature survey including research done by the authors we present measures of the emissions of carbon dioxide at different spatial levels: nation, city, and household. Further, we take more environmental effects into account and introduce the concept of environmental efficiency by combining input-output modeling and data envelopment analysis. Finally, we discuss the policy relevance of the different measures. The article demonstrates that input-output modeling has a wide range of life-cycle oriented applications when combined with other data sources such as detailed trade statistics, foreign input-output and environmental statistics, and household expenditure data.

## 《产业生态学报》

2005 年冬, 第 9 卷第 1-2 期, 187-200 页

题目: 中国经济社会变革及其对中国水资源利用影响的情景分析

作者: Klaus Hubacek, Laixiang Sun

关键字: 投入产出(IO)分析, 生活方式变化, 生态经济建模, 自然资源, 区域不平衡, 发展战略

摘要: 中国过去数十年来的发展表现为经济的快速增长、人口由农村向新兴城市的大规模迁移和随之而来的生活方式的改变, 以及日趋严重的环境污染。这些发展对资源的数量与质量都产生了深刻的影响。本文试图通过情景分析来研究生活方式的变化以及其它重要发展趋向对水资源的影响。

中国拥有世界上最悠久的历史管理江河和水资源的历史。在其数千年的文明历程中一直试图调控水旱灾害并发展航运灌溉。上个世纪以来居民、城市和工业用水之争日趋激烈, 为此进行了大规模的水资源开发并制定了诸多政策。

在一个结构化的经济框架下, 本文将一个描述各流域流量的水力学模型和一个描述中国主要经济区域社会经济活动的投入产出模型结合起来, 开发了一系列的情景用以分析中国的经济社会变革及其对水资源的影响。分析显示华北及西北地区的水资源最为紧张, 生活方式变化以及技术进步是决定未来水资源消耗的最重要因素。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 187-200

Economic and Societal Changes in China and Their Effects on Water Use: A Scenario Analysis

Klaus Hubacek and Laixiang Sun

## KEYWORDS:

input-output (IO) analysis, lifestyle changes, ecological-economic modeling, natural resources, regional disparity, development strategy

## SUMMARY:

China's development over the last few decades has been characterized by high rates of economic growth, large-scale migration from rural areas to the fast-growing cities accompanied by changes in lifestyles, and steady population growth. These developments have left deep marks on resource availability and quality. In this article we conduct a scenario analysis of how lifestyle changes and other major developments might affect water resources.

China has the longest tradition in river and water resource management in the world. Its civilization has sought to control the effects of floods and drought for thousands of years and has utilized water flows for irrigation and navigation. In the last century, competing uses such as domestic, municipal, and industrial water consumption have also become reasons for the regulation of and large-scale abstraction of water.

To investigate the major changes in economy and society and their effects on the water situation in China, a set of scenarios is developed and analyzed within a structural economics framework. A hydrological model that represents water flows in the major watersheds is linked to a regional input-output model that represents socioeconomic activities in the major economic-administrative regions of China. The regional analysis shows that the North and Northwest regions are water-scarce and that lifestyle changes and technical shifts are the most important factors driving future water consumption.

## 《产业生态学报》

2005 年冬, 第 9 卷第 1-2 期, 201-219 页

**题目:** 利用废物输入输出模型对可持续消费分析**作者:** Koji Takase, Yasushi Kondo, Ayu Washizu**关键字:** 二氧化碳排放, 环境影响, 家庭, 日本, 填埋, 反弹效应

**摘要:** 本文通过一个扩展废物输入输出(WIO)模型评估了家庭消费的直接和间接环境排放, 并分析了家庭可持续消费模式。WIO 模型比传统的投入产出模型更适于研究可持续消费的问题, 它不仅包含了废物处理阶段, 还可对购买与使用阶段展开分析。此外, 本文还初步研究了收入的反弹效应。文中选择的环境负荷指标包括二氧化碳排放和家庭消费导致的垃圾填埋量。本文分析了几类典型的可持续消费情景, 包括由私家车转向公共交通, 延长家电使用寿命, 选择饭店就餐而非家庭烹饪。研究发现在评价不同消费类型的环境负荷时, 必须考虑收入的反弹效应。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 201-219

**An Analysis of Sustainable Consumption by the Waste Input-Output Model**

Koji Takase, Yasushi Kondo, and Ayu Washizu

**KEYWORDS:**

carbon dioxide emissions, environmental impact, households, Japan, landfill use, rebound effect

**SUMMARY:**

The extension of the waste input-output (WIO) model to analyze households' sustainable consumption patterns is presented in this article. We estimate direct and indirect emission loads induced by household consumption by the WIO model. The WIO model is much more suitable for the analysis of sustainable consumption than the conventional input-output model because it can deal with the disposal stage of consumed goods as well as the purchase and use stages. A simple method for evaluating income rebound effects is also introduced. As indicators of environmental loads, we estimate carbon dioxide (CO<sub>2</sub>) emissions and landfill consumption induced by household consumption. The model is applied to some typical sustainable consumption scenarios: shifting transportation modes from a private car to public transportation, the longer use of household electric appliances, and eating at restaurants instead of cooking at home. We found that the income rebound effects should be considered to evaluate environmental loads induced by different consumption patterns.

## 《产业生态学报》

2005 年冬, 第 9 卷第 1-2 期, 221-235 页

题目: 关于瑞典城市居民直接和间接能量需求的建模分析与减量化选择

作者: Annika Carlsson-Kanyama, Rebecka Engström, Rixt Kok

关键字: 家庭能源需求, 消费类型, 直接与间接能量, 本地支持系统, 改进途径

摘要: 荷兰能源分析软件(EAP)描述了 300 种消费类型的能耗情况, 本文利用该软件分析了瑞典斯德哥尔摩市的案例, 试图在现有支持系统下找到降低家庭能源消耗的途径。早期关于瑞典的模型只是基于荷兰的数据库, 而本文的案例研究包括了瑞典当地食品店、市场、公共交通和娱乐业信息, 以便更好地确定该地的节能消费形式。现有消费支出不变, 仅改变消费类型, 可望节能 10-20%, 其中饮食方面最多可降低间接能耗 30%, 其它方面的节能潜力则相对较小。进一步的节能降耗需要改进斯德哥尔摩市的内外部支持系统。研究表明在生产领域的能效数据必须是国家级的, 否则某些可能的能效改进将会被忽视。今后还需研究进口产品原产地的能量密度, 以提高分析的可靠性。总体看来瑞典的 EAP 系统仍需进一步改进才能模拟分析日常行为, 但它足以向当地的能量咨询机构提供一些有价值的信息。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 221-235

Indirect and Direct Energy Requirements of City Households in Sweden: Options for Reduction, Lessons from Modeling

Annika Carlsson-Kanyama, Rebecka Engström, and Rixt Kok

**KEYWORDS:**  
household energy demand, consumption patterns, direct and indirect energy, local support systems, change options

**SUMMARY:**  
The objective of this article is to explore the potential for lowering household energy use given existing local support systems, in this case in the Stockholm inner city with the aid of the Dutch energy analysis program (EAP) that was adapted to Swedish conditions and that portrays total energy use for 300 consumption categories. Previously such modeling for Sweden was carried out using only Dutch databases. Our case study area is well equipped with food stores, local markets, public transportation, and entertainment, facilitating some energy-efficient consumption choices. With maintained expenditure levels but changed consumption patterns, current reduction potentials are on the order of 10-20%. Options concerning diet can lower food indirect energy use by up to 30%, whereas options in other areas have a lower potential. Further reductions will require enhanced local support systems, external as well as internal. The results indicate that it is risky not to use nationally adapted figures for energy efficiency in the production sectors when modeling household energy use, because potential for change may be overlooked. Future work should include foreign energy intensities when modeling imported goods; otherwise, results may be less reliable. The Swedish EAP needs further work before it can be put to use as a modeling tool for everyday behavior, but it is already generating important possibilities for producing reliable data that can be used by local energy counselors.

## 《产业生态学报》

2005 年冬, 第 9 卷第 1-2 期, 237-258 页

题目: 香味制品的使用与用户接触多环麝香物质的关系

作者: Matthias Wormuth, Martin Scheringer, Konrad Hungerbühler

**关键字:** 6-乙酰基-1,1,2,4,4,7-六甲基四氢化萘 (AHTN), 皮肤敷用, 六氢六甲基  $\gamma$  环戊烷-2-苯并吡喃(HHCB), 多种使用情景, 药品与个人护理产品, 风险评估

**摘要:** 消费者日常使用的许多产品都含有有机合成化学品。在消费过程中长期大量接触这些化学品(包括一些刺激制品)会对使用者的健康带来负面影响, 作为合成香料之一的多环麝香制品即为一例。本文利用基于情景分析的方法模拟了 6-乙酰基-1,1,2,4,4,7-六甲基四氢化萘和六氢六甲基  $\gamma$  环戊烷-2-苯并吡喃在香味产品中的使用及其与消费者皮肤接触的情况。文中选择了香味个人护理产品和家庭清洁制品两种产品, 计算了两种皮肤接触情景, 并将结果展示给了欧洲的男女消费者。模型的重要参数可设定为最小、平均或最大值, 据此模型的输入变量也相应有所不同。该研究确定了一些麝香质含量高、对皮肤影响严重的香味消费品。文中还分析了多种产品同时使用以及多个消费者同受影响情况下的环境暴露影响程度。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 237-258

**Linking the Use of Scented Consumer Products to Consumer Exposure to Polycyclic Musk Fragrances**

Matthias Wormuth, Martin Scheringer, and Konrad Hungerbühler

**KEYWORDS:**

6-acetyl-1,1,2,4,4,7-hexamethyltetraline (AHTN), dermal application, hexahydro-hexamethylcyclopenta( $\gamma$ )-2-benzopyran (HHCB), multiple-use scenarios, pharmaceuticals and personal care products (PPCPs), risk screening

**SUMMARY:**

Synthetic organic chemicals are ingredients of many consumer products used daily. Consumers are therefore constantly exposed to a broad spectrum of synthetic organic chemicals, which might be irritants or have other effects harmful to human health, in the consumption phase of the product life cycle. Relevant examples are the polycyclic musk fragrances that make up an important group of synthetic fragrance compounds. Using a scenario-based approach, we simulate various product uses and calculate the resulting dermal exposure to the musk fragrances 6-acetyl-1,1,2,4,4,7-hexamethyltetraline and hexahydro-hexamethyl-cyclopenta( $\gamma$ )-2-benzopyran for a wide spectrum of consumer products. The product spectrum was selected from scented personal care products and household cleansing agents. Exposure to musk fragrances is calculated with two dermal exposure models, and results are presented for female and male European consumers. The variability of required inputs is accounted for by assuming minimal, average or median, and maximal values for important model parameters. The study identifies a limited number of types of scented consumer products as significantly contributing to daily dermal consumer exposure to musk fragrances. Exposure levels resulting from the simultaneous use of these products and the number of exposed consumers are investigated.

## 《产业生态学报》

2005 年冬, 第 9 卷第 1-2 期, 259-275 页

题目: 更多的可持续消费模式: 关于欧洲国家和城市的家庭代谢的分析与评价

作者: Henri C. Moll, Klaas Jan Noorman, Rixt Kok, Rebecka Engström, Harald Throne-Holst, Charlotte Clark

关键字: 跨国比较, 能源, 能源分析软件 (EAP), 环境负荷, 产业生态学, 物质流分析(MFA)

摘要: 对人类社会和科学界而言, 如何找到更多的可持续消费模式是一项重要挑战。本文应用家庭代谢这一概念分析了消费模式和发展可持续家庭消费的前景。家庭代谢可通过总的包括直接和间接的能量需求的在内的混合研究方法加以确定。这一方法还可研究国家、地区和家庭等不同尺度下决定消费环境负荷的重要因素。

在荷兰、英国、挪威和瑞典四国内部及四国之间, 家庭的年均能源需求相差很大。家庭平均消费支出在很大程度上可以解释这些差异。此外, 国家之间的差异还与生产部门和能量供应系统的效率有关。食品、交通、娱乐消费导致的环境负荷很大。不同家庭特征的消费者在不同消费种类上的支出极为不同。

因此, 分析各种家庭类型对采取合理措施减少家庭消费的环境负荷十分重要。城市基础设施(如交通、供热等)决定了家庭的大部分直接能耗, 对其展开分析有助于制定城市层面上的措施。在国家一级上, 改进生产和发电过程的效率是降低家庭能量需求的关键。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 259-275

### Pursuing More Sustainable Consumption by Analyzing Household Metabolism in European Countries and Cities

Henri C. Moll, Klaas Jan Noorman, Rixt Kok, Rebecka Engström, Harald Throne-Holst, and Charlotte Clark

**KEYWORDS:**

cross-national comparisons, energy, Energy Analysis Program (EAP), environmental load, industrial ecology, materials flow analysis (MFA)

**SUMMARY:**

Bringing about more sustainable consumption patterns is an important challenge for society and science. In this article the concept of household metabolism is applied to analyzing consumption patterns and to identifying possibilities for the development of sustainable household consumption patterns. Household metabolism is determined in terms of total energy requirements, including both direct and indirect energy requirements, using a hybrid method. This method enables us to evaluate various determinants of the environmental load of consumption consistently at several levels—the national level, the local level, and the household level.

The average annual energy requirement of households varies considerably between the Netherlands, the United Kingdom, Norway, and Sweden, as well as within these countries. The average expenditure level per household explains a large part of the observed variations. Differences between these countries are also related to the efficiency of the production sectors and to the energy supply system. The consumption categories of food, transport, and recreation show the largest contributions to the environmental load. A comparison of consumer groups with different household characteristics shows remarkable differences in the division of spending over the consumption categories.

Thus, analyses of different types of households are important for providing a basis for options to induce decreases of the environmental load of household consumption. At the city level, options for change are provided by an analysis of the city infrastructure, which determines a large part of the direct energy use by households (for transport and heating). At the national level, energy efficiency in production and in electricity generation is an important trigger for decreasing household energy requirements.

## 《产业生态学报》

2005 年冬, 第 9 卷第 1-2 期, 277-287 页

题目: 小即美: 美国住房大小、资源消耗与环境

作者: Alex Wilson, Jessica Boehland

关键字: 建筑, 消费, 住宅, 住宅供给, 不动产, 住所

**摘要:** 住房面积越大, 建筑物的资源消耗越大, 土地占用越多; 更大的地表衬砌导致更多的雨水径流, 建筑成本日趋上涨, 能耗也逐渐增加。自 1950 年以来, 美国新建独户住宅的人均居住面积增加了 3 倍。对比小型和大型独户住宅, 能效一般的小型住宅用于采暖和空调的能耗也比很高能效的大型住宅要低得多。本文研究了美国独户住宅的一些发展趋势, 并提出了关于减小住宅面积来改进住宅质量和资源效率的建议。

## Journal of Industrial Ecology

2005, Vol. 9, Issue 1-2, pp. 277-287

**Small is Beautiful: U.S. House Size, Resource Use, and the Environment**

Alex Wilson and Jessica Boehland

**KEYWORDS:**

construction, consumption, dwelling, housing, real estate, residence

**SUMMARY:**

As house size increases, resource use in buildings goes up, more land is occupied, increased impermeable surface results in more storm-water runoff, construction costs rise, and energy consumption increases. In new, single-family houses constructed in the United States, living area per family member has increased by a factor of 3 since the 1950s. In comparing the energy performance of compact (small) and large single-family houses, we find that a small house built to only moderate energy-performance standards uses substantially less energy for heating and cooling than a large house built to very high energy-performance standards. This article examines some of the trends in single-family house building in the United States and provides recommendations for downsizing houses to improve quality and resource efficiency.