



# Report of the ntelligent Consumption Project



*Edited by:*  
Michael Strigel  
Curt Meine



*A Collaborative Project of the*  
Wisconsin Academy of Sciences, Arts and Letters  
USDA Forest Service, Forest Products Laboratory



*May 2001*



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**Intelligent Consumption Project**



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Madison, Wisconsin

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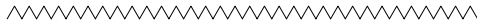


## EXECUTIVE SUMMARY



*The long and short of the matter is that forest conservation depends in part on intelligent consumption, as well as intelligent production of lumber.*

Aldo Leopold, "The Home Builder Conserves" (1928)



The Intelligent Consumption Project (ICP), a joint effort of the Wisconsin Academy of Sciences, Arts and Letters and the United States Department of Agriculture Forest Service, has sought to explore the role that informed consumer choices can play in shaping conservation policy and practice, and ultimately in shaping our landscape. *Intelligent consumption* is viewed as a critical part of our society's continuing effort to develop a viable conservation ethic. The expected increase in the world's population within this century will present society with challenges unprecedented in our history as a species. Not the least of these will be the challenge of providing food, energy, shelter, clothing, and other goods for an expanding population that is increasingly affluent and able to consume. The ICP has examined how intelligent choices, guided by a consumption ethic, can and should contribute to conservation efforts domestically and globally.



The ICP has focused on the consumption of wood and wood products, while recognizing connections to the effects of consumption more generally. Given trends in human population growth and the amount of forestland, it is apparent that forest ecosystems will continue to be subjected to enormous pressures even in the absence of increased consumption. Sharp reductions in forestland per capita virtually ensure escalating conflict over forest uses. With this increased pressure we will face difficult challenges in our efforts to maintain the environmental services and amenity values of forests as we seek to sustain them as a source of needed wood and fiber products.

Per capita consumption of wood in the United States is twice the average for other developed countries and roughly three times the average for the world as a whole (Brooks 1993 and Solberg 1996). Supporting the expanding world population at anything approaching current U.S. per capita consumption rates will impose a substantially increased burden on the world's ecological systems. Reduced consumption of wood and wood products is an important response to this state of affairs. However, reduction of wood consumption alone is an inadequate response. For when we examine wood consumption in a broader context, we find that reduced wood consumption, *if pursued in the absence of reductions of consumption in general*, may result in adverse environmental impacts both within and outside of the United States. These impacts include likely increases in energy use, the "transfer" of environmental burdens, and the substitution for wood of raw materials that carry their own social and environmental costs. The environmental impacts of consumption thus involve not only the *quantity* but also the *type of*

*materials* being consumed, as well as the *type of environmental costs* incurred. To ensure that consumers have opportunities to make intelligent choices involving wood products, we must recognize, seek to understand, and communicate these connections.

Any strategy to encourage more intelligent resource consumption will need to be comprehensive, and involve a variety of organizations and interests. Such a strategy should logically include at least five components: a foundation in ethics and moral authority; access to technical and scientific information; research and development on resource efficiencies; public education; and institutional incentives to encourage responsible consumer choices. The Intelligent Consumption Project has examined these components of an “intelligent consumption strategy” and offers the following recommendations.

### ***Ethics and Moral Authority***

To strengthen the ethical foundation for intelligent consumption, the ICP recommends: explicit recognition of the connections between consumption and environmental quality by opinion leaders and institutions in various sectors; examination of current approaches to environmental ethics for their value in illuminating issues related to consumption; greater scrutiny of the consumption messages delivered through advertising and product promotion practices, and the potential for these practices to be altered to support more informed choices; evocation of a sense of place, and the commitment to environmental quality it entails, through literature and other modes of expression; encouragement of study groups and other means of supporting those who seek to make intelligent consumption choices; and avoidance of the language of shame and guilt that often accompanies messages regarding ethics.



### ***Technical and Scientific Information***

To improve the reliability and availability of technical and scientific information, the ICP recommends: establishment of a National Materials Commission; support for a comprehensive study of the impacts of material use and consumption; updating prior reports on the energy implications of alternative building materials; establishment of a credible and independent clearinghouse for information on the environmental effects of materials use; and development of an easily understood rating system to provide consumer information related to the environmental impacts associated with the manufacture, use, and disposal of materials.

### ***Research and Development***

To encourage development of new knowledge in support of more intelligent consumption, the ICP recommends: continued strong support for basic research and development, both within and beyond the USDA/Forest Service, on efficient use of wood, and on materials use and efficiency in general; preparation of a summary report on recent advances in life cycle analysis and “environmental footprint” analysis; establishment of broadly agreed-upon protocols for testing materials as part of life cycle analysis; and support for research in the social sciences on the connections between economic and environmental health and consumption.

### ***Public Education***

To enhance educational efforts in support of responsible consumption, the ICP recommends: preparation of basic educational materials related to the production, use, and consumption of forest products and other materials; promoting exploration of the environmental consequences of consumption at all educational levels; support for interdisciplinary approaches to consumption-related topics and for critical approaches to “consumer literacy”; tailoring of educational materials to varied audiences; and encouragement of partnerships to promote ecological literacy and responsible consumption outside formal educational settings.

### ***Institutional Incentives and Barriers***

To improve the institutional and policy context for intelligent consumption, the ICP recommends: immediate consideration of a national materials policy; development of a national environmental accounting system to trace the impact of material extraction, manufacture, use, and disposal (refer to life cycle analysis above); fostering a national dialogue on desired future population and immigration policy and on the efficacy of Gross Domestic Product (GDP) as a measure of well being; and evaluation of and, where appropriate, promotion of producer “take back” laws and economic incentives (e.g. tax credits) designed to create more environmentally sound consumer products.

Together these recommended actions could help make intelligent consumption a core component of conservation in the century ahead.



## ACKNOWLEDGMENTS

The Wisconsin Academy of Sciences, Arts and Letters and the USDA/Forest Service Forest Products Laboratory gratefully acknowledge all those who have contributed to the Intelligent Consumption Project. The conference, “Building on Leopold’s Legacy: Conservation for a New Century” held by the Wisconsin Academy in October, 1999, provided the seedbed for this project; we thank the organizing committees of that conference for providing the opportunity. Chief Michael Dombeck and the USDA/Forest Service provided a grant, as well as institutional and logistical support, to carry out the project. We thank the Wisconsin Academy’s Council and Executive Director Robert Lange for their endorsement and support of the project. The diverse members of the Intelligent Consumption Project Working Group (see Appendix A) brought to this effort their expertise, open-mindedness, and willingness to work together. Finally, we thank all those who contributed and reviewed text for this report, especially Janet Abramovitz, Jim Bowyer, Robb Freda-Cowie, Tom Hamilton, Sue LeVan, Doug MacCleery, Michael Schuler, and David Tilford.





## ABOUT THE WISCONSIN ACADEMY OF SCIENCES, ARTS AND LETTERS

The Wisconsin Academy of Sciences, Arts and Letters is an independent, nonprofit membership organization. It was chartered by the Wisconsin state legislature in 1870 with the mission of gathering, sharing, and acting upon knowledge in the sciences, arts and letters for the benefit of the people of Wisconsin. The Wisconsin Academy is independently funded by grants, private endowments, and our members. In keeping with that mission, the Wisconsin Academy conducts various programs and projects in the sciences and humanities. Its four core programs are:

### **The Wisconsin Idea at the Academy**

This program addresses issues of public concern by convening groups with differing viewpoints, a role that the Wisconsin Academy, because of its independent status, is uniquely suited to play. The resulting workshops, meetings, and conferences are designed to gather and share information and, where possible, discover common ground. Under the Wisconsin Idea program, the Academy is now beginning a review of the sustainability of Wisconsin's waters. The Intelligent Consumption Project served as a pilot for this program.

### **Fall Forums**

The Wisconsin Academy's Fall Forums and other conferences use the same "all players to the table" model to educate and encourage a thoughtful citizenry to better evaluate controversial topics and to promote communication among participants and the general public. The forums address topics that call for timely, multidisciplinary examination — issues that are at a "tipping point." Fall Forum 2001 will examine the Bill of Rights in our lives.

### **Wisconsin Academy Gallery**

The Wisconsin Academy's gallery, which opened in 1974, is the only noncommercial gallery in the state to feature a different Wisconsin artist every month, with a special themed exhibit once a year. The juried exhibits showcase both established and emerging artists working in a wide variety of media. The Wisconsin Academy Gallery will move into the Overture Center, a cultural arts center in downtown Madison, in 2004.

### ***Wisconsin Academy Review***

The Wisconsin Academy's quarterly magazine features articles, essays, fiction, and art by many of our state's leading artists and thinkers, reflecting our interdisciplinary mission. It is the only magazine in the state to highlight contemporary Wisconsin thought and culture.

For more information: Wisconsin Academy of Sciences, Arts and Letters, 1922 University Avenue, Madison, WI 53705-4099. Phone: (608) 263-1692 or visit the Wisconsin Academy website at [www.wisconsinacademy.org/](http://www.wisconsinacademy.org/)



## ABOUT THE FOREST PRODUCTS LABORATORY

The U.S. Department of Agriculture, Forest Service established the Forest Products Laboratory (FPL) in 1910 to serve as a centralized wood research laboratory. Since its inception, the FPL has sought to improve the use of wood through science and technology, thereby contributing to the conservation and management of the forest resource. Through its research program, the FPL seeks to expand and understand all aspects of conservation and use of the timber resource. The programs are accomplished through coordinated partnerships involving industry, university, and government. The current research program is conducted in five broad areas:

Wood Products

Pulp, Paper, and Composites

Wood Protection

Timber Demand and Technology Assessment

Microbial and Biochemical Technology

To bring research to potential users, the FPL publishes research findings for a variety of groups including industry, the general public, regulatory agencies, state and private foresters, educators, and other government agencies and organizations. FPL has published thousands of technical reports and several major USDA handbooks. More than 100 scholarly journals publish FPL research results.

For more information: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory, One Gifford Pinchot Drive, Madison, WI, 53705-2398. Phone: (608) 231-9200 or visit the FPL website at [www.fpl.fs.fed.us/](http://www.fpl.fs.fed.us/)



## DEFINING INTELLIGENT CONSUMPTION

**T**he Intelligent Consumption Project is based on the premise that we all must take responsibility for the choices we make as consumers. To appropriately assume that responsibility we must have accurate and useful information. The Intelligent Consumption Project has convened a group of leaders and experts at the interface of conservation and consumption of forest resources to identify needed information and to explore methods for imparting and using that information.



### I. INTRODUCTION

The Intelligent Consumption Project (ICP) has sought to explore an often-neglected dimension of conservation: the role that ethical consumer choices can and should play in shaping conservation policy and practice, and ultimately in shaping our landscape. The participants in the ICP consider *intelligent consumption* a critical part of our society's continuing efforts to develop a viable conservation ethic. Our goal has been to consider how intelligent consumer choices can help sustain the natural resource base upon which all life and any acceptable standard of living depend.

The ICP grew out of the October 1999 conference, "Building on Leopold's Legacy: Conservation for a New Century," hosted by the Wisconsin Academy of Sciences, Arts and Letters and sponsored, in part, by the USDA/Forest Service. The conference was held in Madison, Wisconsin, on the occasion of the fiftieth anniversary of the publication of Aldo Leopold's conservation classic *A Sand County Almanac*. At the conference, the Forest Service's Assistant Director of Forest Management Doug MacCleery delivered an address titled, "Is Aldo Leopold's Land Ethic Only Half a Loaf Unless a Consumption Ethic Accompanies It?" (MacCleery 1999). That address provided a conceptual foundation for the project. The ICP has focused primarily on wood and wood products. This

focus, however, provides the means to understand the patterns and effects of consumption more generally.

In the decades since the publication of *A Sand County Almanac*, both professionals and the American public have increasingly acknowledged and accepted the proposition that ethical considerations are woven into the fabric of our land management philosophies and practices. The land ethic — as outlined by Leopold in 1949 and elaborated since by ethicists, historians, resource managers, and conservationists — has become a vital part of our discussions about human-environment relationships (e.g. Williams et al. 1997; Leopold 1999). It has focused attention on the responsibility that individuals and institutions have for maintaining and restoring the "integrity, stability, and beauty" of the land. Less attention has been given to the question of how a personal environmental ethic can and should be expressed in today's increasingly urbanized world, where few people have any direct role or responsibility in managing land.

Although few of us directly manage natural resources, we all remain resource consumers. However, recognition of the ethical aspects of resource consumption has been limited at best. The United States consumes more resources per capita than any other nation, and the level of consumption is not diminishing (Bowyer 1997). Given these facts, one of the consequences of working toward



## ALDO LEOPOLD AND INTELLIGENT CONSUMPTION

**A**ldo Leopold was trained as a forester at the Yale Forest School and received an appointment with the U.S. Forest Service in 1909. He worked in the Forest Service for nineteen years, and served from 1924 to 1928 as assistant director of the Forest Products Laboratory in Madison, Wisconsin. Leopold's varied career as a forester, wildlife ecologist, conservationist, environmental philosopher, educator, and writer had a lasting impact on the course of twentieth century conservation science, policy, and practice. He published prolifically, and his book *A Sand County Almanac*, published in 1949, is widely regarded as a conservation classic. The Intelligent Consumption Project draws its title and spirit from a 1928 essay "The Home Builder Conserves," in which Leopold writes, "The long and short of the matter is that forest conservation depends in part on intelligent consumption, as well as intelligent production of lumber."



ecological health and sustainability on both public and private lands in the U.S. has been to shift the impact of our consumption choices to ecosystems elsewhere, both within the U.S. and beyond. This raises two fundamental questions. First, is it ethical and acceptable to transfer the impacts of our consumption to "someone else's" ecosystems? Second, do our ever-growing resource demands limit the capacity of developing nations to meet their own expanding resource needs? Thus, a key challenge before us is to address the demand and consumption side of the resource conservation equation, and not just the supply or land management side.

As a growing percentage of the world's population industrializes, the U.S. is often looked upon as a model for behavior. Supporting growing numbers of people at anything approaching current U.S. per capita consumption rates will impose a substantially increased burden on the world's ecological systems. The U.S. has an opportunity — and an obligation — to lead the way in intelligent consumption if it is truly serious in its commitment to environmental stewardship. We can and must demonstrate, through our actions, how a reasonable standard of living can be supported without excessive and growing per capita consumption.

The Intelligent Consumption Project was organized to explore further these premises and their consequences. The ICP has sought, as one of its primary objectives, to provide opportunities for cross-sector exchange of information and ideas on consumption and its impacts. This objective was met through a series of three daylong forums to enhance awareness of issues related to forest product consumption, obstacles to progress, and opportunities to overcome those obstacles. The first forum was held on June 12, 2000, in conjunction with the annual meeting of the Society for Conservation Biology in Missoula, Montana. The second forum took place in Madison, Wisconsin, on July 19-20, 2000. The third forum convened on October 2, 2000, in Washington, D.C., at the U.S. Department of Agriculture. Appendix B includes agendas from the three forums. This report summarizes findings and recommendations produced during the three forums and other meetings of ICP participants.



## II. CONSUMPTION AND CONSERVATION

Human consumption of natural resources is a given; the level and type of consumption — and the excessive degradation of natural resources as a result of human consumption — are not. These, at least, are the premises on which the conservation movement and, more recently, the concept of sustainability have rested. The Intelligent Consumption Project has explored questions that challenge all who are concerned with the health of forest ecosystems and the impact of human demands upon them. In asking these questions, the ICP has provided an opportunity to explore new ground in conservation.

### Consumption and Conservation in Historical Context

In North America, the forest conservation movement arose largely out of the experience of unchecked forest exploitation in the eastern part of the continent during the latter half of the 1800s and the early 1900s (Williams 1989). The waste and ruin associated with that experience gave rise in the first decade of the twentieth century to the Progressive Era conservation movement that emphasized the efficient use and scientific management of forests. Others in the early decades of the conservation movement emphasized the protection of unexploited forestlands (Fox 1981).

This historic split between utilitarian and preservationist approaches shaped debates about the course of conservation throughout the twentieth century. During that time, however, events continually altered the context of forest conservation. Scientific understanding of forest systems evolved. The social and economic demands upon forests changed. The philosophical and cultural foundations of conservation shifted. By the late 1930s,

conservationists had begun to explore how the emerging science of ecology challenged the assumptions of both the utilitarian and preservationist “schools” of conservation. “Conservation is our attempt to put human ecology on a permanent footing,” Aldo Leopold wrote in 1942. Part of the strategy for doing so, he suggested, involved “hitching conservation directly to the producer-consumer relation” (Leopold 1942).

Aldo Leopold and others of his generation began to define a new approach to conservation, one that sought to overcome the traditional utilitarian/preservationist split in the conservation movement by emphasizing the need to protect the diversity and function of healthy ecosystems even while meeting multiple human needs (Meine 1995). This delicate synthesis, however, was soon to feel the pressure of growing social and economic pressures in a post-World War II society that was striving for higher standards of living.

The emergence of the environmental movement in the 1960s and 1970s again changed the context of forest conservation. Environmentalism brought to the forefront a broad range of issues associated with land, air, and water pollution, pesticide use, and population growth, as well as increasingly intensified and specialized approaches to resource management. At the same time, the environmental movement itself often intensified divisions in society between urban and rural dwellers, recreationists and other resource users, consumers and producers, and resource management professionals and citizens.

Recently, new fields have emerged to overcome these divisions and provide more integrated approaches to conservation: restoration ecology, conservation biology, landscape ecology, and sustainable agriculture and forestry, among others. In the land



## TRENDS IN CONSUMPTION — THE BASICS

**P**er capita consumption of wood in the United States is twice the average for other developed countries and roughly three times that of the world as a whole (Brooks 1993). After dropping substantially between 1900 and 1970, annual per capita consumption of wood in the United States increased by 16 percent between 1970 and 1997, from 63.7 to 74.0 cubic feet (Howard 1999). This was driven largely by increased use of wood fuels used in industrial processes after the oil embargoes of the 1970s. When the growing U.S. population is combined with this 16 percent per capita consumption increase, we see a substantial expansion of total wood consumption. Since the 1960s, the total increase in wood consumption in the United States has been about 50 percent, growing from 12.1 billion cubic feet in 1965 to 18.1 billion cubic feet in 1997 (Howard 1999).

The dominance of wood as an industrial raw material in the U.S. is clear. In 1998, wood comprised about 45 percent of the weight of all basic construction materials consumed in the United States in that year (Bowyer 2000). Today, the United States consumes almost as much wood, on a tonnage basis as the total for most other raw materials combined, including cement, steel, aluminum, plastics, and copper (Koch 1991).

Indeed, it is important to note that residents of the United States consume far more of almost everything than other nations. In 1998, for example, the U.S. per capita consumption of steel, aluminum, Portland and masonry cement, and plastics was 3.2, 6.9, 1.5, and 6.4 times higher, respectively, than global per capita consumption of these materials (Bowyer 1997). Thus, if the level of U.S. consumption is a legitimate concern, then the issue extends well beyond the consumption of wood alone.



In contrast to growing per capita consumption of wood in the United States, global per capita wood consumption has actually declined slightly in recent decades, from 28.2 cubic feet in 1960 to 26.5 cubic feet in 1995 (Solberg 1996). During that same period however, overall world consumption of wood — including wood fuel and industrial wood — has grown by 60 percent to over 116.5 billion cubic feet. This is due to the fact that, since 1960, the world's population has grown by 90 percent and the global economy has more than tripled in size (Brooks 1997; FAO 1997). Globally, the weight of wood consumed exceeds the weight of all metals and plastics consumed combined (Bowyer 1997).



management professions and agencies, ecosystem management and community-based conservation have sought to define new approaches to managing for ecosystem health at both broader and more local scales (Knight and Bates 1994; Bernard and Young 1997).

In the forestry arena, we have also become more keenly aware of the overall values forests provide aside from the traditional timber crop. The top 150 non-wood forest products traded internationally are worth over \$11 billion per

year (not counting the even greater local value of these products) and employ millions of people (Abramovitz 1998). Forests shelter countless species and provide habitat for other useful organisms that pollinate crops and control disease-carrying pests. Forest ecosystems provide services whose worth we have only begun to assess. These include protection of soil and water resources, moderation of flooding cycles, provision of recreational and aesthetic benefits, and sequestration of carbon.

Our efforts to define intelligent consumption can be seen as part of our effort to re-integrate conservation upon a broader foundation of values. It grows out of the basic realization that people use wood and wood products and will continue to do so. However, it is based on the conviction that people may think more critically about the effects of their consumption, and make more intelligent choices, if provided with the necessary tools and knowledge.

### **Consumption: Patterns, Connections, and Choices**

Concern about the degradation of soil and water, the loss of biodiversity, climate change, and other known and suspected consequences of forest exploitation have brought increased attention to forest product consumption habits around the world (Gardner-Outlaw and Engelman 1999). These concerns have stimulated conservationists to explore appropriate responses. With the United States consuming a disproportionate share of forest resources and other materials, it is clear that any comprehensive strategy for forest conservation must address reduced consumption. Reduced consumption of wood and wood products can relieve some of the current pressures on U.S. and global forests and help ensure that the growing world population will have adequate forest resources in the future. However, the nature of these reductions must involve a variety of strategies, encompassing both increased producer efficiency and alternative consumer choices.

Even apart from the question of per capita consumption levels, the general trend in human population growth has, and will continue to, place enormous pressure on forestlands in the U.S. and around the world. In less than four decades, per capita forest area has fallen by more than 50 percent from a

global average of 3.0 acres (1.2 hectares) in 1960 to 1.5 acres (0.6 hectares) in 1995 (Gardner-Outlaw and Engelman 1999). Given a projected world population of roughly 11 billion by the end of this century, the amount of forestland for each person in the world will shrink to between 0.7 and 0.8 acres (0.3 hectares) by the year 2100, even assuming zero loss of forests over the next 100 years (Bowyer 2000).

In the United States the story is much the same. The area of U.S. forestland has remained relatively stable between 1920 and 1998 after declining by one third during the 1800s. Yet the more than doubling of the population during that same period had the effect of reducing forest area per capita from 9.5 acres (3.8 hectares) to 2.7 acres (1.1 hectares). *If projected increases in human population hold true, the area of forest per capita in the United States will be more than halved by the end of the century, to about 1.3 acres (0.4 hectares)* (Bowyer and Stockmann 2001). Sharp reductions in forestland per capita virtually ensure escalating conflict over forest uses. We will face difficult challenges in our efforts to maintain the environmental services and amenity values of forests even as we seek to sustain forests as a source of needed wood and fiber products.

The predicted increases in the world's population within this century will present society with challenges unprecedented in human history. Not the least of these will be the challenge of providing food, fuel, shelter, clothing, and durable and non-durable goods of all kinds for a large and expanding population that is increasingly affluent and able to consume. As many as *one billion* new dwelling units globally will likely be needed within just the next fifty years (Bowyer 2000). Providing for this increasing world population in an equitable fashion is the challenge for leaders in conservation and beyond.



Citizens in the U.S. and other industrialized nations enjoy high standards of living, in part due to imports of energy and industrial raw materials from developing nations. While developed nations are substantially reliant on imported raw materials to support high domestic consumption levels, growing numbers of citizens in developing nations are economically able to consume at levels well beyond those of even the recent past. Consequently, global consumption of energy and material resources is increasing rapidly, in some cases more rapidly than population. Per capita consumption of a number of basic materials and products (i.e. aluminum, Portland cement, plastics, paper, and paper-board) continues to increase even in the United States (Bowyer 2000).

The Intelligent Consumption Project has been concerned primarily with the consumption of wood and wood products. However, wood consumption cannot be considered in isolation from the consumption of materials more generally. Forest products are only one possible focal point for a much broader consideration of the impacts of consumption.

Consumption of all materials is an issue of concern for the United States for several reasons, including: (1) its implications for the nation's balance of payments; (2) the reality of growing global competition for industrial raw materials; (3) the domestic and global environmental impacts of U.S. materials consumption; and (4) the equity issues that consumption necessarily entails. But what results might we anticipate if the consumption of wood alone were to be reduced? Contrary to expectations, the result could be highly adverse to the environment in the U.S. and globally. Reduction of wood consumption, *without accompanying success in reducing consumption in general*, would likely lead to a number of undesirable consequences, including:

- the substitution of other, often less environmentally benign, raw materials for wood;
- a substantial increase in metallic and non-metallic mineral extraction globally, with the associated social and environmental impacts of mining, minerals reduction, and metals production;
- a substantial increase in energy use, with associated environmental impacts; and
- a substantial increase in U.S. net imports, accompanied by transfers to other countries of environmental impacts associated with basic raw materials extraction and processing.

Emerging life cycle inventory (LCI) data and life cycle analyses (LCA) from research groups around the world indicate that some environmental impacts traceable to forest harvest and wood use are significantly lower than impacts associated with potential substitutes for wood. This is the case even when high rates of recycling of the potential substitutes are factored in (Bowyer 2000).

Thus, to focus on the reduction of wood consumption alone may be ineffective or even counter-productive from an environmental perspective if the result is merely to substitute for wood the consumption of other raw materials. The environmental impacts of consumption involve not only the *quantity* but also the *type of materials* being consumed, as well as the *type of environmental costs* incurred. To allow consumers to make more intelligent choices as consumers of wood products, we must recognize, research, and communicate information about these complex connections.

In sum, if the objective of intelligent consumption is to encourage changes in consumption choices to provide environmental benefits:





- Efforts cannot focus exclusively on one material, unless such efforts are dedicated solely to increased efficiency of its production and use.
- A “one-material-at-a-time” approach is likely to lead to negative and possibly substantial unintended consequences, again unless efforts are strictly dedicated to increased efficiency of material production and use.
- Consideration must be given to the reduction of consumption generally.
- Macro-issues must be recognized and addressed. These include global trade, population and consumption patterns; environmental trade-offs (in both the domestic and international arenas); and the capacity of economics to account for benefits derived from shifting consumption patterns.



### III. TOWARD INTELLIGENT CONSUMPTION: COMPONENTS OF A STRATEGY

Any strategy to encourage intelligent resource consumption must be comprehensive. It would necessarily encompass a wide variety of organizations and interests. Such a strategy should logically include at least five components: a foundation in ethics and/or moral authority; technical and scientific information to guide consumption choices; research and development of more efficient resource utilization technologies; public education; and institutional incentives to encourage desirable administrative, economic, and structural behavior.

#### *Ethics and Moral Authority*

The ICP working group explored this component of a strategy by first asking a series of basic questions. Is there, in fact, an *ethical* (as opposed to purely scientific and expedient) dimension to the consumption question? Is it desirable to formulate ethical positions and make a moral/ethical case for altering our patterns of consumption? ICP participants gave a unanimous “yes” to these questions. The group achieved a general consensus on the following points:

- American values with respect to the environment are in the “right place” but occupy a relatively low position in the American moral/ethical hierarchy. Access to information is part of the problem, but getting people to take the environment, in particular the issue of consumption, more seriously is a more significant challenge.
- Compartmentalized thinking in America is common and may lead to the embrace of contradictory beliefs and values, including

consumption patterns that may damage valued natural resources.

- Advertising and marketing interests are remarkably effective at promoting consumption. For an ethic of intelligent consumption to take hold, the power of the mass media must be taken into consideration.
- Faith communities and other small mediating institutions can play a role in emphasizing the importance of environmental quality and the link between stewardship and consumption. This may be achieved for the faith communities by drawing upon traditional religious teachings, which include the ethics of “moderation” and “just enough.”

Establishment and communication of ethical and moral guidelines as a basis for limiting consumption is, then, clearly a fundamental component of any strategy for changing the habits of American consumers. However, this is an especially difficult undertaking given the “culture of consumption” that currently exists in the United States. The ethical and moral authority for such a thrust can, and has, come from a variety of possible sources: opinion leaders in government agencies and academia, conservation groups, and religious institutions, as well as the resource-producing industries. To be truly effective, this message should ideally come from a wide variety of credible sources and opinion leaders. This broad authority would help strengthen the ethical foundation for addressing consumption issues, just as Leopold’s writings provided an ethical foundation for land use and resource-management issues.

While the Forest Service could be a catalyst for and supporter of the consumption ethic message, that message should properly be



coming primarily from other sources and opinion leaders. In recent years, faith-based organizations have increasingly taken up the cause of conservation. They are logical and appropriate candidates for raising awareness of the issue of consumption. The Unitarian/Universalist Church, for example, has adopted a position in favor of an ethical foundation for consumption choices (Davidson 2000). Other individuals and organizations with public credibility and key leaders in the natural resource management professions are logical candidates for carrying the message of responsible consumption to the public, media, and others.

There is no question that developing the moral authority for a consumption ethic will be a formidable task. Organizations representing both environmental and commodity-production interests have found reasons to be leery of the consumption issue. Some environmental groups are suspicious that those raising the issue of environmental transfer effects are simply seeking justification for increased commodity production on public lands. Moreover, some of the major financial supporters of environmental causes would, under scrutiny, have to acknowledge their own high per capita consumption rates and their own stake in continued consumption patterns. At the same time, some commodity groups are also understandably leery of taking on this issue. Most of these groups have traditionally assumed that increased consumption — especially of “their” commodities — is an unquestioned good. Regarding high rates of consumption as morally questionable plainly places them in an uncomfortable position.

The moral challenge is complicated by other factors as well. Our economic system is poorly equipped to encourage or reward producers who strive toward social and environmental accountability. Divisiveness within the conser-

vation/natural resources “community” in the U.S. can be a significant barrier to cooperation in addressing consumption issues. Finally, the international trade, equity, and population questions raised by the issue of consumption are difficult, complex, and often controversial.

To advance the ethical and moral component of an “intelligent consumption” strategy, the ICP group recommends the following strategies and actions:

**Investigate and make explicit the connections between over-consumption and environmental degradation.**

As we have seen, these connections can often be complex and simple answers elusive. However, the process of exploring such connections and exploring alternatives is itself valuable in promoting a stronger moral foundation for intelligent consumption.

**Compare and evaluate current approaches in environmental ethics for their value in illuminating issues related to consumption.**

The strengths and weaknesses of existing “schools” of environmental ethics (e.g., the “stewardship” ideal or the “deep ecology” approach) should be compared and evaluated. One ethic that provides a potential bridge between science and ethics is the “consequentialist” approach to ethics, which focuses on the outcomes, rather than the motivations, of behavior. A focus on this approach may help resolve the apparent disconnect between the environmental values people espouse and the behaviors in which they engage.

**Undertake a thorough moral and practical critique of advertising and product promotion.**

These parts of the modern economic “engine” have long been subject to critical analysis and commentary (e.g. Stauber and Rampton 1995). Progress in promoting more intelligent consumption hinges not only



on criticizing those promotion techniques that encourage unwise consumption, but recognizing how promotion may contribute to wiser choices.

**Promote and use literature that encourages a sense of place.** We have separated consumption from its impacts in both our landscapes and our imaginations. In recent years a body of literature has emerged that serves to reconnect people to the places where they live, work, and play (e.g. the works of Wallace Stegner, Wendell Berry, Scott Russell Sanders, and Terry Tempest Williams). Opinion leaders from various sectors can draw upon such writings to help people develop a sense of place and sensitize adults and children to the effect their choices have not only on their own backyards, but the “backyards” of others. This seems to be a necessary step toward the closer integration of a land ethic and a consumption ethic.



**Explore and develop models for study groups that could support individuals in making more intelligent consumption choices.** Faith communities, neighborhoods, service clubs, and consumer cooperatives have sponsored such study groups on other issues. Reviewing the efforts of groups that have already addressed consumption as a theme would certainly yield useful insights.

**Avoid the language of shame and guilt that often accompanies messages regarding ethics.** As a general theme, intelligent consumption is positive both ethically and in terms of human happiness. The Dalai Lama has remarked that the goal of religion and ethics ought to be the advancement of human happiness and compassionate care for the sentient universe. This is the positive spirit we should seek to promote in conveying the need for more intelligent consumption.

### *Technical and Scientific Information*

Even if the moral foundations for a consumption ethic were to be strengthened and broadly accepted, important information would still be needed to put that ethic into practice. Information on many aspects of the consumption issue is still lacking or difficult to access. To move toward more responsible consumption, readily available information on several dimensions of the issue would be needed: 1) information comparing the energy and other environmental implications of alternative consumption choices; 2) information on the environmental, economic, and other implications of U.S. consumption domestically and internationally; 3) exploration of whether economic growth and expansion can occur at the same time resource consumption rates are declining; and 4) information as to how rising human populations and per capita consumption in the rapidly industrializing world are likely to affect the natural environment around the world.

The first of these dimensions involves the consumers' need for reliable information on the full costs, benefits, and tradeoffs associated with raw material production and transport, product manufacturing, product use, and final disposal. The situation demands broadly accepted, standardized procedures and protocols under which such information can be gathered and disseminated. It requires, as well, opportunities for independent verification of claims. Labeling and certification programs have begun to fill this need, but these programs must continue to evolve as scientific understanding advances.

The USDA/Forest Service research community has an important role to play in this arena. In the 1970s the Forest Service cooperated in a major study titled *Renewable Resources for Industrial Materials*, better known as the

CORRIM Report (National Research Council, 1976). The report, named for the Committee on Renewable Resources for Industrial Materials (CORRIM) that created it, examined the energy implications of several alternative building materials including wood, brick, steel, aluminum, concrete, and others. A CORRIM II initiative is currently underway, involving a consortium of U.S. universities, the USDA Forest Service Forest Products Laboratory, the National Forest Products Laboratory of Canada (FORINTEK), and the Athena Sustainable Materials Institute. This group, known as the Consortium for Research on Renewable Industrial Materials, is making progress on updating and expanding CORRIM I data, and through the Athena Sustainable Materials Institute is working to link its efforts to development of a U.S. national database. However, significant additional funding is needed in the near term to provide timely baseline information for consumer decision-making.

“Life cycle analysis,” or LCA, in which all of the energy and other environmental implications of the manufacture, use, and disposal of various materials are systematically evaluated, has been proposed as a significant emerging approach for intelligent decision-making. This work is expensive and complicated and requires new approaches to collaboration, often among competing interests and industries. Its promise has yet to be fully realized. The Forest Service and others could play a leadership role in this area as well.

The second key information need is to identify the “environmental transfer” implications of U.S. resource consumption. This includes information on how U.S. consumption patterns are affecting ecosystems in both the U.S. and other nations. As an example, it is important to know the extent to which U.S. wood demand is affecting primary and/or old-

growth forests in other countries, and how these impacts may be mitigated through establishment of environmentally sound high-yield plantations both in the U.S. and on existing degraded tropical sites. Given the current lack of comprehensive information on this topic, interest groups inevitably offer varying claims. Reliable information is needed to help inform public debate on this and other issues.

The other information needs noted above are self-explanatory. As noted elsewhere in this report, it is important to note that consumption cannot be fully addressed apart from the interrelated issues of the human economy, human population growth, equity, and environmental impacts. Intelligent consumption requires a conceptual framework that can more thoroughly integrate economics and ecology.

The ICP working group sought to assess the existing state of affairs on the quality, usefulness, and availability of technical and scientific information to support intelligent consumption choices. The group agreed on a proposed mission statement for this component of an intelligent consumption strategy: *Make available nationally authoritative information that motivates people to make informed intelligent consumption choices.*

The group felt strongly that, to be effective, information and the audiences for that information must be carefully considered and targeted. For example, groups such as American Association of Retired Persons and the Consumers Union provide opportunities to reach large numbers of people, but messages must be refined to address the issues of concern to these groups. It is also clear that consumers need to know specifically what they can do to reduce the adverse environmental effects of their consumption choices.



To support the scientific and technical information needs of an intelligent consumption strategy, the ICP group recommends the following:

### **Establish a National Materials**

**Commission.** Recognizing the importance of gathering and synthesizing available technical and scientific information on the environmental and other implications of materials manufacture, use, and disposal, the ICP group sees the need for a National Materials Commission. The principal functions of this commission would be to develop a national materials policy and to provide guidance for authoritative research in support of more intelligent consumption. (See further discussion below.)

### **Support an authoritative study of the impacts of material use and consumption.**

A more fully developed national study is needed to consider how the use of materials in the U.S affects energy consumption, climate change, trade, the quality of the environment in the U.S. and other nations, and related topics. Such a study might be carried out by the National Research Council in cooperation with the President's Council on Economic Advisors, the Council on Environmental Quality, the Department of Energy, the Environmental Protection Agency, and the USDA/Forest Service, among other relevant agencies.

**Find mechanisms for substantially increasing funding of the CORRIM II initiative and development of a national database for life cycle inventory and analysis information.** As noted above, the CORRIM Report is outdated due to changes in manufacturing and construction practices, the availability of alternative construction materials, and methods of analysis.

### **Establish a credible independent clearinghouse for information on the environmental effects of materials use.**

The ICP recognizes such a clearinghouse as an important need, but came to no single conclusion as to the most appropriate forum or forums for doing so. Suggestions included: the National Research Council (NRC), the National Science Foundation (NSF), the American National Standards Institute (ANSI), the American Society for Testing and Materials (ASTM), and the National Institute of Standards and Technology (NIST).

### **Develop an easily understood rating system to provide consumer information related to environmental impacts.**

Appliances now carry energy efficiency labels and food products carry dietary labels. Consumers would similarly benefit from a product rating system that provides a broad spectrum of information related to the environmental effects of the manufacture, packaging, use, and disposal of the product. We do not yet have the metrics to develop an easily understood "ecolabeling" and rating system, but this should not prevent deliberate movement toward that objective. The proposed commission, as part of its efforts, may take this a step further by reviewing current labeling and rating protocols.

### ***Research and Development***

Research and development plays an essential role in the effort to achieve more intelligent consumption and is closely related to the available technical and scientific information discussed in the previous section. Assessing fully the quality and quantity of existing research and development efforts was a task beyond the scope of the ICP. The ICP working group did attempt, however, to frame this component of an intelligent consumption strategy.



In so doing, it was building upon a strong existing foundation of research and within the USDA/Forest Service. The Forest Products Laboratory in Madison, Wisconsin, has been a world leader in the development of technologies for more efficient use of wood since it was established in 1910. As the Lab continues to evolve, opportunities to contribute to the overall goal of more intelligent consumption will continue to make it a center for advanced research and development.

In support of the research and development needs of an intelligent consumption strategy, the ICP working group recommends:

**Support continued research and development, both within and beyond the USDA/Forest Service, in support of more efficient production processes involving forest products.** The Forest Service should continue and expand existing efforts to advance new technologies that provide products from currently unused, poorly used, and reused material. Additional support may be needed to encourage public acceptance of these products in lieu of products that are currently used.

**Support research and development in materials use and efficiency.** Beyond research and development on forest products *per se*, we need to restore our capacity for improving efficiencies in material use, recovery, reuse, and recycling generally. Such a renewed focus is key to the objective of intelligent consumption. Seeking and cultivating broader constituencies that will support such investments is seen as essential. It is also important to undertake research that explores the connections between use and reuse of forest products and other materials.

**Summarize the state of life cycle analysis and “ecological footprint” analysis.** These techniques for understanding the environmental impacts of material use have emerged and evolved rapidly in recent years. As discussed in the “Technical and Scientific Information” section, life cycle analysis (LCA) refers to the examination of the total environmental impact of a product through every step of its life — from obtaining raw materials all the way through production, distribution, use, and disposal (Goldberg 1992). The “ecological footprint” is the measure of how much ecologically productive land and water a defined population unit needs to support its current consumption and to take care of its wastes (Rees and Wackernagel 1996). A summary of these and other emerging analytic tools would be very helpful at this stage. This summary should be accessible to a broad audience. It should identify needs and gaps and provide recommendations for addressing them. Their application to real world situations should be emphasized.

**Support interdisciplinary research in the social sciences that examines critical connections between economic and environmental health and consumption.** Research related to the consumption of traditional forest products and other materials is generally undertaken in isolation from social and economic dimensions of consumption patterns. More extensive interdisciplinary research (coordinated perhaps through the Forests Products Laboratory or the National Research Council) is needed on such questions. In particular, research should examine assumptions about the connections between economic growth and materials consumption; between economic health and economic growth; and between quality of life and materials consumption.



## Public Education

To complement the ethical, informational, and research efforts described above, a major educational effort is needed to allow the general public to make more intelligent consumption choices. However, it must be recognized that there is no single “general public” that we need to reach. Rather, there are many different audiences within society, each with different values, consumption patterns, and ways of receiving and acting upon information.

The Forest Service is in an especially favorable position to stimulate broad educational efforts. Through its rejuvenated efforts in conservation education, the Forest Service can disseminate important information on the environmental implications of personal consumption choices. The Forest Service can also focus attention on consumption by encouraging and working actively with a wide variety of other public and private sector organizations involved in conservation education.

In its discussion of educational needs, the ICP working group considered past models of social change (from the civil rights movement to environmentally related campaigns such as Smokey Bear and Woodsy Owl), and concluded that public education is a key element in bringing about large-scale behavior changes in the public. The group developed and agreed to a general mission statement: *Provide information to assist individuals and organizations in making the best choices to sustain the natural resource base upon which all life depends and from which any acceptable standard of living is derived.*

The group agreed on the following general points:

- Educational institutions need to do more to teach students and inform the general public

about natural processes and resources, the production processes that convert natural resources into consumable goods, and the ramifications of our consumer choices.

- Educators are often inundated with curricula (many of which promote the agendas of those who produce them) and need some way of assessing the accuracy and objectivity of a particular curriculum.
- There is difficulty in addressing issues of human population growth as they relate to consumption, but both “sides” of this equation will benefit from more open discussion of the relationship.
- Values are an important component of successful social change efforts (as seen, for example, in anti-smoking campaigns). The values that most people respond to and motivate them to act are health (self-interest) and providing for children and future generations (stewardship).
- It is counter-productive to blame consumers or demand that people simply accept reduced standards of living. Effective public education campaigns must emphasize positive values (such as fulfillment, as opposed to simple materialism) and informed choices (knowing the consequences of our actions — the essence of intelligent consumption).

Given these educational challenges and opportunities, the ICP working group recommends the following:

**Develop basic educational materials related to the production, use, and consumption of forest products.** Educators have already requested that informational materials developed in the course of the ICP be provided for classroom use. As an immediate next step, the ICP working group recommends





preparation of a standard package of educational materials to fulfill this need in a more formal way. In the long run, a generally respected clearinghouse of information is needed to help develop and disseminate reliable information.

**Promote exploration of the environmental consequences of consumption at all educational levels.** Exploration of the connections between consumption and environmental impacts should be encouraged throughout the full continuum of educational settings, from K–12 through college, graduate, and professional schools, and including adult education and other formal and informal learning environments. As an initial step, educators, working with others, should develop a “thought piece” on how the educational system (K–12 and institutions of higher learning) can address issues related to consumption.

**Support interdisciplinary approaches to consumption-related topics.** Intelligent consumption is, by its nature, a complex topic. This complexity requires interdisciplinary approaches that address the issue from the perspective of the natural and social sciences, as well as the arts and humanities.

**Ensure critical approaches to “consumer literacy.”** Environmental education messages must provide accurate, science-based information. These messages must, however, inevitably address the role of values, since values provide the framework through which information is received, interpreted, and decisions are made. Government agencies, foundations, and other educational funders can and should support development of environmental education curricula in a way that integrates diverse perspectives.

**Tailor educational materials to reach varied audiences.** Informational materials

need to be tailored to their intended audiences, especially nontraditional conservation constituencies. At the same time, traditional audiences need to be reached in new ways. For example, outreach and educational materials aimed at landowners (developed in conjunction with extension services) need to promote greater stewardship in forestry practices, and stress connections to consumption. Materials aimed at the business community (the largest consumer of wood products) need to promote greater efficiency in the use of wood products.

**Identify and enlist the support of other organizations to promote ecological literacy and responsible consumption outside formal educational settings.** Much of the educational effort needed to make intelligent consumption a meaningful reality can take place only outside of formal institutional settings. Large-scale public education and outreach efforts have precedent within the natural resource conservation professions and agencies. One can imagine, for example, bringing Woodsy Owl or perhaps even Smokey Bear on board to convey the message, in essence, that “Only You Can Prevent Wasteful Consumption.”

### *Institutional Incentives and Barriers*

To allow a consumption ethic to express itself more effectively, and to better understand the impact of American and global resource consumption patterns, we must address factors affecting consumption that are embedded in our institutions, our public policies, and our economic and social systems. If we are to avoid inefficient and excessive resource production, poorly informed consumption, and consequent environmental effects, we need to understand how public institutions and policies foster a fragmented approach to resource management and conservation. This component of an intelligent consump-



tion strategy seeks to identify and address these institutional and policy factors.

This category encompasses a wide range of relevant forces and topic areas. A partial list would include such items as: efforts to understand the mix of incentives that encourage use of environmentally friendly products and manufacturing processes; identification of government regulations and subsidies that may encourage inefficient manufacturing and use and/or inappropriately consumptive behavior; economic incentives for recycling; evaluation of the effects of externalized costs; mechanisms that might gradually incorporate product disposal costs into the prices charged for products; and elimination of counterproductive incentives.

A fair amount of academic and private analysis is already taking place in this arena, especially in considering the policies that drive national and international forest management practices. The consumption side of the equation has received relatively little attention. It is unlikely that the Forest Service itself could or would take the lead in such efforts, but it could provide appropriate information, technical assistance, and institutional support.

The ICP working group focused on the identification of the key institutional and policy barriers to more intelligent consumption. One barrier, discussed above in the “Technical and Scientific Information” section, is a lack of reliable and available information. In a different category are the subsidies, taxes, and other public policies commonly used to encourage activities considered socially desirable and discourage those considered otherwise. Many of these incentives and disincentives remain in effect long after the original objectives have been achieved (or have become irrelevant). We can break these policy considerations down into several subcategories:

*Externalized costs.* Sometimes mitigation or restoration efforts are conducted by the resource producer and their costs are passed on to the consumer. These efforts, although desirable, rarely account for the full ecological costs incurred by society. This lack of accounting for the true cost of products prevents consumers from deciding whether a given product is worth the full cost of its production.

*Hidden subsidies* occur when the environmental costs of production and consumption are spread over society as a whole rather than paid for by the user of the product. For example, through taxes, health costs, and other mechanisms, the general public pays much of the environmental and social cost associated with ecologically damaging products. Other examples of hidden subsidies are those that in essence reward the emission of climate-altering greenhouse gases, mining and smelting operations that acidify and pollute water and degrade landscapes, and the clearing of forests in ways that erode topsoil and degrade downstream water systems.

*Direct subsidies.* Sometimes more direct subsidies are involved. Historically, these subsidies have been used to encourage development or production of a given resource in a given area, often with inadequate consideration of environmental costs. Many areas and governments (both countries and state and local governments in the U.S.) continue to attract industries to certain areas via such means. But even when such subsidies are no longer needed or may be adverse to the broader public interest, they endure due to a reluctance to alter the status quo or to address their real or perceived usefulness to particular interest groups. Direct subsidies for resource production relevant to the ICP’s work include:



- Resource depletion allowances, which permit resource producers to write off some of the taxes they would otherwise attach to profits from the sale of the resource. As a result, resource consumers pay less than they would for alternative products.
- Laws that encourage “development” of public lands, allowing resources to be removed for less than fair market value.
- Mortgage deductions designed to encourage home ownership, but which also substantially reduce the cost of building larger houses and second homes.
- Infrastructure (roads, water, and sewer) costs not covered by land developers that encourage land conversion, sprawl, and urban decay by making it less costly to build away from the urban core.

Although efforts have been made in recent years to reduce some of these direct and indirect subsidies, many continue to exert a strong influence on consumption choices. The ICP working group recognizes a critical need to evaluate the mix of subsidies, taxes, and other public policies to determine their effect on resource production and consumption patterns.

To address this component of an intelligent consumption strategy, the ICP working group recommends the following:

**Encourage development of a national materials policy.** As noted elsewhere in this report, a National Materials Commission could be charged with development of this policy. Such an initiative could be modeled on earlier efforts to shape a national materials policy that focused on national security needs. This effort, by contrast, would focus as well on environmental impacts. A national materi-

als policy should seek to promote more efficient and environmentally sound management of our natural resources, and should encourage a more holistic approach to materials — especially by taking into account comparative impacts across materials and ecosystems, both domestically and abroad.

**Develop a national environmental accounting system to trace the impact of policy on material extraction and use.** Developed in conjunction with life cycle analyses and other emerging analytic tools, this accounting system would require comprehensive research on the impacts of policy decisions, including taxes and subsidies, on cradle-to-grave impacts and costs.

**Foster a national dialogue on desired future population and immigration policy.** Although politically awkward, it is critical that such a dialogue take place alongside the dialogue on materials use. Talking about population or immigration in a vacuum — like talking about reduced consumption of wood products in a vacuum — leads to unproductive, politicized discussions and stop-gap solutions that do little to advance understanding or to reduce adverse impacts. The impacts of policy on consumption cannot be fully addressed without leadership on this issue.

**Foster discussion about the efficacy of the Gross Domestic Product as a measure of well being.** As currently conceived, the Gross Domestic Product is an arbitrary measure of economic and social health. In effect, it totals spending on activities that can be classified as social and environmental costs as well as benefits. To help recognize and develop policies that promote intelligent production and consumption, a more honest and comprehensive measure of well being is needed.



**Promote producer “take back” laws.** Take back laws make the producer (and therefore the consumer through the product price) responsible for the cost of product disposal and/or recycling once the consumer discards the product. Such laws, which are gaining ground in Europe, discourage excess consumption and encourage design of durable, easily recyclable goods. They have the effect of incorporating costs earlier in the life cycle of a given product.

**Promote tax credits/subsidies for more environmentally sound consumer choices.** Such credits can provide incentives for smaller homes, homes closer to the urban core, multi-family dwellings, and use of more efficient modes of transportation. In effect such credits help to offset those incentives that have historically encouraged wasteful resource use.



#### IV. CONCLUSION AND PRIORITY ACTIONS

In the year that it was given to achieve its goals, the Intelligent Consumption Project could only begin to address the complex issues and challenges associated with the need to develop a viable consumption ethic. By bringing together voices representing varied perspectives and interests, the ICP has sought to stimulate a conversation, and to encourage concrete actions, that will help meet that need.

Those organizations and individuals participating in the project face important challenges in moving ahead. We need to define further the specific actions that can be taken to meet research, policy, and practical needs. Many of the recommendations in this report provide guidance for this. We need to communicate our findings and recommendations in a clear and compelling manner to a broader circle of potential collaborators, and to engage new groups from various sectors as we expand the Intelligent Consumption "network." We need to identify the work that others are doing in order to avoid unnecessary overlap. We need to understand how the unique partners involved in the ICP can serve to integrate varied knowledge and experience, and build bridges with new partners.

The ICP has sought to meet a difficult, sensitive, and potentially controversial challenge. We need to anticipate and respond to those who may misconstrue or object to the very notion of "intelligent consumption." We need to look for new opportunities for honest conversations about consumption and its impacts, and to build upon the connections we have already made.

Of the recommendations offered in this report, the members of the ICP working group recognize several that are of

overarching importance and that are realistically achievable in the near-term. As priority actions, the ICP recommends continued efforts to achieve the following:

- Establishment of a National Materials Commission and development of a national materials policy.
- Development of a package of educational materials related to consumption and its environmental impacts, including materials used in the course of the ICP's work.
- Collaboration on establishment of a clearinghouse for information on consumption and its impacts.
- Support for an authoritative and comprehensive study of the impacts of various material use and consumption scenarios.
- Continued support for research on efficient use of forest products and other materials, and on new methods (such as life history analysis) for understanding environmental impacts.
- Further steps toward an easily understood rating system to provide consumer information related to environmental impacts.
- Encouragement of continued cross-sector discussions on the topic of consumption and the need for a consumption ethic.

Participants in the ICP share the hope that we have reached a time when we can openly address the real dilemmas and real opportunities involved in "putting human ecology on a permanent footing." The ICP represents one small step in addressing this large task. It is an opportunity to contribute to our conservation legacy, even as we reshape that legacy to meet new needs in new ways.



## V. LITERATURE CITED

Abramovitz, J.N. 1998. *Taking a Stand: Cultivating a New Relationship with the World's Forests*. Worldwatch Paper 140, Worldwatch Institute, Washington, D.C.

Bernard, T. and J. Young. 1997. *The Ecology of Hope: Communities Collaborate for Sustainability*. New Society Publishers, Gabriola Island, British Columbia, Canada and East Haven, CT.

Bowyer, J.L. 1995. "A World without Wood: Alternatives to Harvesting Trees." Based in part, on an article accepted for publication in the *Forest Products Journal*. "Wood and other Raw Materials for the 21<sup>st</sup> Century: Where will they come from?"

Bowyer, J.L. 1997. "Global Trends in Industrial Raw Materials Demand and Implications for the World's Forests." Rocky Mountain Institute, Systems Group on Forests, Special Report to Mitsubishi, Inc. and the Rainforest Action Network. [Data Updated to 2000].

Bowyer, J.L. 2000. "U.S. Wood Products Consumption: How a Singular Focus on Reducing Consumption of Wood, Versus Consumption in General, Could be Devastating to the U.S. and Global Environment." Presented at the Madison, WI, and Washington, D.C., forums of the Intelligent Consumption Project.

Bowyer, J.L. and V. Stockmann. 2001. "Agricultural Residues — An Exciting Bio-Based Raw Material for the Global Panels Industry." *Forest Products Journal* 51(1): 10-21.

Brooks, D.J. 1993. "U.S. Forests in a Global Context." *Gen. Tech. Rep. RM-228*. U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Ft. Collins, CO.

Brooks, D.J. 1997. "Demand for Wood and Forest Products: Macroeconomic and Management Issues." *Proceedings of the XI World Forestry Congress*. FAO, Antalya, Turkey.

Davidson, S. 2000. "Responsible Consumption as a Moral Imperative: Monitoring Progress." Commission on Social Witness Workshop. 2000 Unitarian Universalist Association, General Assembly, June 22-26, 2000. Nashville, TN.

Food and Agriculture Organization of the United Nations (FAO) 1997. *State of the World's Forests*. FAO, Rome.

Fox, S. 1981. *John Muir and His Legacy: The American Conservation Movement*. Little, Brown, and Company, Boston, MA.

Gardner-Outlaw, T. and R. Engelman. 1999. *Forest Futures: Population, Consumption and Wood Resources*. Population Action International, Washington, D.C.

Goldberg, R. 1992. "The Big Picture: Life Cycle Analysis." Academy of Natural Sciences, website article, [www.acnatsci.org/erd/ea/big\\_picture](http://www.acnatsci.org/erd/ea/big_picture). Philadelphia, PA.

Howard, J.L. 1999. "U.S. Timber Production, Trade, Consumption, and Price Statistics 1965-1997." *Gen. Tech. Rep. FPL-GTR-116*. U.S. Department of Agriculture, Forest Service, Forest Products Laboratory, Madison, WI.



Knight, R.L. and S. Bates, eds. 1995. *A New Century for Natural Resources Management*. Island Press, Washington, D.C., and Covelo, CA.

Koch, P. 1991. "Wood vs. Non-Wood Materials in U.S. Residential Construction: Some Energy-Related International Implications." *Working Paper 36*. Center for International Trade in Forest Products. University of Washington, Seattle, WA.

Leopold, A. 1928. "The Home Owner Conserves." *American Forests and Forest Life* 34:413 (May 1928), 276-278, 297.

Leopold, A. 1942. "Land Use and Democracy." *Audubon Magazine* 44:5 (September-October 1942), 259-265.

Leopold, A. 1999. *For the Health of the Land: Previously Unpublished Essays and Other Writings*. Callicott, J.B. and Freyfogle, E.T. eds. Island Press, Washington, D.C., and Covelo, CA.

MacCleery, D.W. 1992. *American Forests: A History of Resiliency and Recovery*. Forest History Society Issues Series. Forest History Society, Durham, NC.

MacCleery, D.W. 1999. "Is Aldo Leopold's Land Ethic Only Half a Loaf Unless a Consumption Ethic Accompanies It?" Presented at Wisconsin Academy of Sciences, Arts and Letters conference, "Building on Leopold's Legacy: Conservation for a New Century," Madison, WI, October 4-7, 1999.

Meine, C. 1995. "The Oldest Task in Human History." pp. 7-35 in Knight and Bates eds., *A New Century for Natural Resources Management*. Island Press, Washington, D.C., and Covelo, CA.

National Research Council. 1976. *Renewable Resources for Industrial Materials*. Committee on Renewable Resources for Industrial Materials, Board on Agriculture and Renewable Resources. National Academy of Sciences, Washington, D.C.

Rees, W. and Wackernagel, M. 1996. *Our Ecological Footprint — Measuring Human Impact on Earth*. New Society Publishers, Gabriola Island, British Columbia, Canada.

Solberg, B., ed. 1996. "Long-Term Trends and Prospects." in *World Supply and Demand for Wood and Implications for Sustainable Forest Management*. European Forest Institute Research Report 6, European Forest Institute, Joensuu, Finland.

Stauber, J.C. and Rampton, S. 1995. *Toxic Sludge is Good for You!: Lies, Damn Lies and the Public Relations Industry*. Common Courage Press, Monroe, ME.

Williams, J.E., C.E. Wood, and M.P. Dombeck, eds. 1997. *Watershed Restoration: Principles and Practices*. American Fisheries Society, Bethesda, MD.

Williams, M. 1989. *Americans and Their Forests: A Historical Geography*. Cambridge University Press, Cambridge, England.



## APPENDIX A

### Intelligent Consumption Project Working Group Members

#### Project Director

Michael Strigel  
Director of Programs  
Wisconsin Academy of Sciences,  
Arts and Letters  
1922 University Avenue  
Madison, WI 53705  
Phone: (608) 263-1692  
Fax: (608) 265-3039  
mstrigel@facstaff.wisc.edu

#### Project Advisor

Curt Meine  
Director of Conservation Programs  
Wisconsin Academy of Sciences,  
Arts and Letters  
1922 University Avenue  
Madison, WI 53705  
Phone: (608) 263-1692  
curt@savingcranes.org

Janet Abramovitz  
Senior Researcher  
Worldwatch Institute  
1776 Massachusetts Avenue, NW  
Washington, D.C. 20036-1904  
Phone: (202) 452-1999  
Fax: (202) 296-7365  
jabramovitz@worldwatch.org

Adela Backiel  
Director of Sustainable Development  
U.S. Department of Agriculture  
J.L. Whitten Building, Room 112A  
1400 Independence Avenue, SW  
Washington, D.C. 20250-3810  
Phone: (202) 720-2456  
adela.backiel@usda.gov

James Bowyer  
Professor  
Department of Wood and Paper Science  
University of Minnesota  
2004 Folwell Avenue  
St. Paul, MN 55108  
Phone: (612) 624-4292  
jbowyer@cnr.umn.edu

Art Brauner  
Executive Vice President  
Forest Products Society  
2801 Marshall Court  
Madison, WI 53705  
Phone: (608) 231-1361 ext. 213  
Fax: (608) 231-2152  
art@forestprod.org

Mary Coulombe  
Director, Timber Access and Supply  
American Forest & Paper Association  
1111 Nineteenth Street, NW, Suite 800  
Washington, D.C. 20036  
Phone: (202) 463-2752  
Fax: (202) 463-2708  
marycoulombe@afandpa.org

Paul DeLong  
Deputy Director, Bureau of Forestry  
Wisconsin Department of Natural Resources  
PO Box 7921  
Madison, WI 53707  
Phone: (608) 264-9224  
Fax: (608) 266-8576  
delonp@dnr.state.wi.us





Jane Elder  
Project Director  
The Biodiversity Project  
214 N. Henry Street Suite 203  
Madison, WI 53703  
Phone: (608) 250-9876  
Fax: (608) 257-3513  
jelder@biodiverse.org

Robb Freda-Cowie  
Deputy Director  
The Biodiversity Project  
214 N. Henry Street Suite 203  
Madison, WI 53703  
Phone: (608) 250-9876  
Fax: (608) 257-3513  
rcowie@biodiverse.org

Martin Goebel  
President  
Sustainable Northwest  
620 SW Main, Suite 112  
Portland, OR 97205  
Phone: (503) 221-6911  
Fax: (503) 221-4495  
mgoebel@sustainablenorthwest.org

Tom Hamilton  
Director  
USDA Forest Service-Forest  
Products Laboratory  
One Gifford Pinchot Drive  
Madison, WI 53705-2398  
Phone: (608) 231-9318  
Fax: (608) 231-9567  
tehamilton@fs.fed.us

Gigi La Budde  
Sustainable Woods Coop  
S11793 Hazelnut Road  
Spring Green, WI 53588  
Phone: (608) 588-2048  
bbf@mhtc.net

Susan LeVan  
Assistant Director  
USDA Forest Service-Forest  
Products Laboratory  
One Gifford Pinchot Drive  
Madison, WI 53705-2398  
Phone: (608) 231-9493  
Fax: (608) 231-9567  
slevan@fs.fed.us

Doug MacCleery  
Assistant Director of Forest Management  
USDA Forest Service  
201 14th Street, SW  
Washington, D.C. 20250  
Phone: (202) 205-1745  
Fax: (202) 205-1045  
dmaccleery@fs.fed.us

Spencer Phillips  
The Wilderness Society  
PO Box 25  
Craftsbury Common, VT 05827  
Phone: (802) 586-9910  
srp@sover.net

Hal Salwasser  
Dean College of Forestry and Director Forest  
Research Laboratory  
Oregon State University  
154 Peavy Hall  
Corvallis, OR 97331  
Phone: (541) 737-1585  
hal.salwasser@orstu.edu

Michael Schuler  
Parish Minister  
First Unitarian Society-Unitarian Universalist  
900 University Bay Drive  
Madison, WI 53705-2298  
Phone: (608) 233-9774 ext. 13  
Fax: (608) 233-6079  
michaels@fusmadison.org



Viviane Simon-Brown  
Leadership Educator  
The Sustainable Living Project at OSU  
Oregon State University Forestry Extension  
OSU/COCC, Grandview 202  
2600 NW College Way  
Bend, OR 97701-5998  
Phone: (541) 388-8361  
Fax: (541) 383-8002  
viviane.simon-brown@orst.edu

David Tilford  
Senior Writer  
Center for a New American Dream  
6930 Carroll Avenue  
Takoma Park, MD 20912  
Phone: (301) 891-3683  
Fax: (301) 891-3684  
dave@newdream.org

Donald Waller  
Professor  
Department of Botany  
Room 432 Birge Hall  
430 Lincoln Drive  
Madison, WI 53706  
Phone: (608) 263-2042  
dmwaller@facstaff.wisc.edu



## APPENDIX B

### Intelligent Consumption Project Workshop Agendas

#### FORUM 1

**Missoula, Montana, June 12, 2000. Davidson Honors College on the University of Montana, Missoula Campus. Held in conjunction with the annual meeting of the Society for Conservation Biology.**

8:00 to 8:30

Refreshments/reception and registration for attendees

8:30 to 9:00

Welcome and Introductions Michael Strigel and Curt Meine will describe the ICP and the goals of the day's meeting.

9:00 to 10:00

Presentations:

**Doug MacCleery** — Framing the Issue

**Janet Abramovitz** — The International State of Affairs

**Jack Ward Thomas** — Perspective of a Former Chief

**Michael Nelson** — Ethics and Consumption

10:00 to 10:15      Break

10:15 to noon

Focused Discussion Period

Attendees offer perspectives on the issue and ask questions of the panel

Noon to 1:00

Lunch (on your own)

**Goal of the Missoula Forum:** Due to the coincidence of the SCB meeting, there will likely be many from the conservation community in the audience. Therefore, this meeting will serve to bring some new voices to the discussion and help to refine the outline for the final report and further refine the definition of the key issues. In some ways, this first forum will be an expanded working group meeting. In an effort to share the ICP with more than the 25 attendees, Curt and Michael will attend the SCB conference and be holding informal information sessions with attendees to spread the word of the project before the June 12 meeting. We will also bring the project summaries for distribution.



## FORUM 2

Madison, Wisconsin, July 19-20, 2000. Friedrich Center,  
University of Wisconsin — Madison Campus.

### July 19

10:00 to noon

Registration and tour of the Forest Products Laboratory (FPL) — Meet at the Lab. Led by Forest Products staff, the tour will provide background on the history and role of the lab.

Noon to 12:45

Catered Lunch at FPL

12:45 to 1:00

Walk (10 minutes) or coordinated rides to Friedrich Center

12:30 to 1:00

Registration and reception for those not on the FPL tour

1:00 to 1:30

Welcome and Introductions Michael Strigel, director of programs at the Wisconsin Academy, will describe the project and the goals of the forum.



1:30 to 2:00

Keynote address by Chief Michael Dombeck of the USDA Forest Service

2:00 to 3:15

Presentations:

**Doug MacCleery**, *assistant director of forest management, USDA Forest Service.*

Doug MacCleery has written extensively on the issue of the need for a consumption ethic as a companion to Aldo Leopold's Land Ethic. One of Mr. MacCleery's essays is available on the Intelligent Consumption website. He will discuss the perceived "paradigm shift" in National Forest management policy and its implications given human consumption patterns.

**Paul DeLong**, *director, Bureau of Forestry, Wisconsin Department of Natural Resources.*

Paul DeLong will discuss the implications of consumption patterns from the perspective of a state forester. There will be time for questions after each presentation.

3:15 to 3:30 Break

3:30 to 5:45

Presentations:

**Nadine Bailey**, *president, Timber Producers Association of Michigan and Wisconsin.*

Nadine Bailey will discuss forest management in the context of small resource dependent communities and her experiences growing up as the daughter of a logger. Nadine now works for a trade association representing all aspects of the timber production industry including loggers, millowners, landowners, and manufacturers in the lake states of Michigan and Wisconsin.

**Gigi La Budde**, *ecologist, Sustainable Woods Coop* and **Phil Guillery**, *director of forestry, Inst. for Agriculture and Trade Policy and the Community Forest Resource Center.*

Gigi La Budde is a Smartwood certified resource manager and she will discuss the interface of consumption and conservation from the perspective of a small timber-producing cooperative. She has served as ecologist to SWC since its inception in 1998 where she has most recently focused on landowner education and stewardship. Phil Guillery is a forester whose work focuses on coordinating Forest Stewardship Council certification activities and supporting forestry cooperatives and associations in the lake states.

**Jim Bowyer**, *professor, Department of Wood and Paper Science, University of Minnesota.*

Jim Bowyer has conducted research and written extensively on the subject of raw material usage and material flows worldwide. He will discuss the connection between consumption patterns and environmental impacts with a focus on forest ecosystems.

6:30 to 8:00

Reception and Poster Session at the University of Wisconsin's Pyle Center  
Scientists from the UW — Madison and the Forest Products Laboratory will present posters and the project will provide refreshments on the UW campus.



## July 20

8:00 to 8:30

Continental Breakfast at the Friedrich Center

8:30 to 9:00

Welcome and Explanation of Breakout sessions

9:00 to 11:00

Breakout sessions — These sessions are designed to draw out several facets of the issue. Those identified so far include: Ethical and moral content of consumption; Availability and quality of technical and scientific information; Quantity and quality of research and development; Role of public education; and Institutional incentives and barriers to intelligent consumption.

11:00 to 11:15 Break

11:15 to 12:30

Reconvene and Report Out from Groups

Identify key topic areas and proposed actions to address from each Breakout.

Look for overlap among the issues and synthesize.

12:30

Adjourn Open Forum

1:30-5:00

Working Group Meeting (for Working Group members) to synthesize information gained at the Missoula and Madison forums into major salient points. This will form the basis of the final report and the D.C. forum.

5:30

Adjourn Working Group Meeting

**Goal of the Madison Forum:** The Madison Forum is the best opportunity to get the Intelligent Consumption Working Group together face to face. There will likely be some travel assistance for those working group members who require it. The goal of the forum will be to set the agenda and priorities for the remaining months of the project by identifying the key issues/obstacles/opportunities to be laid out in the final report and the D.C. forum. We will also look for potential actions to address these issues. Projected attendance is approximately 50 people so this forum will offer an opportunity to both spread the word of the project and invite input.



### **FORUM 3**

**Washington, D.C., October 2, 2000. U. S. Department of Agriculture, J.L. Whitten Building Room, 107A.**

8:00

Refreshments and Registration

8:30

Welcome and Background of the Intelligent Consumption Project

Michael Strigel, project director, Wisconsin Academy

Tom Hamilton, director, USDA Forest Products Laboratory

9:00

Welcome Presentation

**Chief Michael Dombeck**, *USDA Forest Service*

9:15

“Ecological Sustainability, Consumption, and NIMBYism”

**Doug MacCleery**, *assistant director of forest management, USDA Forest Service*

10:15

“U.S. Wood Products Consumption”

**Jim L. Bowyer**, *professor, Department of Wood and Paper Science, University of Minnesota*

11:15

“An International Perspective”

**Adela Backiel**, *director of sustainable development, USDA*

12:15

Lunch on your own (USDA cafeteria or other)

1:30

Explanation of Break-out Sessions

The break-outs will involve a review of the draft report with recommendations of the Intelligent Consumption Project. A copy of the report is available on-line at [www.wisconsinacademy.org/programs](http://www.wisconsinacademy.org/programs) (look for the Intelligent Consumption Project link).

1:45

Break-out Sessions

- Ethical and moral content of consumption
- Availability and quality of technical and scientific information
- Quantity and quality of research and development
- Role of public education
- Institutional incentives and barriers to intelligent consumption.



3:30 Break

4:00

Results of Break-outs, Forum Synthesis, and Next Steps for ICP

**Curt Meine**, Wisconsin Academy, leads group discussion

4:45

Adjourn