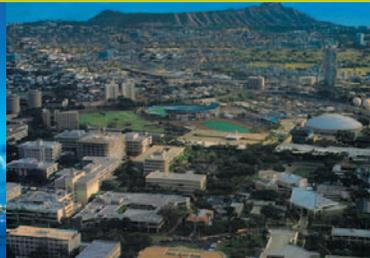
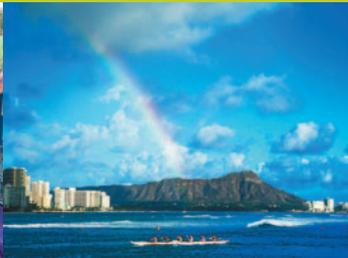


**UNIVERSITY OF HAWAII AT MĀNOA
SUSTAINABILITY RETREAT**



December 1, 2005

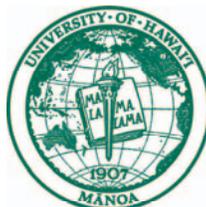


Table of Contents

Section I. Introduction	2
Section II. The Letter of Invitation	5
Section III. List of Current Activities Dealing with Sustainability on the UH Mānoa Campus	7
Section IV. List of Invitees	48
Section V. List of Attendees	54
Section VI. Agenda for Sustainability Retreat	57
Section VII. Sustainability Activities at the University of Hawai`i Mānoa and Other Universities	60
Section VIII. A Brief Overview of Sustainability Initiatives at Other Universities	63
Section IX. Working Groups	
A. Trends and Uncertainties in Hawai`i	67
B. Challenges, Priorities, and Implementation of Programs for Curriculum on Sustainability at UH Mānoa	71
C. Challenges, Priorities, and Implementation of Programs for Research on Sustainability at UH Mānoa	75
D. The Design and Operation of UH Mānoa Buildings and Campus Facilities	78
Section X. Event Website	81

Introduction



Section I.

UNIVERSITY OF HAWAII

Sea Grant College Program
School of Ocean and Earth Science and Technology



The UHM Campus Sustainability Retreat was a full day session held at the Wai`oli Tea Room in Mānoa on September 16, 2005. The purpose of the retreat was three fold: to identify work in the various areas of sustainability currently being conducted by our faculty colleagues, to acknowledge and build on faculty efforts in the past, and to collectively envision a sustainable UH and to concertedly move towards that goal in the future. To support the retreat's purpose the day's activities were divided into four focused thematic areas: 1- forecasting trends that will influence Hawai`i's future, 2- curricula, 3- research and 4- physical plant and building design. An underlying premise of the day's events was the consideration that the University of Hawai`i is one on the largest employers and consumers of electricity, water and resources in the state and that UH is the intellectual epicenter of this community. The University of Hawai`i, therefore, has an opportunity and a responsibility to lead by example. UHM should be demonstrating solutions on its campus and working with communities to bring long-term solutions to the state and region well beyond the boundaries of the campus.

The one day retreat was neither a beginning nor a culminating event but an effort to provide a point of focus and consensus, and a means to develop momentum and continuity, as the UHM community rises to responsibly face the challenges of the 21st Century. The retreat was fully supported by the office of Interim Chancellor Denise Konan, and administratively facilitated by UH Sea Grant College Program and the Center for Smart Building and Community Design. The event aimed at advancing the ongoing efforts of the UH Office of Sustainability and was possible only through the dedicated and collaborative efforts of colleagues from all parts of the campus.

In May of 2005 a small retreat steering committee was formed. On May 27, 2005 a survey was sent by the UH Sea Grant College Program and the UH Office of Sustainability to a large number of UH Mānoa faculty whom had been identified by the steering committee as working in the general area of sustainability. A total of 157 faculty members and staff were surveyed. The responses were compiled and sent to the retreat's invitees. A copy of the survey and responses are attached to this report. On August 17th a follow up letter, signed by Interim Chancellor Denise Konan and UH Sea Grant College Program Director Gordon Grau, providing the agenda and other information encouraging retreat attendance was sent out to all invitees.

The retreat attracted over 40 participants. Most spent the full day from 9:00 a.m. to 4:00 p.m. Wall notes taken during the small group sessions were reproduced and summaries of each of the sessions were developed by volunteer committees formed from workshop participants. Kem Lowry, John Carey and Peter Rappa facilitated and

summarized the session on future trends and uncertainties. John Cusick, Mary Tiles, Shirley Daniel and Graham Parkes were responsible for the session on curricula. Jo-Ann Leong, Sharon Miyashiro, and Nancy Scanlon conducted the session on research and Stephen Meder, Jack Sidener, Sharon Ching-Williams and Rebecca Lively were responsible for the session on the physical design of the campus. Copies of the summaries were sent to all the participants for comments in the first week of October.

Today, as faculty and administrators, we see a great number of students motivated by the principles of sustainability as they pursue their education. The questions of environmental stewardship, economic and social equity, an appreciation for cultural diversity and the need for responsible policies are cross cutting the various fields of study and emerging as undeniable issues in our daily lives. How do we as administrators, researchers and educators prepare our students to understand the rapidly changing world around them and to significantly contribute to the solutions through their chosen fields? How does the physical campus, as it is designed and operated, stand for the values that we would like to teach and have this university exemplify? How do we as citizens improve the quality of life in our communities and how do we as parents leave a decent world for our children to inherit? As discussed by the more than 40 retreat participants, as stated by the nearly 160 sustainability survey respondents, as evidenced by the description of our colleagues' work on the following pages, these issues are heartfelt and a professional concern to many of us at Mānoa. The research, teaching and community outreach, in many cases, is motivated by the values often associated with sustainability. The only way that this work can be effectively expanded, and the only way that this university can lead by example, is through a concerted and long-range commitment to an implementable vision for the university and its role to this community. The Campus Sustainability Retreat of September 2005 was a means to strengthen the ongoing campus sustainability efforts and to develop a focused forum to discuss and collect the relevant work. Further discussions will generate greater momentum, reveal more scholarship, encourage applied research, connect across curricula and expand accomplishments with the community. Success will build upon success and commitment from the university will grow as the collaboration, communication and demonstration projects on the University of Hawai`i at Mānoa campus continue to exemplify the values of this faculty and improve the quality of life for the larger Hawai`i community.

A handwritten signature in black ink, appearing to read 'S. Meder', with a long horizontal line extending to the right.

Stephen Meder
Director of the Center for Smart Building and Community Design
December 2005

The Letter of Invitation



Section II.



UNIVERSITY OF HAWAII AT MĀNOA

DENISE EBY KONAN
INTERIM CHANCELLOR

August 17, 2005

Dear University of Hawai'i faculty or staff member:

Over the summer, the University of Hawai'i (UH) Sea Grant College Program, in collaboration with the UH Office of Sustainability, contacted Mānoa campus personnel to assess the breadth of faculty and staff activities in research, curriculum development, administration and other initiatives that relate to concepts of "sustainability," both on the UH Mānoa campus and in the larger community. We would like to thank you for your thoughtful response to our inquiry.

The results of the survey are being compiled to create a preliminary database of sustainability related projects and personnel on the Mānoa campus. As a next step, Hawai'i Sea Grant is planning a two-day retreat, the goal of which is to facilitate further collaboration among campus personnel involved in the various sustainability initiatives. Specifically, we would like to address the overarching question of what the University should be doing in the next five years in order to become sustainable in fifty years. We would like to invite you to participate in this event, to be held on September 16th through 17th. The venue is still to be determined, and we will notify you as soon we have that information available.

In order to assist in the development of the retreat agenda, we would like to request that you submit a two page summary detailing the following:

- Your current activities involving "sustainability"
- Your estimate of university resources and policies needed to support sustainability research more effectively
- Your thoughts on ways in which the University could best demonstrate sustainable practices that would serve as an example to the larger community
- Your ideas for initiatives to help the community become engaged in sustainable practices

This summary will serve as a "ticket to admission" for the retreat. Please send your replies by August 25, 2005 to Peter Rappa at rappa@hawaii.edu or by campus mail to the UH Sea Grant College Program, HIG 238. Your response will serve as your RSVP.

Thank you very much for your time, we look forward to your participation.

Sincerely,

Denise Konan
Interim Chancellor

E. Gordon Grau, Ph.D.
Professor of Zoology and Director of
Sea Grant College Program

List of Current Activities Dealing with Sustainability on the UH Mānoa Campus



Section III.*

Submissions provided by: Roxanne M. Adams, Michael Antal, Adam Asquith, Paul “Doc” Berry, Pauline W. U. Chimm, Makena Coffman, John Cusick, Linda Day, Aly El-Kadi, Carl I. Evensen, Peter G. Flachsbart, Michael Guidry, Alex Trent Handler, John T. Harrison, Ruth Horie, Denise Eby Konan, Fred Mackenzie, Stephen Meder, Luciano Minerbi, Sharon Miyashiro, Graham Parkes, Ira Rohter, James A. Roumasset, Jack T. Sidener, Mary Tiles

*All documents in this section were reproduced as sent, except email inserts

Roxanne M. Adams
adamsrox@hawaii.edu
Landscape Manager
University of Hawai'i Mānoa
Buildings and Grounds Management

Current Activities

Our first coordinated project was with the Office of Sustainability in the Sustainability Courtyard. We worked with the School of Architecture to develop design ideas around sustainability. We integrated many of the student's ideas in the design of the courtyard along with the Office of Sustainability's committee on Campus Experience and Human Values. We included many different sustainable practices; the removal of lawn area, the use of native plants, sustainable timber (bamboo), recycled building material, drip irrigation. In concert with many other campus users and the community at-large we took what used to be a storage area for abandon trailers and trash and transformed it into a gathering spot. We continue to work with the Office of Sustainability in developing this area into a model of sustainable concepts. We are presently working on a permeable surface demonstration project and hope to move many of these same concepts throughout the campus landscape.

Together with Natural Resource and Environmental Management we developed the award winning Sherman Courtyard Native Plant and Ecosystems Educational Garden. You can read more about this garden on their website www.ctahr.hawaii.edu/nrem/courtyard.

Presently we are working on and Educational Garden at the College of Education's Wist Hall. We work collectively with professors, teachers, students and staff to develop a garden to be used in teaching sustainability in a Hawaiian context. The garden is broken down into different components of an ahupua'a; mesic and dry forest plants and Polynesian introductions are represented. We are working with College of Education and the Honors Program. Our first planting was completed on September 10, 2005. You can see pictures of this first of many planting events at <http://malama.hawaii.edu/photo/index.html>

In concert with the Environmental Health and Safety Office and the Office of Sustainability we are currently working on a pilot project for a comprehensive recycling program. We have chosen four sites which we determined by the use of each area; a mixed use building, an office building, a courtyard with food and a courtyard without food. We have chosen HIG, Hawaii Hall, Sustainability Courtyard and the Sherman Courtyard. We hope to educate the building users as well as collect data to assist us in finding the best ways to manage a complete campus reduce, reuse and recycle program.

We are developing a training program to provide our staff and members of the UHM Landscape Advisory committee with a base of knowledge to assess and manage our

campus tree collection. Along with this training we are working on a grant to provide hardware, software and support for determining the benefits the campus trees provide in the way of carbon sequestration, storm water management and energy savings.

Michael Antal
mantal@hawaii.edu
Coral Industries Distinguished Professor
Hawaii Institute for Natural Energy

Current research

Efficient conversion of biomass (green wastes) to fuels (biocarbons). My earlier research concerned the conversion of biomass to hydrogen and ethanol. Both here at UH and earlier at Princeton, I taught a course in *Solar Thermal Engineering* that was popular with students of Engineering and Architecture. At Princeton I also taught a course entitled *Energy Alternatives* that was popular with students of Engineering and Public Policy (the Woodrow Wilson School). Finally I remark that in 1984 I founded the *Renewable Energy Engineering Certificate Program* here at UH. It was terminated about two years ago for lack of student interest.

Needless to say, HNEI has many other activities concerning sustainability that I have not mentioned. Sustainability means many things to many people. From a practical, engineering point of view, the two big issues that UH will face soon are the costs of electricity to run our air conditioners, and the cost of transportation for students, faculty and staff to commute to UH each morning.

The air conditioning problem could bankrupt UH. UH is extremely fortunate to have the expertise of Prof. Stephen Meder in Architecture, who is working on these problems. He, together with Bruce Miller and Gordon Grau, can supply estimates of the investments that will be needed to make us less reliant on air conditioning.

The UH has already made some good attempts to reduce transportation costs to campus. I refer to the low cost bus passes that were available to students, faculty and staff prior to the bus strike. I understand that some special low price bus passes for the entire term are now available to students. Anything UH can do to encourage bus ridership will be beneficial to all. Beyond this, UH should consider instituting a 4-day workweek (4 ten hour days) to reduce travel.

Public engagement

Concerning community involvement: you will attract the most interest by focusing on issues that hit the “common man” in his pocketbook. Identify where \$70/bbl oil, and \$100/bbl oil will cause the greatest pain, and you will identify the issues that will mobilize the community.

Resources/Policies

Beyond this I would like to remind everyone that the primary purpose of UH is education. For the past 20 years energy education at UH has been in a state of suspended animation because HNEI itself cannot offer any degrees or classes, and neither the

College of Engineering nor CTAHR has shown any substantive interest in partnering with HNEI to offer such classes. All efforts by HNEI to establish an educational program related to energy have been rebuffed by the administration. On many occasions I have suggested a relationship between HNEI, the CoE, CTAHR, and perhaps even Architecture that would mimic the relationship between the Institute for Astronomy and the Physics Dept. Until the administration unties the hands of HNEI and permits its faculty to be fully engaged in degree offering activities, energy education at UH will continue to stagnate.

Sustainability Activities on Kauai
Dr. Adam Asquith
adam_asquith@yahoo.com
UH Sea Grant College Program

Overview: Although not explicit, sustainability is the core of all my programs and activities. Physics, geology and ecology dictate that Kauai will move towards sustainability, if not actually achieve it. The issue is how do we initiate, guide, and benefit from the transition, rather than procrastinate, react, and reel. My activities assisting this transition include research, demonstration and education.

Ahupua`a Model - I work with the Waipa Foundation and Kamehameha Schools in developing an Ahupua`a Learning Center at Waipa. The concept is that traditional Hawaiian ahupua`a were, by and large, sustainable, and thus provide us a model appropriate to our island community. We provide a place and support for culturally sensitive research, education and economies to explore, redefine, and rebuild sustainable social-ecological interactions.

Environmental Monitoring and Restoration - One of the most difficult questions to answer regarding sustainability is whether or not our resource utilization levels are compatible with the long-term health of the ecosystem. This requires monitoring environmental parameters over long periods and time and in different portions of the system. I am working with the UH Center for Conservation Research and Training under two NSF programs, EPSCOR and NEON to establish monitor systems in the ahupua`a of Waipa and Lumahai using remote sensing and Intelesense data visualization technologies.

Sustainable Agriculture - Working with the Waipa Foundation, College of Tropical Agriculture, and private clients, we are seeking ways to move Kauai towards sustainable agriculture through: a) reducing petroleum-based energy input to farming (e.g. small-scale biodiesel production), b) localizing food production and distribution system through farmers markets, c) developing sufficient sources of nonpetroleum nitrogen fertilizer to sustain current production levels.

Energy and Kauai's Economy - Most residents are aware that Kauai has the nation's highest electricity rate. Over 97% of our electricity is generated from petroleum fuel. Current plans for alternative energies are not sustainable (i.e. burning the solid waste stream). I am working to educate the local government, landowners, and citizens that Kauai must rapidly move towards sustainable, renewable energy sources for our electricity. For example, I have established a partnership with a landowner and a power company to establish the first wind turbine power plant on Kauai. However, few people realize how our island economy is predicated on inexpensive, abundant fuel that will soon no longer be either. I have developed a PowerPoint presentation (See attached) and am using it to education people on the link between energy and our economy on Kauai.

University Resources and Policies Needed

I believe that energy sustainability and the resulting economic changes are, overwhelmingly, the most important issues facing Hawaii in the next two decades. The University should take a leadership role in acknowledging, explaining and addressing these issues. There are several important research areas that should be supported by the UH but these should be done in complete partnership with business and industry. Perhaps more importantly, UH, led by science (e.g. thermodynamics and ecology) should seriously and openly examine whether or not a growth economy is sustainable for Hawaii. I think asking these hard questions might significantly redirect resources and research.

University Demonstration

Do not demonstrate. Lead. Determine how we really need to operate as an island community to be sustainable, adopt these as goals, and change our behaviors and expenditures to achieve these goals.

Community Initiatives

I strongly believe that merely encouraging sustainable practices is wholly insufficient. This will simply happen when conditions demand it. Those conditions will largely be economic. The segments of the community with the most power to implement the needed changes are industry and government; and they too respond largely to economics. Thus we should be focusing on the economic perils and opportunities of our sustainable future.

Paul “Doc” Berry
docberry@aol.com
Globalization Research Center

Sustainability Retreat Response

1. I am an advisor and Board member for Sustain Hawaii, a local NGO interested in initiatives furthering island sustainability. In 1993 I authored *In the Wake of Dreams: Reflections of Hawaii*, a book focusing on challenges to Hawaii’s environment and sustainability.

2. I supply the following personal background information as qualification to propose the sustainability project outlined below. I am a documentary film writer (scripting five 55 minute films with island filmmaker Edgy Lee – two of them winning national awards -- and an hour PBS documentary on the life of Senator Dan Inouye with filmmaker Heather Giugni). My work has premiered at the Smithsonian Institute in Washington D.C and appeared on PBS and National Geographic channels regionally, nationally, and internationally. I’m also a former Punahou teacher experienced in uses of television, and have been a consultant to University of Hawaii and national businesses regarding media-based, interactive forms of learning.

I’m in the beginning stages of planning a 12 part televised course called *A Sustainable Hawaii* that I would like to see UH offer free to its students and all members of the community. Each sustainability segment would combine 35 minutes of documentary film with 20 minutes of on-screen discussion by the best informed local/national thinkers. An online sustainability course offering investigation into more detailed case studies of local issues would accompany the televised course. Ideally *A Sustainable Hawaii* would broadcast first on PBS, then repeat for several years on cable access Olelo and distribute via DVDs in libraries. Op–ed pieces in the newspapers, and KHPR discussions, and community/business forums would also accompany the course.

The project needs a planning grant and collaboration with appropriate UH personnel from SOEST, Urban and Regional Planning, Bruce Miller of UH Sustainability, Ken Kaneshiro and CTAHR, and many others at UH. It will also require collaboration with business, government, environmentally focused NGO’s, public and private schools, local media, and members of the community.

This ambitious project will require substantial production funding (including local business contributors), writers and production personnel (perhaps drawing on UH Academy of Creative Media students), at least 18 months of production, appropriate on-screen spokespersons, advertising, teachers for the online course, coordination by an executive producer, and coordination with a series of sustainability forums throughout the business community. It will also need an ongoing third-party assessment of its impact on the community. Ideally it could become a model for how a region uses its educational and

community resources to educate itself and seriously address its long term issues of sustainability.

The course I propose will trigger ongoing public discussion, policy development, and sustainability planning and implementation.

3. UH Mānoa needs to move -- to the extent possible -- off the grid, building after building becoming a showcase for uses alternative energy. Present efforts have dragged on for three years with no visible results yet.

Pauline W. U. Chinn
chinn@hawaii.edu
Curriculum Studies
College of Education

Current Activity

THE COLLEGE OF EDUCATION'S CURRICULAR LANDSCAPE: SUSTAINABILITY AND A HAWAIIAN SENSE OF PLACE

Dean Randy Hitz and Amelia Jenkins were members of UHM Physical Environment Working Group in 2002 that reported:

"Special attention should be given to buildings and landscape on UH as twin models of Hawaiian and sustainable principles."

In Fall 2003, Pauline Chinn and Jennifer Herring asked landscape architect Janet Gillmar's students to develop plans for the COE. Janet presented a composite sketch in June 2004 to Randy Hitz, Roxanne Adams, Wally Gretz, and COE faculty. By spring 2005, taro, sweet potatoes, ti, Hawaiian gardenia and a small ohia were growing by Wist Annex and a poisonous be-still tree was removed.

Sixty freshman Honors Program students installed a landscape able to be interpreted through the program's themes of place, sustainability, and time. On Aug. 28 they learned about Mānoa from a human-in-ecosystem perspective at Lyon Arboretum. On Sept. 10, they dug 20 pounds of sweet potatoes from the 2x 3 m rectangle fronting Wist Hall and planted hala, coconut, sugarcane, milo, kou, kukui, taro and 5 flowering o'hia lehua. An irrigation system is almost complete and native and "canoe plants" will be planted.

The landscape already is supporting community and continuity—with talk of dedicating trees to key individuals and putting benches under newly planted trees in a formerly hot and dusty zone between parking lot and building. Instructors may work plots for a semester or longer.

The landscape is an example at UHM of the curricular work done at Lyon Arboretum and statewide with well over 100 K-12 public and private school teachers under awards from the state (Hawaii Invasive Species Council) and US Department of Education (*Malama I Ka 'Aina, Pikoī Ke Kaula Kualena, Kulia I Ka Nu'u*).

For more information, see project web sites:

<http://malama.hawaii.edu>
<http://pikoī.hawaii.edu>

Denise Eby Konan and Makena Coffman
konan@hawaii.edu and makenaka@hawaii.edu
The University of Hawai'i Economic Research Organization
Department of Economics

The University of Hawai'i Economic Research Organization (UHERO) utilizes a Hawaii General Equilibrium Model (GEM) to conduct both macroeconomic and environmental analysis of policy simulations for the State of Hawaii. UHERO has completed two studies that are motivated by the question of sustainable living in Hawaii: sustainable tourism and the impact of alternative energy sources to Hawaii's economy. The projects required the construction of a comprehensive model specific to Hawaii's economy, frontier modeling techniques, and local data.

The GEM maintained by UHERO is a state-of-the-art computable general equilibrium model that simulates realistic behavioral responses of firms and consumers to changes in economic conditions and can thus capture complex direct and indirect linkages across sectors in an economy. By incorporating projections for population and visitor growth, the Hawaii GEM provides a detailed account of the growth and composition of industries over time. Simulations capture the responses of consumers, producers, and workers to changes in economic conditions.

The sustainable tourism project linked tourist behavior and growth to both economic indicators like household income and to environmental indicators like greenhouse gas emissions. The study shows that visitors impact the economy and environment in significantly different ways than do residents and these impacts change given changing assumptions about the magnitude of visitor growth. This study divides visitors by type and shows that visitor types consume distinctly from one another and thus also have varying impacts on the economy and the environment.

The alternative energy study assessed long-range integrated resource plans under consideration by the Hawaiian Electric Co. (HECO). The aim of the study was to provide an authoritative assessment of the impact of alternative energy sources on the State economy.

Information provided through the GEM model and these policy-related questions of tourist growth and integrated resource plans make better-informed decision making and, consequently, more sustainable living, possible for the future of Hawaii.

Projects lead by Dr. Denise Eby Konan, Dept. of Economics (konan@hawaii.edu)

Research assistant: Makena Coffman, Dept. of Economics (makenaka@hawaii.edu)

John Cusick
jcusick@hawaii.edu
Assistant Specialist
Environmental Center

At present, I have initiated the following activities and projects in relation to the broad concepts associated with sustainability:

Curriculum Development

Prepared the Application to Plan a new graduate degree program in Environmental Studies and circulated to select faculty and Environmental Center Research Affiliates. This initiated a discussion among faculty across disciplinary boundaries on the implementation of interdisciplinary educational goals at UHM. I have researched programs at approximately 200 national and international universities in addition to ten environment-related programs within the UH System. I am preparing a draft Academic Program for eventual circulation among select faculty to address questions of overlap with existing programs and to establish the desire by students and faculty for an MA in Environmental Studies at UHM.

Submitted proposal for two new courses *A Sustainable Campus* and *Gateways to Environmental Literacy* to the Honor's Program and the Interdisciplinary Studies Program. These are courses that could be taught at the 100-200 and 300-400 levels, depending on the particular goals and objectives of the program.

Proposed an overseas and neighbor island field studies program that focuses on human relationships to the natural and cultural environment and global citizenship in collaboration with UHM Dean of Outreach College, Director of Office of International Education, and Director of American Universities International Programs (AUIP).

Research

Received tentative funding for a two year education project concerning stormwater impacts on watersheds on the island of Oahu. Project involves developing curriculum for Grades 5-8 and organizing a teacher training program.

Service

Collaborated with the Director and staff of UHM Landscaping on an Adopt-a-Landscape project in the area adjacent the EC for endemic and native plants. I am also working with the Director of the Honor's Program on an Adopt-a-Landscape proposal for incoming students in the Fall 2005 semester.

Preparing a proposal for the construction of an outdoor classroom facility adjacent to the Environmental Center.

Linda Day
lindad@hawaii.edu
Office of Sustainability

SEA GRANT HAWAII SUSTAINABILITY QUESTIONNAIRE

1. What are your current activities involving “sustainability”?

The UH Office of Sustainability is working to create a sustainable University of Hawaii by (1) coordinating educational projects and events on the UH Manoa campus and throughout the system, (2) developing a campus and system sustainability network of students, faculty and staff, and (3) working with other UH and community partners to further sustainability in the city and county and throughout the state.

Following is an overview of our major projects and events:

UH Charter of Sustainability ~ institutionalizes a blueprint of principles, policies and practices designed to guide the University of Hawaii toward a sustainable future

UH Sustainability Website (sustainable-uh.hawaii.edu) ~ provides to the public an electronic source of current community projects, upcoming events, latest news, job opportunities, and government/business/non-profit resources relating to sustainability in Hawaii

Sustainability Policy ~ collaborates with the UHM Landscape Advisory Committee, UHM Long-Range Planning Committee, Hawaii Energy Forum, Hawaii 2050, and other campus and community groups to promote sustainable practice through policy changes

Hawai'i Energy House Sustainability Demonstration Center ~ works with partners to restore and retrofit the historic Energy House and its surrounding gardens into an open-to-the-public community resource that demonstrates state-of-the-art sustainability principles and practices

UHM Sustainability Courtyard ~ demonstrates “best practices,” such as recycling, buying local products, using renewable energy, conserving water, preserving culture, and creating and mobilizing social synergy, as a model for the rest of the campus and system

UHM Materials Management Program ~ sets up an integrated system for purchasing, reusing, recycling and disposing of materials used on campus

UHM Campus Bicycle System ~ develops a cross-campus network of bicycle paths that connect entry points along the campus' perimeter (e.g., neighborhood streets, bus stops, automobile parking lots) to a variety of "hubs" on campus with uncovered and covered parking lots, bike racks and lockers, shower facilities and clothes lockers, and a centrally located maintenance-and-repair station

UHM Skateboarding Control Demonstration project ~ coordinate with faculty, staff, students and Campus Security to implement a skateboard control policy that will preserve legitimate transportation uses of skateboarding but prevent safety hazards and damage to campus infrastructure

UH Earth Day (every April 22) ~ brings private and public organizations onto our campuses to inform students, faculty and staff about current environmental, economic and cultural/social/political issues and initiatives

UH Campus Sustainability Day (Oct. 26, 2005) ~ showcases our campuses' environmental, economic and cultural/social/political curricula, research, projects, organizations and departments

UHM Sustainability Cinema Series (Fall 2005 semester) ~ presents a broad range of films on environmental, economic and cultural/social/political topics, often accompanied by guest speakers

2. What is your estimate of university resources and policies needed to support sustainability research more effectively?

3. What are your thoughts on ways in which the University could best demonstrate sustainable practices that would serve as an example to the larger community?

~ reduce our energy use substantially (conserve), switch to renewable energy sources, and become increasingly energy self-sufficient (produce our own power)

~ reduce our water use substantially (conserve)

~ handle our materials better (buy less and greener, recycle more, responsibly dispose of waste)

~ encourage alternative modes of transportation (walking, bicycling, mass transit, car-pooling)

4. What are your ideas for initiatives to help the community become engaged in sustainable practices?

~ invite them to Earth Day and Campus Sustainability Day

~ partner with them on community activities such as clean-ups, workshops and conferences, fundraisers, etc.

Aly El-Kadi
elkadi@hawaii.edu
Water Resources Research Center

Current Activities

Source Water Assessment Program Work Water Resources Research Center

A team headed by Dr. Aly El-Kadi has recently undertaken the task of assisting the State Department of Health (DOH) in conducting assessments of the state's 450-odd drinking water sources. The work will implement the state's source water assessment program (SWAP) plan that the EPA approved in November 1999

Reducing or preventing microbiological and chemical contamination of source waters allows public water systems to avoid costly treatment and minimize monitoring requirements. The 1996 reauthorization of the federal Safe Drinking Water Act (SDWA) included an amendment requiring states to develop programs to assess sources of drinking water and encouraging the establishment of protection programs. This points to a new, more comprehensive, watershed-based prevention approach to be applied to improving both groundwater and surface water quality. Accordingly the DOH has prepared Hawaii's Source Water Assessment Program (HISWAP) Plan. A source water protection program that envisions a partnership between local, state, and Federal agencies and the community to ensure that the quality of drinking water sources is maintained and protected.

Carl I. Evensen
evensen@hawaii.edu
Associate Extension Specialist, Environmental Quality
University of Hawai'i at Mānoa
Department of Natural Resources and Environmental Management

Current Activities

- CES Water Quality Program, see <http://www.ctahr.hawaii.edu/wq/>
- CSREES sponsored Regional Water Quality program,
see <http://ag.arizona.edu/region9wq/>
- Hawaii's pollution prevention information factsheets, see
<http://www.ctahr.hawaii.edu/ctahr2001/PIO/FreePubs/FreePubs04.asp>
- Livestock Waste Management and Riparian characterization projects,
see http://www.ctahr.hawaii.edu/wq/projects/projects_page.htm
- Watershed management to protect coastal areas, see webpage
under construction at <http://www.ctahr.hawaii.edu/watershed/>

Peter G. Flachsbaart, Ph.D., AICP
flachsba@hawaii.edu
Associate Professor
Department of Urban and Regional Planning

Current Activities

Analysis of Home Energy Improvements for an Affordable Housing Project in Hawai'i

This work on sustainability involved a spreadsheet analysis of alternative home energy improvements for an affordable housing project of 150 homes in Waikoloa, West Hawai'i County. When the project was first proposed in the early 1990s, county planners needed to compare two options: Option A was a voluntary program in which a homeowner would either pay cash for the entire cost of either a solar water heating system or heat pump at installation or would finance it through a home improvement loan. Option B required the home-builder to install one of these energy improvements in lieu of standard gas or electric water heaters. Most or all of the installed cost of these systems would be included in the home mortgage loan depending on which energy improvement was installed. The following data were gathered for the proposed housing project: (1) information on home prices, home improvement loans, and mortgage financing terms and rates; (2) typical household energy use for a family of four; (3) the cost and availability of state energy tax credits for energy improvements; and (4) electric and gas utility rates. To evaluate Option A, I computed: (1) the present value of net benefits; (2) the percentage of costs recovered by benefits; and (3) the pay-back period using both simple calculations and break-even analysis. To evaluate Option B, I computed the financial impacts on a typical family of four living in a home valued at \$120,000 for a period of 2, 5 and 10 years. These impacts included: (1) the additional annual income needed to qualify for the larger mortgage loan to cover the cost of the energy improvement; and (2) the net impact of the energy improvement on the homeowner's pocketbook from five sources: (a) state energy tax credits; (b) the savings on the monthly utility bill; (c) the additional down payment required for the mortgage loan; (d) the additional monthly mortgage payment; and (e) the additional maintenance and repair costs for the energy improvement. In addition, I estimated reductions in certain greenhouse gases (i.e., CO₂) under each option. To comply with requirements of the Public Utilities Commission to do Integrated Resource Planning (IRP), the local electric utility (Hawai'i Electric Light Company) proposed a \$1,000 cash rebate to homeowners with approved solar hot water systems. I evaluated the benefits of this rebate for each option even though the rebate did not exist when the housing project was first proposed.

Fred Mackenzie/Michael Guidry
fredm@soest.hawaii.edu/ mguidry@soest.hawaii.edu
Department: Oceanography

Current Activity

Currently coordinating the development, management, and publication of sustainability case studies. These case studies are focused on energy, water/climate, and ecosystem sustainability in context of Pacific islands. All these case studies will be published electronically (via the web) and in hard copy form. The case studies are geared toward audiences such as undergraduate and graduate course work, resource managers, and government officials.

The case study on water resource sustainability for Majuro atoll and Oahu is completed and in press. The energy case study is currently under development. This case study is focused on energy sustainability and the state of Hawaii and is being developed with the input of an energy expert from the State of Hawaii.

Finally, the water resource sustainability case study is being converted into content that is appropriate for online high school science study. Working with the Myron B. Thompson Academy (MBTA – located in Honolulu), the final product is scheduled for delivery in late spring/early summer of 2006. This effort may lead to the conversion of the other sustainability case studies into online high school course work.

Alex Trent Handler
ahandler@hawaii.edu
Programs Coordinator
Center for Conservation Research & Training
University of Hawai`i

I'm the Programs Coordinator for the CCRT, which means that I manage a number of existing projects under the auspice of the UH Center for Conservation Research & Training (CCRT) throughout Hawaii and the Pacific Basin. Develop new collaborative projects locally, nationally and internationally. I also act as a Strategic Planner for the CCRT, working directly under the CCRT Director on organizational growth planning. Because the CCRT has a conservation focus, the concept of sustainability is always a part of all conversations we have and integrated as much as possible into existing or developing projects. Examples of a few programs which I am directly involved include (this is not a comprehensive list, rather more of a sampling):

1) I'm leading the development of a lecture series intended to bring high profile speakers to Hawaii to discuss innovation and entrepreneurship within the context of Triple Bottom Line practices (People-social, Places-ecology and Profits-economic). High profile lecturers speaking quarterly about the role ecologically-minded (sustainable) business practices can play in increasing the profits of for-profit companies and decreasing the costs of non-profit organizations.

2) I'm a Co-facilitator (one of three Co-directors) of Sustain Hawaii/Sustain World, a 501(c)(3) action-based, educational non-profit organization dedicated to improving quality of life by achieving sustainability. Sustain Hawaii believes that quality of life can be improved through satisfying basic needs, enhancing educational initiatives, diversifying the economy, protecting the natural environment and preserving local culture and traditions.

Again, this is just a sample of my involvement in "sustainability-based" activities (sustainability has many meanings depending on who you are talking to, so it ends up being somewhat of an abstract concept until an individual, organization, community or country takes ownership and puts their version of it into practice.

John T. Harrison
jth@hawaii.edu
Environmental Coordinator
University of Hawai'i Environmental Center

Current activities

Coordinator and director of the BA degree program in Environmental Studies, offered through the Interdisciplinary Studies Program.

Coordinator of the Environmental Studies Certificate Program.

Environmental Studies Advisor – currently advising 40+ students enrolled as EVS majors or EVS Certificate students.

Teach IS 489 – Environmental Practicum. Interdisciplinary Environmental Internship course offering senior undergraduate EVS majors research opportunities working with environmental professionals throughout the community.

Coordinator for the University of formal reviews of Environmental Impact Statements, Environmental Assessments, permits, legislative bills and resolutions, development and land use plans.

Provide advice to the public regarding access to environmental competence within the University.

Membership on various task forces and committees, including the Hawai'i State Endangered Species Recovery Committee, the Hawai'i Energy Forum, and the Energy-Efficiency Policy Task Force.

Recently completed home renovation incorporating architectural design, landscape integration, energy conservation, and net-metered photovoltaic array to demonstrate residential energy self-sufficiency.

Estimate of needed University Resources and Policies for Sustainability Research

Frankly, IMHO, it's the interest-group pluralism of the University research community that works to undermine achievement of an effective sustainability consensus. I have profound confidence in the intellectual creativity and entrepreneurial energy of our faculty as engines of research ingenuity across a broad spectrum of sustainability topics.

What's lacking, and what's desperately needed, are unified voices towards a common priority.

Ultimately, the sustainability paradigm is resource limited, in the same way that all other facets of academic life are resource limited. As individuals and as an institution, we cannot by ourselves marshal the resources to effect a transformation from the status quo to a reinvented community that embodies critically necessary sustainable practices. Yet when we approach arbiters of policy, be they Regents, Legislators, or the Executive, the pluralism of our interests offers an easy target for dismemberment of consensus.

Sustainability research will proceed; technological innovation will continue; new ideas will germinate and sprout. This is what we do. We are a University, the place for creation of new knowledge. But research alone won't take us to transformation: existing technology that already addresses our most serious deficiency in the realm of sustainability currently lies fallow. We endure the consequences of present policies every time we read the daily news, much less the annals of cutting edge academic research.

Every faculty member has three academic duties: research, education and service. Right now, we need to be teachers more than we need to be researchers. We need to offer our services as a university community united behind a priority of sustainability.

Best University example of sustainable practices

Given Hawai'i's insularity and the precarious pipeline through which we derive the fossil fuels that provide over 93% of State energy needs, setting a goal of energy sustainability for the University offers a compelling resonance. Why is it that in the beautiful artist renditions in yesterday's Advertiser of the new Cancer Research Center facility, not one photovoltaic panel was evident across that vast expanse of roof area? All new construction should incorporate both architectural and systems engineering to be either self-sufficient or, better, a distributed generator feeding excess power back into the grid. Prof. Meder already has delineated much of the conceptual framework for this priority. The principal obstacle remains resource scarcity and competing priorities.

Outreach initiatives to the community

First, as teachers, we must lead by example, individually and as a community. The photovoltaic array on my home roof is a powerful lesson plan for like-minded citizens. Such examples are necessary, but not sufficient. Locally, regionally, and nationally, our fossil fuel dependence, with all of its destructive externalities, constitutes a failure of policy. We remain in non-renewable energy stasis because political and economic arbiters of policy resist change. Yet the very policy initiatives that historically catapulted

the petroleum industry first to national and then to global dominance are equally applicable to renewable energy technologies.

In the final analysis, we need to educate first our children, then their parents, and through the power of the electorate, eventually the policy makers themselves. Our community tax dollars can continue to subsidize the petrochemical industry, or, alternatively, they may be reallocated, through tax credits and other policy incentives, towards sustainable, renewable energy investment.

There's not a moment to lose.

Ruth Horie
ruthh@hawaii.edu
Librarian, Cataloging Department,
Hamilton Library

Here is a summary of my sustainability activities and thoughts, to assist in developing the retreat agenda.

Current activities

- a. Cataloging library materials relating to sustainability, for access in Hamilton Library and the Wong Audiovisual Center in Sinclair Library, and the online web catalog.
- b. Publicizing sustainability events to Hamilton and Sinclair Library faculty and staff.

Estimate of University resources and policies needed to support sustainability:

- a. Resources: unknown, but I recommend that costs be offset by monetary savings in water and electricity bills.
- b. Policies: should be based on recommendations of groups consulted.

Ways in which the University could serve as an example of sustainability:

- a. Reduce water usage
- b. Reduce electricity usage
- c. Increase recycling
- d. Publicize sustainability policies and efforts

Ideas for initiatives to engage the community in sustainable practices:

- a. Continue and expand beverage container redemption stations and hours.
- b. Set up multi-purpose recycling bins similar to ones at public schools.

Stephen Meder
smeder@hawaii.edu

**UH Sea Grant College Program Center for Smart Building and Community Design
School of Architecture
(Including Gordon Grau, Mary Donohue, John Carey, Peter Rappa, Ruth Goldstein)**

Current Activities

The following is a list of projects that have been undertaken to reduce energy and water demand and to improve the quality of life on the University of Hawai'i campuses. Each of these projects requires the formation of partnerships, dedication, and the hard work of many individuals to complete. They have been catalyzed and executed by an active faculty group from the Sea Grant College Program, the School of Architecture, the Office of Sustainability and HNEI. They have been supported by the UH administration, the UH Facilities Department, Sea Grant, the Hawaiian Electric Company, the Gas Company, the Board of Water Supply, the State Energy Office at Department of Business, Economic Development & Tourism, the City and County of Honolulu, the Gas Technologies Institute, the US Environmental Protection Agency, and the US Department of Energy.

The primary principle driving these projects is to save the university money by conserving energy and resources, which reduces harmful emissions and extends the state's sustainable water yield. Underpinning this motivation is the concept that the university has the responsibility, and the ability, to lead by example- that the university should demonstrate solutions to the community beyond the boundaries of the campus and exemplify, in its every practice, methods that individuals and institutions can employ to make the world a better place for generations to come.

Energy Projects

UHM Energy Assessment Study. Estimated the energy use in nearly 50 UHM buildings, made preliminary recommendations for Energy Conservation Measures. HECO installed 32 new meters.

UHM Energy Benchmarking Study. Builds on the Energy Assessment Study. Provides detailed energy profiles on specific buildings. Allows UH to prioritize energy efficiency projects.

Performance Standards for UH Buildings. Establish high performance building standards for New design and building retrofits. 3 phases: 1- Preliminary Investigation, ID relevant campus/ municipal/state codes/regs/standards. 2- draft, review, establish standards. 3- incorporate into RFPs.

UHM Gas Technology Study. Gas Technology Institute will execute an on-campus assessment of potential gas technology opportunities such as water heating, cooling, combined heat and power and district cooling applications.

UHM Solar Energy Study Identify solar radiation and solar energy potential on UHM rooftops. Conducted by School of Architecture.

Sustainable Design Workshops. This series of workshops is designed to elevated the in state sustainable design tools for architects and engineers. Workshops were sponsored by: USDoE, Rebuild America Program, HECO, DBEDT, School of Architecture, Sea Grant.

Water Projects

MOU UH/BWS. The Board of Water Supply and the University signed a Memorandum of Understanding. This allows both parties to move forward on Water Conservation Programs for UH.

UHM Water Audit. Pursuant to the UH / BWS MOU the BWS hired Johnson Controls to perform an extensive water audit for the UHM campus. The worked with civil engineering students to evaluate water use in most UHM buildings with recommendations for retrofits.

UHM Water Conservation Retrofits. Following on the work supplied in the UHM Water Audit the BWS will continue to fund the retrofitting of water conserving fixtures and devices.

UHM/Coconut Island Water Catchment Study. Identify rainwater catchment potential, collection requirements and locations on the UHM and Coconut Island campuses conducted by School of Architecture.

Estimate of University resources and policies needed to support sustainability

UHM Energy Conservation Manager. It is critically important that the University hire an energy conservation manager to oversee all of the energy retrofit and energy demands in new university projects. This person will prioritize and oversee projects. The position will enable the university to realize energy and cost saving substantially greater than anything realized to date.

UHM Energy Plan. The UHM Energy Plan is a strategically important document that will set goals and priorities for energy projects, including R&M needs. It can include renewable energy opportunities. The plan will be developed by the UHM Energy Conservation Manager.

Energy Conservation /Renewable Energy Program. Establish a full scale energy conservation, energy efficiency and renewable energy program for UHM and other campuses. Seek external partners and resources for UH to effectively meet realistic energy goals, create demonstration projects and outreach to community and comply with requirements of Act 77. Seek internal resources, performance contracting, external public and private support.

Luciano Minerbi
luciano@hawaii.edu
Professor
Urban and Regional Planning

Current Activities

Participated in the "INFUSING SUSTAINABILITY INTO THE CURRICULUM WORKSHOP, April 1, 2004".

Basically I developed a new course on sustainability entitled "Public Policy Planning for Sustainability" It uses an existing course rubric of Plan 741 "Seminar in Planning Practice".

Other courses I teach have established "sustainability modules"

Plan 640 Land Use Policy and Programs,

Plan 641 Neighborhood and Community Land Use Planning,

Plan 632 Planning in Hawaii and Pacific Islands

Plan 751 Planning Practicum (topic vary) had a number of projects dealing with aspects of sustainability.

Sharon Miyashiro
sharonmi@hawaii.edu
Urban and Regional Planning

Current Activities

We did the first annual public policy center conference on sustainable policies and developed an interactive website www.sustainablehawaii.hawaii.edu thereafter, but not many takers. To date, the only sustainable effort has been another project under the PPC: the Hawaii Energy Policy Forum. I also told Steve Meder that the PPC collaborated with HIPA to submit a 2050 Sustainability Plan proposal to the Legislative Auditor and we should know by end of the week who will be doing this.

Estimate of University resources and policies needed to support sustainability

We have website <www.sustainable.hawaii.edu> that needs moderators for the various categories to continue to have forums and interaction in areas that were of interest at our public policy center annual conference in 2003.

Ways in which the University could serve as an example of sustainability

Retrofitting campus; sustainable courtyard is great start; continuing work on earth day/earth week; having more service learning in watershed preservation, etc. in the community (I am working with Makiki Stream Stewards and Ala Wai Watershed Association that is continuing this work; adopted stream and clean/restore once per quarter so students can come in and help; there are others in other watersheds)

Ideas for initiatives to engage the community in sustainable practices

We should do more to publicize research & service by faculty in media and how community residents can join in.

**Graham Parkes, Professor
parkes@hawaii.edu
Department of Philosophy**

Current activities

I continue to try, after many years of trying, to reduce the waste of energy caused by people leaving the doors open on the ground floor of Sakamaki Hall (and other buildings), so that the air conditioning runs all night in a futile attempt to cool down the courtyard.

I'm the P.I. for a project just funded by the Sea Grant Program, "Hawaii's Inshore Fisheries: Current Status and Prospects," the aim of which is to get more funding for a bigger project that would help restore local fisheries for sustainable use.

University Resources and Policies

Obviously, more resources need to be diverted toward sustainability research, but at the same time I wonder how much in the way of resources are being directed toward activities that work against sustainability or promote counter-sustainable goals. It would no doubt elicit a good deal of yelping from affected parties -- but it makes no sense for the University to commit itself to sustainability and at the same time continue to fund things that work against it.

Best Demonstration

We assess the sustainability or not of all University practices and cease or phase out or switch those that are unsustainable. We then publish regular reports that track the unsustainable practices that have been curtailed and the sustainable ones that have been instituted, in language that's easily accessible to the general public.

A key to sustainability on islands is food, so what can we do to demonstrate and encourage the growing of more food in the Islands? Isn't there some land that could be used for a model in this respect?

Initiatives

One thing is to introduce more sustainability into the undergraduate curriculum, since after all many of our graduates remain part of "the community."

Another is to spread the word -- not through publications, because the majority of the community in this state aren't readers, but through the media of video and film, since most people in the state watch television. I have lots of ideas about how to make effective documentaries and public service style TV spots concerning sustainability (what it is, how it works, and why it's crucial when you live on the most remote archipelago on the planet).

Ira Rohter
irohter@hawaii.edu
Department of Political Science

Current Activities

1. Teaching an undergrad course POLS 378G in Environmental Politics which covers the range of topics: Generation 1 to Generation 3, and especially solutions that include industrial ecology, Natural Capitalism, etc that constitute sustainability. I have an emphasis on solutions and political agency.
2. Will be offering a graduate seminar in Spring -- POLS 646 F Political Ecology and Development that examines the same issues in more depth.
3. Continue to work with activists and office holders, and some business leaders, to implement sustainable solutions at the state and county level. Energy, community design (smart growth), agriculture, economic development and financing, etc.

University Resources and Initiatives to effect Community

1. I see huge demand at both undergrad and grad levels for courses.
2. Offer degree/ certificate / school of sustainability studies and actions.
3. Establish *hands-on* opportunities for students to engage in such programs.

Internships need to be set up to place Interns with community groups, in government offices (legislature, county councils, governor and administrative offices) NGOs and businesses.

James A. Roumasset
jimr@hawaii.edu
Economics

Nationally Competitive Grants:

Sustainable Resource Management and the Depreciation of Environmental Capital: Applications to Energy Use and Global Warming, National Science Foundation Grant, 1992-94.

“Integrating Prevention and Control of Invasive Species: Lessons from Hawaii,” US Department of Agriculture (PREISM program); \$200,000; 2003-6. (Principal Investigator)

“Coastal Groundwater Management with Positive Stock Externalities,” US Geological Survey via the University of Hawaii Water Center; \$151,414; 2005-6. (Principal Investigator).

Other Grants:

Environmental Mediation: The Case of Global Warming and Seawalls, (with K. Lowry and M. Ridgely), College of Social Sciences, University of Hawaii, 1990-91

Environmental Depreciation and National Income Accounting, Office of Research Administration Grant, University of Hawaii, 1990-91

Environmental Valuation and the Hawaiian Economy, grant from The Nature Conservancy, 1998.

“A Win-Win Approach to Water Pricing and Watershed Conservation,” US Geological Survey via the University of Hawaii Water Center; \$48,420; 2002-4. (Principal Investigator)

“Mitigating Runoff as Part of an Integrated Strategy for Nearshore Resource Conservation,” National Oceanic and Atmospheric Administration via the University of Hawaii Sea Grant College Program; \$65,125; 2003-5. (Principal Investigator)

“Integrated Management of Multiple Aquifers with Subsurface Flows and Inter-District Water Transport,” US Geological Survey via the University of Hawaii Water Center; \$19,713; 2005-6. (Principal Investigator)

Publications and Working Papers

Mitigating Runoff as Part of an Integrated Strategy for Nearshore Resource Conservation
http://homepage.mac.com/ondinebak/HI_Research1_files/Seagrant_Report_2005.pdf

“Specialization and Non-renewable Resources: Ricardo meets Ricardo” (w/ U. Chakravorty and D. Krulce), in press at *Journal of Economic Dynamics and Control*.
<http://authors.elsevier.com/sd/article/S0165188904001113>

“Sustainable Growth with Environmental Spillovers” (with L. Endress and T. Zhou), in press at *Journal of Economic Behavior and Organization*.

“Discontinuous Extraction of a Non-Renewable Resource,” (w/ E. Im and U. Chakravorty), forthcoming in *Economic Letters*, 2005.

“Pollution Solutions,” Aug 13, 2005.
http://www.envecon.net/2005/08/th_following_i.html#more.

“Integrated Water Management Policies for Oahu” (w/ B. Pitafi), *Water Resources Research Bulletin*, March, 2005.

"Pareto-improving Water Management over Space and Time: The Honolulu Case," (w/ B. Pitafi), under second review at *AJAE*.

"Efficient Water Allocation with Win-Win Conservation Surcharges: The Case of the Ko'olau Watershed"
(w/ B. Kaiser, W. Matsathit and B. Pitafi), submitted to *Water Resources Review*.

“Endogenous Substitution Among Energy Resources and Global Warming,” (with U. Chakravorty and K. Tse), *Journal of Political Economy*, December 1997; reprinted in M. Hoel, *Recent Developments in Environmental Economics* (Edward Elgar), 2004.

“The Yin and Yang of Scarcity and Abundance,” in Xinjingji, Tiaojianxia, De, Shengcun, Huanjing, Yu, Zhonghua, Wenhua (eds.), *The New Economy, Living Conditions, and the Chinese Culture*, Hangzhou, China, 2002
(ISBN 7-308-02995-6/C-179)

“Valuing Indirect Ecosystem Services: the Case of Tropical Watersheds,” (w/ Brooks Kaiser), *Environmental Economics and Development*, v7, n4 (2002), 701-14.

“Inter-district Water Allocation with Conjunctive Use,” (w/ Rodney Smith), *Water Resources Update*, Jan, 2001.

“Constrained conjunctive use for endogenously separable water markets: managing the Waihole-Waikane aqueduct,” (w/ Rodney Smith), *Agricultural Economics* 1487 (2000), 1-11.

"Water Management and the Valuation of Indirect Environmental Services", (w/ Brooks Kaiser), *Interdisciplinary Environmental Review*, v. II, n. 2 (Proceedings 2000), 102-122.

"Environmental Valuation and the Hawaiian Economy," (with Brooks Kaiser, and Nancy Krause) UHERO WP (<http://www2.hawaii.edu/~uhero/>), 1998.

"Optimal Allocation of Ground and Surface Water in Oahu: Water Wars in Paradise," (with J. Moncur and R. Smith), Just and Netanyahu, *Conflict and Cooperation in Water Management*, Kluwer Academic Publishers, 1998.

"Designing Institutions for Water Management," in Douglas D. Parker and Yacov Tsur (eds.), *Decentralization and Coordination of Water Resource Management*, Kluwer Academic Publishers, 1997.

"Optimal Management of a Renewable and Replaceable Resource: The Case of Coastal Groundwater," (with D. Krulce and T. Wilson), *American Journal of Agricultural Economics*, November 1997.

Energy and Economic Growth : Is Sustainable Growth Possible : Proceedings of the 20th Annual International
see (<http://homepage.mac.com/ondinebak/>)

"Sustainable Growth With Environmental Spillovers: A Ramsey-Koopmans Approach" (w/ L. H. Endress & T. Zhou), University of Hawaii, Department of Economics Working Paper # 02-4, 2002.

"Sustainable Development Without Constraints" (w/ L. H. Endress), University of Hawaii, Department of Economics Working Paper # 00-9, 2000.

"Preservationism vs. Sustainable Development in the Asia-Pacific Region," University of Hawaii, Department of Economics Working Paper # 97-9R and forthcoming in L. Cho (ed.), *Balanced and Sustainable Development*, EDAP Secretariat, Seoul, Korea.

"Optimal Allocation of Ground and Surface Water in O`ahu: Water Wars in Paradise" (w/ James Moncur and Rodney Smith), University of Hawaii, Department of Economics Working Paper # 97-7.

"Designing Institutions for Effective Forestry Management," processed, 1997.

"The Yin and Yang of Sustainable Development: A Case for Win-Win Environmentalism," (with Lee Endress) *Journal of the Asia Pacific Economy*, Vol. 1, No. 2, 185-194, (1996).

"Integrating Economic Analysis with Engineering Design: The Case of Water Management," (with U. Chakravorty), *American Society of Civil Engineering Journal of Water Resources Planning and Management*, Vol. 120, November 1994.

“A Modified Golden Rule for Sustainable Resource Management,” *Economic Record*, Vol. 70, September 1994.

“Optimal Mining of a Renewable Resource: The Case of Groundwater,” (with T. Wilson and J. Moncur), mimeo.

“Natural Resource Management for Sustainable Development in the Philippines,” *Journal of Agricultural Economics and Development*, January 1991.

“Economic Policy for Sustainable Development,” *Development*, 1990: 3/4.

“Efficient Spatial Allocation of Irrigation Water,” (with U. Chakravorty), *American Journal of Agricultural Economics*, February 1991.

“Estimating Efficiency Prices for Oil: The Case of Eventually Declining Scarcity Rents,” (with U. Chakravorty), *Resources and Energy*, December 1990.

“Exposure Trading: An Approach to More Efficient Air Pollution Control,” (with K. Smith), *Journal of Economics and Environmental Management*, 18, 276-271, (1990).

“Some advanced topics in resource economics”, with Dingding Wang, *Management World*, 1992.

“Oil Prices with OPEC: A Walk on the Supply Side,” (with D. Isaak and F. Fesharaki), *Energy Economics*, July 1983.

"Constrained Conjunctive Use for Endogenously Separable Water Markets: Managing the Waihole-Waikane Aqueduct," (w/ Rodney Smith) prepared for the 1999 International Water and Resource Economics Consortium Meetings.

"Valuation of Nature's Intermediate Products: the Koolau Forest's Contribution to the Pearl Harbor Aquifer," (w/ Brooks Kaiser), prepared for the 1999 International Water and Resource Economics Consortium Meetings.

“Shadow Pricing of Natural Resources for Sustainable Development, (with L. Endress).

“Natural Resource Management in Indonesia: Priorities for Policy Assistance,” (processed), May 1989.

“Economic Depreciation of Natural Resources,” (with L.H. Endress, 1991).

“Efficiency Principles for Water Management,” (with U. Chakravorty, T. Wilson and J. Moncur), East-West Center/Environmental and policy Institute working Paper No. 2, March 1988.

“Renewable and Non-Renewable Resource Economics: An Integration,” (with T. Wilson), (1988).

“A Framework for Economics Research on Water Management in Bangladesh,” (with M. Rosegrant, T. Weaver and J. Keller), 1984.

Jack T. Sidener, Ph.D.
sidener@hawaii.edu
Campus Planner, Office of the Vice Chancellor
Finance and Administration

Responsible for overseeing development of the updated Long Range Development Plan for the UH Mānoa Campus – have introduced two important components, a Sustainable Overlay, and planning and design guidelines.

Doing studies to increase campus permeable area, reduce parking demand/increase use of high-occupancy transportation, compact site planning, etc.

Responsible for reviewing all new development and renovation projects – in process of developing sustainability review criteria. Reviewing all proposed projects for inclusion in the LRDP.

Developing concept designs for conversion of typical buildings for laboratory use.

Professor of Architecture, and Director, Campus Design Group

Published a report of the status and possibilities for walkways and open space: “Improving the Pedestrian Environment for the Mānoa Campus”.

Development of concept designs and feasibility studies for several projects on campus, with emphasis on “green architecture” – law school expansion, an art gallery, dormitories.

Joint-teaching (with Landscape Architect Janet Gillmar) a course in sustainable site design.

Mary Tiles
mtiles@hawaii.edu
Department of Philosophy

Current activities

Campus coordinator for UH Mānoa participation in the NSF sponsored SENCER program. We applied for inclusion in this program under the banner of sustainability and promised to assemble a team of people to develop an undergraduate course consistent with SENCER methodologies (teaching to science through social issues) and focused around sustainability issues. Current thinking is that this would be a large section course, team taught, with ethics focus designation and significant science components. (Denise Konan was until recently my co-conspirator on this project.) Otherwise, just generally making a nuisance of myself by trying to get institutional "space" for sustainability themes into our undergraduate education.

Resources/Policies

My focus is not on research but on education and then on research/practical activities as an integral part of education. Much of what I think is needed on this front is some internal restructuring, breaking down of college barriers, of tenure promotion hurdles for participating faculty, buy in from administration and giving a high profile. It may take some new faculty positions and certainly some funds to support research/practical activities. I think we have to plan on not making these large - we have to plan for economic sustainability of our own projects. Anything that relies on big bucks funding for more than a kick start is likely to die with the funding stream.

Demonstration

We should do a sustainability audit for UH (good centennial project for the campus) to give us a base line. Set some benchmarks for the direction we want to go keep track and publicize.

Public engagement

Eyes of the land projects. Short Outreach classes where people get to assess the impacts of their own lifestyles. (There are materials out there which could be adapted to our context pretty easily.) We could even try to add some of this kind of material to the sustainability web page. Have some teams of people willing to talk to community groups etc. Problem - its all work and nobody has any time! Well - we can try enlisting students, train them and build some of this into research/practice part of learning. We can also, through College of Education link to K-12 teachers and the schools.

**Sustainable Agriculture Research and Education
College of Tropical Agriculture and Human Resources
Department of Natural Resources and Environmental Management**

New Farmers: Choosing the Road Less Traveled: As large tracts of farmland previously used for plantation-style agriculture open up on Hawaii and other Pacific islands, a new breed of farmer is emerging. Various described as gentleman, immigrant, small or part-time farmers, they typically have little training or experience in farming. At the same time, chefs at local restaurants, hotels and resorts as well as local residents are finding value in locally and sustainably grown vegetables, fruits and herbs. To help the emerging ag entrepreneurs successfully produce and market their crops, the project partners will develop training materials, -- a trainer workbook and CD, web site and manual for beginning farmers -- that ag-support professionals, especially those in Cooperative Extension and the Natural Resources Conservation Service, can use to educate the new farmers.

Principal Investigator: Dr. Samir A. El-Swaify

Twelve Trees: High costs, especially for labor, handicap the ability of Hawaii farmers to compete globally against low-cost producers. Sugar cane and pineapple failed to withstand the competition, and newer commodities like coffee and macadamia nuts are following suit. This Western SARE project seeks to help Hawaii farmers, who often grow just one or two crops, develop new opportunities that require less outside labor. It focuses on the Kona District of the Big Island, which contains more than 120 different species of fruit, including bilimbi, lychee, white sapote, loquat, jackfruit, tropical apricot and Surinam cherries. The production and marketing demonstration project will select 12 species of exotic fruit, market them in fresh and processed form and adding agri-tourism into the enterprise.

Principal Investigator: Dr. Richard Bowen

Cropping Systems to Control Tropical Soil-born Pests in Dryland-Grown Taro: To protect against crop-damaging nematodes and fungal diseases, many Hawaii taro farmers apply soil fumigants like methyl bromide. However, because methyl bromide will be banned by 2005 and because many farmers prefer not to use such products because of food and safety issues, taro producers need alternative control measures. Without such measures, root-knot nematodes could cause crop losses as high as 90%, while losses to fungal pathogens could reach 25-36%. In this Research and Education grant, University of Hawaii agronomist Dr. Susan Miyasaka plans to develop and demonstrate economically feasible green manure cropping systems to control nematodes and fungal diseases in dryland taro in Hawaii. The ultimate goal is to increase Hawaii production of dryland taro, a food shown to help reduce health risks.

Principal Investigator: Dr. Susan Miyasaka

Cover Crops and Green Manures

Our list of cover crops below has been prepared by a team of agricultural professionals participating in our SARE Professional Development Grant "Covering New Ground: Tropical Cover Crops for Improving Soil Quality."

Generally used for orchard crops such as coffee and macadamia, cover crops are planted to protect the soil surface between tree rows. They can improve trafficability between rows, benefit soil structure and microfauna, suppress weeds, promote habitat for beneficial insects, and reduce nutrient leaching.

Green manures are frequently used in vegetable crop production. They are incorporated or plowed into the soil to add organic matter and nutrients for the cash crops. Green manures can be managed to disrupt plant disease cycles or to suppress nematodes. Generally they grow very quickly, are very herbaceous, decompose rapidly, and release nutrients quickly.

NOTE: Some of the cover crop and green manure species on this website are currently being evaluated by the Hawaii Weed Risk Assessment as potentially invasive. Check their website for the most current information.

Cover Crops

Legumes

- * Perennial Peanut
- * Stylo
- * White Clover

Non-Legumes

- * Bahia Grass
- * Bermuda Grass
- * Carpet Grass, Broadleaf
- * Carpet Grass, Narrowleaf
- * Pangola (or Digit) Grass
- * Tropic Lalo
- * Rhodes Grass
- * St. Augustine Grass
- * Stargrass

Green Manures

Legumes

- * Cowpea
- * Lablab
- * Pigeonpea
- * 'Tropic Sun' sunn hemp
- * Woollypod Vetch (Lana Vetch)
- * White Sweetclover

Non-Legumes

- * Annual Ryegrass
- * Azolla
- * Barley
- * Buckwheat
- * Oats, black (new promising plant)
- * Oats, common
- * Rye Grain (Cereal Rye)
- * 'Sudex' sorghum-sudangrass hybrid

Sustainable Pest Control for the Tropics
Professional Development Training
January 7th- 8th, 2003 * Komohana Ag Complex * Hilo
Principal Investigator: Richard Bowen
Click on the titles below to view PowerPoint slide shows from each presenter.
Sustainable Insect Control for the Tropics
[IPM 101 for the Tropics](#) - *Dr. Mark Wright, Entomologist, University of Hawaii at Mānoa*
[Living Mulches: Valuable Allies in the War against Insect Pests](#) - *Dr. Cerruti Hooks, Entomologist, University of Hawaii at Mānoa*
[Distance Diagnostics & Recommendation Service](#) - *Dr. Mark Wright*
Sustainable Plant Disease Control for the Tropics
Dr. Janice Uchida, Plant Pathologist, University of Hawaii at Mānoa
[Sustainable Plant Disease Control 101](#)
Report from the Edge: Update on New Methods: What Works? What Doesn't?
[Dr. Uchida's Favorite Tropical Sustainable Practices](#)
Case Study & Talk Story
NRCS: Implementing Pest Management
Larry Shinshiro, State Agronomist, USDA NRCS
[Targeting High Priority Areas * Partnerships * NRCS Certification](#)

Ideas in Sustainable Ag for Hawaii ~ Report on Southern SARE Conference
Kali Arce, CES Moloka'i Field Office
Sustainable Nematode Control for the Tropics
Dr. Brent Sipes, Nematologist, University of Hawaii at Mānoa
[Sustainable Nematode Control 101](#)
Report from the Edge: Update on New Methods: What Works? What Doesn't?
Dr. Sipe's Favorite Tropical Sustainable Practices
[Case Study: The Disappearing Nematodes](#)
[Case Study: Damned if You Do, Damned if You Don't](#)
NRCS Tools for the Tropics
Dr. Michael Robotham, Tropical Technology Specialist, USDA NRCS
Larry Shinshiro, State Agronomist, USDA NRCS
Ken Pfeiffer, Agronomist, National Water and Climate Center, USDA NRCS
[WIN-PST: Pesticide Screening tool](#)
[Organic Pest Control for the Tropics](#)
Bob Shaffer, Trustee, Hawaii Organic Farmers Association (HOFA)
SPECIAL GUEST SPEAKER: *Jim Ferrell, Sustainable Agriculture at Kulani*
Field Trip - Organic Ginger Production (yellow ginger)
Hosted by Hugh Johnson, Owner: Puna Organics
Presentation by Bob Shaffer, HOFA Trustee
Related Case Studies
[Nalo Farms](#)
[Japanese Nature Farming Research](#)
[Mauna Kea Banana Farm and Kea'au Banana Plantation](#)
Demonstration Projects

- Evaluating Melon Production and Fruit Fly Infestation with the Use of Typar - Moloka`i (two projects)
Growing Vegetables in Living Shield Cover Crop - Moloka`i
- Prevention of Soil borne pests in Organic Edible Ginger - Hawai`i Island
- Use of Agribon floating row cover material to make banana bunch sleeves to prevent banana rust thrips infestations, Kaua`i
- Control onion pests using RepelGro silver mulch and environmentally safe pesticides Ecozin and Bacillus thuringiensis, Kaua`i
- Cover Cropping with Barley and Oats in Bare Ground Fallow Cropping Systems - O`ahu
- Evaluation of Sustainable Techniques for Cucumber - Pohnpei
Evaluation of Disease Management Strategies for the Control of Pink Root on Sweet Onion in Maui, Hawaii

List of Invitees



Section IV.

Name	Email	Affiliation
Adams, Roxanne Andrade, Carlos Antal, Michael	adamsrox@hawaii.edu carloso@hawaii.edu mantal@hawaii.edu	UH Landscaping Manager Hawaiian Studies Hawaii Natural Energy Institute
Antolini, Denise Arakaki, Jiro Araki, Blake	antolini@hawaii.edu jiro@hawaii.edu blakea@hawaii.edu	Richardson School of Law Auxiliary/Food Services Facilities Planning and Management Office
Aspili, Bien	aspilib001@hawaii.rr.com	Building and Grounds Management
Asquith, Adam Auyong, Pua	adam_asquith@yahoo.com paw@hawaii.edu	Sea Grant Student Equity, Excellence and Diversity
Babcock, Roger	rbabcock@hawaii.edu	Water Resources Research Center
Bacchilega, Cristina Ball, Jane Berry, Paul	cbacchi@hawaii.edu jball@hawaii.edu docberry@aol.com	English HIMB Globalization Research Center
Bowen, Richard	rbowen@hawaii.edu	Natural Resources and Environmental Management
Brock, Dick Burch, Mark	brockr@hawaii.edu burch@hawaii.edu	Sea Grant Environmental Health and Safety
Bussman, Rainier Callejol, Sam Camara, Janice Carlson, Amy Cheung, Kwok Fai Chinn, Pauline Collison, Fred	bussmann@hawaii.edu samc@hawaii.edu jcamara@hawaii.edu acarlson@hawaii.edu cheung@hawaii.edu chinn@hawaii.edu collison@hawaii.edu	Lyon Arboretum Senior Management Team Student Housing Hamilton Library Ocean Engineering Curriculum Studies Travel Industry and Management
Conant, Sheila Cooper, Patricia Cooper, Joshua Cox, Linda	conant@hawaii.edu pcooper@hawaii.edu cooper@hawaii.edu lcox@hawaii.edu	Biology Program SOEST Political Science Natural Resources and Environmental Management
Creager, Fred Criley, Dick	creager@hawaii.edu criley@hawaii.edu	School of Architecture Tropical Plant and Soil Sciences
Cusick, John Cutshaw, Kathy Dane, Joe	jcusick@hawaii.edu cutshaw@hawaii.edu jdane@hawaii.edu	Environmental Center Mānoa Chancellor's Office ITS

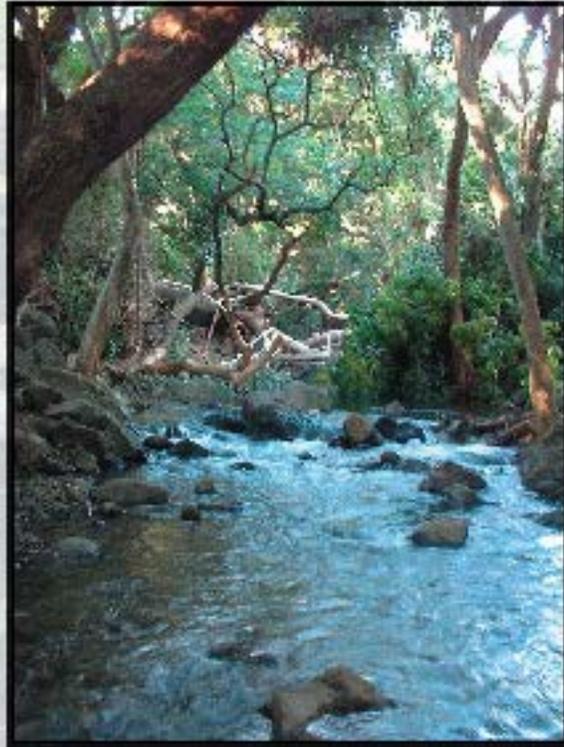
Daniel, Shirley	daniel@cba.hawaii.edu	College of Business Administration
Dator, Jim	dator@hawaii.edu	Center for Future Studies
Davis, Lynn Ann	ldavis@hawaii.edu	Hamilton Library
Day, Linda	lindad@hawaii.edu	Sustainability Office
De Carlo, Eric	edecarlo@hawaii.edu	Oceanography
Donohue, Mary	donohuem@hawaii.edu	Sea Grant
Duarte, Ka'eo	duartek@hawaii.edu	Water Resources Research
Dubanoski, Dick	dickd@hawaii.edu	Social Sciences
Duffy, David	dduffy@hawaii.edu	Botany
El-Kadi, Aly	elkadi@hawaii.edu	Water Resources Research Center
El-Swaify, Samir	elswaify@hawaii.edu	Renewable Natural Resources Extension Program
Enoki, Ted	tenoki@hawaii.edu	Buildings and Grounds Management
Evensen, Carl	evensen@hawaii.edu	Natural Resources and Environmental Management
Eversole, Dolan	eversole@hawaii.edu	Sea Grant
Fares, Ali	afares@hawaii.edu	Natural Resources and Environmental Management
Flachsbart, Peter	flachsba@hawaii.edu	Urban and Regional Planning
Fletcher, Chip	fletcher@soest.hawaii.edu	Geology & Geophysics
Fujioka, Roger	roger@hawaii.edu	Water Resources Research Center
Fujishige, Wayne	wfujishi@hawaii.edu	Auxiliary Services
Gaines, James	gaines@hawaii.edu	Senior Management Team
Gazdar, Nasir	nasir@hawaii.edu	Geography
Giambelluca, Thomas	thomas@hawaii.edu	Geography
Gillmar, Janet	gillmar@hawaii.edu	School of Architecture
Gills, Barry	gills@hawaii.edu	Globalization Research Center
Grau, Gordon	sgdir@hawaii.edu	Sea Grant
Gretz, Wally	gretz@hawaii.edu	Facilities Planning and Management Office
Hamnett, Michael	mhamnett@rcuh.com	RCUH
Harrison, John	jth@hawaii.edu	Environmental Center
Hasager, Ulla	ulla@hawaii.edu	Ethnic Studies
Haskins, Eric	haskins@hawaii.edu	Geology & Geophysics
Haws, Maria	haws@aol.com	Sea Grant
Hayashi, Mel Hisato	melh@hawaii.edu	ASUH
Hollyer, James	hollyer@hawaii.edu	Agricultural Development in the American Pacific
Horie, Ruth	ruthh@hawaii.edu	Hamilton Library
Hsu, Ruth	rhsu@hawaii.edu	English

Hunter, Cindy	cindyh@hawaii.edu	Biology
Ihori, Melissa	ihori@hawaii.edu	Environmental Health and Safety
Jackson, Tom	tjackson@hawaii.edu	Philosophy
Jamieson, Walter	wjamieso@hawaii.edu	Travel Industry Management
Jardin, Jerard	jerard@hawaii.edu	Joint Institute for Marine and Atmospheric Research
Jarman, Casey	jarman@hawaii.edu	Richardson School of Law
Ka'aloa, Pi'ilani	rochelle@hawaii.edu	Hawaiian Studies
Kame'eleihiwa Lilikala	lilikala@hawaii.edu	Center for Hawaiian Studies
Kamite, Dennis	kamite@hawaii.edu	Facilities Planning and Management Office
Kane, Kathie	kathie@leka.cis.hawaii.edu	Center for Teaching Excellence
Kaneshiro, Kenneth	kykanesh@hawaii.edu	CCRT
Kaniaupio-Crozier, Pomaikai	danielka@hawaii.edu	Center for Hawaiian Studies
Kashimoto, Kalvin	kalvin@hawaii.edu	Facilities, Grounds and Safety
Kim, Karl	karlk@hawaii.edu	Urban and Regional Planning
Kim, C. Mamo	kimclaud@hawaii.edu	Mānoa Chancellor's Office
Knott, Troy	tknott@hawaii.edu	Globalization Research Center
Konan, Denise	konan@hawaii.edu	Econ/chancellor
Lassner, David	david.lassner@hawaii.edu	ITS
Lau, Ron	ronaldl@hawaii.edu	Design Division, Facilities, Planning and Management
Laws, Ed	elaws@hawaii.edu	Oceanography
Leong, Jo-Ann	joannleo@hawaii.edu	Hawaii Institute of Marine Biology
Linzi, John	john@gold.chem.hawaii.edu	Chemistry
Lively, Rebecca	rebecca@livelyarchbitects.com	Center for Smart Building and Community Design
Lohse, Steve	lohse@hawaii.edu	CCRT
Lowry, Kem	lowry@hawaii.edu	Urban and Regional Planning
Mackenzie, Fred	fredm@soest.hawaii.edu	Oceanography
Manke, Jim	manke@hawaii.edu	Public Affairs
Martinac, Ivo	martinac@hawaii.edu	TIM
Maynard, Sherwood	sherwood@hawaii.edu	Biology Program
McClain, David	mcclain@hawaii.edu	Office of the President
McClatchey, Will	mcclatch@hawaii.edu	Botany
Meder, Steve	smeder@hawaii.edu	SoA/ Sea Grant
Merlin, Mark	merlin@hawaii.edu	Biology Program
Metivier, Nick	metivier@hawaii.edu	Facilities Planning and Management Office
Miller, Bruce	bmiller@hawaii.edu	Sustainability Office
Minerbi, Luciano	luciano@hawaii.edu	Urban and Regional Planning

Miyashiro, Rae	raemiyas@hawaii.edu	Facilities Planning and Management Office
Miyashiro	Sharon sharonmi@hawaii.edu	Urban and Regional Planning
Moncur, Jim	jmoncur@hawaii.edu	Water Resources Research Center
Moravcik, Phil	morav@hawaii.edu	Water Resources Research Center
Morden, Cliff	cmorden@hawaii.edu	Lyon Arboretum
Morita, Harry	harrym@hawaii.edu	ITS Telecom
Nakanishi, Alan	anakanish@hawaii.edu	Buildings and Grounds Management
Norcross, Zoe	norcross@hawaii.edu	Sea Grant
Okimoto, Hae	hae@hawaii.edu	ITS
Osorio, Jon	osorio@hawaii.edu	Hawaiian Studies
Ostrander, Gary	gko@hawaii.edu	Mānoa Chancellor's Office
Parke, Michael	michael.parke@noaa.gov	Geography
Parkes, Graham	parkes@hawaii.edu	Philosophy
Pauley, Steven	pauley@hawaii.edu	UHSG
Perkins, Frank	fperkins@hawaii.edu	Mānoa Chancellor's Office
Prevedouros, Panos	pdp@hawaii.edu	Civil and Environmental Engineering
Ramirez, Tino	ramirezv@hawaii.edu	Center for Hawaiian Studies
Ray, Chittaranjan	cray@hawaii.edu	Water Resources Research Center
Reed, Gay Garland	ggreed@hawaii.edu	Educational Foundations
Rocheleau, Rick	rochelea@hawaii.edu	HNEI
Rohter, Ira	irohter@hawaii.edu	Political Science
Roth, Lauren	lroth@hawaii.edu	Oceanography
Rubano, Judy	judy@soest.hawaii.edu	SOEST
Ruby, Laura	lruby@hawaii.edu	Art
Sack, Lawren	lsack@hawaii.edu	Lyon Arboretum
Sack, Nancy	sack@hawaii.edu	Hamilton Library
Sadler, Dan	sadler@hawaii.edu	Oceanography
Sanger, Susan	sanger@hawaii.edu	Graduate Student Organization
Sato, Tracie Ann	traciean@hawaii.edu	ITS Telecom
Scanlon, Nancy	nscanlon@hawaii.edu	Travel Industry and Management
Schoonmaker, Jane	jtribble@soest.hawaii.edu; tribble@hawaii.edu; jane@soest.hawaii.edu	Oceanography
Seu, Derek	dseu@hawaii.edu	Building and Grounds Management

Shito, Ray	shito@hawaii.edu	Parking Operations and Transportation Services
Sidener, Jack	sidener@hawaii.edu	Architecture
Sipes, Brent S	sipes@hawaii.edu	Plant and Environmental Protection Sciences
Sloat, Ann	asloat@hawaii.edu	School of Nursing
Smatresk, Neal	smatresk@hawaii.edu	Mānoa Chancellor's Office
Smith, Celia	celia@hawaii.edu	Botany
Smith, Jody	smithjos@hawaii.edu	CTAHR
Sponsel, Leslie E	sponsel@hawaii.edu	Anthropology
Tamaru, Clyde	ctamaru@hawaii.edu	Sea Grant
Taum, Ramsay	ramsay@hawaii.edu	TIM
Tiles, Mary	mtiles@hawaii.edu	Philosophy
Turn, Scott	sturn@hawaii.edu	Hawaii Natural Energy Institute
Uchida, Janice Y	juchida@hawaii.edu	Plant and Environmental Protection Sciences
Wang, Farouk	farouk@hawaii.edu	Buildings and Grounds Management
Wendell, John	wendell@cba.hawaii.edu	College of Business Administration
Wilcox, Bruce	bwilcox@hawaii.edu	School of Public Health
Williams, Sharon	sharon@wkwilliams.com	Center for Smart Building Procurement
Won, Gwen	gwon@hawaii.edu	Auxiliary/Food Services
Yamaguchi, Kimo	jyamaguc@hawaii.edu	Senior Management Team
Yokota, Jan	jsyokota@hawaii.edu	ITS
Yoshioka, Ralph	ralphy@hawaii.edu	Procurement
Zwald, Duff	duff@hawaii.edu	

List of Attendees



Section V.

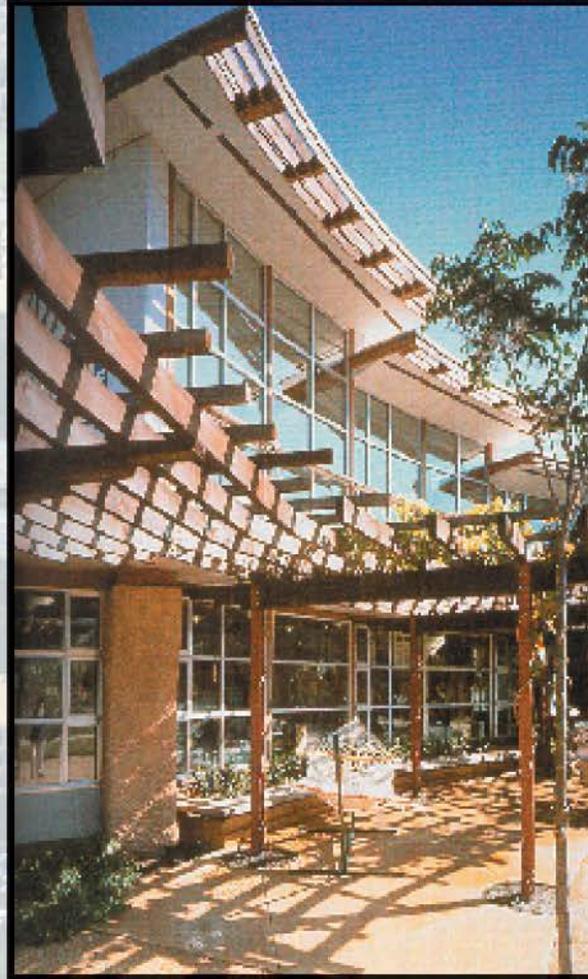
Name	Email	Affiliation
Adams, Roxanne Antal, Michael	adamsrox@hawaii.edu mantal@hawaii.edu	UH Landscaping Manager Hawaii Natural Energy Institute
Asquith, Adam Baker, Ray Berry, Paul	adam_asquith@yahoo.com raymondb@hawaii.edu docberry@aol.com	Sea Grant Lyons Arboretum Globalization Research Center
Carey, John Chinn, Pauline Coffman, Makena Cooper, Patricia Cusick, John Daniel, Shirley	careyj@hawaii.edu chinn@hawaii.edu makenaka@hawaii.edu pcooper@hawaii.edu jcusick@hawaii.edu daniel@cba.hawaii.edu	Sea Grant Curriculum Studies Economics SOEST Environmental Center College of Business Administration
Day, Linda Donohue, Mary Goldstein, Ruth Goorskey, Sarah Grau, Gordon Guidry, Mike Hamnett, Mike Handler, Alex Harrison, John Hasager, Ulla Howerton, Robert Lee, Karen Leong Jo-Ann	lindad@hawaii.edu donohuem@hawaii.edu goldstei@hawaii.edu goorskey@hawaii.edu sgdir@hawaii.edu mguidry@soest.hawaii.edu mhamnett@rcuh.com ahandler@hawaii.edu jth@hawaii.edu ulla@hawaii.edu howerton@hawaii.edu karenlee@hawaii.edu joannleo@hawaii.edu	Sustainability Office Sea Grant Sea Grant Sea Grant/SoA Sea Grant Oceanography RCUH CCRT Environmental Center Ethnic Studies Sea Grant President's Office Hawaii Institute of Marine Biology
Lively, Rebecca	rebecca@livelyarchitects.com	Center for Smart Building and Community Design
Lohse, Steve Lowry, Kem Meder, Stephen	lohse@hawaii.edu lowry@hawaii.edu smeder@hawaii.edu	CCRT Urban and Regional Planning School of Architecture/ Sea Grant
Minerbi, Luciano Miyashiro, Sharon Parkes, Graham Peck, Sara Rappa, Peter Rohter, Ira Roumasset, Jim Scanlon, Nancy	luciano@hawaii.edu sharonmi@hawaii.edu parkes@hawaii.edu peck@hawaii.edu rappa@hawaii.edu irohter@hawaii.edu jimr@hawaii.edu nscanlon@hawaii.edu	Urban and Regional Planning Urban and Regional Planning Philosophy Sea Grant Sea Grant Political Science Economics Travel Industry and Management
Schoonmaker, Jane	jtribble@soest.hawaii.edu; tribble@hawaii.edu; jane@soest.hawaii.edu	Oceanography

Sidener, Jack
Tiles, Mary
Williams, Sharon

sidener@hawaii.edu
mtiles@hawaii.edu
sharon@akwilliams.com

Architecture
Philosophy
Center for Smart Building
and Community Design

Agenda for Sustainability Retreat



Section VI.

Friday, Sept. 16, 2005
Wai'oli Tea Room
2950 Manoa Road
9 a.m. to 4 p.m.

Opening Remarks

Denise Eby Konan, Interim Chancellor
Gordon Grau, Sea Grant Director

Introductions (Rappa)

How the Workshop will Function (Lowry)

Warm up - Sustainability at UHM and Other Campuses (Rappa and Cusick)

An overview of sustainability projects at the University and sustainability projects at other campuses

Sustainability Questions

What are the major sustainability issues we need to confront? (Small group discussion, Facilitators: Kem Lowry, Peter Rappa, John Carey)

1. What are the most important challenges/trends shaping Hawaii's natural and social environment over the next fifty years?
2. What is known---and what are the critical uncertainties about these challenges/trends? (small groups, depending on size)
3. Group reports (reconvened into one group).

Lunch

Speaker: Stephen Meder, Director, Center for Smart Building and Community Design. **Title:** Physical Design's Contribution to a Sustainable Campus

Curriculum Agenda

How can our curriculum better reflect sustainability issues? (Small group discussion, Facilitators: Kem Lowry, Peter Rappa, John Carey)

1. How well does our curriculum address the social and natural transformations that are occurring? (small group depending on number of remaining participants.)
2. Report out changes in the curriculum and list classes that should be taught.

Research Agenda

What should our sustainability research priorities be? (Small Group discussion, Facilitators: Kem Lowry, Peter Rappa)

1. Given the uncertainties what sorts of research should continue to be supported? What new projects should be initiated? (small group depending on number of remaining participants)
2. List of research projects reported out.
3. Prioritize research projects.

Physical Design of the Campus

How can the campus better reflect our sustainability priorities? (Facilitator: Kem Lowry)

1. Does the physical layout and design of the Mānoa Campus enhance or detract from the mission to teach and research sustainability?
2. If not, what changes can be made to facilities, how should we plan new construction so that eventually we will have the necessary facilities?
(Remaining group)

Wrap Up Session

Next Steps (Gordon Grau)

Sustainability Activities at the University of Hawai'i at Mānoa and Other Universities



Section VII.

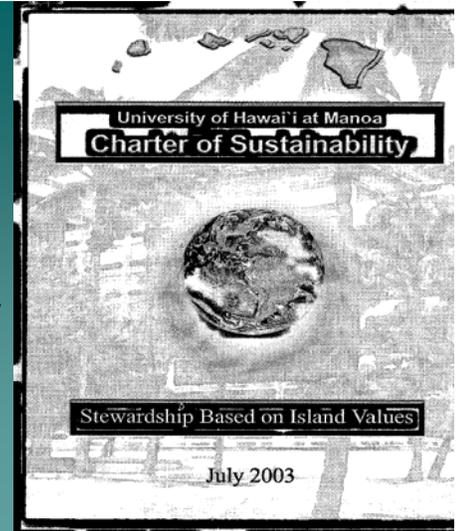
Power Point Presentation by
Peter Rappa
UHM Sea Grant
September 16, 2005
Sustainability Retreat



**UHM Sustainability
Retreat
September 16, 2005**

**Sustainability Activities at
the University of Hawaii
Manoa and other
Universities**

**Charter
of
Sustainability**



Sustainability Charter

- ◆ Set of Principles and Policies for UHM
- ◆ Developed by Faculty, Staff, Students and Community members
- ◆ Coordinated by the UHM Office of Sustainability
- ◆ Published July 2003
- ◆ Available from the Office of Sustainability

Charter of Sustainability

Essential Strategic Goals:

- Strategic Goal 1 – Use Energy Wisely*
- Strategic Goal 2 – Practice Sustainable Water Use*
- Strategic Goal 3 – Minimize Negative Impact on the Land*
- Strategic Goal 4 – Create Sustainable Buildings*
- Strategic Goal 5 – Promote Alternative Transportation*
- Strategic Goal 6 – Minimize Material Waste*
- Strategic Goal 7 – Adopt Green Purchasing Policies*
- Strategic Goal 8 – Enhance the Quality of the Campus Experience*
- Strategic Goal 9 – Teach the Principles of Sustainability*

**Infusing Sustainability Into the
Curriculum**

- ◆ Workshop Held April 2004
- ◆ Sponsored by the Office of Academic Affairs
- ◆ Part of the UHM Strategic Plan: Defining our Destiny 2002-2010
- ◆ Attended by 27 UHM Faculty and Staff
- ◆ List of Course Offerings on Sustainability at UHM

Current Activities

Ira Rohter
Department of Politic Science



- ◆ Teaching an undergrad course POLS 378G in Environmental Politics which covers the range of topics
- ◆ Will be offering a graduate seminar in Spring -- POLS 646 F Political Ecology and Development that examines sustainability issues
- ◆ Continue to work with activists and office holders, and some business leaders, to implement sustainable solutions at the state and county level. Energy, community design (smart growth), agriculture, economic development and financing, etc.

Current Activities Cont'd



Mary Tiles
Department of Philosophy

- ◆ Campus coordinator for UH Manoa participation in the NSF sponsored SENCER program (teaching to science through social issues)
- ◆ Trying to get institutional "space" for sustainability themes into our undergraduate education

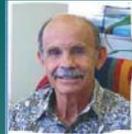
Current Activities Cont'd



Ruth Horie
Librarian, Hamilton Library

- ◆ Cataloging library materials relating to sustainability, for access in Hamilton library and the Wong Audiovisual Center in Sinclair Library, and the online web catalog.
- ◆ Publicizing sustainability events to Hamilton and Sinclair Library faculty and staff.

Current Activities Cont'd



Fred Mackenzie/Michael Guidry
Department of Oceanography

- ◆ Coordinating the development, management, and publication of sustainability case studies in the context of Pacific islands
- ◆ Case study on water resource sustainability for Majuro atoll and Oahu is completed
- ◆ Water resource sustainability case study is being converted into content that is appropriate for online high school science study

Current Activities Cont'd



Stephen Meder
School of Architecture and Center for Smart Building and Community Design

- ◆ UHM Energy Assessment Study Estimated the energy use in nearly 50 UHM buildings, made preliminary recommendations for Energy Conservation Measures
- ◆ Performance Standards for UH Buildings. Establish high performance building standards for New design and building retrofits
- ◆ UHM Solar Energy Study Identify solar radiation and solar energy potential on UHM rooftops

A Brief Overview of Sustainability Initiatives at Other Universities



Section VIII.

Power Point Presentation by
John Cusick
UHM Environmental Center
Sustainability Retreat
September 16, 2005

A brief overview of sustainability initiatives at other universities

John Cusick, UHM Environmental Center
University of Hawai'i at Manoa
Sustainability Retreat
September 16, 2005

List of the world's top 20 universities* ...

Harvard	Yale
Stanford	Cornell
Cambridge	UC San Diego
UC Berkeley	University of Tokyo
MIT	U of Pennsylvania
CalTech	UC Los Angeles
Princeton	UC San Francisco
Oxford	U of Wisconsin (Madison)
Columbia	U of Michigan (Ann Arbor)
U of Chicago	U of Washington (Seattle)

*source: The Economist 9/10/05

Located in the U.S. ... (17)

Harvard	Yale
Stanford	Cornell
Cambridge	UC San Diego
UC Berkeley	University of Tokyo
MIT	U of Pennsylvania
CalTech	UC Los Angeles
Princeton	UC San Francisco
Oxford	U of Wisconsin (Madison)
Columbia	U of Michigan (Ann Arbor)
U of Chicago	U of Washington (Seattle)

Located in the Pacific region ... (8)

Harvard	Yale
Stanford	Cornell
Cambridge	UC San Diego
UC Berkeley	University of Tokyo
MIT	U of Pennsylvania
CalTech	UC Los Angeles
Princeton	UC San Francisco
Oxford	U of Wisconsin (Madison)
Columbia	U of Michigan (Ann Arbor)
U of Chicago	U of Washington (Seattle)

Case studies of campuses with sustainability-related programs of study ...

Harvard	Yale
Stanford	Cornell
Cambridge	UC San Diego
UC Berkeley	University of Tokyo
MIT	U of Pennsylvania
CalTech	UC Los Angeles
Princeton	UC San Francisco
Oxford	U of Wisconsin (Madison)
Columbia	U of Michigan (Ann Arbor)
U of Chicago	U of Washington (Seattle)

Stanford University Institute for the Environment

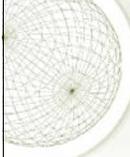
- ✦ <http://environment.stanford.edu/index.html>
- ✦ Themes: Research, Education, Outreach
- ✦ Collaboration of 7 schools, and other institutes and centers
- ✦ Example: Interdisciplinary Graduate Program on Environment and Resources



UC Berkeley Sustainability at UCB

- + <http://sustainability.berkeley.edu/>
- + Mission: engage campus, integrate programs, instill forward-thinking
- + Example: Chancellor's Advisory Committee on Sustainability Charter
- + Subcommittees: Assessment, Greenfund, Buildings and Energy, Purchasing, Outreach

7



UCSD

- + <http://physicalplanning.ucsd.edu/Default.htm>
- + Master Plan Guiding Principles: Neighborhoods, Academic Corridors, University Center, The Park, Connections
- + "saving our environment - one campus at a time"

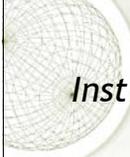
8



University of Tokyo Alliance for Global Sustainability

- + <http://www.esc.u-tokyo.ac.jp/ags/outline-e.htm>
- + Partners: Univ. of Tokyo, MIT, Swiss Federal Institute of Technology, Chalmers University of Technology
- + "a key issue to preserve human civilization, resources, and ecosystems"

9



UCLA Institute of the Environment

- + <http://www.ioe.ucla.edu/default.htm>
- + Located in UCLA's first LEED building
- + Projects: Global Learning and Observations to Benefit the Environment (GLOBE in the City), Urban Center for People and the Environment
- + LA is "environmentally challenged"

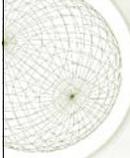
10



University of Washington Program on the Environment

- + <http://depts.washington.edu/poeweb/resources/sustainability.html>
- + How can universities help to achieve UN Millennium Development Goals?
- + What is the role of higher education in the UN Decade of Education for Sustainable Development (2005-2015)?
- + Can the Global Higher Education for Sustainability Partnership serve as a model for shaping the practical role for universities?

11



Additional sites of interest

- + Sustainable Europe Research Institute, a virtual network <http://www.seri.at/>
- + Lund University, Sweden International Masters Programme in Environmental Studies and Sustainability Science <http://www.lu.se/o.o.i.s/1477>
- + Curtin University of Technology, Perth, Australia <http://handbook.curtin.edu.au/courses/30/302469.html>
- + University of British Columbia, Center for Interactive Research on Sustainability <http://www.sdri.ubc.ca/cirs/>
- + Japan for Sustainability <http://www.japanfs.org/>

12

Related employment announcements 2005

- + Centre for Interdisciplinary Studies in Environment and Development, Bangalore, India (11/15/05)
- + University for Peace, Costa Rica (9/23/05)
- + Arizona State University (10/3/05)
- + World Conservation Monitoring Centre, Cambridge, UK ((10/30/05)
- + International Centre for Integrated Mountain Development (ICIMOD), Nepal
- + UC Berkeley (12/1/05)
- + University of Manchester, UK
- + University of Maine (12/1/05)
- + World Fish Center, Malaysia
- + Institute for the Study of Society and Environment, Colorado (8/31/05)
- + Climate and Energy Programme, WWF, China
- + Risk, Technology and Environmental Governance, U of Liverpool (8/31/05)
- + World Bank Group's Foreign Investment Advisory Service, Indonesia (8/15/05)
- + Dept of Science and Technology Studies, Cornell (10/1/05)
- + Center for International Forestry Research
- + Public Policy Institute of California
- + Forest Guild, New Mexico (6/13/05)
- + Umass Environmental Fellows
- + Dept. of Env. Quality, State of Montana (5/27/05)
- + Ford Foundation, Vietnam (10/05)
- + Harvard University (5/1/05)
- + International Human Dimensions Programme on Global Environmental Change, United Nations University, Bonn, Germany 5/31/05)
- + Cultures and Ecosystems at Risk, Univ of Victoria, BC (5/10/05)

13

UH System and UHM web search results

- + UH System keyword search: sustainability
http://www.google.com/u/uhpro?domains=hawaii.edu&site=search=hawaii.edu&q=sustainability&sa_x=0&sa_y=0&sa=Search
- + UHM keyword search: sustainability
http://www.google.com/u/manoaprod?q=sustainability&sa_x=0&sa_y=0&sa=Search
- + Sustainable Hawaii (result 37 on page 4 of UHM search)
<http://www.sustainablehawaii.hawaii.edu/>
- + UH Office of Sustainability (not present)
<http://sustainable-uh.hawaii.edu/index.php?section=6&island=2>
- + Maui Community College Sustainable Living Institute of Maui (SLIM) <http://www.sustainablemaui.com/>

14

Working Groups on “Trends and Uncertainties in Hawai`i”



Section IX.A.

Sustainability Workshop, University of Hawai`i
Wai`oli Tea Room
September 16, 2005
Kem Lowry and Peter Rappa

Key Trends Shaping Hawai`i's Futures

Key Trend: Population growth

- *Uncertainty: What is the rate of population growth? What is the mix of natural increase and immigration from the continent and abroad? What's the military impact on population growth?*

Key Trend: Increasing aging of population

- *Uncertainty: What are the growth rates in various age cohorts?*

Key Trend: Increasing urbanization

- *Uncertainty: How will the growing population be distributed among islands and on each island?*

Key Trend: Increasing impermeability due to urbanization

- *What are the impacts of increased impermeability on water recharge? On runoff and non-point source pollution?*

Key Trend: Increasing automobiles and auto use

- *Under what circumstances will auto users switch to mass transit alternatives?*

Key Trend: Declining supplies of freshwater

- *To what extent are sustainable supplies of water known? What are the levels of uncertainty about withdrawal rates? To what extent is desalinated water a viable economic alternative?*

Key Trend: Loss of open space

Key Trend: Increase in invasive species

- *To what extent will organic farming increase pathways for invasive species?*

Key Trend: Loss of endemic species

Key Trend: Loss of biodiversity

- *What is our ability to control the spread of invasive species thus protecting biodiversity?*

Key Trend: Increased competition for coastal resources

Key Trend: Increase in value of Hawaii lifestyle—attracting more part-time and full-time residents; Key Trend: Increase in demand for environmental services such as air-conditioning—and increases in energy costs; Key Trend: Increase in luxury homes and gated communities on all islands

- *Will this cause a greater separations between the have and have nots?*

Key Trend: Increasing costs of energy

- Will there be another source of energy to replace fossil fuels as we run out of them?
- What are the likely impacts of higher energy costs on the state's economy? To what extent will be able to substitute alternative energy sources?

Key Trend: Increases in transportation costs as a proportion of income

Key Trend: Increasing degradation/depletion of natural resources such as reefs and watersheds

Key Trend: Decreasing "affordable" housing as a proportion of total housing stock

Key Trend: Stronger Hawaiian culture, but with reduction in shared vision

Key Trend: Lack of sustainability in food supplies (increasing dependency on imports).

Key Trend: Long term decline in fisheries

Key Trend: Increasing technically complex development

Key Trend: Increasing dysfunctional large scale command and control government

Key Trend: Increasing tendency to build big box retail stores

Key Trend: Movement toward healthy/organic living

Key Trend: Policy environment not informed by the interdependence between the economy and the environment.

- *Uncertainty about whether ecosystem based fisheries management will result in improved fisheries management*

Key Trend: Importation of inappropriate management models

Key Trend: Increase in knowledge industry

- *Lack of knowledge of marine biodiversity in the 100-400 depth*

Key Trend: Increases in number of visitors and military assigned to Hawaii

Key Trend: Declining federal commitment to resource management

Key Trend: Increasing budget deficits

Comment

Several respondents pointed out that future studies are critical to developing a sustainable University and Hawaii. One comment stated that a “healthy futures orientation is absolutely critical to sustainability—nurture free, fair, and frequent futures thinking within any community and that communicant will begin of itself to discover and converge upon sustainable practices at all levels.” The University needs to use the resources on campus of future thinking to help shape policy toward developing a sustainable Hawaii society.

Working Groups on “Challenges, Priorities, and Implementation of Programs for Curriculum on Sustainability at UH Mānoa”



Section IX.B.

Sustainability Workshop, University of Hawai'i
Wai`oli Tea Room
September 16, 2005

John Cusick, Mary Tiles, Shirley Daniel, Graham Parkes

Why UH should have an identifiable Sustainability Curriculum

1. The environmentally diverse Hawaiian Islands provide a unique location for development and implementation of sustainable strategies and guidelines that could be of use to other island communities facing similar problems. A concerted effort toward sustainable practices by UHM acknowledges contemporary society's responsibility to future generations.

The Hawaiian Islands are distinguished by marine and terrestrial ecosystems rarely found in such close proximity to one another. The concepts associated with managing land uses based on topographic features and natural processes, as was done by Hawaiians in *ahupua'a* land divisions that ran from mountain to sea, provide organizing principles and worldviews of relevance to contemporary society. A UH Sustainability Curriculum would further generate ideas about the human relationship to the natural environment that emphasizes "a Hawaiian place of learning" while avoiding further environmental degradation to island ecosystems. The Hawaiian Islands provide a wealth of available field research sites to develop expertise in this area, most notably university campuses and neighboring communities where sustainability curriculum could be put into immediate practice.

2. Our location gives us other comparative advantages as a consequence of being located in the center of the Pacific Ocean, as the bridge linking East and West: Asia, the Pacific, and the North and Latin American regions.

This linkage is already demonstrated with such institutions as the East-West Center, the various UHM regional centers, and a number of other units with established expertise and contacts. A Sustainability curriculum highlights and builds on the existing strengths of the State of Hawai'i as a center of diverse people and lifestyles.

3. The complexity of current social, economic and environmental concerns demands the attention of individuals educated and trained to think critically and to problem solve across disciplinary boundaries. UHM has the resources to offer a rigorous program of disciplinary and multidisciplinary education and research focused on issues of sustainability, while striving to serve as a role model for implementation of sustainable practices throughout its operations.

Sustainability curriculum and research help to explain and propose solutions to impacts of global climate change, protected areas and conservation of environmental diversity, invasive species management, ecological restoration, tourism carrying capacity, alternative energy solutions, water conservation, transportation alternatives, and can create conditions for sustainable UH campuses.

4. Employers and policy makers in the islands need a pool of people equipped to address sustainability concerns. UHM could graduate students with degrees that provide a level of training and experience required by public and private employers.

University degrees are an integral component of a diverse economy and they help facilitate the State into the global economy with an educated and skilled labor force. Support for a Sustainability curriculum is an investment not only in UHM but also in the quality of life in the State of Hawai'i.

5. If the UHM campus is to move toward more sustainable practices it will require understanding of the issues and support from faculty, students and staff. Having courses from many disciplines identified as sustainability courses in the catalogue is one way of helping those who are interested to find the courses where they can pursue their interest further. Having courses with sustainability themes in aspects of the general education curriculum would give many of our undergraduates exposure to the concepts.

Objectives of the Curriculum

1. To acknowledge that environmental quality in the foundation of the State's economy and provide decision makers with relevant information to balance environmental integrity with economic development.
2. To provide education that is of benefit to local communities.
3. To produce graduates who become part of a skilled labor force capable of making informed environmental, social and economic stewardship decisions because they have both in depth knowledge of a discipline and broad exposure to multi-disciplinary approaches to problem solving.
4. To highlight UH's commitment of helping to manage and conserve the unparalleled natural and cultural environment of these islands and to contributing to international efforts at sustainability.
5. To focus on a holistic education of UHM students so that they can assist with integrating the State into the global discussion of sustainability concerns as an equal partner. This includes courses and research dedicated to identifying and solving issues linked to sustainable practices on the UHM campus.

Sustainability in the Curriculum - Suggestions

1. Offer a graduate degree that focuses on complex, multi-disciplinary interaction in the context of problem analysis and problem solving related to sustainability issues.

2. Build on existing degree and certificate programs, but bring greater coherence and interconnection to their efforts.
3. Offer students interested in sustainability a comprehensive set of courses that take advantage of existing strengths of faculty and facilities in multiple subject areas by assembling at minimum a listing of courses that already exist and giving them a suitable designation.
4. Offer motivated undergraduates a chance to engage in multi-disciplinary research while earning their discipline based baccalaureate degree by developing a sustainability track in the honors college, or using its model (should it be decided that we do not want an honors college).
5. Develop courses with sustainability themes or components that meet hallmarks for the general education curriculum (e.g. ethics, HAP or W focus, or satisfying diversification requirements).
6. Colleges and/or departments might consider adopting the TIM approach of inserting sustainability themes in any courses where it might be appropriate.

Obstacles to Implementation

1. No current framework for multidisciplinary collaboration on curriculum, especially when it might involve crossing college (and hence budgetary) lines.
2. Lack of any official mechanism for recognizing the contributions made by multiple persons to a single team-taught course or set of courses.
3. Current tenure and promotion guidelines, coupled with departmental interpretations of them, which tend to discount contributions to non-departmental teaching or to multi-disciplinary research and publication.

Working Groups on “Challenges, Priorities, and Implementation of Programs for Research on Sustainability at UH Mānoa”



Section IX.C.

Sustainability Workshop, University of Hawai'i
Wai`oli Tea Room
September 16, 2005
Jo-Ann Leong, Sharon Miyashiro, Nancy Scanlon

Summary of the Discussion

The following ideas were generated by two working groups. There was major consensus on the direction for research:

1. The University must serve as an Example of Sustainability, with research initiatives based on assessing and reducing the University's environmental footprint
2. The focus of research should be on effecting social change, more specifically addressing "How can we reach the community so that they want to conserve water, recycle, improve waste disposal, and reduce their energy usage?"
There was less interest- in defining specific sustainability - projects such as biodiesel from marine microalgae, synthetic fertilizers whose production has a low impact on the environment, or developing sustainable aquaculture. We should conduct research on what drives attitudes regarding conservation of our resources and how a knowledge base for sustainability is developed in the community is required.
3. The University community should concentrate on how we can convert sustainable solutions into policy. The following are specific research projects that the University could conduct that would benefit the larger community:
 - The University should set a goal of using renewable resources as its sole energy source within a year. Research would include an assessment of the different types of renewable energy resources and their adaptation to the UH Mānoa environment.
 - The University should provide demonstration projects like the new laboratory at the Hawaii Institute of Marine Biology and the new facility at Lyon Arboretum.
 - The University should concentrate on sustainability projects that have a large impact on the community, e.g. the Ala Wai Canal.
 - The University should develop an inventory of the expertise available on campus and develop a virtual center that can offer its services to the state and private industry on a cost reimbursable basis.
 - The University should encourage research that develops models for future planning with and without sustainable practices.

The following implementation goals were identified:

1. Obtain adequate funding for the Sustainability Program. Possible funding sources identified were: the National Science Foundation for interdisciplinary funding, Research and Training revolving fund monies, private foundations.

2. The University needs to support faculty participation in sustainability programs through amending the promotion and tenure system to include criteria to encourage and reward faculty for efforts to develop community sustainability partnerships -- a critical initiative. The economic outcomes of such efforts are less immediate and obvious.
3. Promote sustainability efforts on campus through the following:
 - Offer campus seminar series on Sustainable Practices
 - Develop courses through an experimental college series that would cover sustainability practices for the home.
 - Sponsor “Smart Practices” competitions that focus on unit efforts to conserve energy, conserve water, or efficient use of land/space for multiple purposes.
 - Incorporate indigenous knowledge into our sustainability approaches.
 - Create an urban garden on campus
 - Increase the knowledge base for low maintenance gardening, composting, recycling, etc.
 - Work with state and county planners to make sustainability efforts permissible under the building and health codes.
 - Develop a set of sustainability indicators that would serve as benchmarks for improvement of the University of Hawaii’s sustainability practices.
 - Develop classroom case studies that initiate research on the effect of sustainable practices on our campus ecosystem.

Working Groups on “The Design and Operation of UH Mānoa Buildings and Campus Facilities”



Section IX.D.

Sustainability Workshop, University of Hawai`i
Wai`oli Tea Room
September 16, 2005
Stephen Meder, Jack Sidener, Sharon Ching Willams,
Rebecca Lively, Sarah Goorskey

Summary of the Discussion

INTRODUCTION

The discussion on *The Design and Operation of Buildings and Campus Facilities at UHM* was brief on the day on the retreat due to a shortage of time and not a lack of interest. It was the consensus of the participants that the campus facilities, from laboratories to dormitories, including offices, classrooms, auditoria and athletic facilities, should use energy and water more efficiently and that they should be designed and operated to be safe, healthful, attractive and comfortable living and working environments. It was also noted that by following a more sustainable path of campus / building design and operations, the university would save millions of dollars a year on its facilities and improve the quality of life on campuses, but that the University of Hawai'i has a unique role to play in demonstrating long-term solutions on its campuses and should take a leadership role in bringing these solutions to the larger Hawai'i and Regional communities beyond the boundaries of our campuses.

The notes compiled in this document reflect the brief discussions from the retreat on September 16, 2005 and offer further information that has been gathered from the work of related UHM committees, including the energy and building design committees that provided input to the Charter of Sustainability.

OVERARCHING ISSUES AND GOALS

The technological methods to reduce energy and resource use, enhanced indoor environmental quality, improve safety and the implementation of renewable energy applications on college campuses are widely known and available. Institutional commitment and supporting institutional infrastructure are the critical factors for the successful implementation of these techniques at the University of Hawai'i.

INSTITUTIONAL POLICY

1. Develop institutional commitment to campus planning, water conservation, energy conservation, energy efficiency, and renewable energy applications.
This policy would include but not be limited to:
 - a. Integration of campus master plan, long range development plan, new building plans, significant campus renovations and interconnections with surrounding community
 - b. Reduce energy demand in all new buildings and retrofitted buildings (with a target of adhering to Act 77 and/or exceeding code by 15% or similar)
 - c. Improve levels of comfort and indoor air quality in campus facilities
 - d. Maximize renewable energy opportunities on the campus (target- meet or exceed Act 77)

Optimize new campus planning and design to maximize unique broad-based campus opportunities to reduce energy and water demand, improve

- a. large-scale transportation implementation, exemplify best practice land use decisions and community development opportunities.
- b. Support public transportation, alternative transportation modes and pedestrian options

IMPLEMENTATION STRATEGIES

1. Create personnel responsibilities to integrate campus master plan with the UHM long range development plan. Interlinking committees should be formed to review new building plans and significant campus renovations to ensure that they are producing quality results and are integrated with the overarching planning documents and decided direction of the campus. The university is committed to elevating the quality of life on and around its campuses. Interconnections with surrounding communities are of critical concern. Renovations on campus should improve conditions for the university's neighbors.
2. Develop an Campus Energy Plan
The UHM Energy Plan is a strategically important document that will set goals and priorities for energy use and energy projects, including Repair & Maintenance needs. This plan would be the establishment of comprehensive energy conservation, energy efficiency and renewable energy program for UHM that is realistic, implementable and measurable. The Campus Energy Plan can include a renewable energy plan. The plan will be developed by a UHM Energy Conservation Manager.
3. Develop Energy Design Standards for all new and large-scale retrofit projects. Standards would include but not be limited to:
 - a. Design standards for passive design strategies, building envelope design, mechanical design, lighting design, indoor environmental quality, maintenance and life cycle cost analysis
 - b. Include design standards in all RFPs
4. Create a position and hire a UHM Energy Conservation Manager (ECM):
It is critically important that the university hire an energy conservation manager to oversee all of the energy retrofit and energy demands in new university projects and large-scale retrofit projects. This person will assess energy project needs as they align with the campus energy plan. The ECM will prioritize and oversee the projects. The ECM will enable the university to realize energy and cost savings which will be substantially greater than anything realized to date. This position could be developed as a qualified in-house position or be contracted as a third party service.
5. Implement water conservation, energy conservation, energy efficiency and renewable energy demonstration projects on campus

6. Identify research and curricula that supports and integrates with institutional policy on sustainable buildings and campus facilities
7. Develop strategic partnerships to advance the goals articulated in the statement of institutional commitment
 - a. Seek external partners and resources for UH to effectively meet realistic planning objectives and energy goals. Create demonstration projects and outreach to community and comply with requirements of Act 77. Seek internal and external funding opportunities, investigate viable performance contracting, commissioning and retro-commissioning opportunities and explore innovative external public, private and industry support.
8. Work with internal and external partners to outreach energy solutions to community needs
9. Identify and implement community-based energy demonstration projects

Event Website:

<http://www.soest.hawaii.edu/seagrant/sustainability.htm>



Section X.

Sustainability Workshop, University of Hawai'i

Wai'oli Tea Room
September 16, 2005