

TRAINER'S MANUAL

MODULE 2

Operates in an Environmentally Responsible Manner

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How to Use this Manual

This manual provides an outline of topics associated with the SMART principle: ***Operates in an Environmentally Responsible Manner***. A variety of reference materials are listed for each topic such as literature, websites, and audio-visuals. These are suggestions of relevant and more detailed information from which the Trainer may draw, according to what he/she feels is appropriate. Ideally, Trainers and Participants will continue to update the list as new sources become available. The module also incorporates numerous “real life” examples – testimonials and first person accounts – which illustrate how other northern tourism operators have adopted environmentally responsible practices.

This manual is not a textbook. It is a compilation of resources from which a Trainer may choose, with the aim of giving tourism operators, or their employees practical advice applicable to their businesses. We have made an effort to include examples from both Europe and North America, which means that occasionally there is a repetition of ideas. It is not anticipated that any Trainer will use all of the materials but, instead, will be guided by the characteristics of their group, such as:

- experience in the tourism industry
- educational level
- language abilities
- age
- homogeneity of the group
- tourism sector in which the participants work
- the time available for the workshop.

Each section of this manual offers a few suggestions of learning exercises, such as: guided group discussions, field trips, research projects and so on. The Trainer may wish to use these ideas or he/she may have favorite training methods of his/her own.

The intention of the SMART training program is to provide advice that is, to a large extent, supported by the experiences of exemplary northern operators. It is expected that the Trainer will have significant experience in training (rather than teaching) as well as field experience in a related tourism sector.

Operates in an Environmentally Responsible Manner

Introduction

Module 2 reminds tourism operators that virtually all operations have some impact on the environment. Here we encourage new and existing companies to develop their own Environmental Plan. For existing companies it is important to identify ways in which operations are impacting the environment and take whatever steps are possible to eliminate or mitigate those effects. Some of the operational areas in which a company can become ‘environmentally responsible’ are discussed in this Module – energy conservation, waste management, and transportation management. Monitoring environmental (and social) impacts requires identifying ‘indicators’ – factors or resources that can be observed for negative (or positive) changes. Outdoor tourism operators may find it beneficial to work with local agencies such as parks or forest services which have their own monitoring schemes. There are numerous resources which provide advice for fixed-roof establishments (such as hotels and B&Bs). Some of these are listed in this manual.

1. Legislation and Wildlife/Environmental Authorities

1.1 Learning Objectives

- Be able to name the licensing authorities in your region;
- Be able to identify the environmental legislation applicable to your business;
- Know the process of securing or renewing appropriate licenses within your jurisdiction (where licensing is a requirement).

1.2 Suggested Training method

- Look up environmental legislation (available on the internet, or directly from the agency involved) and begin to compile a resource binder for your company.
- **Group Discussion:** Why is licensing important to a sustainable tourism industry? What are the ethical implications? Are there marketing implications?

Refer to Appendix 3: Training Tips

1.3 Training Resources

1.3.1 Legislation

Travel and Tourism Act and related Regulations, Government of Nunavut found at:

<http://www.gov.nu.ca>

Push button for *Legislation* (right hand side); Nunavut Court of Justice; Library (left hand bottom); Nunavut Consolidated Regulations (Travel & Tourism) and Summaries for the Consolidated Statutes (Travel & Tourism Act).

Nunavut Land Claims Agreement. Contact Nunavut Tunngavik Inc.

<http://www.tunngavik.com/>

Finland's Ministry of the Environment – English version is available

<http://www.ymparisto.fi/>

1.3.2 Print Material

HARROP, D. Owen and J. Ashley Nixon. *Environmental Assessment in Practice*, Routledge, London, 1999.

1.4 Commentary and ‘Good Practices’

Adhering to legislation and identifying local wildlife/environmental authorities.

The most fundamental environmental standards any tourism operator should abide by are contained in the legislation applicable to their region. In fact, many countries have significant legislation regarding the environment. Eco-sensitive operators will want to exceed these basic rules. Begin by identifying your local wildlife or environmental authority – and consult them for advice regarding carrying capacities environmental regulations, protected areas, mandatory or voluntary wildlife-watching guidelines, endangered species, and so on. In Nunavut, for example, you would consult with Wildlife Officers, the Wildlife Management Board, the Federal Department of Fisheries, and the Department of Economic Development & Transportation [tourism licensing]. Here, as an example, is the Licensing process required by the Nunavut Water Board affecting any tourism business which uses water or disposes of waste into water. Other countries will have their own ‘version’ of this sort of regulation.

Nunavut Water Board (NWB) Licensing Process

Applications for a water licence must be submitted to the NWB on the prescribed application form, along with the applicable supplementary questionnaire and the application fee. The licensing process begins only once the Licence Administrator receives the above documentation and deems the file complete.

- No later than five days after the receipt of a complete file, the Licence Administrator advertises the application in a newspaper in the relevant area, allowing a minimum of a fifteen day period for the public to raise concerns. The Licence Administrator also sends the application directly to federal territorial government departments, hamlet councils, hunters and trappers’ organizations, regional Inuit organizations, regional wildlife organizations, etc.
- During the advertisement period, the NWB carries out a technical review. In general, the Nunavut Impact Review Board (NIRB) also carries out an environmental screening either before or in parallel to the water licence review.

If the public raises no significant concerns by the end of the fifteen-day deadline, the NWB may decide that the project proceeds without a public hearing. A draft licence is prepared for Board review. A final licence is prepared, submitted for Board approval at a regular Board meeting, then issued. However, the NWB will not issue a licence if the environmental screening has not been completed and if no land use permit has been issued by the competent authority (Government of Canada for Crown lands and the regional Inuit organization for Inuit-owned lands). Should there be significant concern, or should the NWB feels that it is in the best interest of the public, the application could be subject to a public hearing.

Sometimes legislation calls for an Environmental Impact Assessment but usually this is required only for larger projects. Remote areas may have no EIA legislation at all.

Finland's Ministry of the Environment provides detailed information on legislation respecting the country's Nature Conservation Act as well as land use and building legislation. Finnish, English and Swedish versions are available at <http://www.ymparisto.fi/>

Trainers who wish to investigate the process of Environmental Impact Assessment may refer to:

HARROP, D. Owen and J. Ashley Nixon. *Environmental Assessment in Practice*, Routledge, London, 1999. This is somewhat 'academic', however.

2. Collaborating with partners in environmental responsibility

2.1 Learning Objectives:

- Be able to identify local environmental agencies and to understand their responsibilities regarding environmental stewardship;
- Be able to describe ways in which different environmental agencies in your jurisdiction cooperate with each other.

2.2 Suggested Training Method:

- **Group Project:** List several agencies in your region – such as National Parks, Department (Ministry) of the Environment, Department of Fisheries, local ecology group (NGO). Work out the responsibilities of each organization and identify areas of possible cooperation. (This project will involve visiting the organizations, inviting in one or two presenters, or going to the internet for ideas.)

See also Module 3 for more information on this topic.

2.3 Training Resources

2.3.1 Print Materials

Each country should research the appropriate reference materials for this section. Here is an example for Canada:

KIM WHYTOCK & ASSOCIATES INC., *Models for Sustainable Tourism: National Parks and National Historic Sites of Canada*, Ottawa, October 2002.

2.3.2 Websites

Government of Nunavut, Department of the Environment
http://www.nunavutparks.com/visitors_centre/safety.cfm#travel

Finland's Ministry of the Environment – English version is available
<http://www.ymparisto.fi/>

Parks and Camping in the Northwest Territories (hit Tips on Camping in the North)
<http://www.explorenwt.com/adventures/parks-camping/index.asp>

2.4 Commentary and ‘Good Practices’

Collaborating with partners in environmental responsibility

The Arctic ecosystem is unique from other parts of the world and is especially sensitive to irresponsible or unthinking behaviour on the part of businesses and visitors. Although the seasons may be harsh, the north is the nesting destination for a vast number of migratory birds, large and small. In sub-Arctic areas trees may be short, slow-growing and of limited variety. But northern areas burst into bloom in the summer months where delicate flowers such as the Arctic poppy survive cold winds and short seasons. Parts of northern Scandinavia may be more developed or have forests, which are more lush. Nevertheless, care for the natural resources of these regions is just as important. [Refer to Appendix 5] Obviously, hiking or camping in our northern countries requires special care and respect for the environment. Operators who wish to seek environmental advice can go to sources such as: elders, Wildlife Boards, Department of Fisheries (fish stocks), Parks or Forestry specialists, or other agencies specific to your region.

Collaborating with Parks Canada

Trail of the Great Bear of Alberta says they design all elements of their tour packages with care and work closely with Park Canada:

- Participation in park planning and strategy development and delivery
- Use of park interpretive planning
- Publications and programs carry park messages
- Tour packages based on ecosystem-based experience and interpretation
- Financial contribution to Park interpretation
- Participation and initiation in relevant research
- Provision of qualified interpreters and guides
- Distribution of visitation

Quoted from: Pam Wight for the Canadian Tourism Commission. *Best Practices in Natural Heritage Collaborations: Parks and Outdoor Tourism Operators*, Ottawa, 2001, p. 67.

Nutti Sami Siida, Jukkasjärvi-Seppero, Sweden

It has always been natural for us to work with sustainable development because we are dealing with Sami tourism. The Sami culture is like that and has always been that you don't leave visible tracks in nature. Working with sustainable tourism and **Nature's Best** is only strengthening our work towards sustainable development. Therefore we chose to work in small groups – we do not want to put on too much pressure on nature.

3. Environmental responsibility for hotels and other types of standard accommodations

3.1 Learning Objectives

- Understand the issues related to energy use:
 - Ways in which energy use impacts the environment
 - Quantitative and qualitative comparison of energy types (e.g. fossil fuel, electricity, hydro power, solar and wind power);
- Understand the energy needs of the tourism industry and the options available to tourism operations;
- Understand the fundamentals of waste management;
- Understand fresh water and waste water management;
- Understand the fundamentals of hazardous materials management and disposal;
- Understand the importance of good communication with staff, visitors and the community regarding your 'green' policy.

3.2 Suggested Training Method

- Look up the websites suggested in the resource list and print out pages that will be useful to include in your resource binder.
- **Individual Project** for existing business owners:
 - Evaluate the energy used by your business and suggest how it could be reduced or supplied by more environmentally friendly energy sources.
 - Identify the waste created by your business and suggest how it could be reduced or recycled

(In a mixed group – business owners and non-business owners, this exercise might be carried out as a group discussion.)

- **Individual (or break-out group) Project:** Choose one of the topics above (energy, fresh water, waste water). How could your 'green' policy help your operation save money?
- If available: Have one of the SMART Pilot companies make a presentation to the group about their environmental planning; OR, visit a local 'green' fixed-roof facility such as a Bed & Breakfast.
- **Form two debate teams:** How effective is solar power in the Arctic (for and against)?
- Take advantage of the Workplace Hazardous Materials Information System (WHMIS) training if possible. (Handling of Hazardous Materials)
- **Guided Group Discussion:** What are the advantages and disadvantages of different energy sources? Which ones are suitable for Arctic conditions: Research the latest technology developments and trends as background information. See Appendix 4.

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3.3 Training Resources

3.3.1 Print Materials

Fairmont Hotels & Resorts. *The Green Partnership Guide: A Practical Guide to Greening Your Hotel*, Second Edition, 2001.

STIPANUK, David M. *Hospitality Facilities Management and Design*, Second Edition, Educational Institute, American Hotel & Lodging Association, Lansing, Michigan, 2002.

3.3.2 Some sources related to climate change and energy use

Hassol, Susan Joy. *Impacts of a Warming Arctic*, Cambridge University Press, 2004.

Lynas, Mark. *High Tide: The Truth about our Climate Crisis*, Picador, New York, 2004.

Weart, Spencer R. *The Discovery of Global Warming*, Harvard University Press, Cambridge, 2003.

Hall, C.M. and Higham, J.E.S. Editors. *Tourism, Recreation and Climate Change*. 2005. Multilingual Matters Limited. ISBN 1845410033.

3.3.3 Video:

What's up with the Weather? (Nova/PBS Frontline News).

3.3.4 Website:

<http://www.aea.nt.ca/pdf/055=GuideCommunities.pdf> Arctic Climate Impact Assessment.
<http://www.amap.no/acia/index.html>

The World Wildlife Fund's (WWF) work on climate change: www.panda.org and the 'Power Switch' campaign: <http://www.panda.org/campaign/powerswitch/index.cfm>
Arctic Energy Alliance, Northwest Territories. <http://www.aea.nt.ca>

See especially *Community Energy Planning: A Guide for Northern Communities* at <http://www.aea.nt.ca/pdf/055=GuideCommunities.pdf>

For environmentally friendly products, see for example:
www.ecoeverything.com

Workplace Hazardous Materials Information System (WHMIS) Training
<http://www.utoronto.ca/safety/whmis1.htm>
<http://www.safetyoffice.uwaterloo.ca/hspm/chemicals/whmis/whmis.htm>

Environment Canada provides information on water use at
http://www.ec.gc.ca/water_e.html

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3.4 Commentary and ‘Good Practices’

Topics Three to Seven provide you with the information you will need to prepare your own environmental plan in Topic Eight.

Environmental responsibility for hotels and other types of standard accommodations

Not all Hotels, Bed and Breakfasts and other types of accommodations offer themselves as ‘ecotourism’ products. That does not mean, however, that they cannot, indeed should not, operate in an environmentally responsible manner – often referred to as a ‘green’ operation. Of course the issues discussed here apply equally (or more so!) to the Ecolodge section which follows.

Refer to the list of Training Resources for this topic as well as Appendix 1: 259 Tips for a better environment profile in the hotel and restaurant branch (Source: GRIP- the Norwegian foundation for Sustainable Production and Consumption.)

3.4.1 Waste Minimization

Waste minimization involves three components: reducing the amount of (surplus) products a company consumes, reusing essential materials and products, and recycling as many products as possible – often through local municipal recycling programs. Reducing waste may be accomplished by purchasing in bulk so that commercial packaging is kept to a minimum. Soap and shampoo dispensers in hotel rooms eliminate the need for hundreds of individual plastic containers. Disposable cups and plates can be replaced by reusable china or glass.*

*Large operations need to evaluate environmental costs of disposables against environment costs of energy, detergents and water needed for re-usable products.

Fairmont Hotel’s *Green Partnership Guide* outlines 8 Goals towards reduction of solid waste and its disposal: (see pages 34 – 100.)

1. Set a target for 50% reduction in landfill waste and a 20 per cent reduction in paper use.
2. Redistribute and/or recycle all used soap and amenities
3. Establish programs at all properties to recycle all paper, cardboard, cans, glass, plastics, kitchen grease, organic waste, batteries, fluorescent bulbs and coat hangers
4. Establish a policy and procedure for identification and disposal of hazardous waste
5. Initiate phase-out programs to reduce or eliminate the use of individual sugar packages, individual creamers and condiments containers, and disposable cups in restaurants and cafeterias.
6. Introduce blue boxes for collection of recyclable materials in all guestrooms
7. Convert all necessary paper products to unbleached or recycled materials
8. Initiate negotiations with suppliers to eliminate or reduce packaging.

Adapted from GRIP- the Norwegian foundation for Sustainable Production and Consumption) See Appendix 1 for all the tips

Waste:

Being aware of the details of your company's waste production (types, sources, quantities and costs) will make it easier for your business to deal promptly with waste problems; to design an efficient waste management system; and to plan for waste reduction. The management system should also identify and eliminate unnecessary waste sources.

Waste management:

When designing the waste management plan for your business, research collection specifications to ensure that products and packages can be recycled in your area. Choose products for your business that have the least packaging or which are easiest to recycle. Alternatively, set up an agreement with your supplier to retrieve and recycle packaging materials.

Reduction of waste:

To reduce paper waste you can: make better use of e-mail; do two-sided copying (Xeroxing) where possible; cancel unsolicited advertising and unread magazine subscriptions; make use of the backsides of waste paper; and use recycled paper for your stationary.

To reduce plastic waste you can: avoid using disposable cups, glasses, and cutlery in office and at meetings; and replace portion-packaged items such as sugar, butter or ketchup with bowls or containers.

3.4.2 Energy Conservation and Management

3.4.2.1 Energy and the Environment

There is a great deal of talk these days about energy use and global climate change. The most serious discussions revolve around the burning of fossil fuels and the role of greenhouse gases (such as carbon dioxide) raising the average global temperature. The greenhouse gases permit sunlight to pass through to the earth's surface but then block the energy (now converted into heat – infrared rays) from escaping back into space. The overall effect is gradual heating of the atmosphere in a similar manner as air trapped within a greenhouse heats up.

Northerners have a special concern about global warming since it is the Arctic that, as scientists claim, will suffer the greatest rise in temperature (and related impacts).

Besides fossil-fuel burning, other types of energy generation have also caused environmental problems. Massive hydro projects have interfered with salmon runs as well as flooding large areas behind enormous dams. Nuclear energy poses other kinds of threats – no one will forget the Chernobyl catastrophe.

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The best solutions appear to involve using energy from renewable sources (sun, wind, biomass) or better still, reducing our use of energy as much as possible. There are numerous resources for those who want to learn more about energy use and its impact on the global climate. One of these is the video: *What's up with the Weather?* (Nova/PBS Frontline News) which reviews climate changes and evaluates alternate energy sources. Several books are also listed under 'Training Resources'.

3.4.2.2 Suggestions for Energy Conservation and Management (Fixed Roof Facilities)

Quoted from:

David M. Stipanuk. *Hospitality Facilities Management and Design, Second Edition, Educational Institute, American Hotel & Lodging Association, Lansing Michigan, 2002. [Agenda 21 for the Travel & Tourism Industry – Towards Environmentally Sustainable Development. WTTC, WTO, The Earth Council, 1997.]*

- Implement programs to reduce energy wastage such as switching off equipment when not in use can bring both financial and environmental benefits. Research alternative, environmentally benign methods of energy generation such as solar, wind or biomass power.
- Develop, use and disseminate energy-saving technology. Reportedly, some hotels in Greenland use motion-sensitive lighting so that lights turn off when no one is in the room.
- Integrate energy efficiency considerations into all new developments.
- Train staff about the environmental benefits of initiatives to safe energy conservation.

STF The Mount Hut of Grovelsjon, Sweden

We started to source-separate waste as early as 1993, a very symbolic action... We were even reported for recycling too much paper. The fact is that the contractor was paid less for our garbage. We reduced the costs from 60,000 to 13,000 Swedish crowns at once. ... Today the contractor is very grateful for the diligence we showed. Now he's taking care of all recycling and has also improved his work environment. We, on the other hand, have become experts in recycling and have opened a dialogue with the community. It has contributed so that the community has become really good at source-separation.

*(Source: **Majoitus ja ravitsemisalan ympäristöjärjestelmä, YSMEK 2 – projekti, MEK E: 36 1997) Translated from Finnish), p. 49.***

Written versus oral directions

Most companies (pilot companies in the YSMEK- project) give oral instructions to their personnel about saving water and energy, which is especially important in kitchen operations. Directions are seldom given in writing, although this is more often necessary with larger companies. Customers are not often given instructions about saving water and energy although this is something that should be done. Informing guests in a positive way will serve to motivate positive behaviour.

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Energy savings

(p. 49) Some companies already do so-called “ecotours” of their facilities during cleaning. Windows are checked that they are not open, the room temperature is checked that it is normal, TV stand-by position is switched off, water leakages are checked, and so on. The possibility of using timers on various electrical devices (car heaters, sauna) and in lighting should be researched, especially for larger companies, where these investments bring significant cost savings.

Some companies have thought about ways to utilize the heat that comes from refrigeration devices for other heating requirements.

Pyhän Asteli, Finland

“In food and accommodation, we sort out the waste: card board, bottles, glass, papers. But it is very frustrating, when they still end up all in the same place.”

(Source: Suomi ympäristöä säästäväksi matkailumaaksi. Ympäristökatselmuskokeilun tulokset kymmenessä matkailuyrityksessä ja ehdotukset jatkotoimiksi. MEK E:30 1995) p. 36.

Most of the energy in accommodation businesses goes into heating indoor spaces and water. That is why it makes sense to pay attention to heating methods and trapping the heat. The simplest way to reduce heating costs is to drop temperature of rooms and cottages. A one percent drop in temperature means a 5 % in savings. (p. 37) The need for heating can be reduced by trapping heat in ventilation, with reasonable airing/ventilation, dropping room temperature to 20-21 degrees, additional insulation and wind protection of buildings, as well as reducing temperature in part of the buildings / rooms during low season.

3.4.3 Fresh Water Management

Fresh water is a precious resource to be valued and not wasted – whether it is flowing out of a hotel room faucet or sparkling in a lake beside your campsite. For the hospitality business, water conservation can include: low-flow shower heads, aerators and shut-off buttons for taps, low-flow toilets, and use of grey water for flush toilets. Rainwater can be captured and applied to suitable purposes. Appendix 1 (259 tips) contains numerous suggestions for water conservation in the hotel and restaurant context. Environment Canada’s website provides extensive information on fresh water use and tips for reducing waste. In addition to the direct economic benefits that businesses derive from reducing water use, Environment Canada suggests:

“... water conservation can generate *significant* environmental benefits. It can reduce water diverted and the pollution loadings on our lakes and rivers by reducing the volumes of wastewater which we have to treat. This can help to protect our drinking water and the ecological balance in sensitive aquatic ecosystems.”

(Source: Suomi ympäristöä säästäväksi matkailumaaksi. 90- luvun haaste Suomen matkailulle. Matkailun edistämiskeskus.1993)

Actions by tourism companies to conserve water

- Regular control of water consumption and use of regulation devices in showers and water taps
- Regulation of toilet water, support use of composting toilets
- Use of grey (waste) water in watering lawns or flowerbeds and in flushing of toilets
- Change linen and towels only if necessary
- Use mild cleaning detergents that conserve the environment
- Give up on using chemical detergents and unnecessary scents in detergents

Refer to Topic 1 for the Nunavut Wildlife Board water licensing process.

3.4.4 Waste Water Management

There are several aspects to waste water management. Reuse of grey water, where possible, is an important conservation measure. Alternatively, release of waste water in an inappropriate manner can be an environmental hazard.

Advice on managing Waste Water

Quoted from: STIPANUK, David M. *Hospitality Facilities Management and Design*, Second Edition, Educational Institute, American Hotel & Lodging Association, Lansing, Michigan, 2002. [quoting: Agenda 21 for the Travel & Tourism Industry – Towards Environmentally Sustainable Development. WTTC, WTO, The Earth Council, 1997], p. 107.

- 1** Use waste water treatment facilities and reuse for secondary purposes as appropriate.
- 2** Where waste water facilities do not exist, work with other companies and governments to establish appropriate facilities and procedures.
- 3** Establish appropriate catchment ponds to ensure that potentially damaging chemicals do not enter the waste system through runoff.
- 4** Establish programs with staff, tourists and communities to clean up degraded aquatic environments
- 5** Establish emergency procedures to ensure that the aquatic environment is protected from disasters within the facility.
- 6** Wherever possible, avoid products containing potentially hazardous substances which may eventually find their way into the water system.
- 7** Dispose of wastewater responsibly.

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3.4.5 Hazardous Substances

Although the tourism industry is not normally associated with use and disposal of hazardous substances, in reality, a number of products can be used by the hospitality industry which have harmful effects on the environment. Some products require specific knowledge regarding handling and safety for humans as well. Refer to: Fairmont Hotels & Resorts. *The Green Partnership Guide: A Practical Guide to Greening Your Hotel*, Second Edition, 2001 pages 49 – 52.

Quoting the Agenda 21 for the Travel & Tourism Industry – Towards Environmentally Sustainable Development. WTTC, WTO, The Earth Council, 1997: David M Stipanuk in *Hospitality Facilities Management and Design*, Second Edition, Educational Institute, American Hotel & Lodging Association, Lansing, Michigan, 2002, provides the following advice:

- Examine the necessity for use of products containing potentially hazardous substances and, where possible, use more environmentally benign products
- Assess the full environmental as well as financial implications of new products prior to purchase.
- Reduce use of products containing hazardous substances to the lowest possible quantity and recycle or reuse any residue that can be captured.
- Dispose of any unavoidable wastes responsibly.
- Set up inventories and storage procedures to guard against theft/accidents.
- Ensure that all appropriate staff are trained in handling of hazardous substances and in emergency procedures.

3.4.6 Communication with staff, customers and communities

In development of new tourism operations, it is appropriate to seek the input of community members through public meetings as well as specific meetings with community leaders. It is important to inform residents regarding any impacts your business may have on the area and point out the policies you have developed to minimize resource use and waste. Staff needs to be well versed in your environmental policies so that they are able to articulate these to guests and residents as well as carrying out their own functions in an appropriate manner. Modules 4 and 6 deal with this topic in greater depth.

4. Environmental Standards for Ecolodges

4.1 Learning Objectives

- Understand the characteristics of ecolodges in terms of:
 - environmental concerns
 - infrastructure
 - cultural suitability
 - costs

4.2 Suggested Training Method

- **Guided Group Discussion:** What sets an ecolodge apart from other kinds of hotels or accommodations which adhere to 'green' policies?
- **Guided Group Discussion:** There is a section in the course materials entitled: 'Sustainability Characteristics of Ecolodges'. [pp 22-23] How could you turn some of these suggestions into specific guidelines for Arctic facilities?

4.3 Training Resources

4.3.1 Print Materials

HAWKINS, Donald E., Megan Epler Wood and Sam Bittman, Eds. *The Ecolodge Sourcebook for Planners and Developers*, The Ecotourism Society, Burlington, Vermont, 1995.

MEHTA, Hitesh, Ana L. Baez and Paul O'Loughlin. *International Ecolodge Guidelines*, The International Ecotourism Society, Burlington, Vermont, 2002.

4.3.2 Websites

The criteria of Nordic Swan Ecolabel for hotels and hostels can be used as an example of criteria, which could be included as part of the training module

Nordic Swan Ecolabel for Hotels and Hostels

<http://www.svanen.nu/DocEng/072e.pdf>

4.4 Commentary and 'Good Practices'

Environmental Standards for Ecolodges

4.4.1 Principles of Environmental Responsibility

What is an ecolodge? How is it different from a lodge or hotel with a 'green' policy?

Certainly an ecolodge is concerned with the same issues as other environmentally responsible facilities: responsible use of water resources, minimization of energy use, reduction of waste and its appropriate disposal. Nevertheless, ecolodges go further than mainstream facilities in a number ways, such as:

- Where possible, use alternative energy (wind, solar, biomass energy);
- Actively work towards conservation of nature and related educational programs for guests and staff;
- Maintain a close relationship with the local community (communities) in planning, and in providing visible benefits;
- Minimize disturbance during the construction phase;
- Construct minimalist, low impact infrastructure, appropriate to the local natural and cultural surroundings.

Building a facility 'from start', allows greater control over materials used and future operations. Using existing buildings may involve capital investment for environmentally friendly improvements and to achieve the high standards expected of an ecolodge.

Facilities that are not connected to the public energy grid, are most likely to look at renewable energy such as solar and wind, as practical sources. A remote lodge in northern countries cannot hook up to a local sewage system and compost toilets are not suited to cold climates. Special creativity is needed to deal with a number of such issues in our areas.

The following quotation from Peter Williams in: Donald E. Hawkins, Megan Epler Wood and Sam Bittman, Eds. *The Ecolodge Sourcebook for Planners and Developers*, The Ecotourism Society, Vermont, 1955 [pp 91-92] expands on the ideas above.

Sustainability characteristics of ecolodges:

- Provide interpretation of natural resources leading to protection and, where appropriate enhancement of the overall environment;
- Ensure that on-site environmentally sensitive cultural resources and processes are left undisturbed, conserved and interpreted;
- Sensitively integrate all built structures into the area's natural and cultural environment;

- Balance built design with human needs (rather than wants) with carrying capacity of the area's natural and cultural environments;
- Increase awareness of energy conservation methods and issues through on-site management practices;
- Increase awareness of water conservation methods and issues through management practices;
- Increase awareness of solid waste reduction, reuse and recycling methods and issues through on-site management practices;
- Increase awareness of biodiversity resource management through on-site management practices;
- Support local participation in the stewardship design development and management of on-site programs and facilities;
- Encourage socially appropriate behaviour of guests and employees;
- Encourage responsible food consumption based on locally and possibly organically grown products and the use of locally produced and prepared foods;
- Encourage product purchasing patterns based on minimum levels of importation, packaging and waste production practices;
- Contribute to local protection and community development initiatives.

4.4.2 Solid Waste Management and Recycling

Recycling: The following suggestions are adapted from Kirk J. Iwanowski in Donald E. Hawkins, Megan Epler Wood and Sam Bittman, Eds, *The Ecologie Sourcebook for planners and Developers*, The Ecotourism Society, Vermont 1995, pp 96-97.

Recycling, although very important, should be the last choice after reducing and reusing waste. When developing a recycling program, begin by identifying the major sources of waste products with a plan to separate them into main groups: paper, cardboard, plastic, glass, and so on. Investigate local regulations regarding waste treatment and disposal. Health and fire codes may apply. Assess available markets for recyclables, and note what requirements they have for separation of materials.

Do you have a way of monitoring your recycling program? Have you designed your program to encourage compliance by both staff and guests? Are your recycling bins clearly marked and labeled in the appropriate languages? Are there enough recycling bins and are they located in suitable places?

4.4.3 Water Conservation

Water conservation is discussed in the previous section on Hotels and the sources referred to there will provide useful information for this section on Ecolodges. In addition, look up pages 97-98 in Donald E. Hawkins, Megan Epler Wood and Sam Bittman, Eds. *The Ecolodge Sourcebook for Planners and Developers*, The Ecotourism Society, Burlington, Vermont, 1995.

4.4.4 Energy Efficiency

Suggestions for energy efficiency adapted from Kirk J. Iwanowski in Donald E. Hawkins, Megan Epler Wood and Sam Bittman, Eds, *The Ecolodge Sourcebook for planners and Developers*, The Ecotourism Society, Vermont 1995, pp 98-99. [excerpts]

Begin by requesting an energy audit of your property. Private companies can do this for you but governments may provide energy audits at no cost. Labeling programs such as Nature's Best and SAT will provide criteria for do-it-yourself evaluation. Your company should have an energy conservation program – which will vary depending upon the type and size of business you operate. Included in your program will be matters such as energy efficient lighting, heat recovery plans, motion sensors, and so on. It is important that hotel staff are trained in adhering to the energy efficient program. Workshops, signage, and incentive programs are all practical ways of motivating employees. It is also important to 'educate' your guests on your energy policy, including ways in which they can participate in the program (turning off lights and stand-by devices when out of the room, making modest use of powered ventilation systems and thermostats, and so on).

Energy conservation in northern buildings stresses insulation, proper window fittings, and energy efficient architectural design.

Review the complete section on Energy Efficiency in Donald E. Hawkins, Megan Epler Wood and Sam Bittman, Eds. *The Ecolodge Sourcebook for Planners and Developers*, [above] pp 98- 100.

There is a great deal of information regarding alternate energy options on the Internet. For example, refer to Arctic Energy Alliance, Northwest Territories.

<http://www.aea.nt.ca>.

Hit 'Links' and then scroll down to 'Renewable Energy'.

The following example from a Scotland's green program really is an operation which 'does it all' when it comes to environmental responsibility.

Quoted from *Greening Scottish Tourism: Ten Best Practice Case Studies* [excerpts]
Loch Ossian Youth Hostel is located on the edge of Loch Ossian in the north part of Rannoch Moor.

The hostel generates all of its own electricity via small 2.2 KW wind turbine. [It] creates enough energy for the hostel [including] lights, fire alarm and the two pumps – one for the central heating and the other for the grey water filtration system. The energy created by the wind turbine is stored in 12 x 2 volt batteries which stores a 24 volt charge which will keep the hostel running for seven to 10 days if there is no wind.

The grey water filtration system works by capturing all of the water from the wash hand [sic] basins and sinks into a holding tank which drains through a sieve to separate solids, such as food scraps, which are cleaned and used in the composting. From the holding tank the water is pumped up to a fabricated soil bed through which the water drains through smaller and smaller particle sizes to filter clean the water. The water trickles through to the reed bed where it is taken up into the plant roots.

The dry toilet system works through ventilation which aerates the toilets, providing oxygen to process wastes which are broken down by biological decomposition which in turn is facilitated by organic compost. A small photovoltaic panel position on the side of the toilet building powers the ventilation fan.

5. Tent camps, campsites and traveling on the land

5.1 Learning Objectives

- Understand responsible use of campfires;
- Understand the proper use of fresh water sources;
- Understand how to dispose of waste water ‘on the land’ properly;
- Be aware of appropriate behaviour in wildlife areas.

5.2 Suggested Training Method

- If possible, carry out an overnight or day trip to practice what is learned in this section.
- **Individual Project or Group Discussion:** What are the harmful actions people do while camping – often without knowing they shouldn’t? Why are these actions harmful?
- What characteristics of the Arctic require special consideration? (Refer to *Characteristics of Arctic Tourism*, Appendix 2.)
- Research alternative environmentally friendly products for camping use and add to your resource binder. (e.g. soap, camping equipment)

Optional: Participate in a ‘Leave No Trace’ training program.

5.3 Training Resources

5.3.1 Print Materials

Brower, Michael, and Warren Leon. *The Consumer's Guide to Effective Environmental Choices: Practical Advice from the Union of Concerned Scientists*, Three Rivers Press, New York, 1999.

HUMMEL, Monte, Ed. *Protecting Canada's Endangered Spaces: An Owner's Manual*, Key Porter Books, Toronto, 1995.

Meyer, Kathleen. *How to Shit in the Woods: an environmentally sound approach to a lost art*, Ten Speed Press, Berkely, California, 1994

5.3.2 Websites:

For information on northern wildlife and wildlife issues:

<http://www.gov.nt.ca>

Then click 'Land & Environment'; then 'Wildlife & Fisheries'. Find 'Wildlife' (top bar) or try 'Canadian Wildlife Service'.

Discover the World is a tour operator in the UK. They bring groups to all parts of the globe including most Arctic countries. To find their suggestions for Responsible Tourism:

<http://discover-the-world.co.uk>

then click on 'Wildlife Encounters'; then Conservation on the top bar

Leave No Trace <http://usscouts.org/advance/venturing/LeaveNoTrace.html>

Minimum impact travel tips provided by Nunavut Parks

http://www.nunavutparks.com/visitors_centre/safety.cfm#travel

Finland's Ministry of the Environment – English and Swedish versions are available

<http://www.ymparisto.fi/>

Government of Nunavut, Department of the Environment

http://www.nunavutparks.com/visitors_centre/safety.cfm#travel

Parks and Camping in the Northwest Territories (hit: Tips on Camping in the North)

<http://www.explorenwt.com/adventures/parks-camping/index.asp>

For environmentally friendly products, see for example:

www.ecoeverything.com

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5.4 Commentary and ‘Good Practices’

Tent camps, campsites and traveling on the land

A number of organizations provide guidelines for environmentally-responsible hiking and camping. Some advice differs slightly between Europe and North America since situations and legislation vary somewhat from one country to the other. For example, in Finland, ‘everyman’s rights’, allow hiking in any forests or open areas, but only in a manner which creates no disturbance and does no harm to the landscape. Often what we call responsible behaviour means taking into account the local conditions and using common sense. The following are general comments that can be adapted to the locale:

Leave No Trace <http://usscouts.org/advance/venturing/LeaveNoTrace.html> offers the following advice:

- Plan ahead and prepare
- Avoid lichen-covered and other sensitive areas
- Spread out use to minimize impact where there are no trails
- Concentrate impacts in high use areas – where hardened trails already exist, do not stray off them
- Pack it in, pack it out (whatever you bring with you)
- Properly dispose of what you cannot pack out
- Leave what you find (unless it’s litter!)
- Use fire responsibly

5.4.1 Minimizing Use and Impact of Campfires

Controlling Energy Consumption ‘On the Land’

In the Arctic and much of the sub-Arctic, summer time is the season of almost constant light. There is seldom a reason to build fires for illumination but it is always tempting to sit for hours around a campfire sharing time with companions, or cooking outdoor meals. Small campfires would not appear to add substantially to the global warming phenomenon, BUT in much of the Arctic there are limited materials for fuel: driftwood, arctic heather or slow-growing shrubs and trees. Over-collection of these fuels can soon denude well-used camping spots.

Whether on the tundra or in the boreal forest, make every effort to avoid a fire getting out of control and spreading through the trees or plant roots. Follow the advice given from the various sources below, and ensure that fires are completely OUT, and COLD before you leave the area. Never leave a fire untended for ‘a few minutes’ while you go off to visit or do something else. Campfires, even in fire rings, should ALWAYS be tended.

Leave no Trace makes the following suggestions regarding the minimization and impact of fires: [excerpts]

- [Preferably] don't build campfires! Instead use a small backpacking stove.
- Use a candle lantern for light instead of building a fire (and pack out drippings)
- If you must build a fire make it as small as possible and use established fire rings. If there are no fire rings (and if the soil is suitable) try the following:
 - Undercut a layer of soil twice the size of your planned 'fire-ring'. Roll the soil back. When you are finished with the fire, make sure it is completely out and the ground is cool. Roll the layer of soil back in place. Avoid using a rock base for your fire. Unnatural crevices will form.
- If building a campfire use wood sparingly. Use dead wood that was already on the ground. Break wood into smaller pieces as needed. (Using small pieces of wood will ensure that it burns more completely.)
- Don't break or saw off branches from dead trees, live trees or fallen trees. Don't burn green wood. Don't peel the bark of live trees.

Some words of advice from the NWT *Parks and Camping in the North* website:

"Fires: Build campfires on sand, earth, or gravel, or in provided fireplaces. Never leave a fire unattended, and always make sure it is out when you are finished. Remember to be careful with fire while out on the land, and respect the restrictions on open fires when they are posted."

5.4.2 Water Use and Disposal

Operators should be aware of, and abide by all legislation in their jurisdiction respecting use and disposal of water. Refer to your Department of the Environment, or other authorities for this information.

Advice from *Total Escape*, California on 'Cleaning and Potty Breaks'
(You can 'google' to find *Total Escape*)

No soap in streams, creeks or lakes: even biodegradable soap is not good for the poor fish downstream

Bring a bucket or wash tub – wash dishes and yourself 100' or more from streams and lakes

5.4.3 Waste Issues at the Campsite

In northern environments, the rule for waste is PACK IT OUT!

Waste tips from *Leave No Trace*

Prevent waste by using reusable containers for packed lunches and other such needs.

Small quantities of safely combustible wastes may be burnt on campfires. [Sub Arctic]

Bathroom break in the bushes? Don't leave your toilet paper trash.

For human waste – Bring a shovel, dig holes 8” deep & pack out all toilet paper.

Do not bury paper as animals will just dig it up. Try using nature's alternatives such as moss, leaves or snow.

Certain areas are so sensitive (as is the Arctic) that all solid waste must be packed out.

Food scraps and other biodegradable wastes may be left in compost toilets or in the special composting containers provided in some areas [however, some compost toilets are not recommended for high Arctic locations].

All other wastes should be taken away when you leave.

Metals, glass, paper and recyclable plastics should be carefully separated from mixed wastes, and left at waste collection points.

More information about [how to help preserve the natural environment \(www.metsa.fi\)](http://www.metsa.fi).

See also the website of the [Center for Outdoor Ethics - Leave no Trace \(www.lnt.org\)](http://www.lnt.org).

Minimizing waste out 'on the land':

Polar Sea, Pond Inlet, Nunavut, Canada

Buying in bulk minimizes packaging in the first place. Additionally, we remove as much food packaging as possible before we leave town. This reduces enormously what we have to bring back in garbage bags later.

We absolutely rule out styrofoam cups. We use thermal mugs instead which can be washed and re-used for years.

Handling waste responsibly isn't always easy in the North. Some areas do not have recycling systems or, in any case, efficient recycling systems. Composting toilets are not suitable for Arctic climates (tundra areas). Reducing waste to a minimum is no doubt the most effective tactic.

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5.4.4 Minimizing Impact on Wildlife

Wildlife is one of the very important resources in nature-based tourism. Viewing wildlife may be the motivating factor that brings guests to your area. The health of our wildlife resources is important economically to your business, as well as to your ethics as an Arctic sustainable tourism operator. Consult with local environmental/wildlife authorities in order to learn to identify indications of stress.

Alaska Wildland Adventures (quoted from their website)

[We] approach all wildlife in such a manner that our presence does not disturb them or change their behavior. This will sometimes require observing animals from a distance even though the opportunity exists to get closer. [We] avoid critical habitat areas, such as nesting areas, that are particularly important to wildlife survival.

Leave No Trace advice: Respect Wildlife (excerpts)

<http://archive.lnt.org/TeachingLNT/background/respect.php>

Learn about wildlife through quiet observation. Do not disturb wildlife or plants just for a "better look". Observe wildlife from a distance so they are not scared or forced to flee. Large groups often cause more damage to the environment and can disturb wildlife so keep your group small. If you have a larger group, divide into smaller groups if possible to minimize your impacts.

Quick movements and loud noises are stressful to animals. Travel quietly and do not pursue, feed or force animals to flee. Considerate campers observe wildlife from afar, give animals a wide berth, store food securely, and keep garbage and food scraps away from animals. Remember that you are a visitor to their home.

Isle of Mull Wildlife Expeditions, Scotland

Quoted from *Greening Scottish Tourism: Ten Best Practice Case Studies*

[David Woodhouse's] approach to viewing animals is low impact. He will alert visitors to particular types of signals coming from birds or animals which suggest that they may be distressed by their presence. In such cases they back off and leave the animals to carry on without disturbance.

Special Issues: Endangered Species

Knowledge about endangered species is important to sustainable tourism operators in several ways:

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- Respect species itself and habitat (e.g. whooping crane)
- Discourage purchase of products made from endangered species
- Be aware of import regulations which may affect your guests' purchases (whether or not *you* consider the species to be endangered)
- Be able to inform your clients about endangered species, their life cycle, habitat, range, and so on.

5.4.5 Safety With Wildlife (for humans *and* wildlife)

Each of our northern countries has its own species of wildlife, so no one description will serve for everyone. It is important to remember, however, that when we travel in wilderness areas we are on *our wildlife's home territory*, not ours. It is both thoughtless and dangerous to believe that wildlife must make way for humans. Accidents can and do happen in encounters with larger animals. Although some of these accidents appear to be unanticipated and therefore unavoidable, many occur through human error or ignorance. Not only are people at risk, but also wildlife must frequently be destroyed after one of these unfortunate incidents. Consult your local wildlife authorities for information about your area.

Quoted from the NWT *Parks and Camping in the Northwest Territories* website

Never approach or feed wild animals, even if they appear to be friendly. When you choose a campsite, always be on the lookout for bear signs, such as tracks and droppings. Don't camp where you see them. Bears will stick mostly to river valleys, so camp higher up on ridges. Keeping your campsite clean and caching food away from tents will help keep them away. Dispose of food scraps by burning or burying them. For many people, seeing a bear is the highlight of a wilderness experience. However, all bears are dangerous, and as long as people and bears occupy the same territory, there will be unplanned encounters with potentially disastrous results. Try not to catch a bear by surprise: when you're out walking, it's a good idea to make a lot of noise.

Advice from the Nunavut Parks website:

Wildlife Safety

As a rule, keep your distance and avoid contact with all wildlife. It is illegal to touch, feed or entice wildlife in Nunavut. Contact the Government of Nunavut, Department of Environment, Wildlife Division for further information.

Grizzly bears are found on mainland Nunavut from the east coast of Hudson Bay across the barrens. You should take the same safety precautions in these parts of Nunavut as you would in any bear country. For general grizzly bear safety information, contact the Government of Northwest Territories Resources, Wildlife and Economic Development Department. For Nunavut Parks specific grizzly bear information, contact the Nunavut Department of Environment, Parks and Conservation Areas or Wildlife Division.

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Muskoxen, particularly if they are lone bulls, have been known to charge and gore people when threatened. Walrus and whales can be aggressive and can easily capsize a boat. Rabies is present throughout Nunavut, especially in foxes but also in wolves. Birds and wildlife will scavenge food, garbage and caches that are not secure.

The Nunavut Parks website (see resource list) also provides safety tips for travel in polar bear country.

5.4.6 Minimizing impact of hiking and other means of travel on the land

Adapted from: Carol Patterson. *The Business of Ecotourism*, Second Edition. Kalahari Management, Inc. Explorers Guide Publishing, Rhinelander, Wisconsin, 2002, Chapter 3: The Eco in Ecotourism.

Where the tourism activity involves travelling ‘on the land’ it is important to decide upon the routes to be taken and the destination, according to where the least damage is likely to occur. If trails have already been used and ‘hardened’ and if facilities exist along an established trail then visitors should adhere to the trail. In remote or ‘pristine’ areas, activities should be spread out so as not to *create* vegetation-bare areas and hardened trails. In any case, stops, cooking and camping should make use of durable surfaces such as gravel. Spring travel on the Arctic sea ice somewhat solves this problem.

Minimum Impact Travel [Provided by Nunavut Parks] - ARCTIC AREAS

http://www.nunavutparks.com/visitors_centre/safety.cfm#travel

Plants and animals in the Arctic are very vulnerable to human disturbance because of the harsh climate and short growing season. Ensure that your impacts on the land are minimized. Practice the following:

- Respect wildlife and wildlife habitat. Do not approach wildlife for any reason, including photographs. Avoid nesting, calving and denning areas. Many Arctic birds are ground nesters, so watch for bird nests and chicks.
- Leave rocks, plants and other natural objects, such as skulls and antlers, as you find them. Not only does collecting spoil the experience for others but you may be breaking laws.
- Do not build cairns, markers, or leave messages in the dirt. These can be potentially misleading and dangerous for other visitors. Do not disturb or destroy any cairns that you do find, as some are of great historical significance.
- Do not camp on, or remove any rocks from any features that look like archaeological sites. Archaeological sites are important cultural resources that tell us about life in Nunavut over thousands of years.
- Travel and camp on durable surfaces where your signs will be minimal, especially for base camps or if you are traveling in a group.

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- Avoid camping near sensitive vegetated areas. Do not dig trenches around tents or build rock windbreaks. If you do use rocks to secure your tent, return them to their original location before you leave.
- Use a camp stove to cook. Vegetation should not be used for fires. Stove fuel must be bought locally due to dangerous goods transport laws.
- Come well supplied with food, particularly specialized products like dried or dehydrated food. Bring food in plastic bags instead of cans, bottles or foil. Carefully measure your meals to minimize leftovers that may attract wildlife. Avoid foods with strong odours.
- Pack out all of your garbage including food scraps and packaging. Do not burn packaging as lingering food odours may become attractants to bears. Pick up any spilled food from your cooking and eating areas. Pick up litter left by others and report any large accumulations to parks staff.
- Avoid using soap. If you must use soap, use biodegradable soap. Waste water should be deposited at least 100 meters away from campsites and water bodies.

Polar Sea, Pond Inlet, Nunavut, Canada

During our spring trips (floe edge) we travel with our clients on the sea ice. At night, when we set up camp, we could choose to put our tents up on the land which would be warmer (or in any case, seem warmer to our clients). Instead we camp on the ice (and we provide good bedding for our guests). This means that once the ice melts in the summer there will be no trace of our ever having been there.

Note that camping on the ice *does not mean* you may leave waste and litter with the hopes it will sink when spring comes.

6. Minimization of transportation and related impacts

6.1 Learning Objectives

- Be able to identify the various modes of transportation involved in tourism and to evaluate their relative impacts on the environment;
- Be able to identify methods of reducing use of motorized transport;
- Be able to prepare a transportation policy and implementation plan for your business.

6.2 Suggested Training Method:

- **Guided Group Discussion:** Pro's and Con's for your region: Snowmobiles (2-stroke; 4-stroke engines) versus dog teams – environmental concerns, cost concerns, safety concerns.
- **Individual Project or Group Discussion:** How can you reduce the motorized transportation of your business? (e.g. lead town walking tours where possible instead of driving tours). There are many suggestions that could be made depending on the type of business.
- **Guided Group Discussion:** What do you think is *necessary* motorized transport and what is not? Are there alternatives?
- **Group work or discussion:** How can you work with other businesses and the community to reduce motorized transport? (i.e. by making it more efficient. For example, collect guests at the airport together with other businesses instead of everybody driving themselves. Discuss the car pooling concept of larger cities and whether these are approaches that could be applied in your community or operation.)
- **Individual Project:** Calculate the investment and its potential pay-off time if you would employ cleaner technology, e.g. 4-stroke in snowmobiles.

6.3 Training Resources

Refer to the resources provided for Topics Three, Four and Five, many of which will include sections on transportation, such as:

STIPANUK, David M. *Hospitality Facilities Management and Design*, Second Edition, Educational Institute, American Hotel & Lodging Association, Lansing, Michigan, 2002.

6.4 Commentary and ‘Good Practices’

Minimization of transportation and related impacts

David M. Stipanuk, comments regarding transportation and the tourism industry:

“The hospitality industry obviously would not exist without means of transport for customers, employees and supplies. The combustion of fuel by autos, buses, trucks, trains, planes and ships clearly contributes to emissions and air pollution. Building the infrastructure to meet transportation needs, such as roads, airports, and terminals, requires alterations to the landscape and contributes to environmental concerns...To help curb the emissions at the unit level, lodging operators can purchase fuel-efficient vehicles, consider powering these with clear fuels such as natural gas, and encourage car-pooling and public transportation by employees. Coordinating the ordering of supplies to help ensure a minimum number of deliveries and looking to purchase supplies produced locally can also help to reduce the environmental impact of transportation.”

Stipanuk, David M. *Hospitality Facilities Management and Design*, Second Edition, Educational Institute, American Hotel & Lodging Association, Lansing Michigan, 2002, p. 109.

Isle of Mull Wildlife Expeditions, Scotland

Quoted from *Greening Scottish Tourism: Ten Best Practice Case Studies*

When touring visitors, [David Woodhouse] takes people by Land Rover to well known viewing spots. He does not drive off-road to prevent impact to the landscape. Some visitors express an interest in driving off-road but he explains that to see wildlife it simply isn't necessary as everything can be accessed by road.

Kairosmaja, Pyhäa area, Lapland Finland

We do not use any motorized transportation when moving in nature. When we are in nature, we advise our customers not to leave any trash behind, but to bring it back with them. One example is that we use wooden sticks instead of plastic servers when possible and the guests bring their own dishes (cups) with them.

Polar Sea, Pond Inlet, Nunavut, Canada

On our floe edge trips I used to ask visitors if they would like to try driving a snowmobile. Many of our guests have never had the opportunity to do this. Then I heard that snowmobiles cause far more pollution than any car does. Since then we have kept snowmobile use to a minimum and there is no driving around just for the fun of it.

Ultimate Adventures of Grande Prairie, Canada has demonstrated leadership in ecotourism by developing comprehensive policies for all areas of its business. Shutting off the vehicle engines while waiting, parking only in parking lots and not on vegetation along roadways, and not using disposable coffee cups while travelling are examples. These policies are helpful in communicating what good tourism practices look like to guides and other staff members.

Quoted from: Carol Patterson. The Business of Ecotourism, Second Edition. Kalahari Management, Inc. Explorers Guide Publishing, Rhinelander, Wisconsin, 2002, page 31.

Luostola horsefarm, Finland

“Here in Lapland there are no ‘muddy seasons’ meaning that you can ride a horse pretty much all year long, when you choose drier places and do not cause damage. You can avoid causing a lot of damage by choosing and planning your routes. When the customers ask, why we use the same routes or paths, we tell them because it is better for the environment not to make new routes every time you ride a horse. Of course, we can have variation by changing the direction. And people accept this, they are even glad about it. Sometimes we go to a deep snowdrift. We avoid certain places, because the horse tramples quite heavily and the erosion happens during winters also. If we know that there is moss underneath the snow, we tell that. We also tell about other things in the nature like ant nests and we take those into account during winters too.”

259 Tips for a better environment profile in hotel and restaurant branch (Source: GRIP- the Norwegian foundation for Sustainable Production and Consumption)*

Traffic

- Have you worked out a strategy to reduce traffic that consumes the environment and transports employees, guests and products?
- Do you have an easy access to public transportation, like bikeways?
- Do you encourage employees to use public transportation instead of private motoring?
- Do you encourage employees to ride bicycles to work instead of driving cars?
- Do you encourage employees to use car-pooling if they must drive and they are from same place?

Transportation

- Have you started an initiative to reduce the amount of transportations with product deliveries?
- Do you organize shared transportations for different deliveries?
- Do you organize product deliveries together with other local subscribers?
- Do you ask that the trucks be turned off when they are loading and making a stop in the area?
- Do you take advantage of the local services when they are available?
- Do you buy locally made products when it is possible and economically viable?
- Do you choose products that can be recycled locally, when it is time to discard them?

***Full set of tips is provided in Appendix 1.**

(Source: Matkailuyrityksen ympäristöopas. Ympäristöä säästävän matkailun käsi- ja oppikirja)

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Transportation in tourism causes the most damage to the environment. Tourism requires that roads and railways, parking spaces and airports be built. Maintenance of these facilities consumes natural resources; salting of roads speeds rusting of cars and degrades the quality of ground water. Building transportation equipment consumes energy and natural resources. The use of transportation equipment creates noise and consumes fossil fuels which add carbon dioxide and pollution to the atmosphere... Driving one's own car creates more stress on the environment per person than does using the train or a bus although the airplane is the least ecological form of public transportation. Favoring public transportation is a significant part of nature conservation in tourism. Skiing centers in Lapland have arranged regular ski buses to the destinations and those who have bought a ski ticket get a free ride.

A Nunavut tourism operator in Kugluktuk offers sports hunts according to an established quota system. His point of view regarding tourism and transportation is:

Often people look on sport hunting as “consumptive” tourism (something of a pejorative term). In fact, we take only a few animals based on a quota system as determined by the local Hunters and Trappers Organization. In turn, we employ guides, cooks for several days, and pay them an excellent wage. In other operations we have seen – so-called non-consumptive tourism – you have only one bus driver taking out a bunch of people (low status job and only one job) for a few hours. What they leave behind are tire ruts which destroy the tundra for years to come. We believe we are more sustainable than some operators who call themselves “ecotourism”.

7. Monitoring Impacts

7.1 Learning Objectives

- To understand the concept of environmental monitoring and its importance to a sustainable tourism operation;
- To understand how to select indicators as part of your monitoring plan;
- To use the other Topics in Module 2 along with this Topic to complete an Environmental Plan for your business.

7.2 Suggested Training Method

- Review sections three to six which relate to waste management, energy use, and transportation. Select one or two ‘indicators’ that would be appropriate to your business.
- Identify organizations and authorities which carry out environmental monitoring activities in your area.
- **Guided Group Discussion:** What are the kinds of indicators that tourism companies can monitor? What impacts are better monitored by agencies such as national parks or national forests? In your region, in what ways could you assist federal agencies with monitoring (or should you)?

7.3 Training Resources

7.3.1 Print Materials

EAGLES, Paul F, Stephen F. McCool and Christopher D. Haynes. *Sustainable Tourism in Protected Areas: Guidelines for Planning and Management*, World Commission Protected Areas (WCPA) , IUCN – The World Conservation Union, Madrid, 2002, Chapter 11, Monitoring Tourism in Protected Areas.

PATTERSEN, Carol. *The Business of Ecotourism*, Second Edition. Kalahari Management, Inc. Explorers Guide Publishing, Rhinelander, Wisconsin, 2002, Chapter 3: The Eco in Ecotourism.

McARTHUR, Simon and Ray Ashton, “Monitoring and Evaluation”, in Hitesh Mehta, Ana L. Baez and Paul O’Loughlin. *International Ecotourism Guidelines*, The International Ecotourism Society, Burlington, Vermont, 2002, pp 157-169.

WATSON, Alan and David Cole. “ LAC Indicators: An Evaluation of Progress and List of Proposed Indicators, “*Ideas For Limits of Acceptable Change Process, Book Two*, Linda Merigilano, Ed U.S. Department of Agriculture; Forest Services; Recreation, Cultural Resources, and Wilderness management Staff, Washing D.C. 1991

7.4 Commentary and ‘Good Practices’

Monitoring Impacts

Read: Simon McArthur and Ray Ashton, “Monitoring and Evaluation”, in Hitesh Mehta, Ana L. Baez and Paul O’Loughlin. *International Ecotourism Guidelines*, The International Ecotourism Society, Burlington, Vermont, 2002, p. 159.

“Monitoring is intended to measure specific conditions of an area over time in order to recognize the occurrence of either harmful or desirable changes.”

* * *

Responsible tourism operators will want to monitor the impacts that their business is having on the local environment. These could cover a number of factors such as: unwanted development of hardened trails and overused campsites, or degraded existing trails, river water quality, condition of river banks, impact on local flora, sightings of wildlife, and so on. Alternatively, changed business operations could show improved conditions such as regrowth of vegetation, or increased numbers of a certain bird species. The physical (and social environment) in which a tourism business operates requires the selection of *indicators* to guide decisions regarding activities and to measure impacts. This is not an easy task – the components of any given environment can be extremely complex – and it is not expected that tourism operators are *necessarily* biologists or environmental scientists. Working with local organizations such as national parks or the forest service allows an operator to take advantage of professional expertise while assisting in the monitoring process. Whether on your own or in cooperation with an environmental agency it is important to know how to select effective indicators.

Quoted from: Carol Patterson. *The Business of Ecotourism, Second Edition.* Kalahari Management, Inc. Explorers Guide Publishing, Rhinelander, Wisconsin, 2002, Chapter 3: The Eco in Ecotourism. [excerpts]

“...It can be difficult to measure changes to physical and cultural environments. You must determine in advance which performance indicators relate to your business.

Although carrying capacity is often discussed, this concept becomes difficult to apply in the real world. Carrying capacity attempts to determine how many people an area can support before negative environmental impacts occur. In a complex ecosystem determining this number can be very difficult, at best. Information, baseline or other, on species and ecosystems may be incomplete. It may often be difficult to isolate the causes of environmental impacts.

... Instead of determining the number of people that can visit an area, [Limits of Acceptable Change] represents the setting of limits where an increase in visitation would indicate an unacceptable environmental decline. ... An individual operator will ... recognize that determining indicators of acceptable change may require a community or regional effort.

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It is necessary to examine the cumulative impact of all businesses in an area. Isolating impacts from tourism may be difficult but necessary. Selecting indicators that relate only to tourism impacts, such as trail condition or number of back country permits issued, help to determine what level and type of tourism is occurring and by using these, provide comparisons to overall environmental change in the community.”

Rid I Jorm, Sweden

If you are not educated in nature conservation you can start to co-operate with someone who is. It's also good to complement with different education and courses. For instance, we are cooperating with a school that includes its course on Mountain Ecology with us and from which we have learned a lot. Much of the information such as inventories of species of vegetation can be found at forestry companies and authorities.

Desirable Characteristics of Indicators

Adapted from: Alan Watson and David Cole. “LAC Indicators: An Evaluation of Progress and List of Proposed Indicators,” *Ideas For Limits of Acceptable Change Process, Book Two*, Linda Merigilano, Ed U.S. Department of Agriculture; Forest Services; Recreation, Cultural Resources, and Wilderness management Staff, Washing D.C. 1991.

- **Measurable** in some kind of units
- **Reliable** enough that different people, and repeated measures will be accurate
- **Cost-effective** requiring no more than simple equipment
- **Significant** enough to be worth measuring
- **Relevant** to changes resulting from human activities
- **Sensitive** resources that can provide early warning before extensive damage is done
- **Efficient** because they indicate several conditions
- **Responsive** to management measures

Snow Games, Finland

We have implemented a Quality, Safety and Environment- system in our company for 3 years. During that time, all the operative processes have been documented. Those process descriptions work as a guideline and are available for all the staff to study. The staff are also trained to use the operation models in their daily activities.

Measurements have been made in the consumption of oil and fuel. Different types of accidents have been monitored and they have been compared to the figures in the accounting reports. Previously, if the costs had been lower, the staff were awarded by giving them a bonus to the salary. Now customer surveys have been implemented – especially safaris lasting several days are evaluated. Oral feedback has also helped us to evaluate the service. If anything out of ordinary happens, for example accidents among the staff or customers during snowmobile safaris, they will always be dealt with.

Rid I Jorm, Sweden

The company Rid I Jorm arranges tour riding with Icelandic horses, cave expeditions and mountain hiking with packhorses.

“Our biggest impact on nature is the wearing from our horses. Currently there is very little knowledge about wearing of the ground and therefore we put in a lot of work in learning more about the impacts and sharing our knowledge. We are studying how clearly you can see the marks made on the ground and comparing how long it takes before they disappear on different kinds of vegetation. We then report everything to local authorities including a plan of action.

Nowadays we think about the nature’s restrictions [capacity] in the areas we are riding in and we ask ourselves these questions: How much can this ground bear? Is it best to ride side by side or is it better for the ground to ride in a row and by that create trails? And in that case, can other people use the trails? And can the ground recover from that? We know what vegetation we can ride on and we know which one we can’t ride on because the marks don’t go away.

We pass the knowledge to our guests because it’s important to explain what happens when we are riding in the sensitive mountain area. They are interested and they do care – they enjoy untouched nature and think it’s positive that we care about it.”

8. Environmental Planning

8.1 Learning Objectives

- Know how to evaluate (or have evaluated) the environmental limitations of the area in which your company operates (as these limitations relate to tourism);
- Identify especially sensitive areas that you use in order to modify behaviour or to avoid the area entirely (e.g. sensitive flora, limited wood fuel supplies, operating on permafrost);
- Understand the importance of environmental sustainability to your operation and to your region;
- Understand environmental issues related to tourism operations:
 - Fixed-Roof Facilities
 - Outdoor Activities;
- Understand the land-use planning process at both company and regional levels;
- Be able to prepare an Environmental Plan for your company.

8.2 Suggested Training Method

- **Guided Group Discussion:** How can environmental planning help you to make your business more successful?
- **Individual Project:** Use what you have learned in sections Three to Seven to prepare an Environmental Plan for your company. (Participants who are not business owners, could prepare a model Environmental Plan suitable to their region.) Include a monitoring component based on what you have learned from the previous section.
- **Guided Group Discussion:** What part would tourism play in a regional land-use planning project? What would be the concerns of tourism businesses? What would be the concerns of other parties to the land-use plan?

8.3 Training Resources

8.3.1 Print Materials

EAGLES, Paul F. J., Stephen F. McCool and Christopher D. Haynes. *Sustainable Tourism in Protected Areas: Guidelines for Planning and Management*, World Tourism Organization, 2002.

EAGLES, Paul F. J., Stephen F. McCool and Christopher D. Haynes. *Sustainable Tourism in Protected Areas: Guidelines for Planning and Management*, World Tourism Organization, Madrid, Spain, 2004.

HAWKINS, Donald E., Megan Epler Wood and Sam Bittman, Eds. *The Ecotourism Source Book for Planners and Developers*, The Ecotourism Society, Vermont, 1995.

LINDBERG, Kreg and Donald E. Hawkins, Eds. *Ecotourism: A Guide for Planners and Managers*, The Ecotourism Society, North Bennington, Vermont. 1993.

MEHTA, Hitesh, Ana L. Baez and Paul O’Loughlin. “Site Selection, Planning and Design”, *International Ecotourism Guidelines*, The International Ecotourism Society, Burlington, Vermont, 2002, pp 7 – 38.

PATTERSON, Carol. *The Business of Ecotourism*, Second Edition. Kalahari Management, Inc. Explorers Guide Publishing, Rhinelander, Wisconsin, 2002, Chapter 3: The Eco in Ecotourism.

STIPANUK, David M. *Hospitality Facilities Management and Design*, Second Edition, Educational Institute, American Hotel & Lodging Association, Lansing Michigan, 2002.

8.3.2 Wildlife Issues

HUMMEL, Monte, Ed. *Protecting Canada’s Endangered Spaces: An Owner’s Manual*, Key Porter Books, Toronto, 1995.

8.3.3 Websites:

For information on northern wildlife and wildlife issues:

<http://www.gov.nt.ca>

Then click “Land & Environment”; then “Wildlife & Fisheries”. Find “Wildlife” (top bar) or try “Canadian Wildlife Service”

Discover the World is a tour operator in the UK. They bring groups to all parts of the globe including most Arctic countries. To find their suggestions for Responsible Tourism:

<http://discover-the-world.co.uk>

then click on “Wildlife Encounters”; then Conservation on the top bar

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GRIP (Norwegian Foundation for Sustainable Development and Consumption). *GRIP Miljøledelse hotell – veien til ISO14001 og EMAS*. 1999. Can be ordered via www.grip.no (in Norwegian). English title: Environmental hotel management – the way towards ISO 14001 and EMAS.

GRIP (Norwegian Foundation for Sustainable Development and Consumption). *GRIP hotell – hvordan gjennomføre miljøprogram i små og store overnattingsbedrifter*. 2002. Can be ordered via www.grip.no (in Norwegian). English title: GRIP Hotel – how to implement an environmental program for small and large accommodation facilities.

GRIP (Norwegian Foundation for Sustainable Development and Consumption). *GRIP reisemål – hvordan jobbe frem en miljøprofil for hele reisemålet*. 1999. Can be ordered via www.grip.no (in Norwegian). English title: GRIP destination – how to develop an environmental profile for a tourism destination.

Environmental management systems:

EMAS (Eco-Management and Audit Scheme):

http://europa.eu.int/comm/environment/emas/index_en.htm

ISO 14001: www.iso14000.com

8.4 Commentary and ‘Good Practices’

Environmental Planning

Environmental planning is only one part of your overall Business Plan. Mainstream Training Programs in your area will teach you other aspects of a Business Plan. Here we will focus specifically on environmental issues.

Advice from Carol Patterson, quoted from *The Business of Ecotourism*.

“Putting the ‘eco’ in your tourism operation will require additional planning early, and monitoring and evaluation once your are operational. It may create additional start-up and operating costs that make it difficult to compete with other companies that bypass strict environmental responsibility. However, if tourism is to be sustainable, there will be a time when all tourism operates with environmentally-friendly business practices.”

Planning for Tourism Operations ‘On the Land’

Adapted from: Carol Patterson. *The Business of Ecotourism*, Second Edition. Kalahari Management, Inc. Explorers Guide Publishing, Rhinelander, Wisconsin, 2002, Chapter 3: The Eco in Ecotourism.

In designing tours, a number of factors need to be taken into account in the environmental plan. These include: the group sizes you will be working with, the number of trips planned per season and per destination, as well as defining your criteria for choosing the destination(s). The operational aspect of the environmental plan will cover the camping procedures, use of vehicles, kinds of foods and their packaging. Staff recruiting and environmental training is also important. Administration issues include plans for recycling systems and choice of suppliers (based on the suppliers’ environmental record). Where ecotourism businesses operate in national parks, there will be additional operational criteria.

Mountain Quest Adventure Company of Alberta outlines their policy for sustainability. “Our agenda is to have everyone leave with a high environmental conscience”.

- We follow ecotourism guidelines. We use local suppliers as much as possible for lunches, transportation and other supplies.
- We use local guides and support people as much as possible.
- We educate people about the park’s mission and mandate, and the importance of properly managing these special areas.
- We work with researchers and, on occasion, park employees, to help with program delivery and design.

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- We go to places that are away from the high human use.

Source: Pam Wight for the Canadian Tourism Commission. *Best Practices in Natural Heritage Collaborations: Parks and Outdoor Tourism Operators*, Ottawa, 2001, p. 71.

Putting it all together:

Hotel Pyhätunturi, Finland

“We have manuals for the staff. When we were involved in the YSMEK project, (a national environment project for tourism companies), we began the work by mapping out our present working methods. We bring a strategy to our staff and there are listed indicators for measuring sustainability. We have had concrete results from minimizing energy, water consumption and waste. We purchased new showers, which only let through 8 liters of water per minute compared to the old ones that let 21 liters. This can be seen in savings in warm water and it also saves oil that goes to the heating of the water. We produce district heating ourselves. With these investments we were able to save 30 % in the costs and in the water consumed.”

“As a compensation of water intake, we plant fish in the lake. We have an agreement currently with a fishery collective on planting fish.”

“Operating in an environmentally friendly manner, means small things such as using rechargeable ‘smart’ ski lift tickets. We have been able to reduce ticket waste from 100.000 to 30.000 compared to the old tickets. A lot of the things we do have become obvious to us although we don’t market that in the brochures. We print paper on an environmentally friendly paper, use eco toilet paper, etc.”

“Throwing trash into nature is almost like committing a crime. Because we have lived for a long time in the vicinity of the national park, we abide by the rules. We sort out paper, cardboard, glass and aluminum. During the YSMEK project, we agreed that the supplier takes all cardboard away. Generally speaking, waste amounts have reduced quite a lot. We have eliminated all disposable packages that we could. Before we make purchases, we already consider what products we want and what we will sell.”

Land Use Planning:

Tourism businesses may participate in regional land use planning with other businesses, residential recreational needs, and other economic sectors. Alternatively, tourism operators (such as hotels or resorts) may carry out land use planning focussed principally (although not exclusively) on their own operation – buildings and grounds.

Regional land-use plans take into account that all resources are limited – even in areas we perceive to be ‘wilderness’. In fact, competing economic activities such as prospecting, mining and forestry, along with tourism, frequently all take place in remote areas. Basically there are two options: either share the same resource area, or divide a region into designated sections where economic activities are specifically limited in each section to those which are deemed to be compatible. There are variations to these choices. For

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example, stands of trees may be left adjacent to roadways while logging is carried out behind the roadside trees and just out of sight. Certain activities may be separated seasonally – for example subsistence hunting can sometimes be separated both temporally as well as spatially from ecotourism programs. However, often these compromises meet with limited success.

Regional land-use planning projects can offer many benefits. Certainly the most obvious is to reduce or eradicate conflict over scarce resources. Additionally, participants become involved in conservation, evaluating resources from all points of view (consumptive versus non-consumptive activities) as well as gaining an understanding of competing sectors' reasoning and needs.

On a more limited scale, a business may be concerned with creating a land-use plan for its own activities to ensure compatibility with adjacent properties and nearby communities. This may be a formal agreement that a hotel or resort enters into with its neighbours, or an informal assessment that an operator makes of the area he/she uses in the business.

Either way, land-use planning is an important element in planning for sustainable tourism.

Quoted from:

David M. Stipanuk. *Hospitality Facilities Management and Design*, Second Edition, Educational Institute, American Hotel & Lodging Association, Lansing Michigan, 2002. [Agenda 21 for the Travel & Tourism Industry – Towards Environmentally Sustainable Development. WTTC, WTO, The Earth Council, 1997.]

- Assess the potential environmental, cultural, social and economic impacts of new developments and take measures to avoid negative impacts.
- Monitor the impacts of all new processes and procedures.
- Employ technologies and materials appropriate to local conditions in new developments and refurbishments
- Involve the local community in major development decisions
- Consider overall carrying capacity and resource restraints when developing new products.
- Work with other sectors to ensure balanced and complementary development patterns

Arctic Vision (Yukon & Alaska) talks about fixed-roof facilities:

“During their construction phase, Arctic Vision made every effort to disturb as little as possible of the natural setting. Any areas that had to be disturbed were returned to their natural state. We designed everything to blend with the park.”

Source: Pam Wight for the Canadian Tourism Commission, Best Practices in Natural Heritage Collaborations: Parks and Outdoor Tourism Operators, Ottawa, 2001, p. 68

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Appendix 1: 259 Tips for a better environment profile in hotel and restaurant branch (Source: GRIP- the Norwegian foundation for Sustainable Production and Consumption.)

ADMINISTRATION

Environment policy and leadership

- Does the company have a written and an oral environment policy?
- Does the employee have responsibility for environmental work?
- Have you shared the responsibilities and tasks that guarantee a continuous follow-up in environmental work in the company?

Learning

- Do all the employees have knowledge of the environment policy?
- Do the employees get a uniform orientation for the hotel's environmental activities and routines?

Internal communication

- Can the environment policy of the company be seen daily by the employees for example on the staff room wall in an announcement, on the table, washroom, and locker rooms?
- Are the employees kept in touch with the economic or environmental results of the environmental work?
- Is the staff included in consultations for finding new environment projects?
- Is the information about the waste sorting and chemical use in an easily understandable form to all employees?

Chemicals detrimental to health and hazardous for environment

- Are you aware what the chemical products that you use contain?
- Are all the chemicals described in a raw material list?
- Do you have good practices for the choice of products that are least detrimental and environmentally hazardous, if there is a need to use such chemicals?
- Have you gone through routines for discovering use of unnecessary chemicals?
- Do you have good practices for storing and using products that contain chemicals?

Energy

- Is the energy use in the company measured and registered regularly, thoroughly and per units?
- Have you gone through operations to discover use of unnecessary energy?
- Have you created an energy savings program?
- Do you purchase 'green energy'?

Waste

- Are you aware of your company's waste production: waste types, sources, amounts, costs and responsibilities?

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- Do you have the waste problem under control and do you oversee that it is properly dealt with?
- Have the operations for discovering unnecessary waste gone through?
- Do you have a plan for reducing the waste?

Water

- Are you aware of the hotel's total water consumption by units?
- Do you register separately the warm water usage of the hotel?
- Have you gone through operations to discover excessive water consumption?
- Have you worked out an action plan to reduce the water consumption?

Traffic

- Have you worked out a strategy to reduce traffic that consumes the environment and transports employees, guests and products?
- Do you have an easy access to public transportation, like bikeways?
- Do you encourage employees to use public transportation instead of private motoring?
- Do you encourage employees to ride bicycles to work instead of driving cars?
- Do you encourage employees to use car-pooling if they must drive and they are from same place?

Activities

- Do the activities and opportunities for relaxing strengthen the environmental profile of the hotel?
- Do you offer activities and experiences, which can attract the customers to stay a day longer?
- Have you given up on organizing motorized leisure activities?
- Do you cooperate with skillful tourist guides or do you provide organized trips with qualified guides?

Aesthetics And The Local Culture

- Do the decorations, arrangements and the menu reflect the local features?
- Are you satisfied with the company's public face, outdoor area and the image that it creates?
- Are you able to influence the municipality or other companies in the area to begin projects to improve the whole environmental profile?

Marketing And Sales

- Will the results from environmental work be constantly communicated to the customers for example annually together with the environmental report?
- Are the customers and guests made aware of attitudes that affect in the background for your participation in the environmental work?
- Are the guests advised to submit any ideas for good environmental actions?

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PURCHASES

Environmental policy and purchasing principles

- Does the company have a written purchasing policy that deals with the environment?
- Do you estimate environmental strain with every purchase?
- Do you set environmental requirements for all suppliers?
- With large deliveries do you favor suppliers that are either EMAS- registered or ISO 14001 certified?
- Do you choose eco labeled products when they are available?

Waste Reduction

Do you choose suppliers that offer spare parts and repairs?

- Do you choose products that can be repaired?
- Do you estimate sustainability with new purchases?
- Do you favor products that largely consist of recycled materials?
- Do you find out, if the products that you use are recyclable?
- Do you aim at buying as little as possible waste and packages with every purchase?
- Do you submit requests to suppliers to reduce or eliminate packaging?
- Do you buy many products that are in large packages instead of small ones?
- Do you avoid buying disposable packages?

Chemicals Detrimental To Health And Hazardous For Environment

- Do you avoid products that have to be dealt with as problem waste, if good options are available?
- Do you use a minimum amount of products that contain chemicals that are dangerous to the health and environment?
- Do you have practices to find out, whether new products include chemicals that cause them to be treated as problem waste?
- Do you choose working clothes for the staff that do not have to be treated chemically/dry cleaned?

Energy And Water

- Do you emphasize minimum usage of energy with every new equipment purchase for the hotel?
- Do you emphasize a minimum consumption of water with every new equipment purchase for the hotel?

Waste Management

- Are you aware of collection directions that ensure that products and packages can be recycled?
- If the products need packaging, will you choose a minimum amount of and best recyclable packages?
- If the products need to be packed, will you set requirements for the suppliers that they must take the packages with them?

Transportation

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- Have you started an initiative to reduce the amount of transportations with product deliveries?
- Do you organize shared transportations for different deliveries?
- Do you organize product deliveries together with other local subscribers?
- Do you ask the trucks to turn off the engine when they are loading and making a stop in the area?
- Do you take advantage of the local services when they are available?
- Do you buy locally made products when it is possible and economically viable?
- Do you choose products that can be recycled locally, when it is time to discard them?

RECEPTION, OFFICE AND MEETING ROOMS

- Are the company's environment policy and operations written in an information file and in other information material?
- Do you make information letters to the guests and customers, where the environment work of the company is also informed about?
- Do you inform the guests about how they can affect to a more environmentally friendly activity?
- Do you always print brochures and other information material on an eco- labeled domestic paper?
- Do you always choose eco labeled products, when they are available in the market?

Reduction Of Waste

- Do you always copy in two-sided, when it is possible?
- Do you attempt to take advantage of using e-mail?
- Have you chosen to subscribe to newspapers or magazines that are beneficial or necessary?
- Have you cancelled the advertisements that have no mailing address?
- Do you use the backside of the paper waste as a sketch paper, fax paper or in internal reports?
- Do you deliver the audiocassettes for a refill or recycling? A Swan labeled product exists.
- Do you use recycled paper?
- Do you avoid using plastic cups, glass and other disposable items in the reception and in offices?
- Have you given up on using disposable cups, glasses and teaspoons in meeting and conference rooms?
- Do you avoid using cover and portion packages for example with coffee milk, butter, lemon, and sugar?

Chemicals Detrimental To Health And Hazardous For Environment

- Are the overhead projector transparencies manufactured of PVC-free plastic and without chemicals that are hazardous to the environment and health?
- Are the whiteboard markers water-soluble and contain no hazardous chemicals that are listed by the authorities?

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Energy

- Do you have good practices on lighting regulation in meeting and conference rooms according to the needs?
- Do you guide the use of rooms in a way that you fill floors one by one with a low use rate?
- Do you use low energy lamps in offices and meeting rooms?

Waste Handling

- Has the waste sorting been organized in all the offices?
- Is it possible to sort out the waste according to their origin at least in 3 different categories?

Traffic

- Have you made arrangements that the guests can reduce the environment consuming traffic?
- Do you inform enough about the public transportation opportunities and more environmentally friendly means of transportation?
- Do you offer guests transportation, if they travel by using public transportation?
- Do you have videoconferencing opportunities?
- Are the souvenirs that you buy and sell forward domestic or near-produced?
- Do you rent bicycles from the hotel and do you inform about the renting opportunities nearby?

Activities

- Do you avoid organizing activities based on motorized transportation?
- Is a large part of your activity supply in the vicinity of the hotel so that the need for motorized transportation is reduced?
- Do you inform foreign guests who go in to the nature that the everyman's right also includes a duty to take the nature, flora, fauna and other users and private property into consideration?

RESTAURANT AND BAR**Communications and environment profile**

- Do all the waiters have good knowledge about the environment policy of the company so that they can answer the questions that the guests have about it?
- Do all the waiters have knowledge of ecological products on the menu and why is ecological food so good for the environment and health?
- Do all the waiters have knowledge of the vegetarian food on the menu and that it is a part of the company's environment profile?
- Do waiters receive information on how the main food ingredients are produced in all the courses?
- Do all have knowledge on why locally produced raw materials and food courses is an important environmental act?
- Are both the menu and the wine list printed on eco-paper?
- Are the paper products, like napkins and clothes made of eco-paper?
- Do you re-use cocktail sticks in the drinks?

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Waste reduction

- Have you changed the disposable products where they can be replaced by glass, wood, porcelain and hard plastic?
- Chemicals Detrimental To Health And Hazardous For Environment
- Do you use only unwhitened filters in coffee makers?

Energy

- Do you have routines for ensuring that lighting will be regulated according to the needs?
- Do you have practices to ensure that heating in the facilities/meeting spaces can be regulated?
- Do you turn off the coffee makers and plug out the contacts when they are not in use?
- Do you have routines to check that the seals are properly attached in refrigerators and warming cupboards?

Water

- Do you check that the water taps are not unnecessarily open and water running?

KITCHEN**Raw materials**

- Have you gone through the menu by thinking of ways how to better use the raw materials?
- Do you always have ecological food on the menu, breakfast and lunch? 121. Do you aim at increasing the use of ecologically produced food ingredients?
- Have you tried to offer a menu of fully ecologically produced ingredients with single events?
- Do you always have at least one vegetarian meal on the menu?
- Do you use as little as possible ready or semi-finished food products?
- Do you use as much as possible the products of the season (fruits, vegetables, fish and game)?
- Do you use domestic fruits and vegetables instead of exotic, imported ones?
- Do you use as much as possible locally produced raw materials?
- If the chain contracts prevent you from buying certain raw materials locally have you tried to do something about it?
- Do you take into consideration the local food tradition during the tourist peak season end search for local options to imported, international foods?

Waste reduction

- Do you choose raw materials that are least packaged?
- Have you given up on all portion packages?
- Do you buy products that you use much in larger packages instead of small ones?

Water

- Do you check that there is no water running in the kitchen?

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DISHES AND CLEANING

The use and release of chemicals detrimental to health and environment

- Do you use only detergents that are eco labeled, when they are available on the market?
- Do you avoid using detergents containing chemicals that are on the authorities' top 20 list of the most detrimental agents?
- Have you given up on using unnecessary chemicals?
- Do you have practices for correct measuring of cleaning detergents?
- Do you have practices for correct measuring of machine detergents?
- Do you use electromagnetic washing cards in washing machines?
- Are the HMS- cards for detergents made in the language of users?
- Are the HMS- cards easily available to all the users?
- Do you collect HMS-cards in a register and update it regularly?

Energy

Are the washing machines always full, when they are in use?

Waste Handling

- Do you sort out the waste from the kitchen and restaurant at least by the community guidelines and deliver the waste in to recycling or second use?
- Do you deliver the food remains for the animals?
- Do you compost the organic waste from the restaurant?
- Do you sort the fat from washing machines and deliver that to the environment stations?
- Are the fat containers collected and emptied from washing machines regularly?

HOTEL SECTION

- Guest rooms, public rooms, and staff rooms

Reducing waste

- Do you avoid using plastic cups and other disposable articles in the rooms?
- Do you have shampoo dispensers in the showers?
- Do you have soap dispensers in the showers?
- Do you have shampoo dispensers in the toilets and bathrooms?
- If you use small soaps, are they without plastic and paper packaging?
- Do you avoid disposable or portion packages and glass in the bathroom wares, if there are other options available?
- Do you always use environmentally labeled toilet paper?
- Do you have an alternative for paper towels in hand washing?

Chemicals Detrimental To Health And Hazardous For Environment

- Do you let guests decide, when the towels are changed?
- Do you use fragrances in toilets and bathrooms and are they environmentally hazardous?

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Energy

- Do you control the use of electricity in rooms by key cards?
- Is the room temperature lowered in the guest rooms that are not in use?
- Can the heating of rooms and air conditioning be controlled independently?
- Do the electrical heaters work with thermostats?
- Can the TV appliances be entirely turned off or be put in rest position, when they are not in use?
- Do you use economy bulbs in all rooms?

Water

- Do you have good practices for supervising the water taps and toilets?

Waste Handling

- Is the waste sortment in guest rooms and meeting rooms arranged in at least 3 categories: paper, food/organic and plastic waste?
- Is the information about waste sortment easy to understand for foreign guests also?

SANITATION AND CLEANING**Environment policy and sanitation routines**

- Do you have a sanitation plan that observes also the immediate surroundings?
- Do you set environmental regulations to external cleaning and sanitation services, if you use any?
- Do you use only eco labeled washing and cleaning products?
- Do you have practices for maximal utilization of washing machines?

The use and reduction of chemicals detrimental to health and environment

- Do you have systems and repairing measures for accurate portioning of all the washing and cleaning agents?
- Have you removed all unnecessary chemicals?
- Have avoided using washing and cleaning agents that are on the authorities' list of most hazardous agents for the environment?
- Do you use micro fiber cloths for dusting and window cleaning?
- Do you use micro fiber mops for the floors and other large surfaces?
- Do you use sanitation equipment that run by steam?
- Are all the vacuum cleaners equipped with extra micro filters to reduce the amount of dust?
- Does the Laundromat use electro magnetic wash cards in machines?
- Are the HMS- guidelines for users in a language that they understand? Are they also easily accessible for everyone?
- Are the guidelines collected in the register and updated regularly?

Energy

- Do the washing routines ensure a minimal energy use?

Water

- Do the washing routines ensure a minimal water use?

Module 2: Operates in an Environmentally Responsible Manner

USE AND MAINTENANCE

Indoor

- Chemicals detrimental to health and hazardous for the environment
- Have you updated a general overview on what products contain chemicals that are detrimental to health and hazardous for environment and which of them have to be handled as problem waste?
- Do you follow routines in disposal and use of chemicals that are detrimental to health and hazardous for environment?
- Do you deliver fluorescent and energy lamps in the problem waste reception?
- Do you have a conception, if there are PCB- concentrated parts in fluorescent lamps before 1980?
- Do you deliver the remnants of the paint, lacquer, waste oil, and plant protective agents to a special reception?
- Is the pool equipped with an automatic chemical dispenser?
- Do you use an option that is more environmentally friendly chlorine for pool sanitation?

Energy/ lighting

- Have you gone through the hotel lighting to check if the amount, time, place and strength of light sources are in right relation to use?
- Do you switch fluorescent lamps in to economy lamps as soon as it is necessary? Remember that economy lamps are special waste!

Energy/ heating, cooling and ventilation

- The indoor temperature thermostat-driven in all rooms?
- Is the room temperature lowered at night?
- Have you moved the radiators from behind couches and other large objects?
- Are the windows and doors well insulated with seals?
- Are the seal lists in refrigerators, freezers, ovens and warming cupboards?
- Is there a regular maintenance for cooling devices?
- Are the condensers in refrigerators and freezers cleansed regularly?
- Do you have a thermometer in refrigerators and freezers that ensures a right temperature?
- Do you have a system to get the heat back from the cooling equipment?
- Do you have practices for the maintenance of airing equipment?
- Do you have systems to get the heat back from airing equipment?
- Does the frontage have sun protection for a lesser need of cooling during the summer?
- Is the oil-fired heating equipment cleansed every month?
- Do you have an extra insulation for pipes, ventilators and pumps in older boiler rooms?
- Do you drop the water temperature at night?
- Have you got systems for reuse of heat from the wastewater?

Energy / relaxation

- Do you have a conception of when during the day are the pool and sauna used?

Module 2: Operates in an Environmentally Responsible Manner

- Is the sauna equipped with a timer?

Waste handling

- Do you store and handle problem waste properly and deliver that to special waste reception?
- Do you sort out waste at least by the community guidelines and deliver the waste in to recycling or second use?
- Do you give away or sell usable items that others could use instead of throwing them away?
- Are you aware of what types of waste exists a local collection place?

Water

- Do all the showers and water taps have a water saving adjustments in place?
- Do you have water taps that save water?
- Do you have toilet seats that flush a little?
- Do you fix dripping taps immediately?
- Do you have a 'dead man's button' in public space water taps? (Water goes on automatically after a certain amount of time)

USE AND MAINTENANCE

Outdoor spaces

- Chemicals detrimental to health and hazardous for environment
- Do you avoid spraying solutions that are detrimental to health and hazardous for environment in hotel yard or lawn?
- Do you grit the icy roads with sand instead of salt?

Energy

- Do you avoid heating the outdoor spaces?
- Is the outdoor lighting adjusted according to the needs? Right place, right time and right power?
- Do you have energy saving lamps in outdoor lighting?
- Have you installed photocells that are guided by movement and light, for regulating the outdoor lighting where it is necessary?
- Do you set the outdoor pool in a way that the water holds the heat better, when the pool is not in use?

Waste handling

- Do you compost the green waste from the garden and kitchen?
- Are there enough waste bins outside? Are they in right places?

Aesthetics and immediate surroundings/ environment

- Is the use of signs adapted to the buildings and the environment?
- Are the signs and other information outside made out of environmentally friendly material?
- Can the garbage bins and containers made look nicer?
- Are the outdoor areas taken care of daily and kept free of garbage?

Module 2: Operates in an Environmentally Responsible Manner

- Have you chosen plantations that are fit for northern climate?
- Do the parking places look good?

Cars and machines

- 242. Do the cars and machines in the hotel use bio fuel?
- Do you use electric cars?
- Do you think of environmental consequences in buying the agents for treatment of cars?

MAINTENANCE AND BUILDING

Environmental management

- Do you repair and keep up the maintenance in any case?
- Do you set environmental requirements to rented construction companies, pointers etc.? HMS- regulations are the minimum requirement.
- Do you require environmental documentation from all new material deliverers?
- Do you choose as natural materials as possible in re-construction and replacement?
- Do you support the northern trees instead of subtropical species?

Chemicals detrimental to health and hazardous for environment

- Are you aware of what products contain chemicals that are detrimental to health and hazardous for environment?
- Have you reduced the use of chemicals in to a minimum?
- Do you use least environmentally hazardous chemicals that are available for the object of use?
- Do you deliver the problem waste for example glue, lacquer, and paint in to an approved place of collection?
- Do you avoid using PVC- plastic covered floor cover and wallpaper?

Waste reduction

- Do you choose re-usable products?
- Do you set requirements for product deliverers to take away the packages?

Waste handling

- Do you deliver the demolition remnants in to recycling?
- Do you deliver demolition remnants in to local burning establishment?

Transportation

- Do you choose products that are produced locally as much as possible?

Appendix 2: Characteristics of Arctic Tourism

<i>Characteristics of Arctic Tourism</i>		
Environment and Climate		
CHARACTERISTICS	IMPACTS	TRAINING NEEDS
Highly seasonal, extreme weather	Short season, limited revenue generating season	Value-added for increased revenue
Weather undependable, sometimes life-threatening	Special clothing and equipment	Programming to mitigate delays/cancellations
Location remote	Limited access to healthcare, emergency response	High level of training in first aid, emergency / contingency plans; risk management plan
Ground conditions (permafrost NO)	Affects construction and operation of facilities	Low impact infrastructure; technical knowledge of waste management and minimizing.
Slow growing flora, environment delicate	Land quickly damaged, but slow to recover	Use of vehicles; no trace camping; alternate transportation
Fauna unique but often widely spread	Wildlife viewing may be seasonal, not always easy to find	Programming with hard-to-find wildlife (<i>e.g. know habits, habitat of wildlife; alternate activities related to wildlife; provide guests with realistic expectations; program not solely based on viewing one type of wildlife</i>)
	Often stressed by excessive human activity	Recognizing signs of stress; establishing wildlife viewing guidelines
Working on and around sub-zero waters	Hypothermia can set in within a few minutes for people falling overboard, overturned boats, etc.	Superior safety equipment, survival suites (Kakivak is doing research on this area)
Infrastructure		
CHARACTERISTICS	IMPACTS	TRAINING NEEDS
Many communities remote	High construction costs	Providing high quality service to justify high cost of tourism products
Transportation links may be limited	Public transportation expensive, sometimes infrequent, limited options	Learning to program according to airline schedules, fall-back programs
Community infrastructure	Accommodations limited	Providing quality service in

Module 2: Operates in an Environmentally Responsible Manner

may be limited	and sometimes substandard (not corresponding to high-end clientele)	simple facilities; operators working with local accommodations providers
Costs of building and maintaining infrastructure high	Forces high cost tourism products	Options such as B&B's, hospitality meals / meals with local residents
Limited local building material	Infrastructure materials virtually all imported	Learning about environmentally friendly alternatives
Environmentally friendly products not available and not widely accepted		Educating local population; creative construction solutions
Communications problems in remote areas	Interruptions in (esp. electronic) communications	Training in electronic communications
	Missed business opportunities	Training in back-up communication plans
Socio-Economics		
CHARACTERISTICS	IMPACTS	TRAINING NEEDS
Most Arctic areas are remote areas of developed countries	Have higher expectations regarding income than under-developed countries	Service levels must be high to justify high-cost products; visitor expectations
Populations more sparse than in southern areas	Large labour force may not be available	Benefits to communities besides jobs
Educational levels on average lower than urban areas	Business and tourism skills often lacking	Doing business in the Arctic; Resources available; Marketing the Arctic; Branding AST
Limited access to training / educational facilities (and trainers)	Training programs are costly and challenging to design / deliver; training facilities/infrastructure limited	Development of varied training mechanisms / "road-shows"
Cost of living / cost of doing business high	Passed on through pricing of products	Pricing (relating pricing to product/ actual costs)
Culture		
CHARACTERISTICS	IMPACTS	TRAINING NEEDS
Usually differs significantly from urban areas	Requires cross-cultural sensitivity by trainers, tourism operators and visitor education	Cross-cultural training for operators and cultural learning for visitors
Local languages and dialects different from mainstream	Local operators may have difficulty communicating with international travellers	Language training, tourism terms
May have different world view	Misunderstandings may occur between visitors, local operators and local residents	Communication between tourism business and other residents

Module 2: Operates in an Environmentally Responsible Manner

Closer relationship with the land	Visitors need to learn new inter-action with the land; operators need to respect the land	Promoting mutual respect between visitors and residents
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Appendix 3 Training Tips

Each Topic in this module lists suggested training methods. Experienced trainers will have their own inventory of training methods they have used in the past. The choice of workshop delivery styles will, of course, be dependent upon a number of factors, including:

- Age of participants
- Educational level
- Linguistic skills
- Experience in the tourism industry
- Homogeneity of the group
- Tourism sector represented
- What part of the Arctic the participants are in (trees? roads? towns? tundra?)
- and perhaps even gender of the group

The following are suggested workshop/training techniques. It is hoped that trainers will share their ideas and experiences so that additional training methods may be included in the SMART Trainers' Manuals.

- Individual Projects, including research projects
- Guided Group Discussions
- Debate over a controversial issue
- Brainstorming session
- Break-out groups
- Guest presenters
- Role Play
- Case Studies
- Field Trips
- Video resources
- Using visual resources (such as murals or posters) to generate discussion, interpretation, or role plays
- Panel of presenters
- Demonstrations (trainers or participants)
- Games
- Hand-outs, pre-course study materials

Appendix 4 Outline Energy Sources Today (M.B.)

This outline has a North American orientation. Trainers may wish to create their own outline more appropriate to European businesses.

- 1. Coal**
- 2. Oil**
- 3. Natural Gas**
- 4. Nuclear**
- 5. Hydro**
- 6. Solar**
- 7. Wind**
- 8. Biomass**

(Outline does not follow this order.)



Fossil Fuels – Coal

ENVIRONMENTAL ISSUES

- Coal creates CO₂ emissions twice that of natural gas and a third more than petroleum for the same amount of energy produced, making it a leading contributor to greenhouse gas build-up.¹
- Coal mining devastates the land; coal-burning utilities acidify lakes, poison our water with mercury, provoke asthma attacks and kill thousands each year through coal-related illnesses.²

COAL TODAY

- Coal is widely distributed and abundant – more than 200 years of reserves.³
- Some devices – *precipitators and scrubbers* – can filter out some pollutants (but not reduce CO₂ emissions).⁴
- *Fluidized-bed* combustion (burning coal in a suspended stream of air) can increase efficiency.⁵
- China relies heavily on coal to meet its energy needs.⁶

COAL IN THE FUTURE

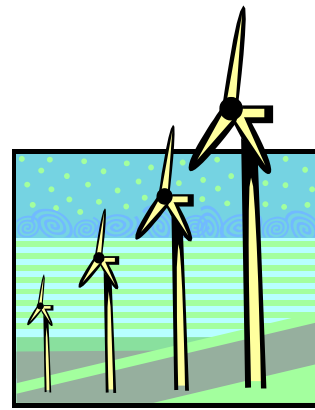
- “Permanent” carbon sequestration (disposing of CO₂ emissions) in oil wells, abandoned coal mines, salt formations, the deep ocean, may be possible but still present many challenges.
- In 2003, Bush administration announced *Future Gen* – an advanced facility that includes coal gasification, production of electricity through fuel cells, and sequestration of 90% of carbon emissions. (Will it overcome the challenges?)⁷
- Ontario is planning to shut down the province’s five coal-fired plants by 2007.⁸ The U.S. plans to build 24 coal-fired plants by 2008.⁹

IMPORTANT TO KNOW

- Replacing one incandescent light bulb with a compact fluorescent lamp will save nearly a quarter ton of coal over its lifetime.¹⁰
- The Ontario Medical Association reported in 2000 that coal combustion caused \$10 billion in health-related costs as well as 1,900 premature deaths in Ontario annually.¹¹

Sources for slide “Fossil Fuels - Coal:

1. Barbara Freeze, *Coal: A Human History*, Perseus Publishing, Cambridge, MA, 2003, p. 184.
2. Robert F. Kennedy Jr., *Crimes Against Nature*, Harper Perennial, New York, 2005, p. 191.
3. John H. Gibbons, *et al.*, “Strategies for Energy Use”, *Managing Planet Earth*, Readings from *Scientific America Magazine*, W.H. Freeman and Company, New York, 1990, p. 88.
4. 4. *ibid.* , 5. *ibid.* p. 90.
5. Freeze, p. 238.
6. Walter H. Corson, Ed., *The Global Ecology Handbook*, Washington, D.C. Global Tomorrow Coalition, 1990, p. 194.
7. James Gustave Speth, *Red Sky at Morning: America and the Crisis of the Global Environment*, Yale Nota Bene, New Haven, 2005, p. 68.
8. Danylo Hawaleshka, “Power Hungry”, *Maclean’s*, Vol.118, No. 9, Rogers Media Inc., Toronto, February 28, 2005, p. 22.
9. *ibid.*, p. 23.
10. Michael Parfit, “Future Power: Where will the world get its next energy fix?” *National Geographic*, Vol 208, No. 2, Washington, DC, August 2005, p. 6.
11. Elaine Dewar, “Nuclear Resurrection”, *Canadian Geographic*, May-June 2005, p 76.



WIND ENERGY

ENVIRONMENTAL ISSUES

- Wind farms are thought noisy, and eyesores by some; and as spoiling the view, when built off-shore.¹
- Large wind farms are a hazard to certain migratory birds.²
- According to critics, wind the farm equivalent to a 1,000 megawatt fossil fuel or nuclear plant would occupy 2,000 square miles of land – only enough energy for the needs of 100,000 homes.³

WIND ENERGY TODAY

- Wind energy rates at the top in ‘sustainability’ but there are problems with reliability – the wind doesn’t necessarily blow when you need it.
- Although Canada ought to have enormous wind energy potential, less than 1% of the country’s energy output comes from wind.⁴
- Lowering costs, concern for global warming, and (in some countries) government policies have made wind energy second only to solar in growth rate. Wind power is now cheaper than natural gas.⁵
- 72% of global wind energy capacity is in Europe.⁶ Wind turbines in Germany, the largest wind energy nation, produce the equivalent of 10 – 1,000 megawatt nuclear power plants.⁷
- Today’s wind turbines run quieter and are not as much of hazard to birds as early machines.⁸

WIND ENERGY IN THE FUTURE

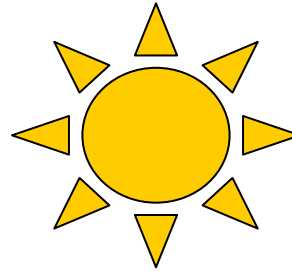
- As more wind energy facilities join the grid, more options will be available for days where the wind doesn’t blow in certain areas.
- Continually lowering costs means that wind will eventually compete with that of coal.⁹
- There are plans to build the largest land-based wind farm in the world in Iowa.¹⁰

IMPORTANT TO KNOW

- Twelve wind turbines in Alberta replace the equivalent of 26,000 tonnes of CO₂ emissions annually.¹¹
- Overall, the U.S. is home to enough usable wind resources to supply all the electricity the nation needs.¹²

Sources for slide “Wind Energy”

1. Michael Parfit, "Future Power: Where will the world get its next energy fix?" *National Geographic*, Vol 208, No. 2, Washington, DC, August 2005, p. 10.
2. Larry Taylor, Pres. Of NSP Electric, quoting National Audubon Society in NOVA-FRONTLINE. *What's Up with the Weather?* PBS (written, produced and directed by Jon Palfreman), 2000. [video]
3. Ronald Bailey, *Global Warming and Other Eco-Myths*, Prima Publishing, Roseville, California, 2002, p. 253.
4. Danylo Hawaleshka, "Power Hungry", *Maclean's*, Vol.118, No. 9, Rogers Media Inc., Toronto, February 28, 2005, p. 23.
5. Janet Sawin, "Global Wind Growth Continues", in Linda Stark, Ed. *Vital Signs 2005: The Trends That are Shaping our Future*, (Worldwatch Institute), W.W. Norton & Company, New York, 2005, p. 34.
6. *ibid.*
7. James Gustave Speth, *Red Sky at Morning: America and the Crisis of the Global Environment*, Yale Nota Bene, New Haven, 2005, p. 66.
8. *ibid.*
9. Janet Sawin, p. 34.
10. James Gustave Speth, p. 66.
11. Danylo Hawaleshka, p. 23
12. James Gustave Speth, p. 66.



SOLAR ENERGY

ENVIRONMENTAL ISSUES

- While solar energy is the *ultimate* renewable energy resource, some critics claim that a global solar energy system would extend over 500,000 square miles of land and would use 20% of the world's iron reserves.¹
- The sun isn't always shining and is often least available at times of greatest need (such as winter).²

SOLAR ENERGY TODAY

- Solar energy is the fastest growing energy source but provides less than 1% of global demand.³
- Japan leads in photovoltaic production; Europe is a large producer; U.S. lags.⁴

Solar Photovoltaic

- Sunlight strikes a cell containing semiconductor material (silicon) creating a direct current. Cells are grouped as *grids, modules or arrays*.⁵
- Of primary use in rural areas where electricity from power lines is not available (e.g. remote signals, country homes).
- A primary source of energy for watches, calculators and satellites.
- Plastic solar cells made of flexible film could be less expensive and easier to install than today's panels but capture only 6% of the sun's energy.⁶

Solar Thermal

- Passive systems heat water in a collector which rises to replace cold water in the tank above; active systems pump water through collectors and back to a tank.⁷
- Large mirrored 'bowls' or reflectors can concentrate the sun's rays to heat liquids to very high levels.⁸

SOLAR ENERGY IN THE FUTURE

- An emerging concept – 'quantum dots' (nanometer-sized crystals) are so small they could be painted onto a surface; they capture a broad spectrum of wavelengths. Invented by Ted Sargent, University of Toronto.⁹

IMPORTANT TO KNOW

- Home solar water heating systems will pay for themselves in as little as four years due to savings in fuel costs.¹⁰

Sources for slide “Solar Energy”

1. Ronald Bailey, *Global Warming and Other Eco-Myths*, Prima Publishing, Roseville, California, 2002, p. 253.
2. Brett Hoover (Sunray Energy Inc.) in NOVA-FRONTLINE. *What's Up with the Weather?* PBS (written, produced and directed by Jon Palfreman), 2000. [video]
3. Janet Sawin , “Global Wind Growth Continues”, in Linda, Stark, Ed., *Vital Signs 2005: The Trends That are Shaping our Future*, (Worldwatch Institute), W.W. Norton & Company, New York, 2005, p. 34.
4. Janet Sawin , “Solar Energy Markets Booming”, in Linda, Stark, Ed., *Vital Signs 2005: The Trends That are Shaping our Future*, (Worldwatch Institute), W.W. Norton & Company, New York, 2005, p. 36.
5. Louis Peck, “Whatever Happened to Solar”, *Garbage Magazine*, Gloucester, MA, January-February, 1991. Reprinted in *Global Environmental Change: Course Anthology Reader*, Athabasca University, p. 191.
6. Dashka Slater, “Earth’s Innovators”, *Sierra*, Sierra Club, San Francisco, July-August, 2005, p. 39.
7. Louis Peck, p. 192.
8. Walter H. Corson, Ed., *The Global Ecology Handbook*, Washington, D.C. Global Tomorrow Coalition, 1990, p. 197.
9. Dashka Slater, p. 39.
10. Janet Sawin, “Solar Energy Markets Booming”, p. 36.



FOSSIL FUELS – NATURAL GAS

ENVIRONMENTAL ISSUES

- Natural gas, like other fossil fuels contributes to air pollution and global warming but at significantly lower rates than either petroleum or coal.¹
- And natural gas produces virtually no sulphur dioxide emissions; nitrogen oxides about one-third of a coal-fired operation.²

NATURAL GAS TODAY

- Natural gas supplies approximately 20% of all commercial energy.³
- Use of natural gas continues to grow impressively.⁴
- The cleanest of the fossil fuels, natural gas is suitable for domestic needs such as cooking.⁵
- Hydrogen as a fuel emits only water and small amounts of nitrous oxide – but producing hydrogen requires energy – 99% from fossil fuels. The most efficient and most common method is by treating natural gas with steam.⁶

NATURAL GAS IN THE FUTURE

- Supporters predict a 34% increase in natural gas from 2000 to 2015; largest growth will be in power generation.⁷
- More efficient electric equipment, energy reducing architectural design and better insulation in buildings will reduce per person consumption of fossil fuels in use.
- Clean fuel, hydrogen, will be produced by using renewal sources such as sun and wind to split water into hydrogen and oxygen (electrolysis).⁸

IMPORTANT TO KNOW

Since natural gas is a much cleaner burning fuel than coal or oil, it could bridge the gap between the “carbon-rich present and a de-carbonized future” – although it will still be difficult for natural gas alone compensate for current use of coal.⁹

Sources for slide 'Natural Gas'

1. World Commission on Environment and Development, "Energy: Choices for Environment and Development", *Our Common Future*, Oxford University Press, 1987. Reprinted in *Global Environmental Change: Course Anthology Reader*, Athabasca University, p. 199.
2. Ronald Bailey, *Global Warming and Other Eco-Myths*, Prima Publishing, Roseville, California, 2002, p. 257.
3. John H. Gibbons, et al., "Strategies for Energy Use", *Managing Planet Earth*, Readings from *Scientific America Magazine*, W.H. Freeman and Company, New York, 1990, p. 88.
4. Christopher Flavin, "Fossil Fuel Use Surges", in Linda Stark, Ed., *Vital Signs 2005: The Trends That are Shaping our Future*, (Worldwatch Institute), W.W. Norton & Company, New York, 2005, p. 31.
5. World Commission, p. 200
6. Robert Bailey, p. 257.
7. *ibid*,
8. *ibid*, quoting Seth Dunn of Worldwatch, p. 262.
9. Barbara Freeze, *Coal: A Human History*, Perseus Publishing, Cambridge, MA, 2003, p. 240.



FOSSIL FUELS – OIL

ENVIRONMENTAL ISSUES

- Oil combustion causes acid rain damaging forests, waters and crops. It contributes to global warming.¹
- Oil tanker spills continue to be an enormous environmental threat
- According to many geologists oil discoveries have not kept up with oil use.²

OIL TODAY

- Use of oil grew by 3.4% 2004, the most impressive rate in 16 years.³
- In industrialized countries, petroleum is indispensable particularly in transportation – but transportation affects almost all other economic sectors
- In 2004 China and U.S. drive fossil fuel markets; created almost half the increased demand in oil.⁴
- Numbers of cars rising rapidly; oil is in large demand for industry and power generation.⁵
- Automobiles are major producers of smog threatening health worldwide
- Improvements in vehicle efficiency has been cancelled out by more and larger vehicles on the road.
- Now 531 million cars on the road worldwide , heavily concentrated in America and Europe. ⁶

OIL IN THE FUTURE

- Difficult to predict the effect of spiralling gasoline costs of mid-2005. Untapped tar sands and oil shale depend on price of oil and may become more economic.
- More efficient electric equipment, energy reducing agricultural design and better insulation in buildings will reduce per person consumption of fossil fuels in use.
- Exploding world populations and burgeoning economies in countries such as India and China will likely counteract energy savings in the industrialized world.⁷
- 2005 hybrid car sales (internal combustion engine + electrical motor) 200,000 – continued doubling of sales predicted – perhaps 1 million hybrids on us roads as early as 2007.⁸

IMPORTANT TO KNOW

- In 2004 5 U.S. vehicles on the road drove the equivalent of 14,308 roundtrips from earth to the sun.⁹
- Increasing 1 mpg would double the oil that could ever be extracted from the Arctic National Wildlife Refuge.¹⁰
- Increasing 2.6 mpg would provide more oil than that from combined imports from Iraq and Kuwait.¹¹

Sources for slide “Oil”

1. John H. Gibbons, *et al.*, “Strategies for Energy Use”, *Managing Planet Earth*, Readings from *Scientific America Magazine*, W.H. Freeman and Company, New York, 1990, p. 85.
2. Christopher Flavin, “Fossil Fuel Use Surges” in STARK, Linda, Ed. *Vital Signs 2005: The Trends That are Shaping our Future*, (Worldwatch Institute), W.W. Norton & Company, New York, 2005, 30.
3. *ibid.*
4. *ibid*
5. *ibid*
6. Michael Renner, “Vehicle Production Sets New Record”, in STARK, Linda, Ed. *Vital Signs 2005: The Trends That are Shaping our Future*, (Worldwatch Institute), W.W. Norton & Company, New York, 2005, p. 56.
7. John B. Heywood, Sloan Automotive Laboratory, MIT in NOVA-FRONTLINE. *What’s Up with the Weather?* PBS (written, produced and directed by Jon Palfreman), 2000. [video]
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9. *ibid*
10. Robert F. Kennedy Jr. *Crimes Against Nature*, Harper Perennial, New York, 2005, p. 107.
11. *ibid*, p. 108.

HDRYO POWER

ENVIRONMENTAL ISSUES

- Dam building causes destruction of ecosystems
- Flooding populated (often aboriginal) areas
- Health risks (rotting underwater vegetation, snail fever)¹
- Barrier to fish migrations (especially salmon)
- Risk of dam failure causing catastrophic flooding



HYDRO POWER TODAY

- Growth rate for hydro amongst primary energy production 7% (1999)²
- Currently most renewable energy comes from hydro power (85% of renewables in electricity generation in 2000).³

HYDRO POWER IN THE FUTURE

- In 2020, (predict non-renewable skeptics) hydro power will still be 74% of renewables electricity generation and will remain the major economical renewable energy source for the foreseeable future.⁴
- Remaining potential for hydro-development worldwide is huge,⁵ but in developed countries most good locations for major hydroelectric dams are already used up.⁶
- Future of hydroelectric dams is in small-scale projects, in developing countries.

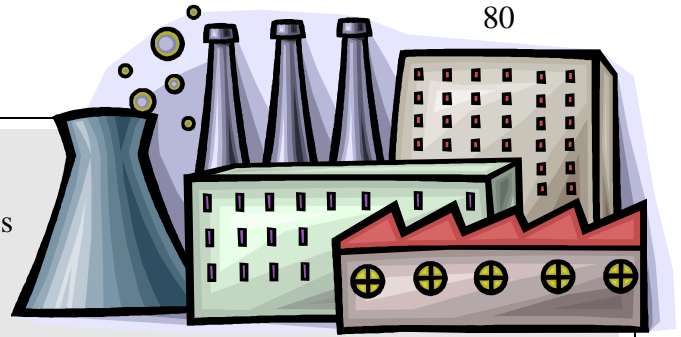
INTERESTING TO KNOW

By 1985, 86,000 small hydro plants were in operation in China.⁷

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1. WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, “Energy: Choices for Environment and Development”, *Our Common Future*, Oxford University Press, 1987. Reprinted in *Global Environmental Change: Course Anthology Reader*, Athabasca University, p. 211.
2. Ronald Bailey, *Global Warming and Other Eco-Myths*, Prima Publishing, Roseville, California, 2002, p 251.
3. *ibid*, p. 252.
4. *ibid*. p.252 and p. 255.
5. World Commission on Environment and Development, p. 210.
6. Barbara Freeze, *Coal: A Human History*, Perseus Publishing, Cambridge, MA, 2003, p. 240.
7. Walter H. Corson, Ed., *The Global Ecology Handbook*, Washington, D.C. Global Tomorrow Coalition, 1990, p. 197.

NUCLEAR ENERGY



ENVIRONMENTAL ISSUES

- A great deal of energy is expended in the process of mining and concentrating uranium 235.¹
- Spent fuel rods from fission reactors are highly radio-active; concerns regarding future waste disposal.
- No radioactive decay waste results from fusion reactions but exposed materials become radioactive
- Danger of human error (as Chernobyl incident)
- Danger of terrorist action.
- Nuclear reactors do not emit carbon dioxide (greenhouse gas)

NUCLEAR ENERGY TODAY

- Readily accessible uranium will last only about 50 years.²
- China and India have ambitious plans for additional nuclear reactors; use of nuclear power in France, Spain; no new reactors in U.S. in more than 30 years.³
- Japan has suffered a number of accidents at their nuclear plants.⁴
- Atomic Energy of Canada claims that its newest line of CANDU reactors are among world's top performers.⁵

NUCLEAR ENERGY IN THE FUTURE

- Breeder reactors can generate more fuel than is consumed but plutonium which is produced is a nuclear arms threat.⁶
- Complex process to use nuclear fusion (ultra-high temperatures and almost uncontrollable plasma) – expected decades away and billions of dollars in development.⁷

IMPORTANT TO THINK ABOUT

- “In 1987 U.S. nuclear power plants reported nearly 3,000 mishaps and at least 430 emergency shutdowns, and 104,000 incidents in which workers were exposed to measurable doses of radiation...”⁸
- A 2002 Sierra Club study claims that with conservation and improvements in energy efficiency (already marketable) Canada could eliminate use of nuclear and coal-based energy and still meet Kyoto Protocol criteria.⁹
- Atomic Energy of Canada's nuclear program has produced 40,000 tonnes of high-level nuclear waste to date, which will remain toxic for a million years.¹⁰

1. Charles D. Aldrich, *Global Environmental Change: The Scientific Social Issues*, Course Guide, University of Maryland University College, 1994, p. 48.
2. Michael Parfit, "Future Power: Where will the world get its next energy fix?" *National Geographic*, Vol 208, No. 2, Washington, DC, August 2005, p. 26.
3. Nicholas Lenssen in Linda Stark, Ed., *Vital Signs 2005: The Trends That are Shaping our Future*, (Worldwatch Institute), W.W. Norton & Company, New York, 2005, p. 32.
4. Michael Parfit, p. 26.
5. Matthew Little, "Nuclear Renaissance Threatens Canada's Green Future: Environmentalists", *The Epoch Times*, Epoch Times International, August 26 – September 1, 2005, p. A3.
6. Michael Parfit, p. 26.
7. *ibid.* p. 29
8. Walter H. Corson, Ed. *The Global Ecology Handbook*, Washington, D.C. Global Tomorrow Coalition, 1990, p. 196.
9. Matthew Little, p. A3.
10. Elaine Dewar, "Nuclear Resurrection", *Canadian Geographic*, May-June 2005, p 73 & p. 84.

BIOMASS ENERGY

ENVIRONMENTAL ISSUES

- Reduces fertility of land by removing essential nutrients.¹
- Has stripped large areas of trees – especially in developing countries.²
- Can use large areas of land; much less efficient per square foot of land than solar.³
- Inhaled pesticide residues create a hazard when agricultural wastes are burned.⁴
- Generally burns cleaner than fossil fuel.⁵



BIOMASS ENERGY TODAY

- Wood has been the biofuel used throughout history but it was predicted that by 2000, 2.4 billion people would live in areas of fuelwood scarcity.⁶
- Urban solid waste can be a moderate, economical energy source but requires separation of garbage and control of emissions.⁷
- Today's important biofuels are ethanol, biogas, biodiesel.⁸
- Other sources of biomass energy include: animal dung, vegetable oils, pulp and paper waste.⁹
- Sucarcane provides 30% of automobile fuel in Brazil (14 billion liters of ethanol annually). U.S. uses corn-distilled ethanol for 2% of its transportation fuel.¹⁰

BIOMASS ENERGY IN THE FUTURE

- Biomass energy shows greatest potential in tropical/subtropical developing areas. (longer growing seasons; lower production costs).¹¹
- Growth of biofuels depends upon reducing cost.¹²
- Supportive policies could mean world biofuels production of 120 billion liters by 2020.¹³

INTERESTING TO KNOW

- To fulfill all of earth's energy needs through biomass energy would use 10% of the earth's surface – the amount that is currently required for all of the world's agriculture.¹⁴
- Iogen (based in Canada) is world leader in cellulose ethanol technology. Plans for new plants could quadruple the supply.¹⁵

Sources for slide "Biomass Energy"

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1. Walter H. Corson, Ed., *The Global Ecology Handbook*, Washington, D.C. Global Tomorrow Coalition, 1990, p. 199.
2. *ibid.*.
3. Michael, Parfit, "Future Power: Where will the world get its next energy fix?" *National Geographic*, Vol. 208, No. 2, Washington, DC, August 2005, p. 22.
4. WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, "Energy: Choices for Environment and Development", *Our Common Future*, Oxford University Press, 1987. Reprinted in *Global Environmental Change: Course Anthology Reader*, Athabasca University, p. 211.
5. Molly Aeck in Linda Stark, Ed., *Vital Signs 2005: The Trends That are Shaping our Future*, (Worldwatch Institute), W.W. Norton & Company, New York, 2005, p. 38.
6. World Commission , p. 197.
7. GIBBONS, John H. Gibbons, *et al.*, "Strategies for Energy Use", *Managing Planet Earth*, Readings from *Scientific America Magazine*, W.H. Freeman and Company, New York, 1990, p. 89.
8. Michael Parfit, p. 22.
9. Walter H. Corson, p 198; Molly Aeck, p. 38
10. Molly Aeck, p. 38.
11. *ibid*
12. *ibid*
13. *ibid.*
14. NOVA-FRONTLINE. *What's Up with the Weather?* PBS (written, produced and directed by Jon Palfreman), 2000. [video]
15. Molly Aeck, p. 38.

ENERGY USE AND THE ENVIRONMENT

Like other economic sectors, tourism is a consumer of energy – in fact, a substantial consumer – from the small campfire enjoyed by a group out tenting in the woods to the massive jumbo-jets and opulent cruise ships circling the globe. Luxury tourism resorts, business hotels, and environmentally-conscious ecolodges constantly make choices regarding the kinds of energy they will use and what controls they will put on that use. Electricity that serves our cities and our industries is generated through the use of coal-fired or oil turbines, hydro-power, nuclear plants, solar and wind energy and a variety of other sources. Heating, cooling, lighting, and other energy needs may be met by public utilities or produced through private means. For us who live in the northern regions, the luxury of almost constant daylight during the summer months is countered by long, dark winters where substantial energy is devoted to heating our buildings and lighting our homes. While some northern communities are small, remote and have few choices available, other northern locations such as Anchorage, Helsinki or Stockholm, offer a range of responsible alternatives.

The main purpose here is to review the kinds of energy in use today, ideally to encourage wise choices by awakening an interest in renewable energy sources.

A significant challenge one encounters in researching energy alternatives is the rapidity with which circumstances and technologies change. In the 1990s, the cost of renewables was often cited as a deterrent. Brett Hoover of Sunray Energy Inc., (2000) commented that the neighbouring coal-fired system was able to produce energy 365 days a year at one-quarter of the cost of Sunray's solar plant.¹ Writing about solar energy in 2005, Janet Sawin of Worldwatch was able to claim that: "Technical advances, scale economies in production, and experience installing systems have led to significant cost

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reductions. ...Globally, module costs have dropped from about \$35 in 1975 to close to \$3 per watt.”² How transportation and the tourism industry will be affected by the unanticipated, skyrocketing fuel costs of summer 2005 is difficult to predict.

Additionally, it is important to evaluate who is providing the information; what their interests are, and in what way the information is being presented. Biomass fuels might be derived from a number of sources (many of them waste). They vary in applicability from one part of the world to another, and are normally expected to be only one component of energy generation even amongst renewable energy advocates.³ Marty Hoffert, of New York University, however, presents this unlikely scenario. If all the energy the world uses now (10 trillion watts) were secured from biomass (say, barley), then 10% of the earth’s land area would be required – the amount used for all agriculture today.⁴

The three energy sources known as fossil fuels are coal, oil, and natural gas. Coal fuelled the Industrial Revolution but, producing 1.3 times the CO₂ emissions of oil and twice the CO₂ emissions of natural gas, it is a major source of greenhouse gases (related to global warming).⁵ Other additional environmental problems, such as acidification of lakes, can be charged against coal, still the largest supplier of electricity.⁶

Oil, of particular importance to global transportation (and therefore tourism), is also a producer of CO₂. Oil tankers plying our oceans continue to present the danger of oil spills. Automobiles are the major source of health-endangering smog. A new car (2000) sends 2,200 lbs of carbon into the energy while a new SUV doubles that amount to 4,400 lbs per year.⁷ Use of oil is still growing, and as developing countries acquire the luxuries of the developed world, CO₂ emissions could explode. Nevertheless, ‘hybrid’

cars, which combine internal combustion engines with electrical motors, and alternative fuel vehicles are making gradual but important inroads.⁸

Of the fossil fuels, natural gas is at least the best choice for home heating and cooking. While natural gas emits CO₂, it produces virtually no sulphur dioxide emissions and nitrogen oxide production is much less than that of coal.⁹ Production of hydrogen for fuel is energy-consuming but hydrogen itself emits only water. Currently the most efficient method of deriving hydrogen comes from treating natural gas with steam.¹⁰ Supporters of natural gas point out that this is the fossil fuel which may be capable of bridging the change from today's heavy dependence on carbon fuels to a "decarbonized" future.¹¹

Nuclear energy (fission), which has been opposed by many, particularly after incidents such as the explosion in the Chernobyl nuclear plant, is still being considered by those in the industry, as a means of reducing fossil fuel use. Nuclear plants emit no CO₂, however, they present other kinds of dangers such as long-lived, highly radioactive waste, and danger of both terrorism activities and human error. Since the readily available reserves of uranium are currently estimated at only about 50 years, other kinds of nuclear plants are being considered.¹² Breeder reactors generate more fuel than they consume but since plutonium is one of the products, they are considered a nuclear arms threat.¹³ Nuclear fusion reactors (which solve the supply and waste issues) require extremely complex processes that may not be available for decades, and then at a great developmental cost.¹⁴

Hydropower is one of the "renewables" but it has long drawn criticism for its destruction of ecosystems, and the problems hydroelectric dams have caused by blocking fish migrations (particularly the salmon of the Pacific Northwest). Hydropower is

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nevertheless expected to grow even though many of the best locations in the developed world are already occupied. Supporters believe that the future of hydroelectricity will be with small plants in developing countries.¹⁵

Solar power has been called the ‘ultimate’ renewable energy source. Unfortunately, however, critics point out, the sun doesn’t shine all the time and solar grids require large areas of land.¹⁶ Although solar is the fastest growing energy source it still provides less than 1% of global demand.¹⁷ Still, solar energy (via photovoltaic cells) is ideal for use in remote areas (e.g. railway signals), for houses not connected to the public grid, for small devices such as calculators, and for satellites. Solar thermal systems enjoy widespread use in heating water. New technologies in solar energy are constantly emerging and no doubt will make this energy source less expensive and more efficient in the future.¹⁸

Like solar, wind is not always available. Complaints about wind farms include: noise, spoiling the view, and presenting a hazard for migratory birds.¹⁹ Still, wind turbines are being improved to counter these complaints. Supporters point out that as more wind energy facilities join the grid, energy can be derived from different areas according to the wind resources available at any given time.²⁰

Biomass energy is mankind’s oldest source of energy – and small woodfuel fires continue to be used in many parts of the world to the extent of stripping large areas of trees, and denuding hillsides with the environmental problems that creates. Today, biomass energy is usually thought of as being derived from sugarcane, vegetable oils, pulp and paper waste, urban solid waste, and animal dung.²¹ Some of these sources, such as forest or agricultural waste are blamed for reducing land fertility by removing essential nutrients, and for emitting pesticide residues when agricultural wastes are burned.²²

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Apparently, there is no such thing as the ‘perfect’ energy source although some fuels appear to present far less significant hazards than others. For the time being at least, solutions seems to lie in combining energy sources to the best advantage, and more importantly, reducing energy use. Hotel chains have, for some time now, been espousing energy conservation along with other “green” practices. For example, Fairmont Hotels & Resorts’ *The Green Partnership Guide: A Practical Guide to Greening Your Hotel* outlines numerous suggestions for cutting energy use and cost such as refitting all appropriate lighting from incandescent to compact fluorescent bulbs.²³ Kirk J. Iwanowski in Donald E. Hawkins, Megan Epler Wood and Sam Bittman, Eds, in *The Ecolodge Sourcebook for planners and Developers* suggest having properties undergo an energy audit as well as developing an energy conservation plan. Hotel staff should be trained in energy conservation by means of both workshops and incentive programs. Other suggestions include analyzing price and energy consumption records.²⁴ For our northern properties, energy conservation also means adequate insulation and proper window fittings.

When the problems of energy and greenhouse gas emissions seem so enormous it is easy to forget that even small actions have impact. Making toast for breakfast puts 20 pounds of carbon into the atmosphere each year.²⁵ However, collectively, even modest changes will have notable effect. Replacing one incandescent light bulb with a compact fluorescent lamp will save nearly a quarter ton of coal over its lifetime.²⁶

The following is an example of a small business which is doing its part to make a difference. (Loch Ossian Youth Hostel, Scotland)

The hostel generates all of its own electricity via small 2.2 KW wind turbine. [It] creates enough energy for the hostel [including] lights, fire alarm and the two pumps – one for the central heating and the other for the grey water filtration system. The energy created by the wind turbine is stored in 12 x 2 volt batteries

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which stores a 24 volt charge which will keep the hostel running for seven to 10 days if there is no wind.

The grey water filtration system works by capturing all of the water from the wash hand basins and sinks into a holding tank which drains through a sieve to separate solids, such as food scraps, which are cleaned and used in the composting. From the holding tank the water is pumped up to a fabricated soil bed through which the water drains through smaller and smaller particle sizes to filter clean the water. The water trickles through to the reed bed where it is taken up into the plant roots.

The dry toilet system works through ventilation which aerates the toilets, providing oxygen to process wastes which are broken down by biological decomposition which in turn is facilitated by organic compost. A small photovoltaic panel positioned on the side of the toilet building powers the ventilation fan.²⁷

For the tourism industry, a great deal of information is available on energy conservation. Tourism operators need to take the responsibility of keeping themselves up-to-date on new technologies as they become available and of promoting energy conservation among both staff and guests.

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Appendix 5 The Natural History of Northern Finland

The climate of Lapland is typically continental, with four distinct seasons – although Laplanders also recognize a fifth season, *kaamos*, meaning ‘winter twilight’. Winters are cold and snowy, and summers are warm due to the effect of the Gulf Stream.

Lapland’s landscape is distinct from other parts of Finland. The flat shoreline along the Gulf of Bothnia soon gives way to inland wooded hills and the lush Tornio River Valley. Central forests mingle with swampy areas, while fells and tundra are typical of the far north. The treeline runs through the region of sparse vegetation bordering Sweden and Norway known as “the arm of Finland”.

Most of Finland is covered by boreal forest (taiga) – largely coniferous species such as Scots pine and spruce, but also including hardwoods such as the mountain birch. Fell and dwarf birch occur farther north. Arctic areas of Lapland abound in berries, heather and delicate flowers such as the mountain avens. The beautiful Lapland rhododendron is seen in the northwest.

The most common fauna are the reindeer (domesticated caribou) of which there are some 200,000 in Finnish Lapland. Found in swampy areas during spring and summer, reindeer move to the spruce forests in the fall, and then graze the lichen and moss of pine forests during winter. There are about 6,500 reindeer owners/herdsmen.

Lapland is home to many bird species, of which meadow pipits, wheatears, willow warblers, golden plovers, snow buntings, willow grouse and Siberian jay are some of those most frequently seen. The water ouzel, woodpeckers, sandpipers, ruffs, cranes, and geese are also common. Important raptors are the eagle (the largest population in Finland) and the rough-legged buzzard.

According to “public right of access”, Finns may use private lands (on a temporary basis) for activities such as berry picking or mushroom collecting. Fishing is governed by national regulations and landowner’s permission.

More information on northern Finland may be found on the following websites:

www.laplandfinland.com

www.ymparisto.fi

<http://www.ymparisto.fi/download.asp?contentid=25603&lan=en>

<http://www oulu.fi/northnature/english/englanti/lumal.html>