

Sustainability

What does it really mean?

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Common Definitions

- ✦ **Sustainability**, in a general sense, is the capacity to maintain a certain process or state indefinitely.
- ✦ **Sustainability** seeks to maintain a constant supply of a given resource or set of resources which are of value to humans.
- ✦ As applied to the human community, sustainability has been expressed as meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Brundtland, G. H. (ed.), 1987. *Our common future: The World Commission on Environment and Development*, Oxford, Oxford University Press.

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Sustainability concept has a long history in America

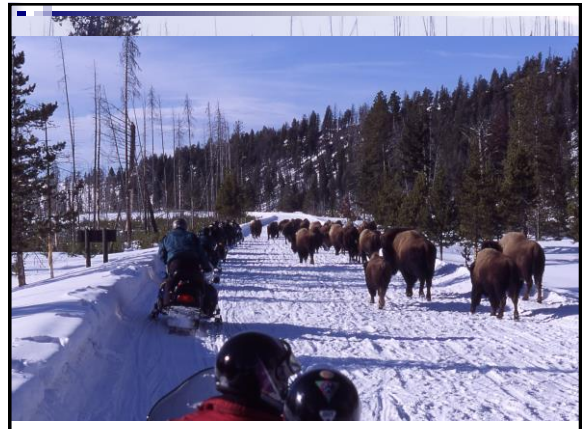
- 1872 Yellowstone National Park Act:

"... to conserve the scenery & the natural & historic objects & the wildlife therein & to provide for the enjoyment of the same in such manner & by such means as will leave them unimpaired for the enjoyment of future generations."



"...meeting the needs of the present without compromising the ability of future generations to meet their own needs." *Our common future*

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Historic Focus -- Using resources

- Sustained yield of a biological resource (forests or fish)
- Maintaining a constant supply of a given resource or set of resources which are of value to humans (coal, fish, irrigation water, timber...)
- Carrying Capacity: the levels of use of a resource (e.g. number of cattle that can be grazed on a given meadow) that can be maintained over a period of time

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Historic Focus – Recognizing Complexity

- Maintain the supply of a single resource (hardwoods, range, elk, sturgeon)
 - Keeping *exploitation* levels below *regeneration* levels
- Maintain a group of related resources (lake fisheries, waterfowl & wetlands, rangelands)
- Maintain the viability of all the complex systems which support society (the *ecological, social & economic* systems of our world)

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Historic Focus – Economic Growth

- Debate over limits to growth in 1970s
- Questioning the ability of the earth to sustain unlimited economic growth!
- Are we polluting our own nest?
- What about equity & environmental justice?
- Are we merely shifting the economic & ecological burden overseas?

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Historic Focus – Values & Equity

- Economic growth vs. Ecological stability?
- Which receives priority?
- What about social systems? (protecting neighborhoods, ethnic diversity, lifestyles—logging, ranching, mining, farming, hunting?)
- Urban vs. rural? Upper class vs. lower class? Indigenous vs. Colonizers? Immigrants vs. “Local” people? “Old timers” vs “Newbies”



Evolving Concepts

- “A sustainable society is one that can persist over generations, one that is far-seeing enough, flexible enough, and wise enough not to undermine either its physical or its social systems of support.”
- It's the integrated nature of the components which support society & ultimately ensure sustainability.
- It's holistic, not just a matter of taking care of any one of the cultural, social, economic or ecological components, it's an “ecosphere” approach.



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Ethical Considerations

- An ethical stance extends our moral obligations to future generations.
- *“We should pass on to our children an adequate supply of natural capital which they will need to live adequately. . .”*
- ***“But not at the expense of minority, underprivileged or indigenous people.”***

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Temporal Considerations

- “Much planning takes place at too short a temporal scale.”
- How far into the future should we sustain things? (5 years? 50 years? 500 years?)
- Who decides?
- Decisions we **MAKE** today, or **DON'T MAKE**, can affect the condition of human & natural resources 100 or more years from now!



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A More Holistic Approach

- “We cannot simply choose between a healthy economy or a healthy environment for the two are inextricably linked and, ultimately, we cannot have one without the other.” (Young 1991: 32)



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Eight Fundamental Questions Must Always Be Asked

- 1. What is being sustained?
- 2. For whom are we sustaining it?
- 3. For how long are we sustaining it?
- 4. Why sustain it?

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Eight Fundamental Questions

- 5. What are the appropriate indicators of sustainability?
- 6. Who are the key institutional players?
- 7. Who is responsible for sustaining it?
- 8. What are the consequences of sustainability?

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1. What is being sustained?

- Are we talking about sustaining:
 - the ecology of the defined protected area,
 - the benefits which flow from or are encompassed in the area,
 - the management structure of the area,
 - the jobs created by managing the area, or
 - the people who visit the area?

Or Jobs for UI graduates!

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2. For whom are we sustaining it?

- Are we sustaining *protected areas* for the use of all people alive (intra-generational equity) and those yet unborn (inter-generational equity)?
- Or are they being sustained for a smaller subset (e.g. scientists, timber industry, conservationist, or the economically privileged)?
- The ecosphere perspective would suggest the broader interpretation is more appropriate.

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3. For how long are we sustaining it?

- We need to make our time assumptions explicit. "Forever" is not really a viable answer because all human & natural systems undergo change. And change is natural.
- So pick a reasonable target

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4. Why sustain it?

- We need to understand the values attributed to different outputs which are perceived as being sustained.
- Traditional responses: to preserve biodiversity, to ensure a clean constant water supply, to provide for tourism which will supply hard currency, because we have an ethical responsibility to do so, or because people like diverse natural landscapes.
- From an ecosphere approach, protected areas should be sustained because of their role as one of the essential cogs which make up the larger ecosystem.

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5. What are the appropriate indicators of sustainability?

- How will we know that our efforts to sustain protected areas are successful?
- By measuring key indicators which may include things such as:
 - level of species diversity,
 - presence & relative condition of key wildlife populations,
 - water quality (turbidity, temp. O₂, etc.),
 - attitudes of local people towards the protected area,
 - the level of satisfaction of visitors

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6. Who are the key institutional players?

- Will the local people, political, cultural and governmental structures be supportive? Will more distant regional, national or international corporations or politics become a factor? Who is likely to be supportive of our vision of sustainability and who will resist and why?
- *“If you ignore these players it won’t be sustainable.”*

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7. Who is responsible for sustaining it?

- An ecosphere approach would require knowing who is taking responsibility for seeing that sustainability is achieved.
- To be successful we must get as broad a commitment to implementing sustainability as is possible.



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8. What are the consequences of sustainability?

- The ecosphere approach to sustainability requires that we give equal emphasis to ensuring the resiliency of the cultural, social, economic and ecological components.
- We need to understand the consequences of potential trade-offs (or of failure).

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2008 Environmental Performance Index

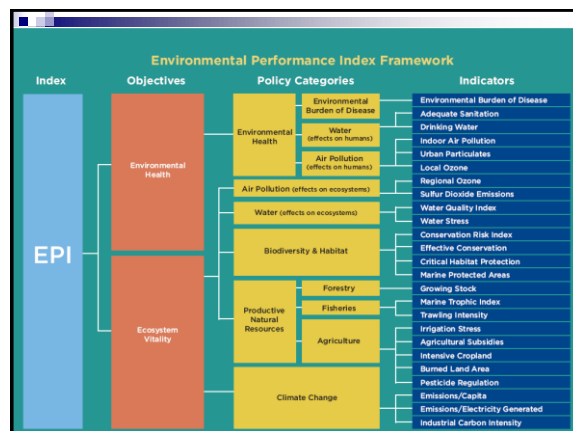
Summary for Policymakers

Full report and additional materials available at: <http://epi.yale.edu>

- It's not a yes or no
- Combine multiple measurements
 - An INDEX for comparisons

<http://epi.yale.edu>

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| Sub-Saharan Africa | Mid East & N. Africa | Americas | European Union | Asia and Pacific |
|---------------------------|---------------------------|-----------------------|------------------------|--------------------------|
| 1 Mauritius 701 | 1 Israel 79.0 | 1 Costa Rica 90.0 | 1 Switzerland 95.5 | 1 New Zealand 89.9 |
| 2 Gabon 713 | 2 Uganda 79.2 | 2 Colombia 88.3 | 2 Sweden 93.1 | 2 Jordan 84.0 |
| 3 Ghana 708 | 3 Tunisia 78.1 | 3 Canada 86.6 | 3 Norway 93.1 | 3 Malaysia 84.0 |
| 4 Namibia 70.0 | 4 Armenia 77.8 | 4 Ecuador 84.4 | 4 Finland 92.4 | 4 Taiwan 80.8 |
| 5 Congo 69.7 | 5 Algeria 77.0 | 5 Chile 84.4 | 5 Austria 89.6 | 5 Australia 79.5 |
| 6 Zimbabwe 69.3 | 6 Iran 76.9 | 6 Panama 83.1 | 6 Latvia 89.6 | 6 Sri Lanka 80.9 |
| 7 Nigeria 69.0 | 7 Jordan 76.3 | 7 Dominican Rep. 82.7 | 7 France 87.8 | 7 South Korea 79.5 |
| 8 South Africa 68.6 | 8 Brazil 76.2 | 8 Brazil 82.9 | 8 Iceland 87.6 | 8 Iceland 79.2 |
| 9 Botswana 68.7 | 9 Turkey 75.9 | 9 Uruguay 82.3 | 9 Germany 86.5 | 9 Philippines 77.9 |
| 10 Cote d'Ivoire 65.2 | 10 Saudi Arabia 75.8 | 10 Luxembourg 82.0 | 10 United Kingdom 86.2 | 10 Viet Nam 77.9 |
| 11 Tanzania 65.0 | 11 Morocco 72.1 | 11 United States 81.0 | 11 Slovenia 86.3 | 11 Nepal 77.1 |
| 12 Cameroon 62.8 | 12 Lebanon 70.8 | 12 Venezuela 80.0 | 12 Lithuania 86.2 | 12 Fiji 69.0 |
| 13 Senegal 62.8 | 13 Oman 70.3 | 13 Venezuela 80.0 | 13 Slovakia 86.0 | 13 Mongolia 68.1 |
| 14 Nepal 62.5 | 14 Syria 69.2 | 14 Mexico 79.8 | 14 Portugal 85.6 | 14 Laos 66.2 |
| 15 Uganda 61.6 | 15 Kuwait 64.5 | 15 Jamaica 79.1 | 15 Estonia 85.2 | 15 Indonesia 66.2 |
| 16 Switzerland 61.3 | 16 United Arab Em. 64.0 | 16 Peru 79.1 | 16 Hungary 84.2 | 16 Myanmar 65.1 |
| 17 Ireland 60.9 | 17 Jordan 63.5 | 17 Panama 77.7 | 17 Italy 84.2 | 17 Chile 65.1 |
| 18 Kenya 59.4 | 18 India 63.9 | 18 El Salvador 77.2 | 18 Denmark 84.0 | 18 Papua New Guinea 64.8 |
| 19 Ethiopia 58.8 | 19 Iran 63.5 | 19 Guatemala 76.7 | 19 Spain 83.1 | 19 India 62.2 |
| 20 Nigeria 58.2 | 19 Yemen 63.2 | 20 Honduras 75.4 | 20 Luxembourg 83.1 | 20 Pakistan 58.7 |
| 21 Nepal 58.1 | 21 Myanmar 62.4 | 21 Honduras 75.4 | 21 Ireland 82.2 | 21 Bangladesh 58.0 |
| 22 Central Afr. Rep. 58.0 | 22 Belarus 71.7 | 22 Bolivia 70.4 | 22 Poland 80.9 | 22 Cambodia 53.8 |
| 23 Zambia 58.1 | 23 Thailand & Tobago 70.4 | 23 Bolivia 70.4 | 23 Greece 80.2 | 23 Solomon Islands 53.8 |
| 24 Rwanda 54.0 | 24 Guyana 64.8 | 24 Guyana 64.8 | 24 Netherlands 78.7 | |
| 25 Kazakhstan 54.2 | 25 Bolivia 64.7 | 25 Bolivia 64.7 | 25 Belgium 78.6 | |
| 26 Afghanistan 54.6 | 26 Albania 64.0 | 26 Haiti 60.7 | 26 Belgium 78.6 | |
| 27 Honduras 53.9 | 27 Albania 64.0 | | 27 Costa Rica 76.8 | |
| 28 Guinea 51.3 | 28 Romania 60.7 | | 28 Romania 71.9 | |
| 29 Djibouti 50.5 | | | | |
| 30 Guinea Bissau 49.7 | | | | |
| 31 Dem. Rep. Congo 45.2 | | | | |
| 32 Chad 45.2 | | | | |
| 33 Burkina Faso 44.3 | | | | |
| 34 Mali 44.3 | | | | |
| 35 Mauritania 44.2 | | | | |
| 36 Sierra Leone 40.0 | | | | |
| 37 Angola 39.8 | | | | |
| 38 Niger 39.1 | | | | |

| Eastern Europe | Central Asia |
|-----------------------------|--------------|
| 1 Croatia 84.6 | |
| 2 Albania 84.0 | |
| 3 Romania 83.9 | |
| 4 Georgia 82.2 | |
| 5 Bosnia & Herzegovina 79.7 | |
| 6 Macedonia 74.1 | |
| 7 Latvia 74.1 | |
| 8 Lithuania 72.3 | |
| 9 Kazakhstan 71.3 | |
| 10 Turkmenistan 71.3 | |
| 11 Uzbekistan 70.2 | |
| 12 Kyrgyzstan 69.6 | |
| 13 Uzbekistan 69.6 | |
| 14 Kazakhstan 65.0 | |

Geographical Peer Groups by Rank, Country, and EPI Score

The EPI facilitates peer grouping and the identification of leaders, laggards, and best practices on an aggregate and issue-by-issue basis.

| Rank | Country | Score |
|------|------------------|-------|
| 1 | Switzerland | 95.5 |
| 2 | Norway | 93.1 |
| 3 | Sweden | 93.1 |
| 4 | Finland | 92.4 |
| 5 | Austria | 89.6 |
| 6 | Latvia | 89.6 |
| 7 | Sri Lanka | 80.9 |
| 8 | South Korea | 79.5 |
| 9 | Philippines | 77.9 |
| 10 | Viet Nam | 77.9 |
| 11 | Nepal | 77.1 |
| 12 | Fiji | 69.0 |
| 13 | Mongolia | 68.1 |
| 14 | Laos | 66.2 |
| 15 | Indonesia | 66.2 |
| 16 | Myanmar | 65.1 |
| 17 | Chile | 65.1 |
| 18 | Papua New Guinea | 64.8 |
| 19 | India | 62.2 |
| 20 | Pakistan | 58.7 |
| 21 | Bangladesh | 58.0 |
| 22 | Cambodia | 53.8 |
| 23 | Solomon Islands | 53.8 |
| 24 | Costa Rica | 82.3 |
| 25 | Uruguay | 82.3 |
| 26 | Luxembourg | 83.1 |
| 27 | Ireland | 82.2 |
| 28 | Poland | 80.9 |
| 29 | Greece | 80.2 |
| 30 | Netherlands | 78.7 |
| 31 | Belgium | 78.6 |
| 32 | Belgium | 78.6 |
| 33 | Costa Rica | 76.8 |
| 34 | Romania | 71.9 |

Where do we stand?

- Environmental Performance Index


Not as high as we think!

Principles of Sustainability from an Ecosystem Perspective

1. Think long-term
2. Manage protected areas as “integrated systems”
3. Plan & implement in an interdisciplinary atmosphere
4. Monitor progress towards achieving the defined vision of sustainability

Principles of Sustainability from an Ecosystem Perspective

5. Adapt ongoing management based upon monitoring.
6. Plan collaboratively with broad community involvement at the local level.
7. Educate leaders & citizens about sustainability & the role protected areas play.



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4. Why sustain it?
5. What are the appropriate indicators of sustainability?
6. Who are the key institutional players?
7. Who is responsible for sustaining it?
8. What are the consequences of sustaining it or not?

