

## **APPENDICES:**

**A: DELPHI SURVEY FORM AND COVER LETTER**

**B: SURVEY PROTOCOL**

**C: DESIGNERS' QUESTIONNAIRE**

**D: MANAGERS' QUESTIONNAIRE**

**E: VISITORS' QUESTIONNAIRE**

**F: EGYPT / UNITED STATES, THE FACTS**

**G: STATISTICAL TABLES AND DIAGRAMS**

**H: SUSTAINABILITY CRITERIA, EXAMPLES OF IMPLEMENTATION  
GUIDELINES**

Dear Sir or Madam:

I am writing to request your assistance in a study of beach resort design and planning being conducted as part of my doctorate studies at Virginia Polytechnic Institute and State University. Traditionally, beach resort development has given very little consideration to sustainability principles. This study examines the potential for applying sustainable design principles and carrying capacity thresholds to coastal tourism development.

As part of this study, a modified Delphi technique will be implemented to establish a sustainability criteria list specifically related to the coastal environment. As a professional or expert in the field, I am asking you to evaluate the attached criteria list, and assign values for each criterion in response to five questions.

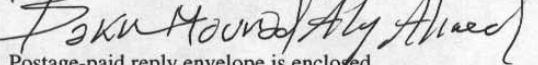
The results will be compiled, and a tool for assisting designers, planners, developers, managers, and decision-makers in improving the quality of existing and future projects will be developed.

I would be happy to answer any questions you may have. You may contact me by telephone at (540) 961-7009; fax (540) 231-3367; or e-mail alyahmed@vt.edu

Thank you for your time and cooperation.

Sincerely,

Bakr Mourad Aly Ahmed, Doctoral Candidate  
Environmental Design and Planning



Postage-paid reply envelope is enclosed  
Please send it back within the deadline of the 14 of December, 1999

# SUSTAINABILITY CRITERIA FOR COASTAL TOURISM DEVELOPMENT

## EVALUATION FORM

**Personal Data**

**Name:** \_\_\_\_\_ **Age:** \_\_\_\_\_ **Organization:** \_\_\_\_\_ **Position:** \_\_\_\_\_  
**Numbers of years in the field:** \_\_\_\_\_  
**Numbers of years in the position:** \_\_\_\_\_  
**Phone:** \_\_\_\_\_  
**Fax:** \_\_\_\_\_  
**E-mail:** \_\_\_\_\_

**Q1. How important is each of the following criterion to overall sustainability?**

1=unimportant, 2=less important, 3=fairly important, 4=important, 5=very important

**Q2. How difficult do you believe it is to achieve this criterion?**

5=very difficult, 4=difficult, 3=fairly difficult, 2=easy, 1=very easy

**Q3. Is this criterion important when planning for coastal development than non-coastal development?**

Y=Yes, N=No.

SUSTAINABILITY CRITERIA AND INDICATORS	Q1					Q2					Q3	
<b>1. EFFICIENT USE OF RESOURCES</b> Ensure the efficient use natural resources such as the use of energy, water, and land in the built environment.	1	2	3	4	5	1	2	3	4	5	Y	N
<b>2. ENERGY CONSERVATION</b> Ensure the capability of energy-production for future generations that relies on renewable natural resources production, and minimizes or prohibits the use of non-renewable resources.	1	2	3	4	5	1	2	3	4	5	Y	N
<b>3. WATER PRESERVATION</b> Minimize water pollution and waste, and ensure the availability of water resources that are essential for maintaining human, animal, and plant life.	1	2	3	4	5	1	2	3	4	5	Y	N
<b>4. AIR QUALITY</b> Clean air is essential to maintain ecological integrity and avoid causes of human illness, alteration of the microclimate, global warming, depletion of the ozone layer which leads to dead soil, plant death, and decay of built structures.	1	2	3	4	5	1	2	3	4	5	Y	N
<b>5. LAND AND SOIL PRESERVATION</b> Improve soil quality that improves soil productivity, thereby ensuring the availability of food and other vegetative cover for future generations. Also ensure land management that minimizes erosion and desert formation and encourages the creation of new rich soil.	1	2	3	4	5	1	2	3	4	5	Y	N

<p><b>6. SOCIAL VALUES</b> Enhance social relationships, reduce crime, promote community pride, meet human needs, and encourage individuals to take responsibility for the maintenance of their environment.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>7. PSYCHOLOGICAL VALUES</b> Create comfortable environments in terms of places and spaces which are important to the psychological well-being of locals and visitors, connect people to the place, promote an attitude of caring toward their environment, and make people more aesthetic, ecologically and culturally tied to their environment.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>8. CULTURAL RESOURCES CONSERVATION</b> Provide opportunities that interrelate the local natural and cultural worlds and provide visitors with local community experiences, awareness, and understanding toward sustaining their cultural values.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>9. ECONOMIC DEVELOPMENT</b> Promote economic self-efficiency that pertains more to the site level, such as availability of local job opportunities. Encourage “green builders” to the application of appropriate technology.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>10. RECYCLING &amp; WASTE MANAGEMENT</b> Eliminate the concept of waste to approach the state of natural systems in which there is no waste. Make visitors and locals aware of recycling opportunities and environmental benefits. Using wastes as production input.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>11. POLLUTION CONTROL</b> Create reasonably quiet and clean environments by minimizing and controlling of noise and visual pollutants as well as foul odors and dust pollutants.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>12. ECOLOGICAL BIODIVERSITY</b> Ensure ecological integrity and conservation, promote biodiversity of wildlife habitat, protect ecologically critical areas (e.g., wetlands, stream banks, shorelines, floodplains, large natural areas), and maintain or enhance animal and plant habitats.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>13. MEETING NEEDS LOCALLY</b> Ensure access to food, water, shelter, and fuel at reasonable costs, also, ensure access to facilities, services and people as well. Mostly, the ability to produce for their own basic needs.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>14. HEALTH CARE AND SAFETY</b> Providing health care, security, and safety from accidents and crime essential to maintain social opportunity. Places are determined by their identity, character, mood, legibility, safety, microclimate, activity, location in relation to other places.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N

<p><b>15. NATURAL FACTORS USE</b>          Incorporate natural factors and characteristics into designs for more comfortable and efficient use of the built-environment including: climate, temperature, sun, wind, rainfall, vegetation, topography, water bodies, hydrology, geology, and soil.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>16. TRANSPORTATION</b>          Minimize automobile use and encourage mass transit that minimizes energy use, air pollution, and the overall impact on the environment. Encourage the use of bikes, pedestrian walking.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>17. INVOLVEMENT IN DECISION MAKING</b>          Ensure skills, local knowledge and a broad participation in the decision-making process to maintain quality facilities and services operations and maintenance. Bridge between experts (scientists) and experimental (citizens)</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>18. SUSTAINABLE CONSTRUCTION TECHNIQUES</b>          Apply construction techniques and equipment that minimizes disturbance or damage to the natural and culture resources during construction.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>19. MATERIALS SELECTION</b>          Select building materials in light of their sustainability; their process of extraction, manufacture, transformation, degradation, and disposal their embodied energy. Materials selection should emphasize the use of suitable and ecologically sensitive materials for potential reuse or recycling opportunities.</p>	1	2	3	4			1	2	3	4	5	6	Y	N
<p><b>20. HAZARD CONTROL</b>          Avoid building in naturally hazardous areas, on unstable soils and slopes, or on critical resource production areas. Also, the control of seismic, pests hazards.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>21. SITE PLANNING CONSIDERATIONS</b>          Consider sustainable planning that meets the human needs of housing, water, sanitation, safety, and waste management, in terms of what is needs to be built, where it should be located, and how it could be implemented in a sustainable way. Also, non-disrupt to natural biological ecology.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>22. BUILT ENVIRONMENT FORMATION</b>          Design with respect to the site, the context, and the surrounding natural landscape. Building should be designed to be flexible enough to accommodate many human purposes and serve different needs within the objectives to: 1) minimize the cost; 2) minimize the used materials; and 3) minimize the energy consumption.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N
<p><b>23. LANDSCAPE DESIGN</b>          Design solutions should benefit flora and fauna, and maximize the use of native plants that promote spiritual harmony with, and ethical responsibility to, the native landscape and its resources.</p>	1	2	3	4	5	6	1	2	3	4	5	6	Y	N

**Q4.** What is missing? Please feel free to suggest deletions or additions to the list.

SUSTAINABILITY CRITERIA AND INDICATOR	Q1					Q2					Q3	
24. EQUITY-SOCIAL/SPATIAL												
25.												
..												

**Q5.** Finally, assign a “Weight Value” from 1 (less Important) to 5 (more important), and a “Relative Weight Value” (RWV) with a total 100% on the importance of each of the following six dimensions to be sustainability implementation in coastal tourism development?

1=unimportant, 2=less important, 3=fairly important, 4=important, 5=very important

SUSTAINABILITY DIMENSIONS OF COASTAL RESORT DEVELOPMENTS	WEIGHT VALUE						RWV %
<p><b>(1) PHYSICAL-FACILITY CAPACITY</b></p> <p>The level of tourist development or recreational activity beyond which facilities are “saturated”; or physical deterioration of the environment that occurs through overuse by tourists or an inadequate infrastructure network.</p>	1	2	3	4	5	6	
<p><b>(2) SOCIAL CAPACITY</b></p> <p>The level reached when local residents of an area no longer welcome tourists because they are destroying the environment, damaging the local culture, and crowding them out of local activities.</p>	1	2	3	4	5	6	
<p><b>(3) ECONOMIC CARRYING CAPACITY</b></p> <p>The ability to absorb tourism functions without squeezing out desirable activities or to exclude other forms of industrial activities from developing.</p>	1	2	3	4	5	6	
<p><b>(4) PSYCHOLOGICAL CAPACITY</b></p> <p>This is exceeded when tourists are no longer comfortable in the destination area, for reasons that can include perceived negative attitudes of the locals, crowding of the area (traffic jams), or the deterioration of the physical environment.</p>	1	2	3	4	5	6	
<p><b>(5) ECOLOGICAL-ENVIRONMENTAL CAPACITY</b></p> <p>The level of tourist development or recreational activity beyond which the environment has previously experienced is degraded or compromised.</p>	1	2	3	4	5	6	
<p><b>(6) MANAGERIAL CARRYING CAPACITY</b></p> <p>This is the decision-making tool in terms of the on-going management and operation of a coastal resort development.</p>	1	2	3	4	5	6	
							<b>Total 100 %</b>