Integrated Landscape Management Models for Sustainable Development Policy Making – Briefing Note

Further Reading

For information on the Georgia Basins Future Project and ALCES, see: <http://www.basinfutures.net/> and <http://www.foremtech.com/index.htm>.

For information on the Threshold 21 model, please visit: <http://www.threshold21.com/>.

US Environmental Protection Agency Research Division (Modeling, Monitoring, Risk Assessment) <http://www.epa.gov/ebtpages/research.html>.

US Department of Agriculture, Natural Resources Conservation Service (Economic & Environmental Models) <http://www.nrcs.usda.gov/technical/land/models.html>.

U.K. Government, Treasury Board *Greenbook*, Chapter 5: Appraising the options <http://greenbook.treasury.gov.uk/>.

Links

Links to modeling software (water and climate emphasis) from the US Geological Survey.

<http://www.fort.usgs.gov/products/software/software.asp>

Extensive list of links to modeling software and other water-related sites. Forest Research Extension Partnership.

<http://www.forrex.org/programs/wmlinks.asp#hydrologic>

Water and other modeling links compiled by the US Environmental Protection Agency.

<http://www.epa.gov/epahome/models.htm>

<http://www.epa.gov/ceampubl/>

<http://www.epa.gov/water/soft.html>

<http://www.epa.gov/OST/wqm/>

Appendix 1

A selection of examples of various types of Integrated Land Management Tools.*

Application	Name	Weblink
Multiple-application planning (economic-watershed, planning, landscape, runoff, environmental, etc)		
	ALCES	http://www.foremtech.com/index.htm
	SELES	http://www.cs.sfu.ca/research/SEED/
	Sustainable Futures	http://www.altfutures.com/
Planning		
	TOPIC	http://www.wldelft.nl/rnd/intro/topic/topic/index.html
	DSS-RACS	http://www.wldelft.nl/cons/area/rbm/dds-racs.pdf
	IWR-PLAN	http://www.pmcl.com/iwrplan/
	DELFT-Tools	http://www.wldelft.nl/soft/tools/index.html
	Tarsier	http://science.csumb.edu/%7Etarsier/
	Sustainable Futures	http://www.altfutures.com/
Objective-specific models		
Soil, Water, & Pollution	SWAT	http://www.brc.tamus.edu/swat/index.html
	U.S. EPA	http://www.epa.gov/ceampubl/
Forestry & terrestrial	TELSA	http://www.essa.com/services/forestry/ (see also: http://www.essa.com/downloads/software.htm)
River Basin	RIBASIM	http://www.wldelft.nl/rnd/intro/topic/ribasim-63/index.html
Watersheds**	WAMADSS	http://www.cares.missouri.edu/projects/completed/WM.html
	WLM	http://www.wldelft.nl/rnd/intro/topic/wlm/index.html
	STELLA	http://www.unep.or.jp/ietc/Publications/Freshwater/FMS5/index.asp
	Various	http://www.wiz.uni-kassel.de/ecobas.html
Ecological	APSRU	http://www.apsru.gov.au/apsru;
	POLSYS	http://apacweb.ag.utk.edu/poly/format.pdf
Agriculture	EPIC	http://www.brc.tamus.edu/epic/
	IGSM	No public access (MIT)
Climate Change/ Economics		

* The Environmental Center provides a wide assortment of simulation and modeling software. <http://www.environmental-center.com/software.htm>.

** Links to watershed tools available at:
<http://www.epa.gov/owowwtr1/watershed/tools/>.

The source site for this is: <http://www.foremtech.com/index.htm>.

Appendix II: Example of Indicator Variables used in ALCES

Types	Landscape/Footprint	Hydrocarbons, Wood, Crops	Humans	Livestock	Fish & Wildlife
Units	(ha)	(m3)	(Individuals)	(Individuals)	(Individuals)
Input Rates	Fuel (m3/ha/yr) Electricity (kHz/ha/yr Direct Labor (FTE/ha/yr) Indirect Labor (FTE/ha/yr) Natural Gas (m3/ha/yr) Water (m3/ha/yr) Nitrogen (tonne/ha/yr) Phosphorus (tonne/ha/yr) Herbicide (tonne/ha/yr) Insecticide (tonne/ha/yr) Manure Applications (tonne/ha/yr) Operating Costs ($/ha/yr)	Fuel (m3/m3/yr) Electricity (kHz/m3/yr Direct Labor (FTE/m3/yr) Indirect Labor (FTE/m3/yr) Natural Gas (m3/m3/yr) Water (m3/m3/yr) Operating Costs ($/m3/yr)	Fuel (m3/ind/yr) Electricity (kHz/ind/yr Direct Labor (FTE/ind/yr) Indirect Labor (FTE/ind/yr) Natural Gas (m3/ind/yr) Water (m3/ind/yr)	Fuel (m3/ind/yr) Electricity (kHz/ind/yr Direct Labor (FTE/ind/yr) Indirect Labor (FTE/ind/yr) Natural Gas (m3/ind/yr) Water (m3/ind/yr) Nitrogen (tonne/ind/yr) Forage (tonne/ind/yr) Operating Costs ($/ind/yr)	Fuel (m3/ind/yr) Electricity (kHz/ind/yr Direct Labor (FTE/ind/yr) Indirect Labor (FTE/ind/yr) Natural Gas (m3/ind/yr) Water (m3/ind/yr) Nitrogen (tonne/ind/yr) Forage (tonne/ind/yr) Operating Costs ($/ind/yr)
Output Rates	Crop Production (m3/ha/yr) Nitrogen Runoff (tonne/ha/yr) Phosphorus Runoff (tonne/ha/yr) Sediment Runoff (tonne/ha/yr) Manure Production (tonne/ha/yr) Direct Labor (FTE/ha/yr) Indirect Labor (FTE/ha/yr) Royalties ($/ha/yr) Carbon Fixation (tonne/ha/yr) Waste Water (m3/ha/yr)	Conventional Oil (m3/yr) Natural Gas (m3/yr) Oilsand (m3/yr) Carbon Emissions (tonne/m3/yr) Waste Water Emission (m3/m3/yr) Sulfur Emission (tonne/m3/yr) Acid Emission (tonne/m3/yr) Direct Labor (FTE/m3/yr) Indirect Labor (FTE/m3/yr) Royalties ($/m3) Electricity (kHz\m3\yr)	Carbon Emissions (tonne/ind/yr) Human Waste (tonne/ind/yr) Waste Water (m3/ind/yr) Garbage (tonne/ind/yr) Direct Labor (FTE/ind/yr) Indirect Labor (FTE/ind/yr) Anthro Footprint (ha/ind/yr)	Methane Emissions (m3/AU/yr) Manure Waste (tonne/AU/yr) Waste Water (m3/ind/yr) Meat Production (tonne/ind/yr) Milk Production (tonne/ind/yr) Direct Labor (FTE/ind/yr) Indirect Labor (FTE/ind/yr) Electricity (kHz\ind\yr)	Methane Emissions (m3/AU/yr) Manure Waste (tonne/AU/yr) Waste Water (m3/ind/yr) Meat Production (tonne/ind/yr) Sport Harvest (tonne/ind/yr) Aboriginal Harvest (tonne/ind/yr) Direct Labor (FTE/ind/yr) Indirect Labor (FTE/ind/yr)