



**“No one shows a child the sky.”
African Proverb**

March 2011

SAGE AGM April 7th, 7:00 p.m. at the Fish & Game Hut. (No meeting in March)

Earth Hour - turn off the power for the hour on Saturday, March 26th at 8:30 p.m. (Practice turning off the lights beforehand, though).

Pitch-In Canada Week, April 18 - 24th. More to follow.

Groundwater mapping beginning south of Calgary as part of the Water for Life plan. Helicopters will fly at a height of 75 meters and will cover 18000 km² of the region to improve knowledge of underground water resources.

FIT To Be Tried

Ontario initiated a Feed-In-Tariff (FIT) last year to advance the installation of alternative energy technologies and create green jobs in the industrial heartland of Canada.

Each alternative energy project must source **60%** of the project’s value from within the province, resulting more than 20 new manufacturing plants to be opened in

the next couple of years, and the promise of 43,000 jobs to support the 5 GW of new green energy.

The **subsidies** range from 80.2 ¢/kWh for rooftop solar, to 16 ¢/kWh for biogas, to 13.5 ¢/kWh for wind. These rates make it affordable for homeowners to purchase the technologies. Furthermore, the **Institute for Local Self-**

Reliance recently published a report that indicates that Ontario receives more jobs for the dollar subsidy than U.S. programs.

Japan also initiated a FIT pilot-program in November 2009 and is planning to expand the scope for the final version. Japan remains committed to reducing its greenhouse gas emissions by 25% from 1990 levels by 2020.

Fire Sale for Public Land in Alberta

For a dollar, the County of Lethbridge was able to pick up a couple thousand acres of Public Land that has been fallow since the great depression (the one in the 1930s).

The Government of Alberta has recently dumped

84,000 acres of land to municipalities around the province: “The transfer of these lands will allow municipalities to make decisions on the land that are best for the local area.”

Can it be said that what is best for a municipality is

best for Albertans in the present and in the future? Was there any consultation process with Albertans? Was there an assessment of the past land-use for this land? Were there any easements applied to preserve natural grasslands,

wetlands, habitat, or to protect species at risk? Is there a larger agenda at work in this decision?

It is difficult for Albertans to know the answers to these questions without science-based research and public consultation.

The Cost of Coal

A [Harvard Medical School study](#) on the true impacts of coal in the generation of electricity accounts for the costs normally externalized to society. These 'hidden costs' include health care costs, air pollution, mercury poisoning, and global warming emissions.

The study estimates economic and environmental costs to be roughly \$375 billion in the U.S., which doubles to triples the current cost of electricity. Including the true costs in the price of electricity would make alternative energy sources (like wind and solar PV) much more competitive.

A similar study from the [National Research Council](#) esti-

| GENERATION | | | |
|------------|-------|------|-----|
| GROUP | MC | TNG | DCR |
| Coal | 6232 | 4035 | 0 |
| Gas | 5308 | 4139 | 180 |
| Hydro | 879 | 240 | 240 |
| Other | 266 | 200 | 0 |
| Wind | 777 | 0 | 0 |
| TOTAL | 13462 | 8615 | 420 |

AESO real-time generation (February 18th, 2 p.m.)
http://ets.aeso.ca/ets_web/ip/Market/Reports/

mates that 10,000 people in the United States die each year from coal related pollution.

[Alberta](#) currently has 12.9 GW of electricity generating capacity, of which 45% is coal-fired. But the capacity numbers can be misleading, as coal-fired generation supplies the base power (working all of the time), whereas natural gas and renewable may be used only when needed or

when available.

For example, the real-time consumption from [AESO](#) shows the Total Net Generation (TNG) in Alberta, which varies with demand.

It is estimated that 70% of Alberta's delivered electricity is derived from coal. As a result, we burn about 20 million tonnes of coal each year for electricity ... because it is so 'inexpensive'.

Notice:

The Lethbridge and Region Home and Garden Show is scheduled for March 16-19, 2011.

SAGE is again partnering with the Urban Team of the Oldman Watershed Council and the City of Lethbridge to help with an information booth promoting environmental messages. The displays this year will be on prairie urban gardens and riparian health in the Oldman River valley.

If you are interested in volunteering for a 2-3 hour shift at the booth, please email sage-communications@sage-environment.org and we will be in touch to determine a time that works for you.

Some Interesting Events & Online Sources:

Mining Coal, Mounting Costs <http://wvgazette.com/static/coal%20tattoo/HarvardCoalReportSummary.pdf>

Life Cycle Alternative Fuels <http://www.epa.gov/oms/renewablefuels/420f09024.pdf>

Wind vs. Solar <http://sites.google.com/site/anatomyofglobalclimatechange/vj/data-and-analysis>

Life Cycle Electricity Generation <http://fti.neep.wisc.edu/pdf/fdm1181.pdf>

Southern Alberta Group for the Environment (SAGE)

A Leading Voice for a Healthy and Environmentally Sustainable Community.

Visit us at: <http://sage-environment.org/>

If you are interesting in getting involved, contact us at:

info@sage-environment.org

State of the World 2011: Innovations that Nourish the Planet (Book Review)



[WorldWatch Institute](#) publishes a book each year that provides insightful articles on a specific topic, including references to recent research in the field. In the 2011 edition, the topic is food production in Africa.

The fifteen chapters vary widely in focus, but together tell a consistent story: Africa faces many challenges with respect to food security, and this continent is a bellwether for the world.

Challenges include the availability and quality of water, land-rights issue, the impact of genetically-modified crops, the appropriateness of technologies, food waste in the supply chain, and soil fertility. One authors states: "That Africa is facing a soil fertility crisis is no news to the well-informed. But that the tragedy is rushing at us so quickly that tens of millions of people could starve within the next four or five years is big news indeed. The continent faces an imminent tragedy: a Great African Famine" (p.60).

Many of the authors note the same imminent tragedy, but each illustrates opportunities to mitigate it through agro-ecological innovation.

These innovations include micro-irrigation techniques, including the use of wastewater. Don't be

shocked by this, "At least 2 million hectares in developing countries are irrigated with raw sewage or partially treated wastewater, and at least 10 percent of the world consumes wastewater-irrigated produce" (p.113). The goal is to use this source safely for consumption (or learn to wash your food well).

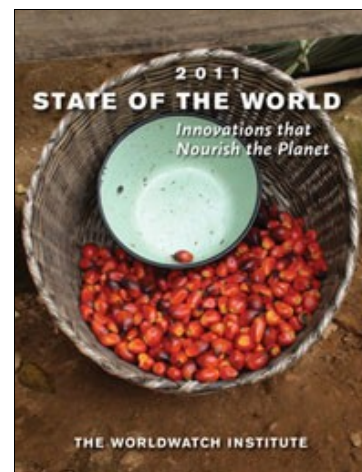
Soil fertility is, perhaps, the greatest challenge in Africa as traditional farming is replaced by industrial agriculture - mining the soil of nutrients increases the reliance on petrochemical inputs and reduces yields and food nutrition. One study regarding agricultural yields worldwide "found that introducing agroecological approaches in developing countries [as opposed to industrial approaches] led to two to four times greater yields" (p.95), not to mention the greater water-holding capacity and sequestration ability of the carbon-rich soils.

Another major focus was reducing post-harvest waste (in storage), which can average as high as 30% in African countries. The author maintains that it is "more sustainable to increase available food by reducing waste than by chopping down virgin forests to increase cultivable land - which is the principal method by which food production is being made to increase globally" (p.107) - better

food preservation, pest control, and facilities can all contribute substantially.

The current focus of aid to African countries trends away from appropriate technologies and agro-ecological methods, as they support industrial infrastructure, and the application of petrochemical fertilizers and pesticides. The short-term gains evident in the past, however, result in long-term losses in soil fertility and greater dependence on aid. The focus on genetically-modified seed technologies, for example, has lead to continued losses of (as much as 75% in the twentieth century) the genetic diversity of agricultural crops.

Even though WorldWatch's State of the World relies heavily on corporate support (Bill and Melinda Gates Foundation), the publication provides evidence-based perspectives of our many challenges - one of which being food security. The authors are generally optimistic, but this optimism is premised on immediate and meaningful action.



From the AEN: Castle Falls / Beaver Mines Lake slated for logging

Action Alert: Save Castle Special Place

Your prompt action is needed before March 14th to save the popular Castle Special Place / Special Management Area located in the headwaters of southern Alberta from block-cut (commonly called clear-cut) logging by a sawmill located outside the region. See Action Checklist below. Spray Lake Sawmills located west of Calgary is set to start logging operations this June and plans to take what they estimate as 3,750 truck-loads of logs from the protected area over two logging seasons. It's short-term jobs at the expense of local, long-term ones associated with tourism and outdoor recreation. Such large-scale logging has not occurred in the Castle Special Place since 1998, when the Government of Alberta announced it had added it as the new Castle Special Management Area to "Alberta's protected areas network." The Government described it then as "a milestone in the preservation of Alberta's natural heritage for future generations."

The Sustainable Resource Development Department approved the logging last year for the logging license they had issued to the sawmill in 2005 and for the sawmill's requested expansion of the license; both without public consultation and ignoring the 1998 protected area decision. The Spray Lake Sawmills and Alberta Sustainable Resource Development are intent on logging the Castle Special Management Area despite:

- No pine beetle outbreak and it being at low risk of a future outbreak from this native Rocky Mountain beetle.
- Regional land-use planning stipulating watershed protection, tourism and recreation as the highest priorities for the area; not block-cut/clear-cut logging.
- Since 1934, the historically most extensively logged drainages in the Castle (those of the Carbondale), are where all the major fires (> 2 sq. km) have occurred.
- Few intact forests in Alberta's southern headwaters and less than 9% of the Castle remaining with trees over 150 years of age, when the natural landscape there should be a third old-growth forests.
- The Castle providing an unsurpassed 1/3 of the annual water flow for most of southern Alberta; specifically the water stressed, Oldman River Basin and its 70 municipalities, including Lethbridge.

ACTION CHECKLIST

Write a **short letter to Premier Stelmach**. Use the white box at http://org2.democracyinaction.org/o/5654/p/dia/action/public/?action_KEY=5663#letter Write your letter in that box, using your own words and making use of tips below (also at the above link). You can change the wording in the Subject box if you wish. Click to send when done. Copies will also automatically go to local MLA, Evan Berger and the opposition MLAs: Bridget Pastoor, Liberal; Paul Hinman, Wild Rose; Rachel Notley, NDP; and Dave Taylor, Alberta Party.

After you send your letter, please take a moment and **call MLA Evan Berger** (403-553-2400). Berger is the local MLA. Let him know of your opposition.

Print & post the poster with maps & photos. Download the poster in PDF (1.74 MB) at <http://www.sierraclub.ca/sites/sierraclub.ca/files/castle-pdf.pdf> or JPG (199 KB) <http://www.sierraclub.ca/sites/sierraclub.ca/files/castle-pdf.jpg> Open and print with your computer's picture printing function at letter size and post, or for more impact, save to memory stick & print at ledger size (11" x 17") at a local print shop & then post in public places.

Ask friends & family to join the action and email them this action alert.

Stay in the news & action loop by "liking" **Stop Castle Logging on Facebook**. If not on Facebook, you can still view our page at <http://tinyurl.com/4v7pp7y>

TIPS FOR WRITING LETTERS

- State what the Castle Special Place / Special Management Area means to you. Ask Premier Stelmach to stop the pending logging of the Castle.
- Use your own reasons and/or draw from the action alert above.
- Ask your concerns to be represented in the Alberta Legislature. Request a reply.

FOR MORE INFORMATION

Poster with maps & photos: PDF (1.74 MB) at <http://www.sierraclub.ca/sites/sierraclub.ca/files/castle-pdf.pdf> or JPG (199 KB) <http://www.sierraclub.ca/sites/sierraclub.ca/files/castle-pdf.jpg>

Read the Government of Alberta's highlights of their 1998 protected area decision at http://www.sierraclub.ca/sites/sierraclub.ca/files/1998_decision.pdf

Proposal from local citizens' initiative www.castlespecialplace.ca and pamphlet <http://www.castlespecialplace.ca/castle-pamphlet.pdf>

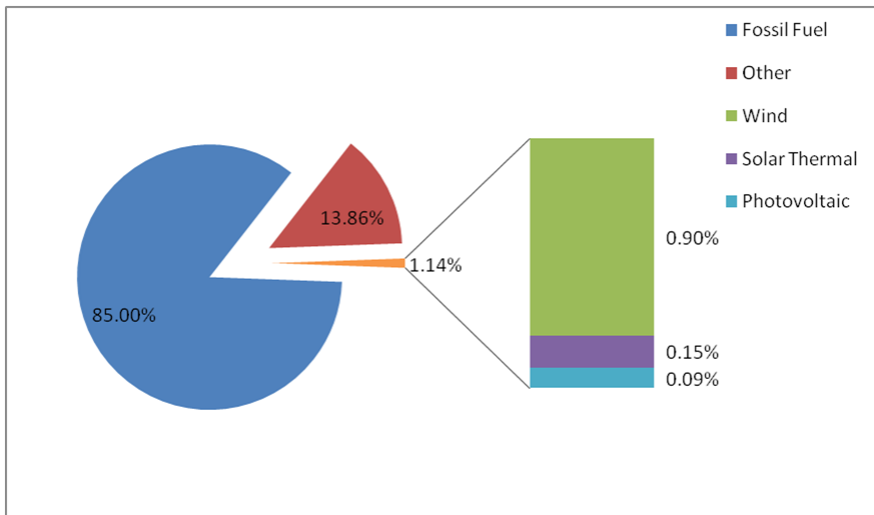
Ad hoc network's Stop Castle Logging Blog www.stopcastlelogging.org

Moving Towards Sustainability - Fossil Energy: No Free Lunch

(Special Feature)

We use approximately 480 Exajoules of primary energy each year (480 x 10¹⁸ Joules/year), about 85% of which originates from a one-time inheritance of fossil fuels.

The energetic labour from an individual is about 150 Watts. Over an 8-hour working day, this is approximately 4.32 MJ/day. The current use of fossil fuel (even at a 30% efficiency) is like



There are three important aspects of energy use to consider:

- As a finite and non-renewable resource, this fossil inheritance should be preserved or 'invested' for a sustainable future.
- Energy is work – fossil fuel energy is essentially free work that relieves the labour of human and draft animals to sustain the human population.
- All work results in a universe with a lower level of entropy (a lower energy potential). The only 'sustainable' rate of work on earth is at the rate of energy received from the sun (minus the losses due to conversion).

having 28 trillion people doing free work for us, or more than 4000 workers to keep each human on earth enjoying their present lifestyle. (Of course, North Americans have many more of these virtual workers than most of the rest of the world).

Gasoline has an energy density of 35 MJ/litre. If your car can travel about 15 km/litre, you are using 2.3 MJ/km travelled – that is about a half of a person-day of energy to pull a ton of steel (your car) one kilometre. Each time we turn on a switch, jump into our car, eat a 2000 km salad, or sit comfortably in a heated building, we rely on energy that would otherwise take a lot of labour-power to produce.

Then there are the unwelcome carbon emissions from burning fossil fuels. We emit roughly 15 million bull elephants of carbon dioxide into the atmosphere each day. Carbon dioxide is a known greenhouse gas, which results in an increase in the average global temperature. This energy imbalance is correlated to extreme weather events, changes in pest and disease vectors, unreliable water availability for agriculture causing greater reliance on fossil groundwater resources, biodiversity loss, net losses in agricultural yields, and so on. Contrary to Canada's micro-agenda for prospering through climate change, the macro-consequences are grim regardless of how much money we have. James Hansen asserts that we have to stop using coal and unconventional oil and gas immediately, and use the remaining conventional oil & gas wisely to avert runaway climate change.

Alternative energy technologies can replace some of what is delivered by fossil fuels, but they need an initial fossil fuel investment. For every one unit of fossil fuel energy invested we can get ten to thirty energy units out of a wind turbine over twenty years; or two to five from a photovoltaic panel. Alternative energy technologies do not remove the need for fossil fuels, but they do make them more 'efficient'. Jevon's Paradox, however, suggests that these efficiencies often result in even

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greater demand for energy – the net energy use actually increases with greater efficiencies in a market economy. The key is to *replace* fossil fuels with alternative energy, not simply add it to an expanding energy mix.

With the immanent peak production rate of oil and gas it also means that we will have to 'invest' fossil fuel energy into alternative energy technologies at the expense of other energy users. We waste a lot of energy now, so directing it to alternative technologies manufacturing would be relatively easy (though unlikely absent the sort of governance that directs resources to the greater good). If we wait too long we will continue to move down the decline side of the curve for oil and gas, and we will have squandered our last opportunity for sustainability, because we will then have to redirect energy from competing necessary uses to create alternative technologies for future energy production. Now we are taking a potato off of someone's plate to plant it in the spring in the hope of having more potatoes next year.

Worldwide we have approximately 30,000 MW of photovoltaic at a current production capacity of 9000 MW/year. At a good conversion rate of 4.5 GJ/kW of installed PV, the worldwide energy production is 135 million GJ/year (0.09% of our current primary energy consump-

tion at a 30% conversion rate from primary to electric energy). There are about 130 GW of wind turbine capacity worldwide, with a production capacity of 120 GW annually. At a generous capacity factor of 0.35, these turbines produce 1.4 billion GJ each year (0.9% of world primary energy consumption). Even solar thermal (water heating) has about 150 GW(th) capacity or 210 million m² with a current production capacity of 120 GW annually. At a conversion rate of 3 GJ/m², this is 630 million GJ per year (0.15% of world energy consumption).

Assadourian in the 2010 State of the World quotes a recent analysis that states: "in order to produce enough energy over the next 25 years to replace most of what is supplied by fossil fuels, the world would need to build 200 square meters of solar photovoltaic panels every second [current capacity is 2.9 m²] plus 100 square meters of solar thermal every second [current capacity is 5.3 m²] plus 24 3-megawatt wind turbines every hour [current capacity is 6.8] nonstop for the next 25 years. All of this would take tremendous energy and materials – ironically front-loading carbon emissions just when they most need to be reduced – and expand humanity's total ecological impact significantly in the short term".

Conclusion:

- Maximize production of alternative energy technologies (wind, PV, solar thermal).
- Reduce consumption of fossil fuels (to reduce the impacts of climate change and preserve remaining energy sources for production of alternative energy technologies)
- Build resilience into local economies (food security, transportation/distribution networks, energy efficient buildings and manufacturing processes).
- Manage population growth (in nations with unsustainable lifestyles)

SAGE projects might include building local capacity for alternative energy projects; advocating for better incentives (like Medicine Hat); educate to reduce fossil fuel consumption (home and transportation).

This is a submission for SAGE's Moving Towards Sustainability initiative. A more detailed account will be made available in a comprehensive report in 2011.