
An Economy in Transition

March 2011

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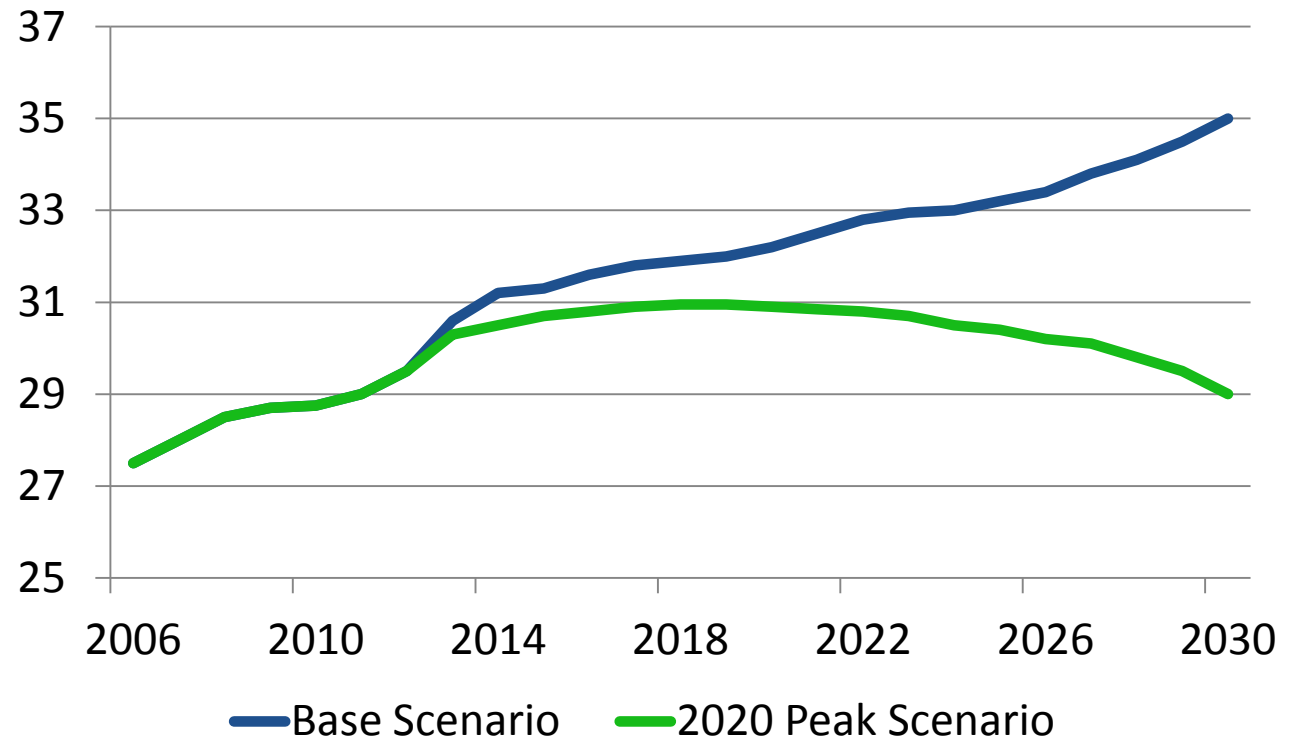


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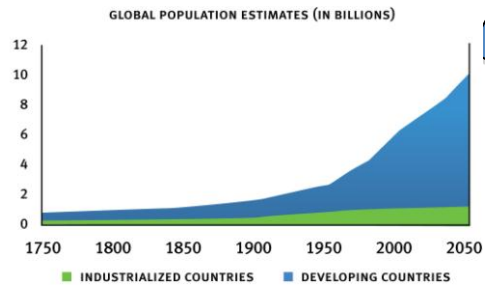




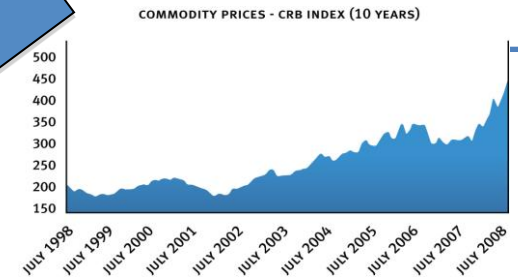
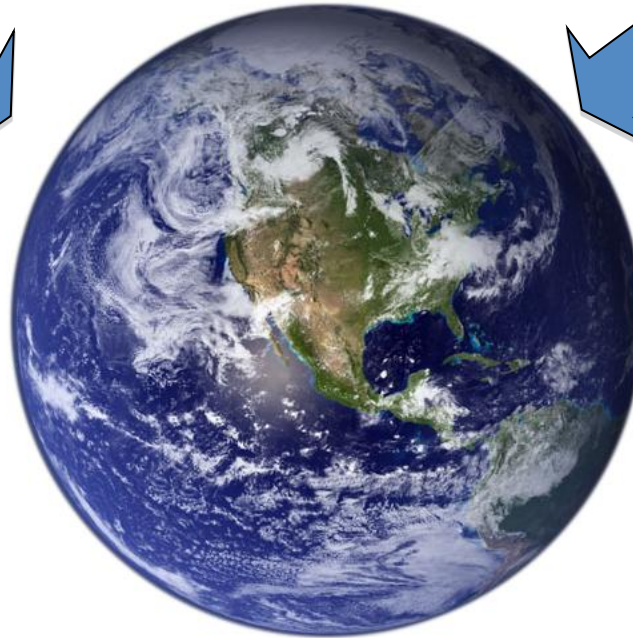
CO₂ EMISSIONS FROM ENERGY BASE AND 2020 PEAK SCENARIOS, GTONNES



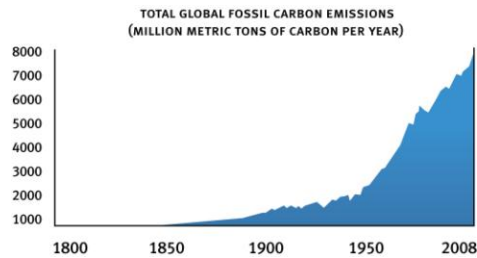
Source: New Energy Finance, GE2M



Demographics



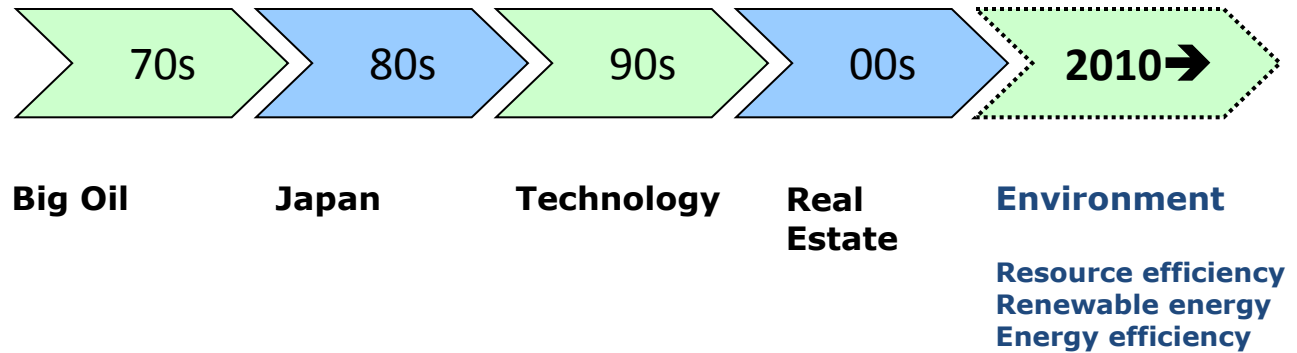
Resource Scarcity



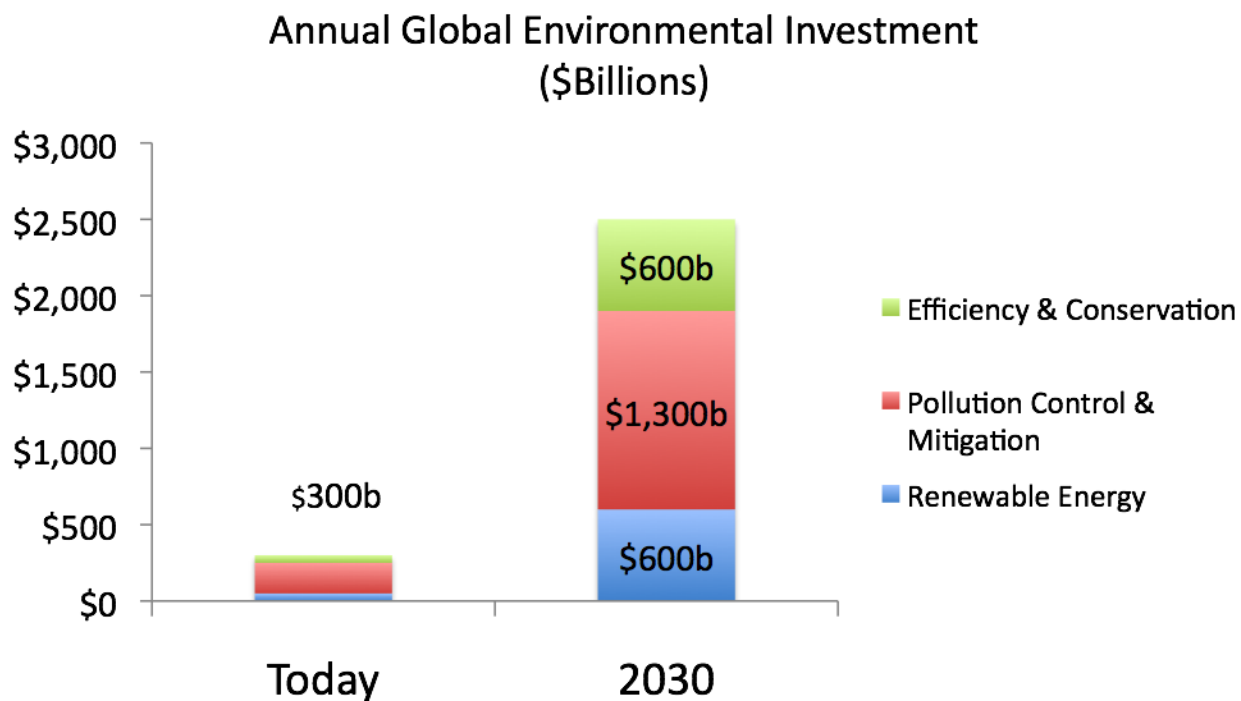
Environmental Challenges

CAPITAL'S NEXT HOME

Environmental sectors will catch the next investment wave



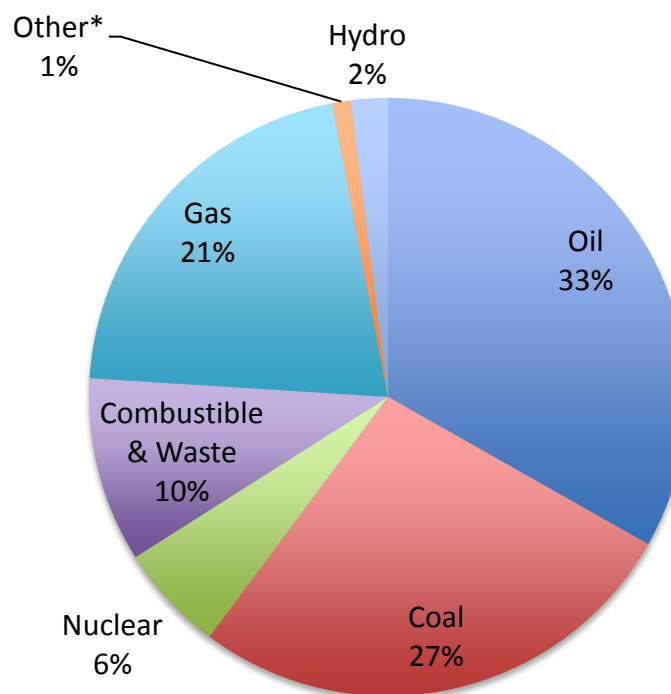
NEXT WAVE – FROM \$300 BILLION TODAY TO \$2.5 TRILLION BY 2030



Sources: Government of Canada, IPCC, IEA, IMF, Wharton School
Waste-to-Energy.net, Solarbuzz, Vestas Wind, Siemens Inc.
Badger Meter

GLOBAL ENERGY SUPPLY - CURRENT

Total Primary Energy Supply by Fuel (2008)
12,267 Mtoe



* Other; includes wind, geothermal, solar, etc.

Source: IEA

GLOBAL ENERGY SUPPLY - 2060

**50 Year
Transition:**

Renewables 1-18%

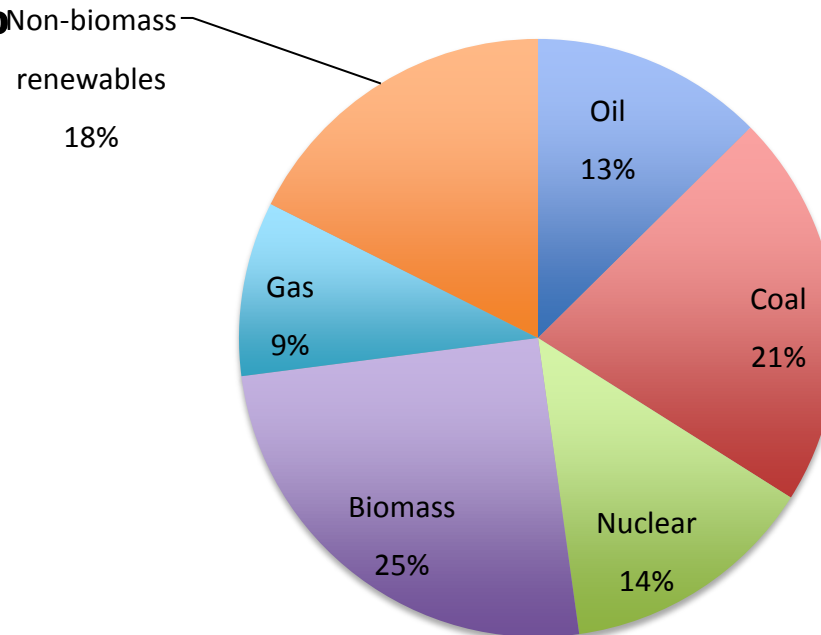
**Biomass 10-
25%**

Nuclear 6-14%

Oil 33-13%

Coal 27-21%

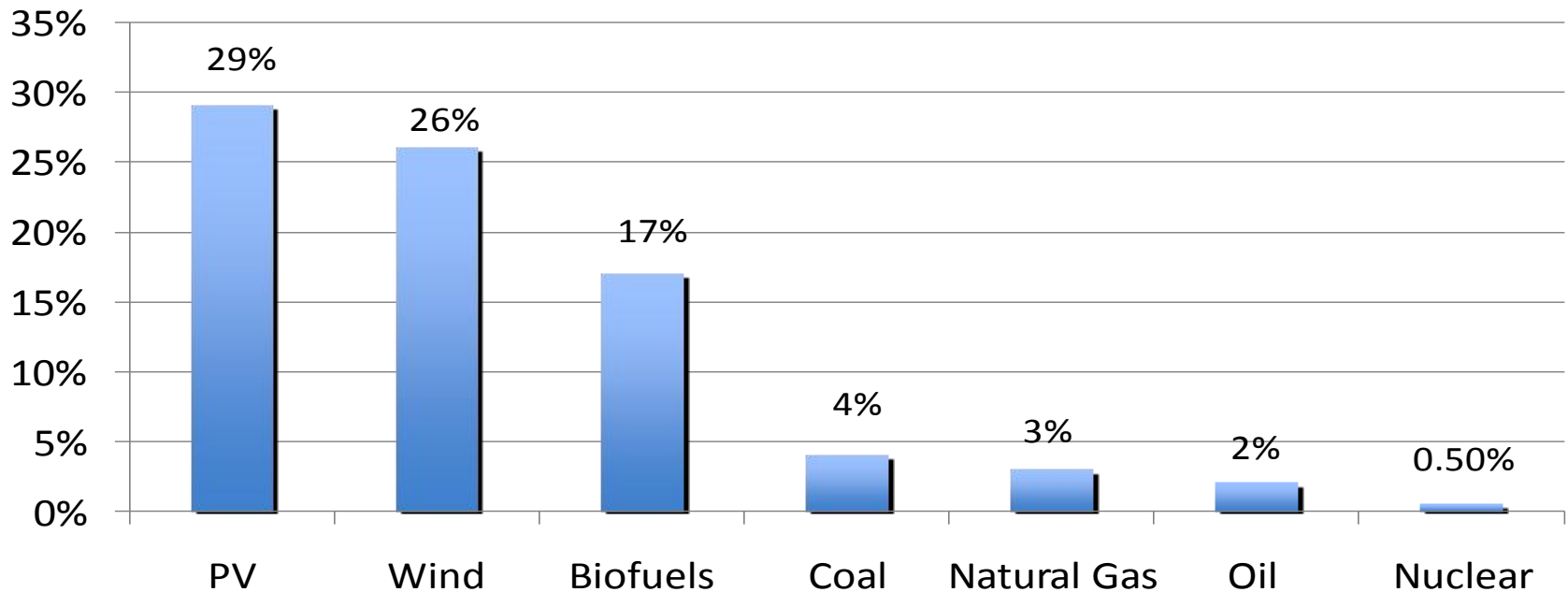
2060 Energy Mix - 450 ppm CO₂e



* Other; includes wind, geothermal, solar, etc.

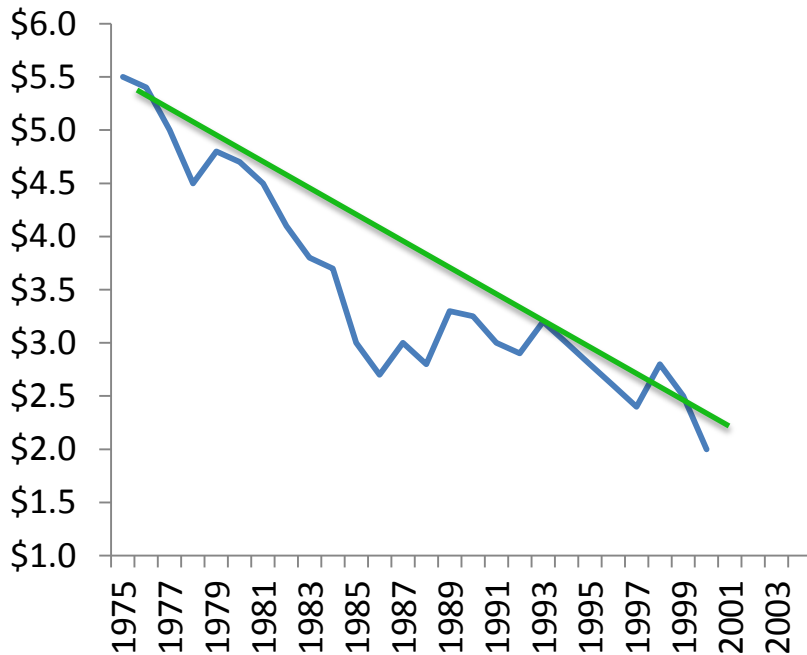
Source: World Bank

Average Annual Global Energy Supply Growth Rates (2000 - 2007)



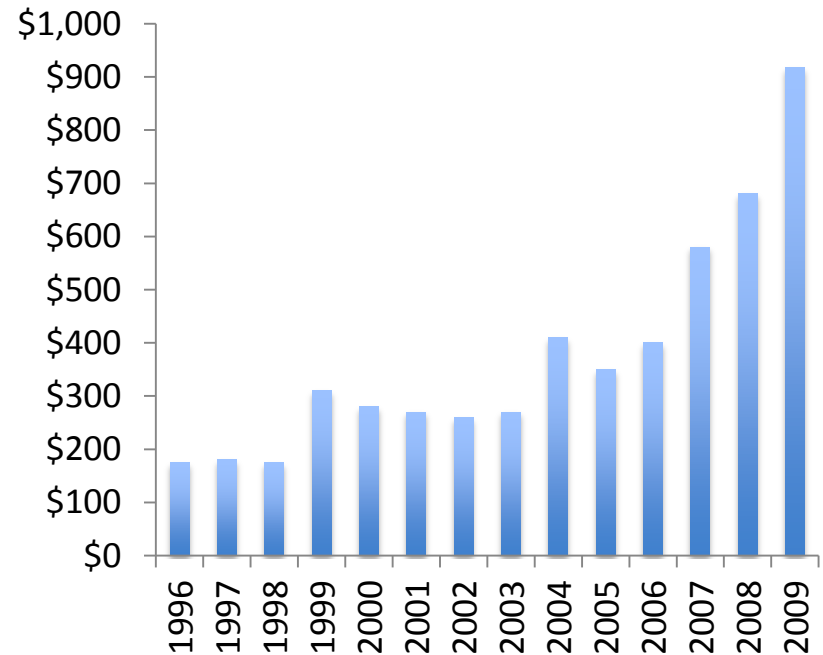
EXISTING GRID NEEDS REPLACEMENT NOW IS THE RIGHT TIME TO MAKE IT SMARTER

U.S. Transmission Investment
(U.S. \$bil. - inflation adjusted)



Source: Dundee Securities

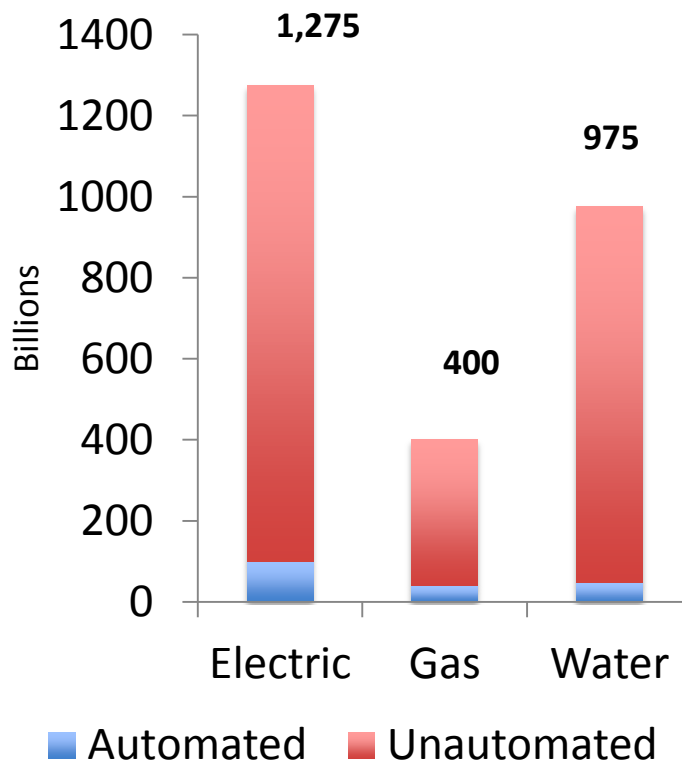
Hydro One capital spending
(Millions/Cnd\$)



Source: Hydro One

DEMAND MANAGEMENT: SMART METERS

- 2.65 Billion Meters Worldwide
- Only 9% Automated
- \$400-600 Billion Opportunity
- Ontario is the global leader: will have 3.6 million households on time-of-use metering by summer 2011



Source: Itron

COMBINING TO FORM A SMART GRID

Investments in smarter utilities will improve efficiency



Source: Bullfrog Power

NEXT WAVE – INVESTMENT AND SAVINGS



inspired by
ecomaginationSM



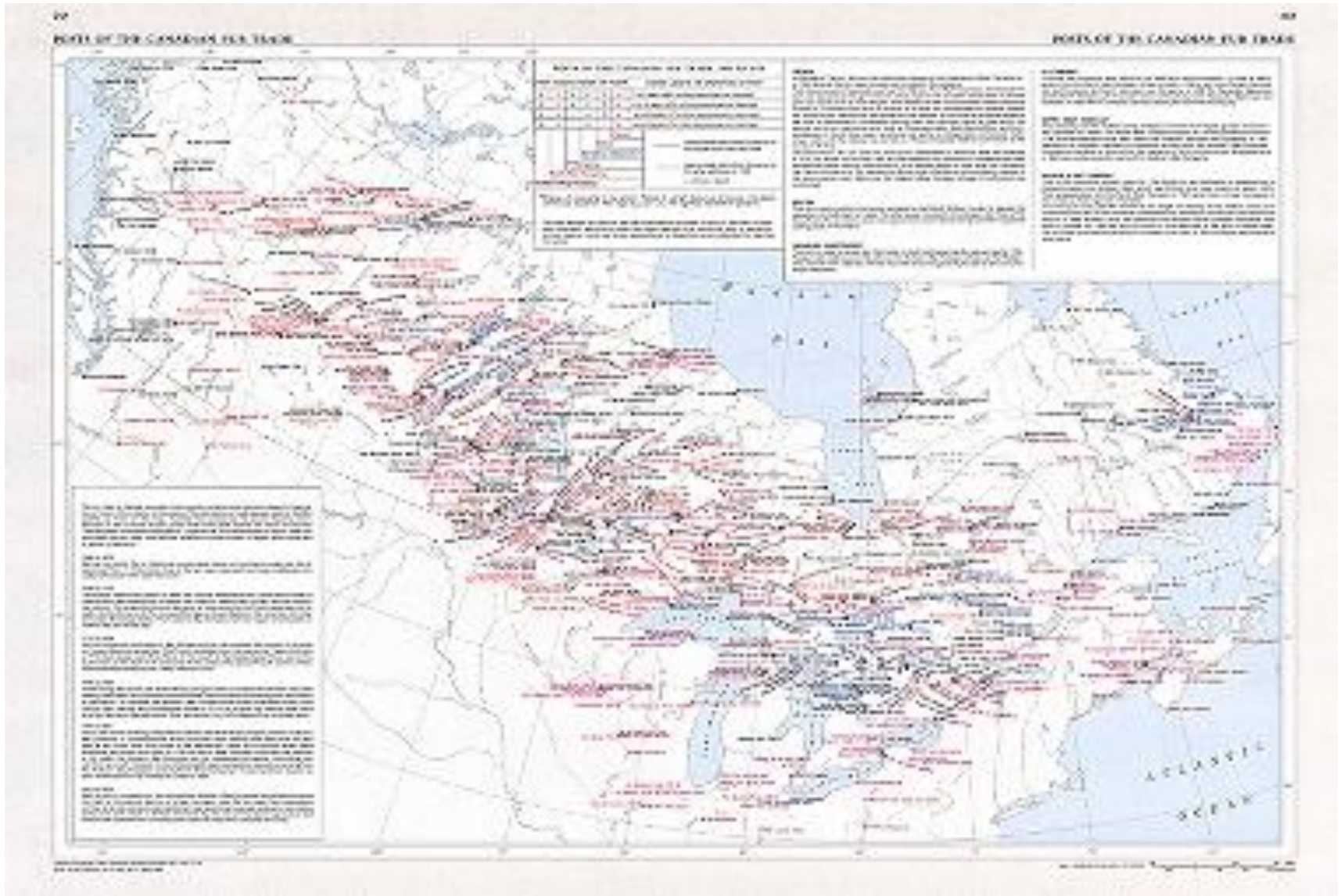
“Going green is the largest economic opportunity of the 21st Century”

John Doerr
Kleiner Perkins Caufield & Beyers

WHAT DOES IT MEAN FOR CANADA?



Beaver Club medal







ECONOMIC TRANSITION

Staples Economy: Where wealth is based on exploiting raw natural capital

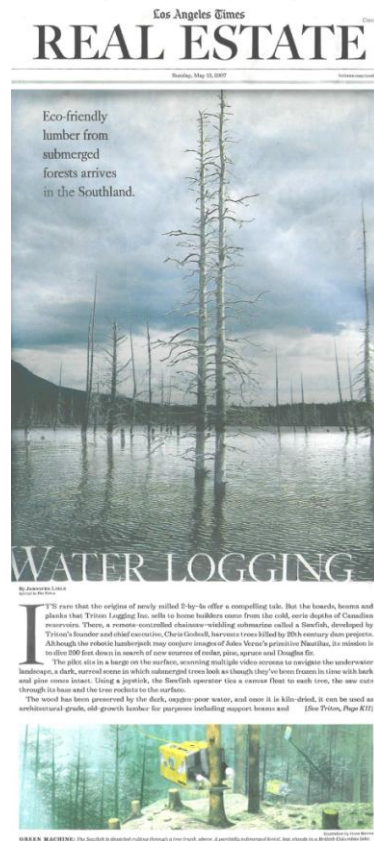


Innovation Economy: Where wealth is created from innovation

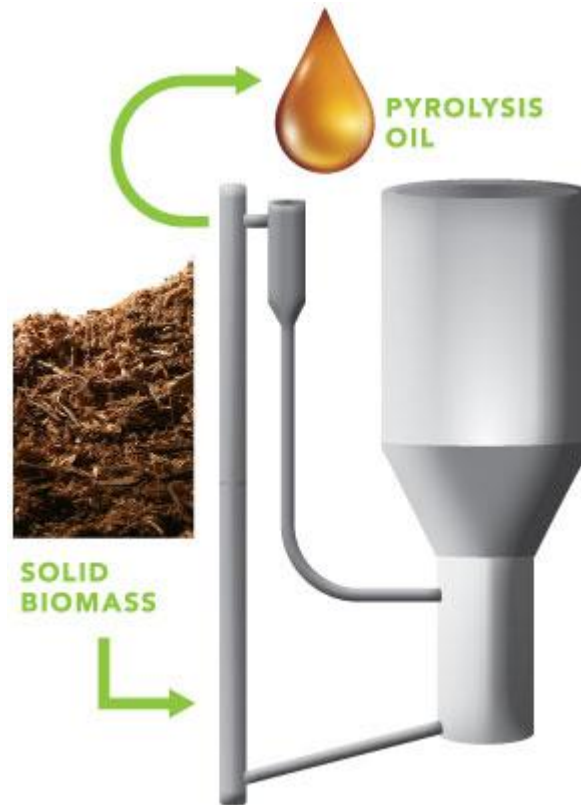


TRITON LOGGING INC.
'underwater harvesting specialists'

Underwater Logging: potential \$50 billion market worldwide



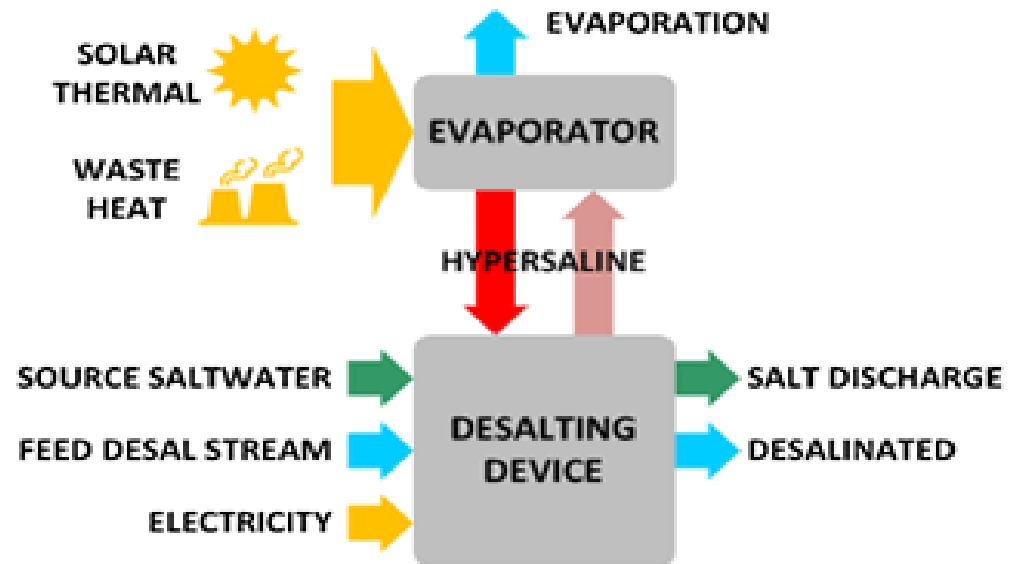
Biofuels:
\$247 billion
market by 2020*



* source: Pike Research



Desalination:
\$95 billion
market
worldwide from
2010 – 2015*



* Source: Water Industry News

ECONOMY IN TRANSITION

Staples Economy

Forestry – Logging, Dimensional
lumber

Water – no treatment, bleach

Oil Sands – Open pit mines

Power – large hydro, coal

Innovation Economy

Fast pyrolysis, gasification,
cellulosic ethanol, torrefaction

Desalination, membrane
technology, recycling and
reuse, UV

Process efficiency, carbon
sequestration, tailing ponds
remediation

Renewable energy, distributed
energy, smart grid, demand
management

KEY ENTREPRENEURIAL INSIGHT

Staples Economy: Natural resources are plentiful – almost limitless. Their only value is to be used as raw materials.

Innovation Economy: Natural resources are scarce; preserving them creates value in and of itself; developing the processes to use them most efficiently is the BIGGEST commercial opportunity.



TO DEVELOP AN INNOVATION ECONOMY

A massive mobilization of new ideas and technology and new companies by supporting entrepreneurs

Increased R&D investment

Increased VC investing

National strategies on: renewable energy, smart grid, GHG emissions, high speed rail and smart mobility, energy efficiency

HOW TO GET THERE: EMBRACE THE PORTER HYPOTHESIS

Environmental Regulation Enhances and Encourages Innovation and Competitiveness through a process called the "Innovation Effect"

3 principles to leveraging Innovation Effect:

- Leave approach to industry, not to regulators*
- Be technologically agnostic*
- Reduce regulatory uncertainty at every stage*

TO BUILD A GREEN ECONOMY

Proposal:

A nation-wide price on GHG emissions

Called an "innovation charge"

Starting at \$10/tonne

Increasing \$5/tonne every year

80% of revenues returned as tax reductions

20% invested in encouraging R&D investment

“There is only one thing bigger than Mother Nature and that is Father Profit, and we have not even begun to enlist him in this struggle”

Thomas Friedman *Hot, Flat and Crowded*

Thank you!

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