

# Changing Carbon Reduction into Profit Production

IMG

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## Agenda

- Cattle industry problems
- Fertilizer and fuel cost concerns
- Forecast carbon value for agriculture
- Bio diesel
- Torro Nutrient Solutions
- Agroforestry
- Biomass
- Saskatchewan & Alberta GHG expenditures
- Feasibility of a carbon fund for agriculture

## Cattle Industry is a Wreck

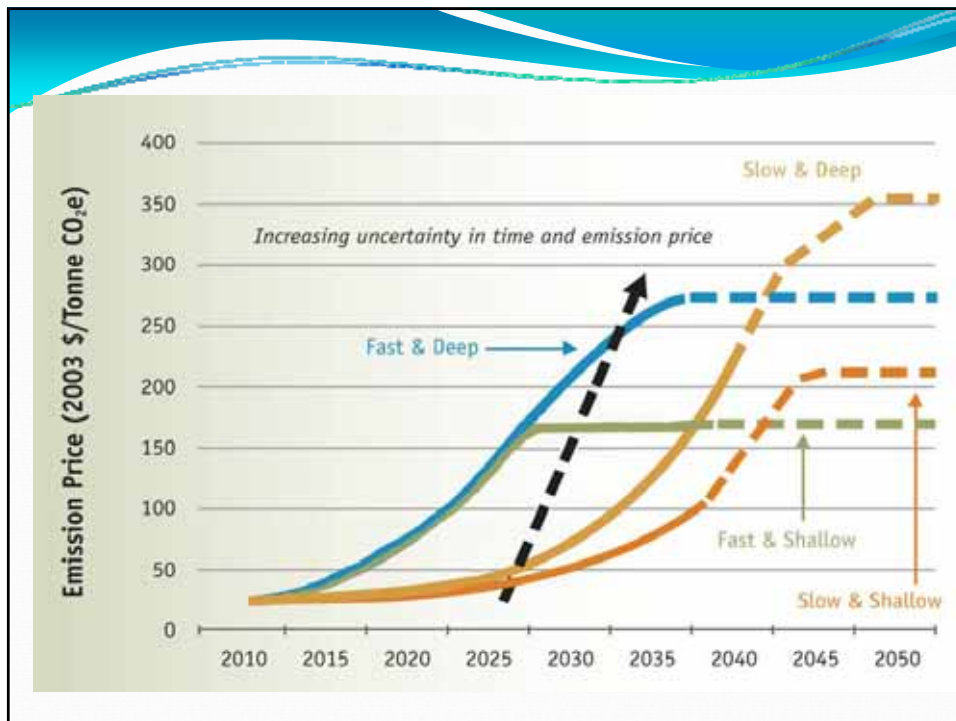
- Concentration of Packers!
- Failure of farmer owned facilities.
- Doomed to a US dollar that will move up!
- A large number of producers will not have a reasonable retirement without solutions being found to add income to their farm operation.
- We are presenting two alternatives today

## Fertilizer and Fuel

- The increase in fuel costs has been greater than the increase in fertilizer costs over the long run.
- We are forecast to be short of both fertilizer and food production in the future.
- We need solutions where farmers can constrain their fuel cost increase.
- We need to convert organic waste into fertilizer

## Agriculture and Agroforestry

- Both contribute 10% of Canada's greenhouse gases, and have the ability to be the major source of GHG reduction!
- Past programs to stimulate investment have had significant problems, they were not bankable!
- Farmers have been selling CO<sub>2</sub> reduction for as little as four dollars per ton!



## Trade Sanctions over Carbon

- Energy Secretary Steven Chu on last Tuesday advocated adjusting trade duties as a "weapon" to protect U.S. manufacturing, just a day after one of China's top climate envoys warned of a trade war if developed countries impose tariffs on carbon-intensive imports.
- Canada **will pay** one way or another!

## Reductions are not Equal

Canada	2020 (-20%)	2050 (-65%)
British Columbia	-14%	-58%
Alberta	-24%	-66%
Saskatchewan	-27%	-72%
Manitoba	-13%	-61%
Ontario	-14%	-66%
Quebec	-13%	-64%
Atlantic	-14%	-66%

# Carbon Income for Biodiesel

## CARBON REDUCTION CALCULATOR

Use this Carbon Reduction Calculator to estimate Greenhouse Gas (GHG) emission reductions from using biodiesel.

**Enter** the total litres of diesel used:  litres

**Enter** a Biodiesel blend (eg. 20% = B20):  %

**Enter** a Price per Tonne for CO2 credits (eg.\$10): \$

**Click** Calculate to estimate GHG reductions:

## \$8 Million / year @ \$50/T

### RESULTS

GHG Emissions with <b>Diesel</b> :	<input type="text" value="205374.4"/>	tonnes CO2e
GHG Emissions with <b>Biodiesel</b> blend:	<input type="text" value="46440.8"/>	tonnes CO2e
GHG Emissions <b>Reduction</b> :	<input type="text" value="158933.59"/>	tonnes CO2e
Equal to annual exhaust CO2 from:	<input type="text" value="27506.68"/>	Turbo Diesel SUVs
<b>Total Value</b> of CO2 Credits:	<input type="text" value="7946679.99"/>	dollars

## Biodiesel Works in Saskatchewan

- Farmers burn B100 in their tractors and combines, consuming eight months of production.
- Four months of production is burned in homes and on farms heated with oil.
- Yellow Gold Energy is a company we are involved with, which is ready to go with a project, and this could be the first of many.

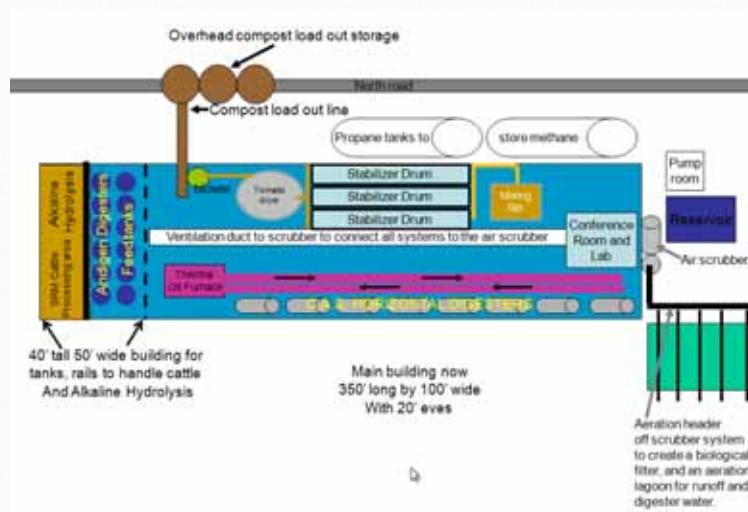
## Financial Benefit

- Interest cost on \$50 million at 6% is \$3 million.
- \$8 million of carbon income **pays for the plant** in eight years!
- Five small plants throughout Saskatchewan sequester 1,000,000 tons!
- Farmers can grow their own fuel and not be held hostage by OPEC, as they are the ones who establish Canada's fuel price!

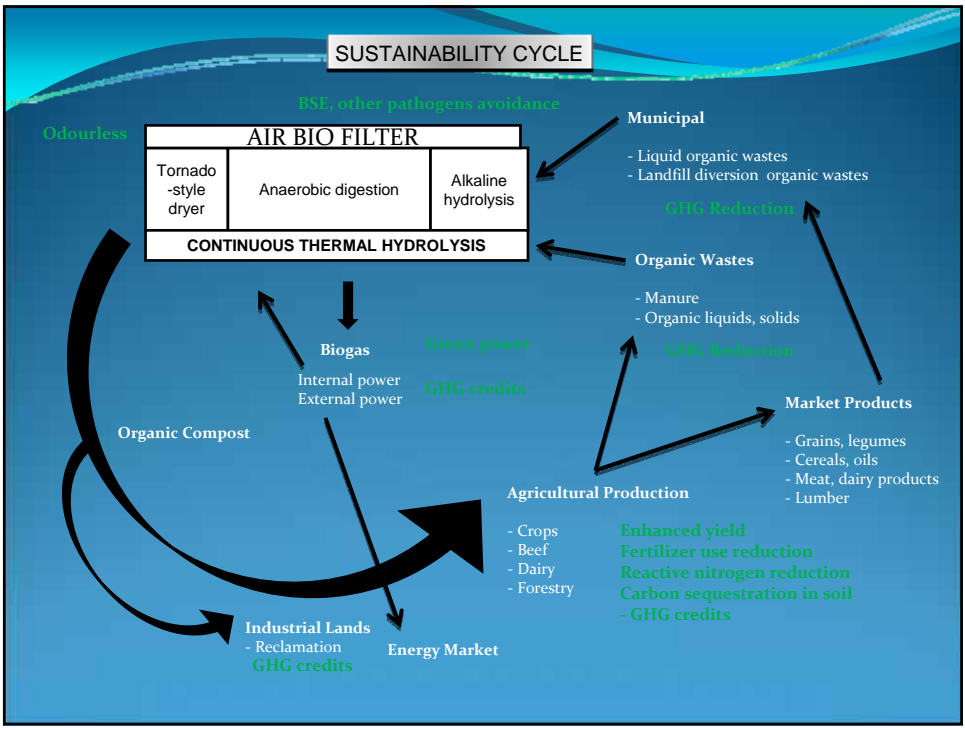
# Torro Nutrient Solutions

- Their technology beats plasma, pyrolysis, gasification as it is a biological rather than mechanical solution.
- It is being developed by Canadian farmers.
- I have invested in the company.
- Torro converts farm and city organic waste into methane and nutrients

## Two Dimensional Model



### Three Dimensional Model



## High River Facility INPUTS

➤ **MANURE** is typically the primary feedstock considered when looking at anaerobic digestion. It is an excellent biomass for producing biogas as it comes pre-populated with the bacterial groups that are responsible for anaerobic digestion. Manure has integrated feedstock materials such as bedding material, waste feed & soil and significant amounts of water.

➤ **BIO-SOLIDS** are the solid residue that remains after sewage has been treated at municipal sewage plants. After the sewage has undergone several treatment phases the solids settle out. They are typically treated by bacterial decomposition and the resulting biomass is called bio-solids.

➤ **INDUSTRIAL ORGANICS** are the organic residues (wastes) from industrial and commercial processing & most typically from the food and beverage processing industries.

➤ **BIO-BASED** materials are simply an engineering material made from substances derived from living matter. These materials are sometimes referred to as biomaterials but could include many common materials such as wood and leather but typically refer to modern materials that have undergone more extensive processing.

➤ **SPECIFIED RISK MATERIAL** is the tissues in cattle that can harbour the infectious agent for BSE (mad cow disease) which has strict federal regulations governing their disposal. This project includes the alkaline hydrolysis which eliminates the prions associated with this disease. Existing regulations regarding SRM means that these tissues are removed from all cattle slaughtered for human consumption and cannot be included in any animal feed products. Only CFIA approved facilities such as EcoAg are authorized to accept SRM. SRM has a high methane potential so are a valuable feed stock for anaerobic digestion.

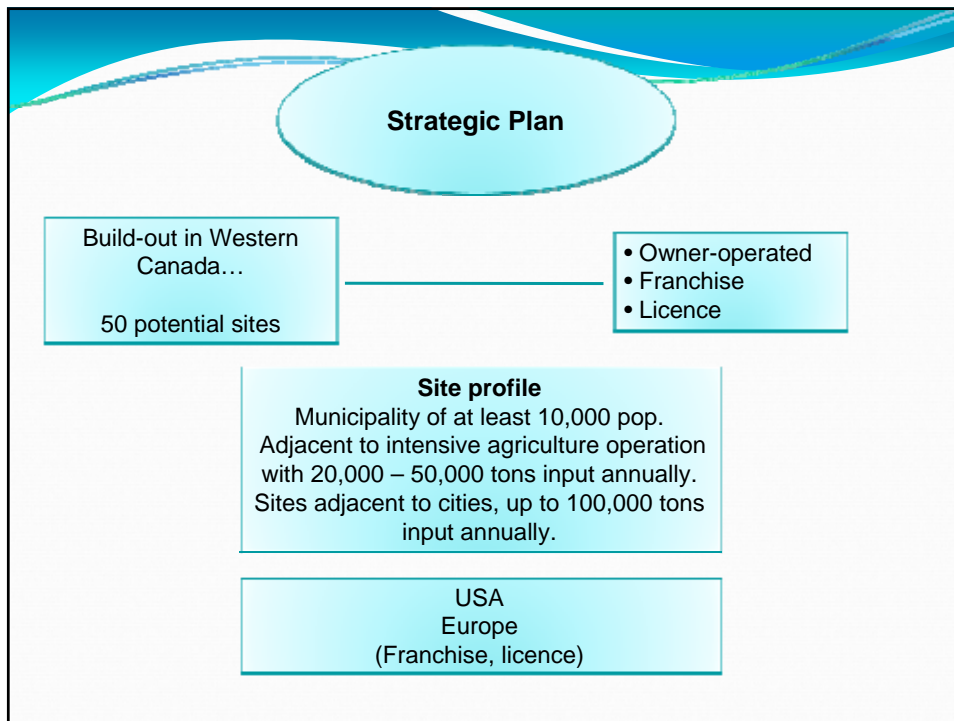
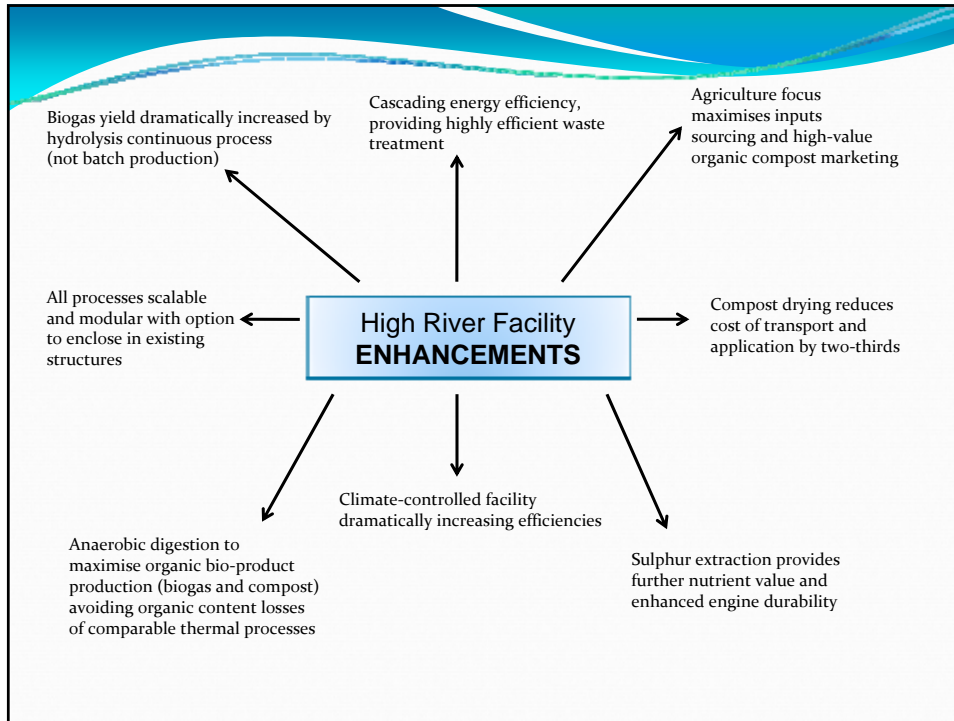
Inputs: 80,000 (off-site); 25,000 (on-site) tons annually

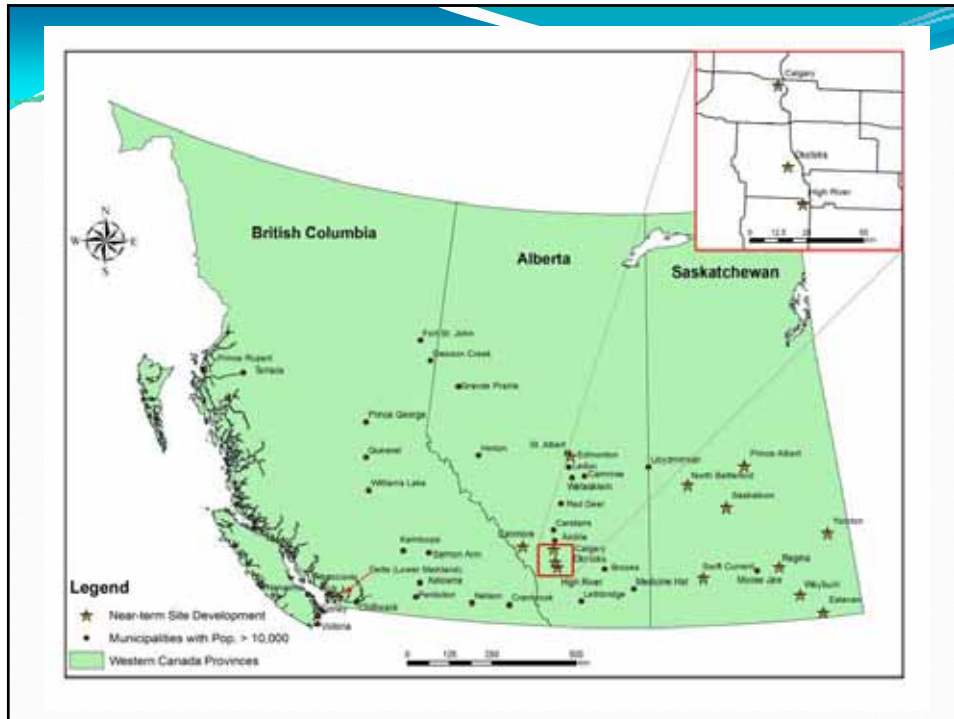
## High River Facility OUTPUTS

➤ **BIOGAS PRODUCTION**  
1 million ft.<sup>3</sup>/day

➤ **COMPOST, AMENDED**  
20,000 – 30,000 tons annually

➤ **CARBON REDUCTION**  
75,000 – 100,000 tons annually





## Saskatchewan Benefits

- Nine sites including Lloydminster could sequester between 500,000 and 1,000,000 tons of carbon.
- These sites could be licensed by Saskatchewan farmers, municipalities and cities.
- We would create eco-parks which would focus on food production, such as greenhouses, and other opportunities.

## Agroforestry

- Approximately 80,000 acres would sequester 1,000,000 tons of carbon. (125 sections)
- Our objective would be to create value-added opportunities, the \$3000 tree!
- Current carbon payment to start the industry is about \$11 per acre.
- The wild forest is at risk due to warming!

## Forestry is a Wreck

- Like cattle, it has been too dependent on marketing product to the US.
- Markets for fibre in China and elsewhere have significant long-term opportunity.
- We have “sunk value assets”, where we need to look at alternatives to rebuild the industry, which includes attracting foreign investment.



## Carbon Funded Trees

- Can have trees used both for commercial and ecological purposes, not all will have to be harvested
- Can be used to generate new revenue for cattle producers on a means test.
- Can be funded with partial foreign investment.
- Potential for 2,000,000 acres!



## Biomass Project

- We have a new technology in front of us that converts low temperature heat into electricity.
- This technology permits the construction of biomass power generation units adjacent to areas of the province which need additional power production.
- This creates the opportunity to provide value to cattle producers and the forestry sector among others.



## Saskatchewan and Alberta

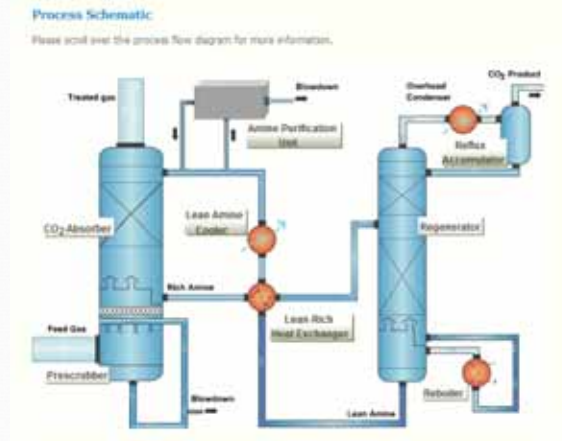
- More than \$3 billion worth of mechanical processes have been announced, where large capital injections to do the projects will leave the province.
- Big oil's lobby group ICO<sub>2</sub>N published a paper stating that it costs \$85 a ton to sequester carbon.



## SaskPower Project

- This crown is considering investing \$1.4 billion to renovate a power generation facility and add the capability to sequestered carbon.
- This money is going to a multinational oil company, an American company and an Alberta engineering firm.
- Doesn't it make sense to spend this money at home?

# Cansolv CO2 Scrubber



# Powerspan ECO scrubber







## Carbon Sequestration Fund

- A not-for-profit fund will be established owned by farmers and rural investors.
- A for-profit corporation will be established with the same ownership.
- The combination of the two will ensure public accountability, financial performance and the ability to attract outside investment.



## Carbon Sequestration Fund

- Today we are calling for expressions of interest in collaboration.
- Our goal is to complete the pre-feasibility study by mid-summer, and determine if there is sufficient interest in the agricultural and rural community.
- Only proven technology and expertise will be utilized.

## Carbon Sequestration Fund

- It is our hope that we can establish a long-term fund which will provide the same benefits that the US farmer has received as result of their participation in the Farm Credit Services.
- We also hope to provide a better environment and a better life for rural areas.

## IMG

- Quote “Oil is very good at coming forward with one voice”
- Who wants to collaborate on developing ours?
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