

# My venture into renewable Energy and Farming

















This is my veggie car....it starts on biodiesel and when warm I switch it over to sunflower oil.



I live a life of maintenance to my energy sources and machines but also rely less on unsustainable fossil fuels.

We have relied on fossil fuels to increase our farm yields using less labour and not only to drive the machinery but for use in fertilizers, is this renewable?

I woke up to the fact that we have based our entire existence on finite fossil fuels and anyone can easily figure out that if we base our livelihood on something that will eventually run out we will be in serious difficulties



There is no magic fix to all of this and with a little thought we might see our way through this if we transition to more sustainable systems. So what is sustainable? What is renewable?

Growing a garden is part of my life of maintenance. Look at the energy savings.... no fertilizers if you make your own compost, no driving to the store, no tractor as you are the energy. And yes it will take time so that means you cut down on your working for others. This is a form of renewable energy.



I have become skilled at using hand tools and maintaining my equipment. I have a complete woodworking shop and machine shop and I am looking into the many forms of renewable energy.

Both the woodworking shop and machine shop are powered by sunflower oil fueled diesel generators.



I live debt free and am constantly working on becoming more efficient with a mind to having backups that can be easily be fixed with common tools and materials. No computers in my machinery!



Unfortunately Windmills and solar cells are not sustainable in the long run and are firmly based in fossil fuels. I consider them a transitional step to move away from fossil fuels. You can't make a solar cell from a solar cell.



So how do we farm with renewables???

So Why farm?????

Since I press organic vegetable oils I wanted to find local organic oil seeds but it seems that everyone I knew grew corn and beans and did not want to try anything else so I decided to try my hand at growing sunflowers. In my first year weeds and poor soils were a big problem. This year weeds were also problem but less so as I get better equipment and more knowledge. I also did hemp this year for the first time and weeds were also problem for me but I did get a crop!



**I use straight sunflower oil in many of my diesels and also use blends of veggie oil and diesel or bio-diesel for my vehicles and other generators. I make bio-diesel to start my diesels then switch to straight heated sunflower oil when things warm up.**

**But my cost for growing and processing sunflower oil is about four times what it costs at the pump. I do however get a fair amount of waste so that goes into the fuel bucket!**



I live in an agricultural area and looking at how difficult it is to make a living on a small acreage I thought value added farming made sense. With impending fuel shortages which will not only affect your tractors but the fertilizers and pesticides just maybe pressing and using sunflower oil as fuel may make sense to transition to future energy forms.





I figure that I can earn enough money on 20 acres with the value added as my farmer friends earn with 200 acres... but with this years corn prices just maybe I am way ahead.

So what made sense to me was value added farming where I could put my transitional renewables to work.

Not just the sunflower oil used a fuel but the solar cells and windmills used on sunny days to provide energy for processing my oils and charge my fork lift.

The forklift is solar powered and an amazingly useful tool in the veggie pressing. The many large totes are moved around and lifted up to fill hoppers. It is in a sense my indoor tractor, which sometimes makes me wonder about the viability of an electric tractor for the field.



I must live within my means, not only monetarily but especially in regard to the weather: if it is sunny I utilize the sun's energy to produce things, on cloudy days I maintain equipment. Yes this might even mean that I have to choose between a hot shower at night or getting my clothes washed.



So if I have any advice it is to reduce your acreage and do value added farming so you can take advantage of the solar energy and start working with horses.

**I rent land while learning about more energy efficient means to farm.**



**My field of hemp**

My field of sunflowers that I planted late in July had a very good yield.



I own a couple of tractors, planter, seed drill, cultivators, rotary hoe, scuffler, small white combine, and cube van. All of them from the 1970's but paid for and in excellent mechanical condition.



## Some of the energy saving things I am doing

I am building a methane digester to use the waste from the oil pressing filtering.

The trash from my combine is used in the compost....and heat from that can heat water!

All of my hot water is solar heated.

All of our rags are washed using solar hot water and solar electricity and solar dried

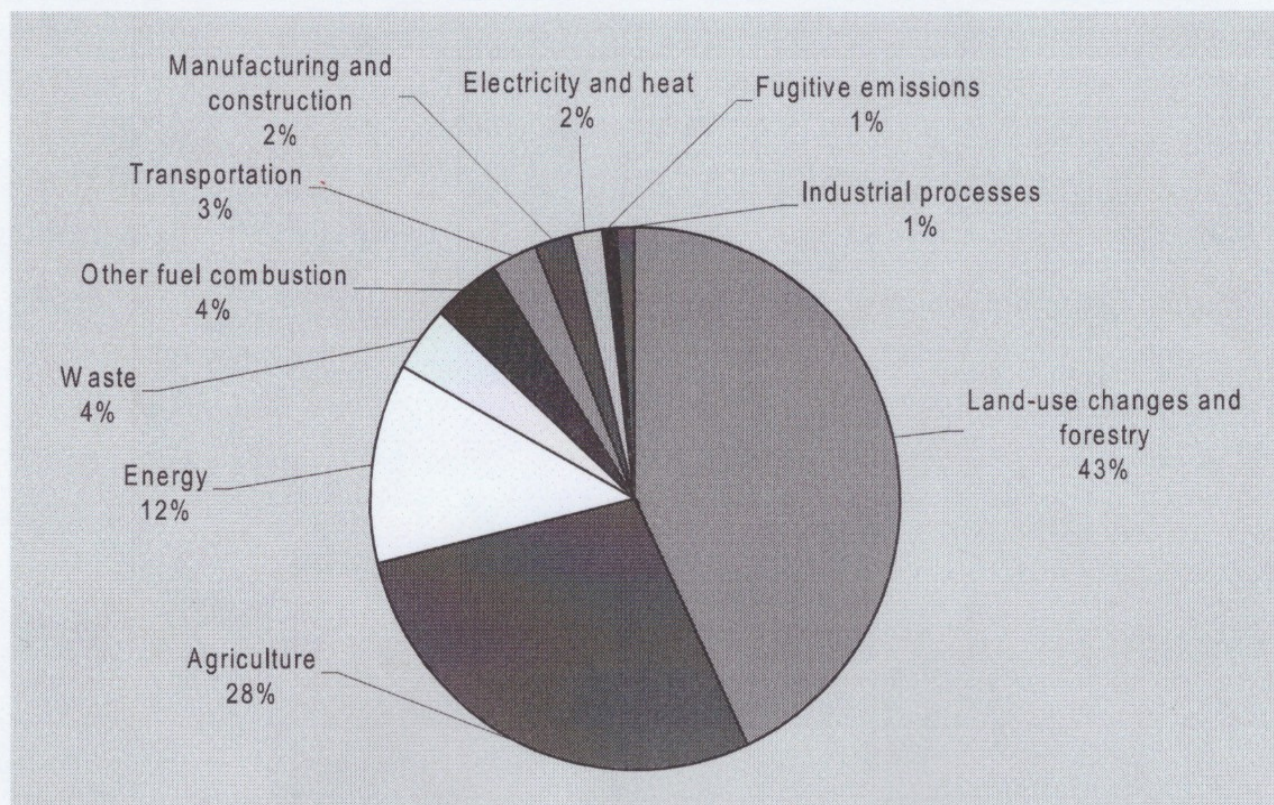


The biodiesel process is entirely solar driven in heating the oil and any electricity used.

Farming is responsible for 28 percent of greenhouse gas emissions.

While most people will think of windmills and solar cells when discussing renewable energy do not forget to consider reducing your energy use while maintaining production. And a good example of this is not only growing crops locally but selling it locally.

Figure 3: LDC GHG emissions by sector, 2005 (per cent of total emissions)



Source: UNCTAD (2010: 127).

## **Becoming more local reduces energy needed**

Our food system—which is currently overwhelmingly dependent on fossil fuels for transport, fertilizers, pesticides, and herbicides—will have to become far more localized. In the best instance, it would transition to an ecological, perennial-based agriculture designed for the long haul. *-quote from Richard Heinberg*

Re-localization will merely reverse the recent globalizing trade trend until most necessities are once again produced close by, so that we—like our ancestors only a century ago—are once again acquainted with the people who make our shoes and grow our food- *quote from Richard Heinberg*

**These are serious considerations we must consider for the reduction of our energy use.**



United Nations Conference on Trade and Development report: **Wake Up Before it is Too Late**, included contributions from more than 60 experts around the world (including a commentary from IATP). The report includes in-depth sections on the shift toward more sustainable, resilient agriculture; livestock production and reducing climate change



Developing and developed countries alike need a paradigm shift in agricultural development: from a "green revolution" to a "truly ecological intensification" approach. This implies a rapid and significant shift from conventional, monoculture-based and high external-input-dependent industrial production towards mosaics of sustainable, regenerative production systems that also considerably improve the productivity of small-scale farmers.

The United Nations Conference on Trade and Development report identified key indicators for the transformation needed in agriculture:

Increasing soil carbon content and better integration between crop and livestock production, and increased incorporation of agroforestry and wild vegetation

Reduction in greenhouse gas emissions of livestock production

Reduction of GHGs through sustainable peatland, forest, and grassland management

Optimization of organic and inorganic fertilizer use, including through closed nutrient cycles in agriculture

Reduction of waste throughout the food chains

Changing dietary patterns toward climate-friendly food consumption



If we are able to sequester GHG in the soil would this extend our transition from fossil based fuels?

Sequestering CO<sub>2</sub> into the soil could bring about a significant reduction in GHG levels. There is scientific evidence that this can be achieved with current good organic agricultural practices and that the best organic farming practices can achieve even higher levels of CO<sub>2</sub> sequestration. Building up soil organic material is one of the least costly climate change mitigation methods.

Quote from UNCTAD's Trade and Environment Review 2013 (TER13)

Biochar is another form of sequestering carbon which I have tried. I have no garden results yet as the biochar I have made is being inoculated in the compost pile.



My time to install solar cells and windmills to produce electricity is coming to an end as solar cells can't reproduce solar cells, and fossil fuels are in depletion. There seems to be no magic energy source I know of, so I am planning and preparing for the next transition for world of no electricity and little and no fossil fuels.



## So now what is my future course of action in renewables?

I am in transition from the past life that relied on fossil fuels and grid based electricity, to my present off grid self sufficient lifestyle. But I am preparing for a future that will not have electricity nor fossil fuels and basing a lot of my future energy needs on human and horse power.



*Mat learning about horse power at Ken Laings*

The only true energy efficient replacement for my tractor is a horse!

# Some rather harsh realities to consider!

*by Gail Tverberg, originally published by Our Finite World*

Green solutions tend to push us from one set of resources that are a problem today (fossil fuels) to other resources that are likely to be problems in the longer term.

The name of the game is “kicking the can down the road a little.” In a finite world, we are reaching many limits besides fossil fuels:

The danger in almost every “solution” is that we simply transfer our problems from one area to another.



Green solutions that use rare minerals are likely not very scalable because of quantity limits and low recycling rates.

. Green technology (including renewables) can only be add-ons to the fossil fuel system.

Adding intermittent renewables to the electric grid makes the operation of the grid more complex and more difficult to manage. We run the risk of more blackouts and eventual failure of the grid.

A person needs to be very careful in looking at studies that claim to show favorable performance for intermittent renewables.

It would be nice to have a way around limits in a finite world. Unfortunately, this is not possible in the long run. At best, green solutions can help us avoid limits for a little while longer.

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There are many problems with our financial system, serious issues with fossil fuels: and climate change just might snuff out the earth, there are wars to be fought over water, so I need to get real about my farming methods to reduce my dependency on outside services and business as usual by learning to work with others, developing my own crops from my own seeds, use cover crops, compost and have my own renewable energy sources. (horses)

There is a myth that we might live a lifestyle similar to our current one powered by wind, solar, and biofuels but this is not what the evidence tells us.





My life of maintenance leaves little time for golf, television watching or going to the movies but it does seem to have many other rewards such as being part of a community and knowing where your food comes from. I have learned to share abilities with others and continue my quest for a sustainable living.

I need to prepare now before fossil fuels or electricity are no longer available.....,so I can learn the difficulties, find solutions and share the knowledge.



Everything else hinges on the myth that we might live a lifestyle similar to our current one powered by wind, solar, and biofuels. Like the conservative belief that climate change cannot be happening, liberals believe that renewable energy must be a suitable replacement. Neither view is particularly concerned with the evidence.

ere it not for the lobbying efforts of big oil companies and their Republican allies. The truth is far more inconvenient than this: it will be all but impossible for our current level of consumption to be powered by anything but fossil fuels.

A number of people have created electric tractors, most with low horsepower and limited to 3-4 hours of cultivating. They are complex and my worry is how to keep the batteries up over the long winter.

This seems like a transitional stage before arriving at the solution that horses or oxen are the answer.



Globalization has also encouraged excessive specialization, increasing scale of production of few crops and enormous cost pressure. All this has aggravated the environmental crisis of agriculture and reduced agricultural resilience. What is now required is a shift towards diverse production patterns that reflect the multi-functionality of agriculture and enhance close nutrient cycles



The problems of climate change, hunger and poverty, economic, social and gender inequity, poor health and nutrition, and environmental sustainability are inter-related and need to be solved by leveraging agriculture's multi-functionally. Against this background, a fundamental transformation towards climate-friendly agriculture, consisting of a mosaic of agro-ecological production practices, must become the new paradigm, but it should not compromise other very important development objectives. Addressing the equity challenge, notably food security and farmer livelihoods.

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Addressing the equity challenge, notably food security and farmer livelihoods. Enhancing sustainable productivity, based on a new, systemically different definition that focuses on total farm output instead of productivity per unit of labour, and Strengthening resilience to resource and energy scarcity and climate change. It is therefore important to think in systems, rather than overemphasizing a climate focus

**Past and present global efforts aimed at reducing carbon dioxide emissions by Improving energy efficiency and the adoption of renewable energy sources have been unsuccessful. It is therefore critical to look at all readily available options that could significantly mitigate runaway climate change.**

Synthetic nitrogen fertilizers degrade soil carbon.

One of the main reasons for the differences in soil carbon between organic and conventional systems is that, as research shows, there is a direct link between the application of synthetic nitrogenous fertilizers and a decline in soil carbon

The report is especially harsh in stating that global trade rules should be reformed in order to work toward these ends, which is the opposite of what mega-trade deals like the proposed Trans Pacific Partnership (TPP) and the U.S.-EU Trade and Investment Partnership (TTIP) are seeking to accomplish.

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The agreements of the UNFCCC conference in Cancun proposed that hundreds of billions of dollars should be used for funding climate change mitigation activities. FAO believes that 70 per cent of the potential benefits from agricultural mitigation could go to farmers in developing countries (FAO. 2012c).

One of the interesting ideas is from Farmland LP they acquire conventional farmland and converts it into certified Organic, sustainable farmland then rent it out to organic farmers.

**Farmers** of premium quality crops and livestock to expand their production to meet customer demand, without having to go into debt to buy land;

**Investors** to benefit from owning professionally managed farmland through increased value of the land, produce, and animals;

**Everyone** to enjoy the benefits of less chemicals in our air, water, and food; more carbon sequestered in the soils; more biodiversity of birds and other creatures visible to the naked eye, as well as the invisible but extraordinary microbial life under the soils; and more high quality, less expensive, sustainably produced, locally grown food