



TEMARRY RECYCLING

CAN **HAZARDOUS WASTE** BE PART OF THE **CIRCULAR** **ECONOMY?**



INTRODUCTION

"Imagine if you could design waste out of your business, replace your product with a service or remanufacture your products. Think of beer made out of leftover bread, leasing lighting instead of buying bulbs or returning your bedsheets for remanufacture." (Source: Zero Waste Scotland)

Temarry Recycling has perfected a **True Closed-Loop Recycling** process that fits into the current Circular Economy model.

These are just a few examples of how the new circular economy model can potentially change our future.

Topics like global warming, the Paris Agreement, free trade and the U.S. Presidency of Donald J. Trump dominate the business news cycle and occupy our thoughts.

At the same time, unfettered access to global dialogue through social media allows for "heated, coarse and sometimes violent exchanges" among parties that have EXTREMELY stratified social and political ideologies.

Current business debates in the United States center around the topics of jobs, free trade, over-regulation and whether scientific research validates that the Earth is by nature warming because of man-made forces.

However, there appears to be perhaps a more

important and disturbing question lingering in the background, one that is not QUITE URGENT enough to be on center stage, BUT may be of greater importance to the long-term sustainability of world economies.....the complete depletion of vital and non-renewable natural resources.



It's at times like these when great questions linger and that fresh ideas are presented that have the ability to shift paradigms and introduce new systems of doing business..... ideas that can alter human history.

One such promising idea, which one day may prove to be as important as the Industrial Revolution, is currently taking root in Europe and slowly making its way to North America.....it is the concept of the **circular economy**.



**Recycling Is Not A Luxury,
It Is A Necessity**

You Now Have A Choice

CIRCULAR ECONOMY

Will our current method of consumption sustain the planet in the near future?



IS OUR CURRENT ECONOMIC MODEL NEARING THE END OF ITS USEFUL LIFE?

The world's current “**take, make and dispose**” economic model relies on large quantities of cheap, easily accessible materials and energy, as well as planned obsolescence.

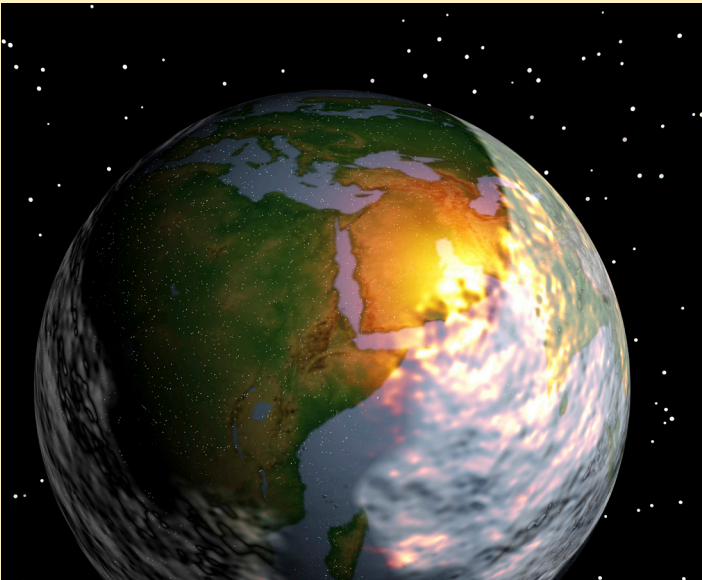
It is a model that we have relied upon since the dawn of the industrial revolution, and as resource depletion draws near, there is a **LEGITIMATE QUESTION** as to whether this model is rapidly approaching its physical constraints.

Why?

There are a few simple forces at play.



There is a **LEGITIMATE QUESTION** as to whether the **CURRENT MODEL** is rapidly approaching its physical constraints.



FACT 1

The world's population is growing.....EXPO-NENTIALLY!

Between 1900 and 2000 the increase in world population was three times greater than the entire previous history of humanity- an increase from 1.5 to 6.1 billion in just 100 years.

Current estimates put our population at 7 billion in 2017. (Source: Our World In Data)

FACT 2

There is a finite amount of non-renewable natural resources available.

This includes **water, oil, natural gas, phosphorous and coal.**

All materials that were once plentiful and cheap are reaching the limits of known reserves and a future of costly and potentially destructive exploration to find unidentified sources.

FACT 3

Price Volatility and Price Increases Make Commodities More Expensive.

As scarcity enters the equation, there is upward pressure and volatility on commodity pricing, making "CHEAP" access to the materials non-existent.



DEPLETION ESTIMATES OF HIGH VALUE NATURAL RESOURCES

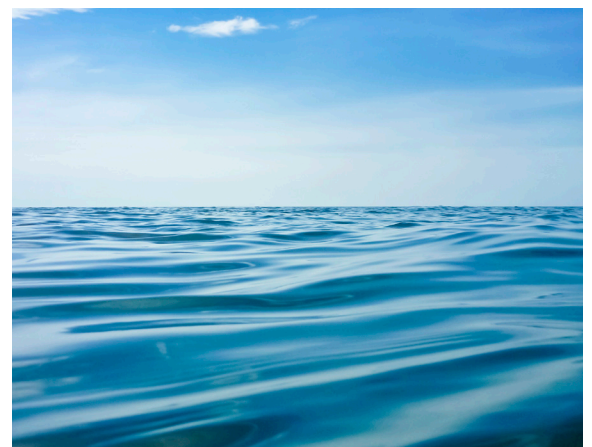
Here are the current estimates of depletion of these 5 commonly used resources:

Water: The United Nations projects that by 2025, 1.8 billion people will be living in countries or regions with absolute water scarcity.

Oil: Rystad Energy estimates that the world has about 2,092 billion barrels of reserves, or about 70 years' worth of oil at today's production rate of 30 billion barrels per year.

Natural Gas: There was enough gas in proven reserves to meet 58.6 years of global production starting at the end of 2010.

Phosphorous: With the need to feed 7 billion people, scientists from the Global Phosphorus Research Initiative predict we could run out of phosphorus in 50 to 100 years unless new reserves of the element are found.





While there are certainly opportunities for new exploration for these resources, there are a couple of indisputable facts that signal that it **MAY** be time for a change from **BUSINESS AS USUAL**.

First, our current reserves for MUCH needed non-renewable resources are close in time proximity to exhaustion. Second, a rapidly growing population will **COMPETE** for access to those resources and potentially increase current estimated rates of depletion.

THE CIRCULAR ECONOMY IS GOOD FOR BUSINESS



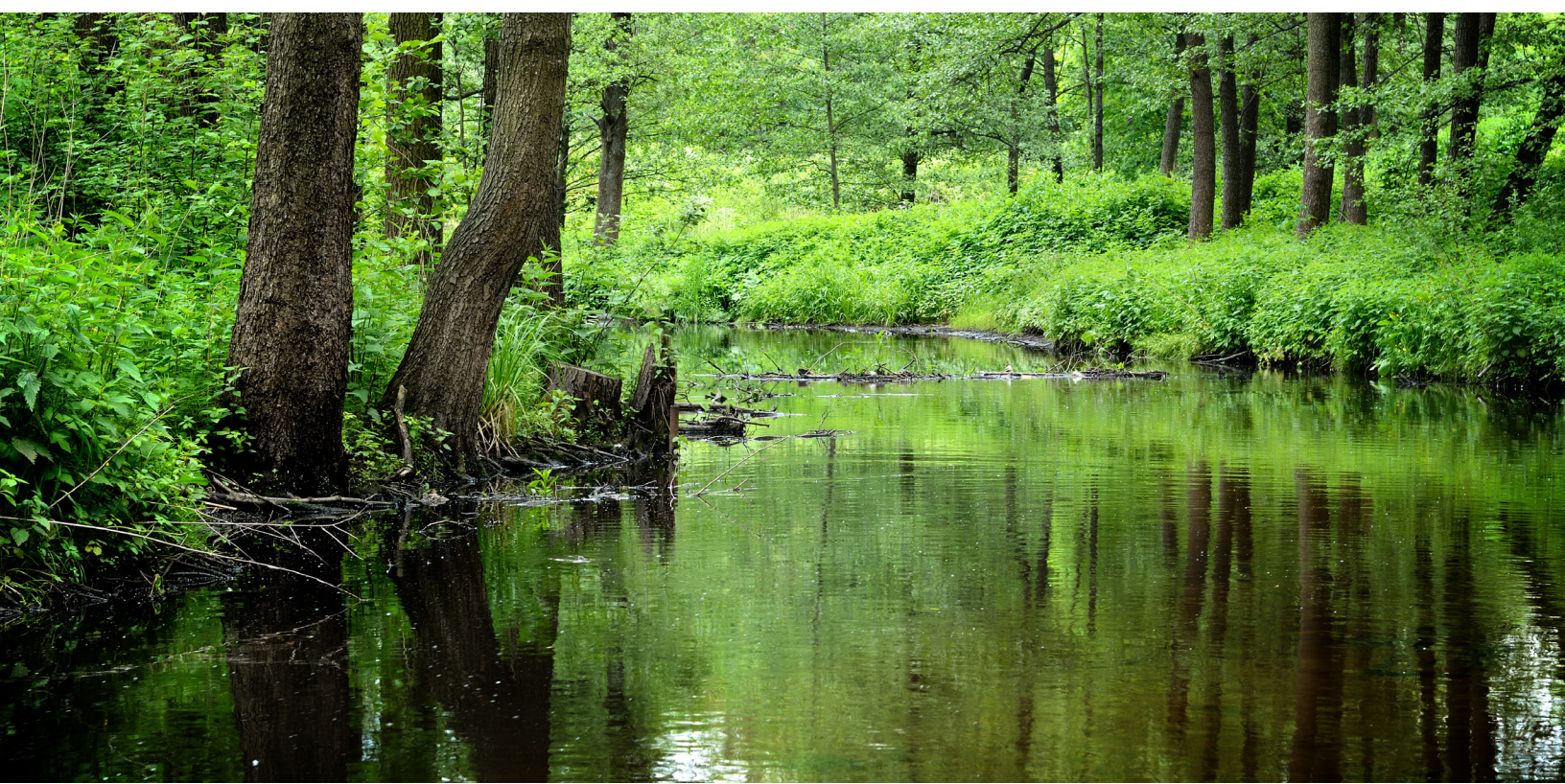
Walter Stahel, generally credited as the originator of the modern circular economy concept, makes the business case by suggesting that if someone suggests opening a manufacturing plant to make money, point out that they can make five times as much from opening a remanufacturing plant.

Experts in and outside the business community are making the business case--not just in terms of doing the right thing, but in terms of the bottom line.

"Waste represents inefficiency," says Fred Bedore, a senior director on Walmart's sustainability team. "We want to root out the inefficiencies. We want to be operating at the lowest possible cost."

He offers a somewhat dire prediction for businesses that lag: "You can completely ignore all the concepts of the circular economy, but if one of your competitors picks it up and it's successful, then you have solved your problem, because your company will disappear."

CIRCULAR ECONOMY - A POTENTIAL SOLUTION



Make no mistake, there is a growing problem. It will certainly become more challenging for the Millennial generation to come up with solutions.....50 years is all they have for some of the most depleted resources before they disappear within their lifetime.

One very promising solution is the concept of the circular economy. According to the Ellen MacArthur Foundation:

“A circular economy is an attractive and viable alternative that businesses have already started exploring today.”

“A circular economy is restorative and regenerative by design, and aims to keep products, components, and materials at their highest utility and value at all times. The concept distinguishes between technical and biological cycles.”

“As envisioned by the originators, a circular economy is a continuous positive development cycle that preserves and enhances natural capital, optimises resource yields, and minimises system risks by managing finite stocks and renewable flows. It works effectively at every scale.”

SUMMARY

Regardless of whether there is a dispute about the rate of depletion and quality of existing reserves.....the fact of the matter is that an operating model where the end result of a product's useful life is burying it in the ground is wasteful, and not the HIGHEST use of non-renewable resources.

There is a commonsense and rational argument for the encouragement of sustainable business practices.



HOW DOES IT WORK?

Scotland is one country leading the way in creating a circular economy. According to the Zero Waste Scotland website, the circular economy initiative's ultimate goal is to keep physical products and materials in circulation in a "high value state" for as long as possible in order to maximize the use of precious resources and slow precious natural resource depletion rates.

In order to achieve this goal, new products and manufacturing processes are being designed and developed in an intelligent manner that considers their entire lifecycle, from development and inception, to production, recovery and re-manufacture.

According to Zero Waste Scotland:

"It's an all-encompassing approach to life and business where everything has value and nothing is wasted. In simple terms, it can be explained as "make, use, remake" as opposed to "make, use, dispose."

This simple but radical shift in thinking has the potential to make a significant dent in the issues related to non-renewable natural resource depletion, while at the same time creating new opportunities that support a new business paradigm.

With the rising cost of raw materials, shifting regulations, increased global competition and growing concerns around sustainability related issues, business as usual is becoming a difficult and margin shrinking proposition.

In 2017, manufacturers are now trying to discover new and sustainable means of optimizing existing processes for designing and developing new products.

For manufacturing companies looking to overcome these challenges and exploit the vast commercial potential of a more connected global marketplace, exploring the concept of the circular economy may radically provide growth for an uncertain future.

CIRCULAR ECONOMY IN NORTH AMERICA

Europe is not the only area where circular economy concepts are being explored.

At Temarry Recycling, we are embracing the concept of zero waste with remarkable results.

For years, the manufacturing community has sought out ways to reduce their carbon footprint and improve sustainability. Oftentimes, being sustainable comes at a “perceived higher cost.” That cost could be higher manufacturing costs, or reduced profitability.

However, by being responsive to customer demand and having a willingness to invest in equipment and manpower, Temarry has successfully developed a process that allows them to take an existing physical product (industrial solvents) and recycle it in a closed-loop process with useful waste byproduct.



Temarry Recycling has embraced the Circular Economy concept by investing in the following technologies:

Waste to Energy - converts high BTU organic solids into steam to be used as energy on site.

Solvent Distillation - utilizes the steam from WTE as energy to power the recovery stills. By distillation, spent solvents are remanufactured and sold back into industry for their original solvent properties.

Water Treatment - extracts usable water from industrial hazardous wastes including acids, bases, coolants, oily water and latex paint. Treated water is used on site for industrial needs including WTE and cooling tower.

By coupling together multiple technologies in a closed-loop recycling system, their objectives of “True Recycling” and “Zero Waste” are achieved. More importantly, they can provide this service to their customers at a lower cost and in a cleaner, more environmentally-friendly option.

Best of all, it has been a spectacular business decision as a three-year average annual growth rate of 58.6% has been achieved.

**It is better for the environment, better for their customers, and highly profitable for the bottom line...
A true win-win for all.**

THE CLOCK IS TICKING



The concept of the circular economy is not new.

For ages, indigenous people groups in territories around the world had a special relationship with the land. They took what they needed, and used only what was absolutely necessary.

They found unique and ingenious ways to use every bit of the resources that they consumed.

We turned our backs on this model long ago in the name of “progress,” consumerism and the “inalienable right” to access Earth’s natural resources.

Imagining a world where its inhabitants lack access to important and life-sustaining natural resources like drinking water and phosphorus needed for growing our food sources is scary.

The social and political ramifications of such a scenario are bleak and ominous.

Exploring potentially profitable ideas NOW seems prudent and timely.



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