



## Terra Alpha Quarterly



April 2019

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### Origins of Earth Day and Terra Alpha

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Earth Day 2019 is the 49th since it was founded with the leadership of U.S. Senator Gaylord Nelson of Wisconsin. At the time, his purpose was to build broad awareness about the risks to essential natural resources and to build the support for action to protect them. In the following year, then President Richard Nixon (R-California) signed into law the Environmental Protection Agency. Soon after, both the Clean Air, Clean Water, and the Endangered Species Act were enacted. These actions led to substantial regulatory rules that protect the natural resources that we all rely upon for human well-being and economic activity.

In 2014, when we founded Terra Alpha Investments, our primary motivation was to demonstrate that putting our planet's natural resource constraints (clean air and freshwater; healthy soils, oceans, and forests; and vital

raw materials) at the heart of investor and business decision-making was essential to managing risks and improving long-term financial, economic, environmental, and societal outcomes.

Simply put, we saw an opportunity to redesign the investment process by putting our Earth first to yield better returns. The structural integration of the value of these resources into all decision-making is an essential improvement to our capital allocation processes, if we are going to build a sustainable economy for our growing population. We also believe that companies that recognize the long-term benefits of evolving their business to be more aligned with natural-resource constraints are simply better managed and prepared to succeed in our rapidly changing world.

It should be noted that in most financial and economic circles, natural resources (e.g., clean air, freshwater, and healthy soil, oceans, and forests) are considered “Externalities”. Meaning, that their value need not be considered by economists, financiers, and business leaders. Perhaps this was acceptable 50 years ago. However, it is abundantly clear that we can no longer afford to ignore the role and the value of these resources.

At Terra Alpha, we put the use of and impact on our Earth’s natural resources into the core of our company research as a natural progression of investment thinking in order to deliver better outcomes for our investors.

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## Circular Economy - Redesigning Our Economy for Sustainability

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As our population and its economic “takes” on our natural systems have grown exponentially over the last century, the need to re-imagine our economic systems has become essential. Continuing to use the traditional “linear” economic model is simply not plausible. We see the transition to a “circular” economy as a huge opportunity for forward-thinking companies. Companies deploying circularity in the design of product and services, as well as in their operations, are extremely advanced in their thinking. We search for advanced circular economy initiatives as a part of our fundamental analysis, as we see this as a strong indicator of companies that are building truly sustainable businesses.

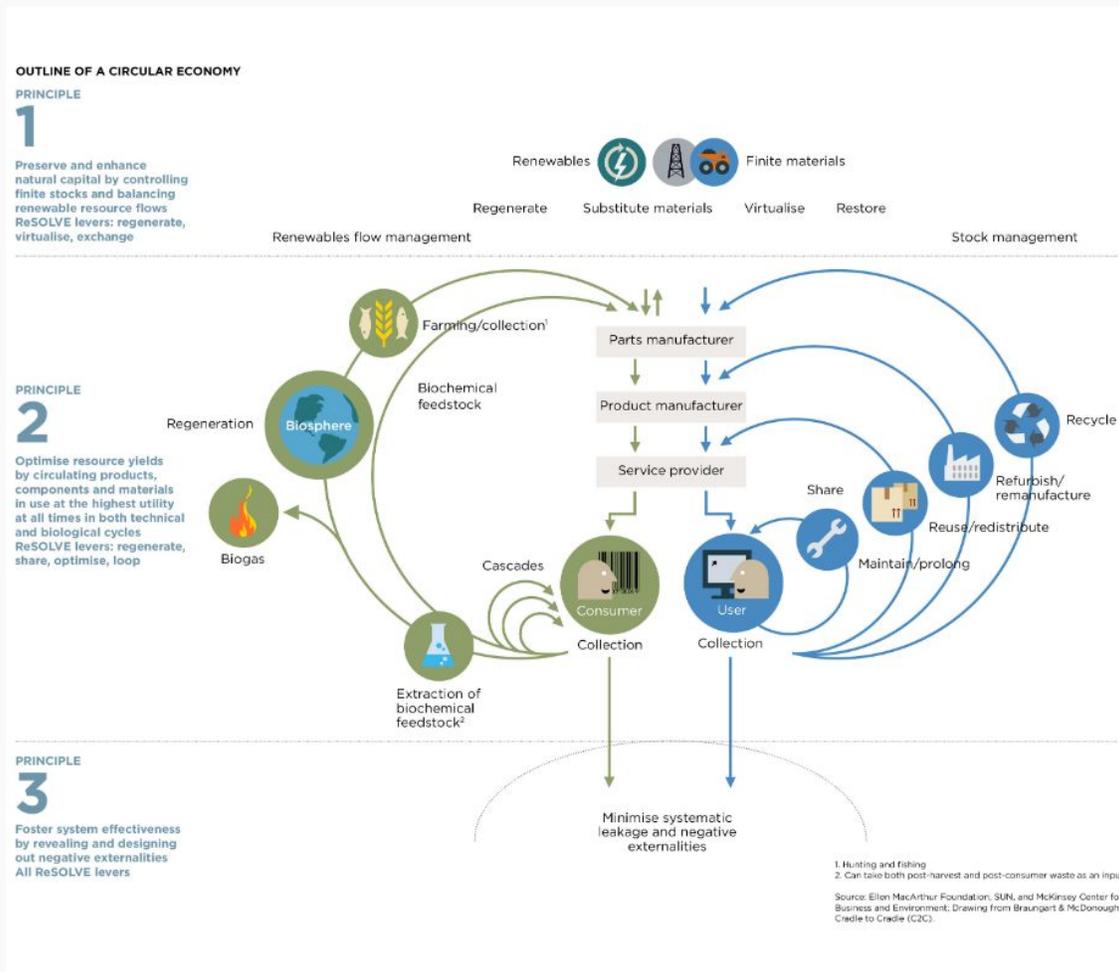
## LINEAR ECONOMY



## CIRCULAR ECONOMY



The [Ellen MacArthur Foundation](#) is the most well-regarded champion of the circular economy. The circular economy is based on three basic principles: design out waste and pollution, keep products and materials in use, and regenerate natural systems. It is fundamentally different from our current, linear economic system, in which resources are extracted, products are manufactured, distributed, and consumed, and then thrown away, sometimes after one short use (in other words, a take-make-waste economy). In a circular economy, products and services are designed with the intention of being kept in use for as long as possible, extracting maximum value, and recovering materials for a second, third, and fourth use, etc. The circular economy requires a change in thinking about the way we extract natural resources and the way we design our products. Therefore, this system is not just a slight progression of the linear economy, but rather is a systemic shift to a resilient system that will ultimately provide economic and environmental benefits. 80% of environmental impacts are determined at the design stage; to minimize these impacts, a redesign to work within our planetary boundaries is necessary. The circular economy is also, in the Ellen MacArthur Foundation's words, "underpinned by a transition to renewable energy sources."



We take the values that Ellen MacArthur Foundation, and many others, have laid out in their concept for a circular economy and apply them to the way we think about companies. The foundation makes a compelling case for businesses to apply circular economic principles: shifting to a more circular economy could unlock up to €1.8 trillion (\$2.03 trillion) of value in Europe alone. Several businesses are demonstrating this fact and proving that by leveraging closed loop principles, they can “do good while doing well”.

Two, amongst several, companies identified by Terra Alpha as leading examples are Royal Philips NV and Waste Management, Inc. Philips has deployed circular thinking in new product design. Waste Management is a leading industry operator providing infrastructure to improve circularity across our economy.

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## Royal Philips NV - Example of Product Design

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Philips, a global healthtech and personal health products company, is a pioneer in terms of how it considers sustainability within its business model and strategy. Sustainability is fully integrated into Philips' operations from design to end of life.

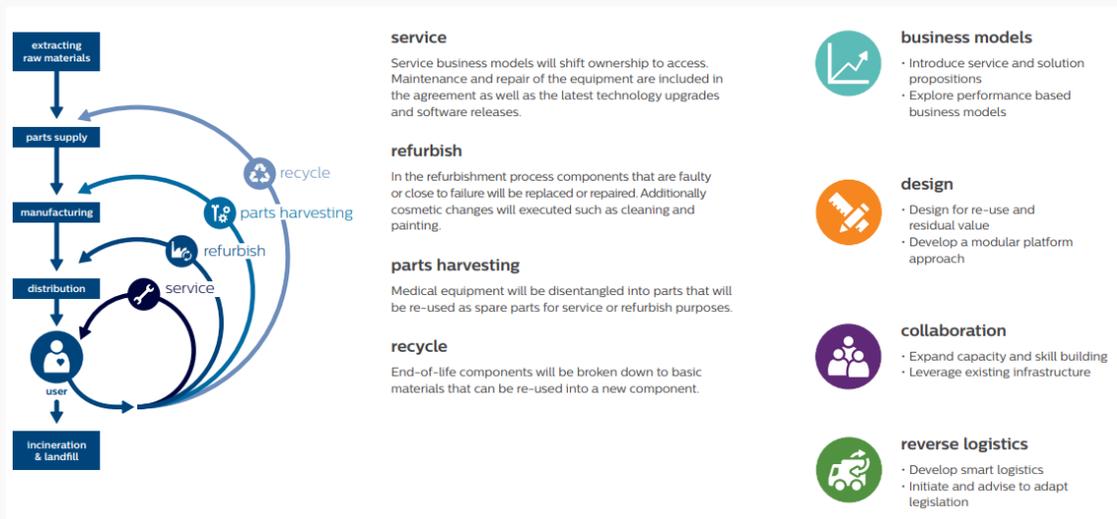
Not only do the majority of its revenues constitute as "green," but Philips also aims to have circular economy related revenue represent 15% of total revenue by 2020 (currently represents 11%). In order to reach its circularity goal, Philips assesses the environmental performance of its products over multiple life cycles, taking into account the recovery of materials and their reuse in new products. Refurbished healthcare products are one of Philips' most successful circular efforts because they offer medical facilities access to high quality systems within budget and enable Philips Healthcare to reuse vital components, driving circular economic value creation.

Philips is also contributing to the rise of the circular economy through its business model innovation. For example, the company introduced the concept of selling light as a service instead of selling physical bulbs. In this system, customers pay a service fee for the light; Philips installs, maintains, and upgrades the systems; and then Philips reuses and recycles the equipment when it is no longer needed or serving its original purpose. Philips' lighting business was spun off as a separate company, Signify, in 2016. Philips is currently the top shareholder with a 16.5% stake.

Another way Philips is making the circular economy happen is through material recovery programs. As mentioned above, Philips refurbishes its old medical equipment instead of building new equipment from scratch. This kind of forward thinking about material recovery is a vital component of a successful adoption of the circular economy.

Philips has also moved to renewable energy for its lighting demands. LED technology reduces power needs, diminishing the necessity of building new power plants.

The following graphic explains Philips' circular economy strategy and activities within its healthcare space:



Overall, Philips is setting an impressive example for other companies to follow and adopt circular economic principles. Philips' CEO, Frans van Houten, said it best: "For a sustainable world, the transition from a linear to a circular economy is essential."

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## Waste Management, Inc. - System Level Example

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Waste Management (WM) is the largest residential recycler and heavy duty commercial natural gas fleet operator in the U.S., as well as the largest landfill-gas-to-energy and largest material recovery facility operator in the country. This capacity makes the company uniquely capable of helping to transition the United State's economy to a more circular model. WM's goal is to help redefine "waste" and enable the recycling of recyclable products that are often still being landfilled. Proper recycling can reduce material lifetime emissions by over 80%. In 2017, WM recycled 15.33 tons of materials, avoiding 32.5 million tonnes of CO<sub>2</sub>e emissions.

For goods that cannot currently be recycled, WM is pioneering the effective capture of the methane gas these materials emit as they decompose in landfills. These practices reduce the environmental impact of landfills and provide a sustainable source of energy for Waste Management and its customers. In 2017, WM captured enough energy from landfill gas to power nearly 500,000 homes for a year.

WM also directly helps customers reduce their waste footprint. The company's Diversion and Recycling Tracking Tool (DART) helps project planners, contractors, architects, and building owners set "green" performance targets and measure progress. In 2015, DART helped divert more than 416,627 tons of material through reuse or recycling. WM's CORE technology similarly provides municipalities with a cost-effective way to boost

production of renewable energy. The CORE process collects organic waste from grocery stores, schools, restaurants, and food processing plants and converts this into a bioslurry. This slurry can then be used to increase energy production of anaerobic digesters at wastewater treatment facilities by over 70%. Collectively, WM aims to generate enough renewable energy to power two million households by 2020.

Often vilified for its role in our current linear economic model, Waste Management is perhaps best positioned to help transition this paradigm to a more circular one. Accordingly, the company continues to signal its commitment to growing its recycling operations, all the while innovating new ways to extract sustainable value and reduce environmental impact from all waste streams.

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## Additional News and Updates from Terra Alpha

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- Terra Alpha participated in several recent conferences to build awareness of the financial, environmental, and societal benefit of shifting capital into sustainable investment approaches. In each case we participated in panels to highlight how we approach actively managing equities in a changing world.
  - Intentional Endowment Network's Higher Education Climate Leadership Summit
  - Confluence Philanthropy's 9th Annual Practitioners Gathering "Truth and Transparency"
  - CFA Society of Washington DC's 1st ESG Asset Owners Summit
- Important reports released about the impact of climate change on our economy, financial system, and our society that might be of value to our readers:
  - Federal Reserve comments - The US Federal Reserve recently released a study which concluded that climate change represents a material risk to the US Banking System. While this was not a revelation to us, it certainly is another clear example of the growing recognition that climate change is already a business and investor risk.
  - National Climate Assessment Report - On November 23, 2018, the US Government released its fourth report on climate. The overview begins with this clear point: "Earth's climate is now changing faster than at any point in the history of modern civilization, primarily as a result of human activities. The impacts of global climate change are already being felt in the United States and are projected to intensify in the future—but the severity of future impacts will depend largely on actions taken to reduce greenhouse gas emissions and to adapt to the changes that will occur."

- Our most recent addition to the Terra Alpha team, Tara Doyle (Director of Business Development), completed NYU Stern's Sustainable Finance and ESG Investing course at the beginning of April. The two-day course was co-taught by Professors Tensie Whelan and Cary Krosinsky, and explored the emergence of ESG across a variety of sectors and asset classes. Tara particularly enjoyed learning more about Professor Whelan's work on the CSB Return on Sustainability Investment (ROSI) methodology and Professor Krosinsky's discussion around how to measure the impact of different ESG financial products and strategies.

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## Earth Day 2019 Action Ideas

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Below are a few organizations worth considering if you want to support an organization doing good work related to our planet (N.B.: Terra Alpha and/or team members are active supporters of all of these organizations).

