

# EXPANSION AND EVOLUTION – THE CHANGES IN OUR INVESTMENT UNIVERSE

## INTRODUCTION

This paper looks at the thinking that shaped the initial design of the Nanuk Global Alpha Fund investment universe and how that has evolved over time. It will review some of the new sectors that have emerged more recently and make some comment on where the theme of environmental and resource sustainability may take us in the future.

## THE EVOLUTION OF OUR INVESTMENT UNIVERSE

		Themes			
		Clean Energy	Energy Efficiency	Alternative Materials	Water, Waste, Agriculture
Supply Chain	Equipment Providers, IPPs				
	Materials, Components				
	Systems, Ancillary Suppliers				
	New Business Models				

As we launched our business in 2009, we assembled a universe of stocks positively exposed to a number of the long-term drivers we saw as impacting the world at the time. These drivers, or global mega-trends as they were often referred to then, were centred around environmental and resource sustainability - the concept that increasing populations, economic growth, the rise in living standards and increasing urbanisation are placing immense pressure on available finite resources, causing serious pollution problems and contributing to climate change. Our thesis was (and remains) that these factors are transforming a number of the largest and most important sectors in the global economy - in particular, energy, water and agriculture. The table above shows the high level groupings we adopted with the darker areas the initial focus of attention. We believed that companies exposed to this change will undergo great changes themselves, providing an excellent investment opportunity for those with a superior focus, knowledge and understanding of the complex technological, regulatory and commercial environment those changes create. This has proven correct and we are now seeing a point where the innovation and investment in technologies designed to provide solutions to resource scarcity issues are fast becoming the mainstream. As a result we've seen our universe expand dramatically over the past five years.

## **INITIAL FOCUS ON CLEAN ENERGY, THE LARGEST AND MOST TRACTABLE CATEGORY**

Initially we centred the selection of our investment universe around energy, the sector most impacted by the trends we had identified and presenting the largest set of tractable companies to examine. In constructing the universe, we identified the sectors and industries we saw as positively exposed to a number of themes related to a cleaner and more sustainable energy system, such as the increased use of renewable energy and natural gas for power generation, a shift to a more distributed power system, increased use of alternative fuel vehicles, substantial investment in power grids and the development of products and business models centred around energy efficiency. We identified companies within these industries and classified them based on the technology grouping, position in the supply chain, geographic location and level of thematic exposure. This enabled us to form trading strategies centred around how developments in policy and technology, as well as normal market dynamics would impact companies in different parts of the technology and supply chain matrix.

Our initial universe in 2009 carried a heavy focus on companies involved in renewable energy - wind, solar, hydro, biofuels - whose performance was largely driven by a variety of subsidy regimes implemented in the mid 2000s and in some cases enhanced by stimulus packages announced by many governments immediately following the global financial crisis. It consisted of 230 stocks meeting our investability criteria<sup>1</sup>, with an aggregate market capitalisation of US\$412 billion, split roughly equally between North America, Europe and Asia. It contained a wide variety of stocks, from small-scale technology providers through to large power utilities, and was still quite focused on pure-plays, companies with the majority of their business derived from renewable energy.

## **PROGRESSION UP AND DOWN THE SUPPLY CHAIN**

As our research into clean energy expanded, we started looking increasingly at companies up and down the supply chain that, while not pure-plays, had a meaningful level of exposure to the themes we were following, such that our knowledge and insight could contribute to investment outperformance. Some early examples of this included chemical companies that manufacture polysilicon used in the production of solar panels, suppliers of 'rare earth' metals used in the permanent magnets of some wind turbine generators (and a range of other applications) and carbon fibre manufacturers. Carbon fibre, twenty times the strength of steel by weight, is used extensively in the manufacture of wind turbine blades and consequently of interest to us.

## **PROGRESSION BEYOND RENEWABLES AND BEYOND SUBSIDIES**

By the end of 2010, our investment universe had expanded to over 280 companies with an aggregate market capitalisation of just over US\$770 billion. Renewable energy industries had received close to US\$1 trillion in new investment in the preceding four years and there had been some remarkable progress. In 2011, the price of a solar module hit \$1 per watt of peak power output, considered an almost unachievable milestone a mere two to three years earlier when prices were in the \$4 per watt range. In fact, prices did not stop there, continuing to fall a further 40% to US\$0.60 per watt by 2013. At the same time we saw the first incidences of wind power competing without subsidy against conventional energy. It was clear at that point that renewable technologies were on a path towards widespread competitiveness with conventional energy.

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<sup>1</sup> Companies with a market capitalisation greater than US\$200 million and a level of exposure to our themes of greater than 25%.

During this time we further expanded our investment universe to reflect the structural transformation we foresaw taking place across the entire energy industry. Some of the new sectors we added are discussed below:

### **Natural gas, a critical transitional fuel**

While natural gas is a fossil fuel, it has roughly half the CO<sub>2</sub> emissions of coal and significantly less NO<sub>x</sub>, SO<sub>x</sub> and particulate emissions when compared with both coal and oil. Natural gas is a cleaner alternative to coal and gas in the transition to a cleaner energy supply and its ability to be quickly ramped up and down is important in the integration of intermittent renewable energy technologies such as wind and solar. This is particularly true in the US where unconventional gas discoveries are pushing the prices down dramatically and regulation of coal fired power plant emissions continues to tighten. In the US we have included a wide range of companies involved in providing equipment and services to the shale gas industry and the growing network of natural gas pipelines. China, where pollution from coal fired power stations is creating an environmental disaster, is experiencing a similar trend and is seeking to double its natural gas usage between 2011 and 2015. In China, we cover the large gas distribution utilities and continue to add companies involved in supplying equipment and services to this industry. LNG is another area where we see significant growth both for stationary power generation and, increasingly, as an alternative to diesel fuel, particularly for long haul transportation. There are a small but growing number of specialised service providers to this industry.

### **Suppliers for an expanded, more robust and smarter electricity grid**

The inevitable increase in penetration of renewable energy requires a smarter and more interconnected power grid. There are billions of dollars of large-scale power transmission projects on foot globally and less than 20% of the world's one billion electricity meters have 'smart' communication capabilities, the first step towards a more consumer driven power market. We have included a broad range of companies providing services and equipment to power transmission and distribution grids around the world, including specialised construction contractors (who in addition to general grid works provide a meaningful volume of grid interconnection services directly to wind and solar developers), high voltage submarine cable suppliers, low voltage electronic equipment suppliers, smart meter manufacturers and software developers.

### **Further investigation into energy efficiency**

The most logical way to address environmental and other constraints on energy supply is to reduce demand through energy efficiency measures on both the demand and supply side of the equation. Energy efficiency is now the second largest theme within our investment universe and includes over 100 companies with an aggregate market capitalisation over US\$400 billion. Energy efficiency related stocks cover a variety of industries, the largest being the supply chain related to LED lighting. LED lights use significantly less power and last substantially longer than conventional lighting technologies. Penetration rates in general lighting markets have gone from close to zero in 2010 to over 25% by the end of 2013. Over the past 18 months we have expanded our coverage from LED materials and components suppliers to include more conventional general lighting companies such as Phillips, Osram and Zumtobel as LED is fast becoming the dominant technology within their product ranges.

### **Advanced materials for improved efficiency**

As mentioned above, advanced materials like carbon fibre have long been used in renewable energy applications. Over the past two years we have seen a much greater focus on their use as lightweight alternatives to traditional materials for improved energy efficiency in industrial applications. An example is the use of carbon fibre and other composites to reduce the weight and improve the performance of the latest range

of passenger jets from Boeing and Airbus. US based composite supplier Hexcel Corporation, which originally entered our universe as a supplier of carbon fibre for wind turbine blades, has seen substantial growth in orders in the aerospace segment. Hexcel will supply ten times the volume of composite content for each new Airbus A350 than it supplies to new legacy aircraft. The scope of applications for carbon fibre is quickly growing and we are now starting to see the first meaningful orders for structural composite material for production motor vehicles and expect this to continue. Given the increasing usage of advanced materials is a theme in its own right we have expanded our universe to capture of a broader range of products and companies.

By the start of 2013, our investment universe had grown to a total market capitalisation of over US\$1 trillion. While some of the expansion was through inclusion of new industries and technologies, much of it was organic reflecting the role that continued innovation and investment in R&D in existing technologies has played in allowing technologies to achieve cost parity, thereby opening up the new markets and driving innovative new business models.

#### **EXPANSION INTO WATER, WASTE, POLLUTION CONTROL AND AGRICULTURE**

In 2013 we started to expand the focus of the fund away from just energy and include other industries related to the overarching theme of environmental sustainability, specifically water, waste, recycling, pollution control and agriculture. We are now investing across a universe in excess of 600 stocks and an aggregate market capitalisation over US\$2 trillion. This was a logical move because, while the industries themselves are different, their characteristics and long term drivers are very similar. Electricity generation, industrial processing and agricultural production rely heavily on water and its increasing scarcity due to overuse will drive a greater need for efficiency, recycling and treatment. We continue to see advances in filtration and treatment technologies. We have included companies involved along the entire water supply chain from treatment materials and technologies through to large water utilities. One of our most interesting recent investment trends is the rapid growth in water treatment outside of major cities in China, where water pollution remains at near crisis levels.

The pollution control and waste management sectors include all forms of products, technologies and services that contribute to the improvement or control of environmental quality, the management of waste streams as well as disposal, reuse, recycling and storage or waste products. We have included a wide range of companies including large waste management and recycling companies. We are also focussing increasingly on companies supplying pollution control technologies in emerging markets, particularly China where pollution reduction is a multi year theme.

We further expanded our focus on advanced materials to include companies that improve the efficiency of extraction, processing, distribution, usage and recycling of a wide range of materials. Activities include the provision of resource recovery and waste management systems incorporating existing and new technologies. This also includes the substitution of scarce or harmful materials.

Agricultural companies are often ground zero for environmental and resource sustainability issues. The limited availability of arable land and increasing pressure on food supplies require increasing agricultural yields and more sustainable food production practices. Fertiliser use has increased 5 fold in the past 50 years while the rate of improvement in crop yields has actually declined. We have included companies involved in new techniques like precision farming, and up and down the value chain from fertiliser supply through to food processing and distribution.

## THE RISE OF CHINA

Although this paper focuses mainly on the expansion of our investment universe across sectors and technologies, it's worth talking for a moment about China. China's desire to control the extreme levels of pollution caused by recent decades of rapid economic growth and to progress on a more sustainable path in the future is a multi year, multi faceted theme. It will lead to growth in alternative energy and gas, severe restrictions on fossil fuel generation and probably just as importantly far greater efficiency in their energy use. It is not a surprise that sustainable economic growth is a central pillar of China's 12<sup>th</sup> Five Year Plan. Each year since its release we've seen new and more far reaching measures to promote clean energy and reduce pollution. The aggregate market capitalization of our Hong Kong listed investment universe has increased from US\$45 billion in 2009 to US\$147 billion at the end of 2013. We expect China will continue to act aggressively to reduce energy and emissions intensity per unit of GDP.

## ELECTRIC VEHICLES AND AUTOMOTIVE ENERGY EFFICIENCY

While companies involved in the electrification of automotive drive trains, like lithium ion battery manufacturers and electric vehicle original equipment manufacturers (OEMs), have been included in our universe since inception, the theme of automotive energy efficiency has expanded to include a variety of other solutions being pursued in response to tightening fuel consumption and emissions standards around the world. Huge progress has been made not only in hybrid and electric vehicles but also in improving the performance of internal combustion engines and reducing the weight of vehicles to improve fuel efficiency. It's not 100% clear whether we are on a path to full electric vehicles but we are definitely on a path to greater electrification. Manufacturers are developing smaller turbo charged internal combustion engines alongside electric drive trains powered by batteries and, more and more, combining the two to achieve the right balance between cost and performance. Our universe has been expanded to include suppliers of components such as turbo-chargers, injectors and engine management systems for new, highly efficient motors, electronic components used in hybrid and electric drive trains and companies making lighter weight components from materials like plastic, carbon fibre and magnesium.

## NEW BUSINESS MODELS

Another notable trend has been the growth in third party financiers. In 2013 we saw the IPO's of a number of companies specialising in providing innovative financing solutions to consumers wanting to deploy clean energy or energy efficiency technology. Using distributed generation like solar power or making structural changes to improve energy efficiency tends to involve a large up front cost, followed by a period of savings. In solar, the most notable is SolarCity Inc, a company that owns the solar systems on residential and commercial rooftops and sells the power to customers at prices below utility rates. SolarCity's sales have more than doubled since 2011 and it is at the time of writing capitalised at over US\$7 billion. A range of similar companies is operating in the US and we see it is likely that more will seek to raise capital in the public markets in the near term.

## FUTURE DEVELOPMENTS AND THE FURTHER GROWTH OF THE UNIVERSE

We see the growth of advanced, software enabled, industrial innovation as one of the important next steps in the evolution of our universe. It's been said that the first phase of the internet was about productivity, the second phase about achieving connectivity and the third phase will be its industrialisation. The integration of communication and data analysis technology offers enormous scope for improvements in efficiency across a wide range of industries. In January 2014, Google made headlines after announcing its acquisition of Nest for US\$3.2 billion. Nest produces smart thermostats and smoke detectors which, through a system of internet connected sensors, can be monitored and modified remotely using a Smartphone app interface, providing significant energy savings for customers. The integration of such systems with LED lighting, with its digital control capabilities, offers a step change in the way energy is consumed in buildings, which are responsible for close to one third of all power usage, while offering vastly improved consumer utility.

We recently added Trimble Navigation Limited to our universe. Trimble provides GPS based products designed to maximise productivity and efficiency for the construction, mining and agriculture industries. Its core products are incorporated in farm machinery to allow precision planting and harvesting using pre-programmed auto pilot steering, optimizing fuel, seed and water use. Similar products are used in mining and construction, where unmanned aircraft can supply geospatial data used in the design phase of major projects. This data is then incorporated with specialized GPS equipment during the construction process, particularly for large-scale civil works, to improve fuel efficiency and conserve materials.

Technology led innovations will also have an increasing role to play in improving industrial, and therefore resource, efficiency, providing investment opportunities not only in companies utilising these practices but the vast array of companies supplying technology, equipment and materials to them.

In our view there's no question that continued innovation, and the business models it creates, will be a far more potent force than subsidies have been in driving the greater adoption of resource efficient technologies. From here we see the themes we invest in becoming more and more mainstream. In fact, we are already now seeing the corollary of this whereby certain existing traditional business models are now clearly being disrupted. As a consequence such companies are being incrementally included in a separate "hedging only" category of our investable universe, further diversifying the available opportunity set and increasing the overall capacity for the investment strategy.

We firmly believe that this universe is now an adequate, if not yet perfect, base for the development of a (scalable) active global equity portfolio that can be expected to outperform a traditional global equity index as the world changes, inevitably and driven by capitalism, to become more environmentally sustainable. This is a clear and exciting turning point in the evolution of, and prospects for, our investment universe.

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