

St. Gallen Symposium 2007

# The Power of Natural Resources

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# 37



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Born in 1981, Kevin Chua graduated cum laude with a Bachelor in economics and a Minor in Chinese studies at the Ateneo de Manila University. He is currently pursuing his Doctorate degree in economics at Fordham University, focusing on international and development economics.

Prior to coming to the United States, he gained work experience as a credit officer for corporate and middle-market accounts in the Philippines. Kevin Chua has actively participated in national and international conferences, including the China Synergy Programme for Outstanding Youth, the Student Conference on United States Affairs and the U.S. Naval Academy Foreign Affairs Conference. As a global classroom speaker, he prepares educational workshops about the Philippines for students in selected New York public schools.

In addition to being a Fordham Presidential Scholar and a recipient of graduate assistantship from the same school, Kevin Chua was also awarded a summer fellowship at the American Institute for Economic Research.



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## The Triumph over Resource Scarcity



### Introduction

The world will never run out of oil!

This is my fearless forecast of significant global non-events never to come. Contrary to popular beliefs spun by a thriving Neo-Malthusian mentality, I offer an optimistic view, considering the intertwining factors that affect the demand and supply of natural resources. My vision presents not another doomsday prophecy of the Malthus or Ehrlich type, but a futuristic declaration of man's triumph over resource scarcity.

Resource scarcity is undoubtedly a real threat. It is a natural cap, a limiting force, a clear constraint to a basic human aspiration of continuous and greater growth. From biology, we learn the familiar bacterial population growth phase in which the death phase, a stage of population annihilation, is preceded by the stationary phase, a stage where growth slows as a result of nutrients depletion and the accumulation of toxic waste. Man, being far superior to bacteria, will not merely succumb to the death phase. Indeed, the biggest threat raised by scarcity to mankind would be the limit to growth.

Ironic enough, while scarcity remains one of the leading threats to our growth, it has, in the history of mankind, become the very catalyst to our sociological, technological and even, cultural advancement.

### The Wonders of Scarcity

To view resource scarcity as a major threat and merely as that, does not give justice to its role in the history of human development. It has, after all, affected us in three important ways: 1. Scarcity forces us to innovate; 2. It revolutionises our social taste and; 3. It defines our concept of commodity value.



<sup>1</sup> "Bacterial Growth" Available [Online]:  
<[http://en.wikipedia.org/wiki/Bacterial\\_growth](http://en.wikipedia.org/wiki/Bacterial_growth)> 3 January, 2007.

Scarcity forces man to innovate. Affirming the old adage that “necessity is the mother of invention,” scarcity has become the primary impetus for scientific and technological advancement. The great leap in technology has in truth become the single most important factor that prevented man from encountering Malthus’ apocalyptic vision of *inevitable human misery*<sup>2</sup>. While he correctly conjured that population would grow at an exponential rate, he did not consider that technology would advance at greater heights so that food production would more than satisfy the needs of the booming population.



Food, by all means, is the best exemplar of how far technology has gone to address resource scarcity. In the Philippines, the International Rice Research Institute (IRRI) has been developing hybrid rice as part of the government’s attempt to feed the expanding Filipino population over the next two decades. By 2025, 40% to 50% more rice relative to current production levels will be needed to feed the projected population of 100 million<sup>3</sup>. IRRI and other local companies have produced variants such as the Magat, Mestizo, Magilas and Rizalina, which can improve farm yields to at least 15% higher than that of the improved inbred varieties<sup>4</sup>. Hybrid rice seed is presently being used by farmers in selected regions and their farm yield experiences have shown promising results.

Scarcity also revolutionises social taste. In the pursuit of satisfying unlimited wants, man has approached the problem of constraints by looking at alternatives. A peek at history shows that during the 18<sup>th</sup> century, spermaceti or commonly known as whale oil became the popular choice for lamp oils and candles. This took a deadly toll on whale species that almost drove them to extinction. As the number of whales diminished and oil prices soared,

<sup>2</sup> Thomas R. Malthus, “An Essay on the Principles of Population” New York/London: Ward, Lock & Co. 1890.

<sup>3</sup> S.R. Obien, E.D. Redona and F.M. Malabanan, “Advances in Hybrid Rice Technology in the Philippines” Available [Online]: <<http://www.fao.org/DOCREP/003/X2243T/x2243t06.htm>> 6 January 2007.

<sup>4</sup> “Why Go Hybrid Rice?” Available [Online]: <[http://www.openacademy.ph/index.php?option=com\\_content&task=view&id=763&Itemid=105](http://www.openacademy.ph/index.php?option=com_content&task=view&id=763&Itemid=105)> 6 January 2007.





the world braced for a change in taste with the introduction of the kerosene oil. In the early 20<sup>th</sup> century, another trend was set to rise with the rapid commercialisation of plastics which became a substitute to rubber and wood products. More recently, Europe attempts to sweep a new perspective on energy by stalwartly advocating green technology as substitute to petrochemicals and fossil fuels. The world continuously changes and so is taste.

Scarcity creates value. In economics, the interaction of demand and supply for a commodity creates an equilibrium point which dictates the quantity and price in which a seller is willing to sell and a buyer, willing to buy. The rarer a commodity is, the higher the price it will command. This same principle resolves the water-diamond paradox. Water, albeit a necessity, is priced cheaply because of its abundance in the market; compared with diamond, a luxurious commodity which commands a high price due to its scarcity. This condition leads us to conclude that any depleting resource will eventually command a higher price. With higher price, demand will taper off until only limited amount of the resource is consumed in the market. Somehow, through the price mechanism, scarcity is able to solve its own problem.

The problem of scarcity in modern times requires novel approaches. So far, we have used technology to primarily augment the supply of resources, sometimes pushing the environment to the extreme. Blasting mountains to get metal ores from deep within and drilling oil even in icy regions: these are temporary solutions to an impending global depletion. This will not be enough! A complementary response is to approach the problem through the demand side as well. The objectives would be to influence public taste and divert consumer demand away from the depleting resources and into alternative products. This way, even if the availability of a given resource is alarmingly falling to low level, the demand would also be steadily declining such that there is no strain to further exploit that resource to the point of depletion.



In achieving this, I believe that entrepreneurs will necessarily perform an active role.

### The Roles of Entrepreneurs

The corporate world is in the best position to influence the taste and demand of consumers. Entrepreneurs and businessmen are the vanguards of the market, able to mobilise capital, labor, information and resources with the ultimate aim of tapping buyers. In this regard, I propose three important roles that an effective entrepreneur should perform with the goal of diverting consumer demand away from depleting resources.

1. Entrepreneurs as Co-Innovators. They will actively search, invest and adopt new technology specifically in producing alternative commodities.
2. Entrepreneurs as Information Disseminators. They will influence public opinion by campaigning for alternatives via advertisement and promotion through the media.
3. Entrepreneurs as Sellers of Affordable Alternatives. They will ensure the price affordability of the alternatives to maintain public patronage.

### Entrepreneurs as Co-Innovators

Entrepreneurs are in no position to invent things. They are business people who are concerned with asset, liability, profit and loss and must remain in those areas in which they have expertise. Nevertheless, being market-watchers, they have a good gauge of public sentiments and needs; moreover, they have control on the factors of production: land, labor and capital. Given these two attributes, entrepreneurs are in the best position to search and invest in new technologies that are being developed by academic, scientific, public and private institutions, and adopt the technology for usage and production.

Entrepreneurs and businesses should look for technologies that





specifically seek alternatives for scarce commodities such as food, oil, wood and metals. They are encouraged to do tie-ups or be co-innovators with research or public institutions through their own research and development department. This idea is definitely not new and has been in practice in the corporate world during the past years.

The Philippine case of hybrid rice production is an example. Research activities started in the country in the late 1970's with the IRRI being the main proponent. The institution developed varieties using germplasm technology, initially producing two successful breed adapted to the tropics<sup>5</sup>. Unfortunately, it took a while for this technology to reach the private businesses. For a decade, almost all rice research has been done by the public sector through national and international agricultural research centers. In fact, Hyrice, a private company, started to engage in hybrid rice development using the same technology of IRRI only in 1996<sup>6</sup>. Currently, however, the hybrid rice market is more vibrant thanks to the varieties introduced by private companies. While IRRI developed the technology, businesses learned to adopt it and became the key to the ongoing propagation of hybrid rice seeds in the Philippine rice market.

### Entrepreneurs as Information Dessimimators

Technologies for alternatives have long abounded the market. The first solar cell was built by Charles Fritts in 1883 which was vastly improved since then on, and used in Russia's satellite, Sputnik 3<sup>7</sup>. The first wind turbine for electricity production was built in Ohio by Charles Brush in 1888, which led to the invention of a forerunner of modern wind generator in Yalta, USSR in 1931<sup>8</sup>. Sadly, however, more than a century later, these technologies are not yet widely patronised by the public because of misconcep-

<sup>5</sup> Obien, Redona and Malabanan, loc cit.

<sup>6</sup> Ibid.

<sup>7</sup> "Solar Cell" Available [Online]: <[http://en.wikipedia.org/wiki/Solar\\_cells](http://en.wikipedia.org/wiki/Solar_cells)> 10 January, 2007.

<sup>8</sup> "Wind Turbine" Available [Online]: <[http://en.wikipedia.org/wiki/Wind\\_turbine](http://en.wikipedia.org/wiki/Wind_turbine)> 10 January 2007.



tions and misperceptions. To the public, solar panels require so much space while wind turbines are simply too big and noisy.

Entrepreneurs need to educate the public, disseminating correct and appropriate information, and stressing the importance of using resource alternatives. To drive consumer demand away from depleting resources, entrepreneurs must exploit the power of the mass media. Media's role cannot be underestimated because at the level of everyday life, man is routinely exposed to any of its form. The internet, television, radio, cinema, newspaper, billboard and cellular phones: these can be used to tap, inform and influence the taste and behavior of consumers. Since people's behavior is related to their social understanding, we surmise that through the media, entrepreneurs have the potential to shape social and political action. And the resounding action that we need is: Use alternatives.



### Entrepreneurs as Sellers of Affordable Alternatives

Ultimately, price will be the signal as to what extent buyers would be willing to buy an alternative product in the market. For even if there is a promising newly-invented substitute that is well promoted, consumer budget will still be the toughest constraint in diverting demand away from scarce resources. Keeping this in mind, substitutes must therefore be sold relatively cheap to entice patronage. The question now arises: Is this feasible?

The answer is yes. For one thing, what an alternative attempts to substitute is a commodity of depleting source which is necessarily priced high; much like how cheap kerosene oil became the substitute for expensive whale oil. Presently, across all parts of the globe, many countries have been implementing the use of alternatives in response to the soaring price of petroleum. One of the strategies is to blend gasoline with additives made from cheap and abundant resource of a country. The United States of America advocates the use of ethanol made from corn, Brazil uses ethanol made from sugarcane while the Philippines uses coco-methyl ester made from coconuts. And there is indeed a difference in the





price. In the Philippines, interview with local refiner and biofuel proponent, Seaoil Phils. President Glenn Yu confirms that blendedgasoline is selling at 50 centavos less per liter than unleaded gasoline and once the biofuel act is enacted to law, the difference will drop further to Php 1 per litre<sup>9</sup>.

It is true that the cost of technology to create substitute is high and that profit-oriented entrepreneurs impute research expenditures to price products. However, due to the gravity of the situation, we should make technology for alternative commodities available to businesses at the most reasonable price. Patent and rights specifically for critical commodities such as food, medicine and oil, must be relaxed and made accessible to the most number of producers. We will do this since we want to encourage entrepreneurs to mass produce substitutes in order to pull down the price and ultimately, reach the aim of enticing public consumption.

### Conclusion

The world will never run out of oil!

The world will never run out of oil because there will be no more demand for it. In the future, people will learn to patronise resource alternatives which are efficient, yet cheaper and more accessible. They will be constantly bombarded with consumer information that will help them decide which to buy and which not to, in the market. Like old days, they will still hear resource scarcity as a major threat but will also hear the technological advances that man is accomplishing to overcome this obstacle. Economics will still be taught as a regular subject in school and the law of supply and demand will still hold in the market.

<sup>9</sup> "Govt eyes scrapping oil tax over biofuels" Available [Online]: <<http://www.gmanews.tv/business/economy>> 21 January 2007.

This is my vision. It presents not another doomsday prophecy of the Malthus or Ehrlich type, but a futuristic declaration of man's triumph over resource scarcity.





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