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# \*\*\*A2 Economy Adv\*\*\*

## No economic benefit

### No economic benefit from airline industry.

Warren Buffett, 2008, annual letter to Berkshire Hathaway shareholders, <http://seekingalpha.com/article/493061-southwest-may-be-best-in-class-but-no-reason-to-own-airline-shares>

The worst sort of business is one that grows rapidly, requires significant capital to engender the growth, and then earns little or no money. Think airlines. Here a durable competitive advantage has proven elusive ever since the days of the Wright Brothers. Indeed, if a farsighted capitalist had been present at Kitty Hawk, he would have done his successors a huge favor by shooting Orville down.

## Trade inevitable

### Global Trade is Inevitable - no possibility of collapse.

Bob Dole, 11-13-07, Washington Post trade policy special report, November 13th, ’07, “Get back to the fast track on trade” <http://www.washingtonpost.com/wp-srv/politics/special/trade/stories/trop110397.htm>

Today it is more apparent than ever that the debate between advocates of free trade and protectionism is over. Global trade is a fact of life rather than a policy position. That is why we cannot cede leadership in developing markets to our competitors through inaction, thereby endangering America's economic future and abandoning our responsibility to lead as the sole remaining superpower.

# \*\*\*A2 Hegemony\*\*\*

## A2 Airpower falling now

### The U.S. remains the most dominant air power in the world – rising costs for fuel and utilities have forced fifth generation modernization by the U.S.

Mark Clodfelter, Fall 2009, is a prof. of military strategy @ the National War College in Washington, DC, a former Air Force officer, he has taught @ the Air Force Academy, the School of Advanced Air and Space Studies, and the Univ. of North Carolina @ Chapel Hill, Strategic Studies Quarterly, “Back From the Future The Impact of Change on Airpower in the Decades Ahead,” <http://www.au.af.mil/au/ssq/2009/Fall/clodfelter.pdf>

The conduct of war on a global scale using high-technology platforms has become increasingly expensive. The US Air Force—the world’s only air force with a truly global capability—has pursued a 2009 budget of almost $144 billion, roughly 28 percent of the $515 billion sought by the entire Department of Defense.9 The request is $8.6 billion more than the Air Force received for 2008, and more than $2 billion of the increase will go toward expenses for fuel and utilities.10 Just a $10 rise for a barrel of oil costs the Air Force almost $600 million a year.11 To curb spending, the service has developed a fuel blend that includes synthetic kerosene derived from natural gas, and the trend towards synthetic fuels will influence many air forces in the years ahead. The fluctuating price of oil has helped limit the US Air Force to request only 93 new aircraft for 2009.12 Of that total, just 28 are fighters—20 F-22s and 8 F-35s. The “fly away” costs for these aircraft—which include money spent only on production, not research and development13—come to between 140 and 160 million dollars for each F-22 and $50 million for each F-35—a combined total of roughly$3.5 billion.14 Such staggering costs for the latest and greatest in high-tech sophisti­cation guarantee not only that a decreasing number of fifth-generation fighters will replace their fourth-generation counterparts, but also that many nations will consider alternatives to creating their own fifth-generation fighter. Most countries simply cannot afford to fund such a project alone, and the international backing that has highlighted the development of theF-35 is a trend that will continue in the decades ahead.

### There is no air-gap between the U.S. and other major nations – multiple things such as aircraft carriers and early warning and control prove that America is still overpowering.

Alexander von Rosenbach, 3-4-2009, works as a military analyst for a private intelligence firm in London, England, and holds a Masters in International History from the London School of Economics, he has previously written for the U.S. Project on National Security Reform and worked in Washington, D.C. @ a think-tank on global security issues, On Message, “A Reality Check on Chinese Military Capabilities,” <http://on-message.net/tag/taiwan/>

If brought to bear on China, America’s air power would be simply overpowering. China has over 2,300 operational combat aircraft and several different advanced fighter production lines and is designing the J-XX, a 5th generation aircraft with advanced stealth capabilities. However, its current fleet is only 15 per cent ‘modern’ and it will take years to phase out all of its 1960s and 1970s-era aircraft. Moreover, China has extremely limited number of airborne early warning and control (AEW&C) aircraft that serve as ‘operational quarterbacks’ in the modern (digital) combat zone, meaning that China’s offensive operations would be uncoordinated and its defensive perimeter would be vulnerable to stealthy attacks. Undoubtedly, the United States, with its fleet of 3,500 modern fighters – including over 100 5th generation, super-stealthy F-22 Raptors – and dozens of AEW&Cs, would exploit this vulnerability with devastating effect. (Note: the F-22 is not able to operate off carriers, but in a conflict with China it would undoubtedly see action from America’s airbases throughout the region.) China would, clearly, be best served to keep American forces far from Chinese territorial waters or airspace. Yet, although China maintains a large navy, it has no aircraft carriers and is only in the preliminary stages of carrier research and development. This means the nation is years (if not decades) away from commissioning its first vessel, and has no ability to project its air power over the horizon. Meanwhile, in January 2009, the United States commissioned the USS George H. W. Bush, its 12th ‘supercarrier’ nuclear-powered aircraft carrier. When remembering the arrival of two American carrier battlegroups in the Taiwan Straits effectively muted Chinese aggression in the 1995-1996 crisis, it is clear that these floating, fighting cities will remain a primary deterrent in any future regional hostilities.

### U.S. airpower has overtaken any chalangers.

Eric Stephen Gons, 2011, Rand Corporation, “Access Challenges and Implications for Airpower in the Western Pacific,” http://www.rand.org/content/dam/rand/pubs/rgs\_dissertations/2011/RAND\_RGSD267.pdf

Since WWII, U.S. military successes have depended on air superiority and air dominance. Successive generations of fighters have wrestled air superiority from each adversary in turn, enabling every other use of airpower, and indeed, military power in general. The last American killed by a foreign aircraft died in 1953,1 and U.S. air superiority has enabled every other airpower capability – ISR, C2, interdiction, strike, close air support, etc. U.S. air superiority has also given land and naval forces unprecedented flexibility and security. U.S. warfighting has evolved with air dominance as an assumption, enabling positioning of overwhelming forces at large, secure bases and staging areas.

### U.S. Military is unmatched.

Reuters, 1-8-2012, “U.S. will have world's strongest military despite cuts: Panetta”

(Reuters) - Defense Secretary Leon Panetta cautioned global rivals on Sunday not to misjudge U.S. plans to slash military spending over the next decade, saying America would still field the world's strongest military and nobody should "mess with that." Panetta, speaking on CBS's "Face the Nation," also reiterated the tough U.S. stance toward Iran's threat to close the Strait of Hormuz, which is vital for oil shipping in the Gulf, saying the United States would not "tolerate" it. "That's another red line for us and ... we will respond to them," he said. General Martin Dempsey, chairman of the Joint Chiefs of Staff, told "Face the Nation" Iran had been investing in the weapons they would need to close the strait but the United States had been working to "ensure if that happens, we can defeat that." "The simple answer is, 'Yes, they can block it,'" he said. "But we would take action and reopen the strait." Asked whether it would be difficult to take out Iran's nuclear capability, Dempsey said it was his job to plan and understand the risks associated with any military option and "all those activities are going on." Pressed on whether the United States could take out Iran's nuclear sites without using nuclear weapons, Dempsey would only say: "I absolutely want them to believe that that's the case." "They need to know that ... if they take that step, they are going to get stopped," Panetta added. The United States is concerned that Iran's nuclear program is aimed at producing a weapon, but Tehran insists it is for peaceful energy production. The tough talk comes days after President Barack Obama unveiled a new military strategy that calls for a smaller force as the United States cuts $487 billion in projected defense spending over the next decade in an effort to deal with the nation's $14 trillion debt. The new strategy, which is meant to identify spending priorities as the military cuts back, calls for greater emphasis on Asia even as the Army and Marines shrink to become smaller and more agile forces. NOT 'MILITARY IN DECLINE'-DEMPSEY Dempsey said he worried that some countries might misunderstand the debate Americans are having over changing strategy and the need to cut defense spending. "There may be some around the world who see us as a nation in decline, and worse, as a military in decline. And nothing could be further from the truth," Dempsey said. He said such a miscalculation could be "troublesome" in dealing with countries like Iran or North Korea. Panetta said U.S. rivals should not misunderstand the situation. "I think the message that the world needs to understand is: America is the strongest military power and we intend to remain the strongest military power and nobody ought to mess with that," he said. Obama and Congress agreed in August to cut some $487 billion in defense spending over the next decade.

## Naval power deters North Korea

### U.S. already deterring North Korea.

FRANKLIN FISHER, 7-26-2010, Stars and Stripes, “General: Lethal U.S. airpower ready to defend ally against North Korean threats,” <http://www.stripes.com/news/pacific/korea/general-lethal-u-s-airpower-ready-to-defend-ally-against-north-korean-threats-1.112326>

OSAN AIR BASE, South Korea — The United States stands ready to bring to bear military force – including sophisticated airpower – if North Korea pursues aggression against South Korea, a U.S. Air Force general said Monday. With two advanced F-22 Raptor fighters on display in a hangar behind him, Lt. Gen. Jeffrey A. Remington issued the “defensive message” during a press conference at Osan Air Base as a large-scale show of force exercise entered its second day off South Korea’s east coast. The four-day “Invincible Spirit” exercise consists of about 20 warships, 8,000 U.S. and South Korean servicemembers, and about 200 warplanes from both countries, officials said. “The United States of America and its air power will be there, and its naval power will be there, should we need to deter and, or, defeat North Korea,” Remington told a group of mostly South Korean media.

## Navy trade-of Disad (1)

### The current fiscal environment is shaky and the navy is on the brink - perception of the air force spending money will either cause the navy to be cut or it’ll lose its tech.

Daniel Darling, 8-27-2010, international military markets analyst with Forecast International Inc, “DEFENSE SPENDING Stormy Seas Ahead for the U.S. Navy,” <http://thefastertimes.com/defensespending/2010/08/27/stormy-seas-ahead-for-the-us-navy/>

First brought to Congress’ attention in February 2006, the affordability of the Navy’s shipbuilding plan has come into question on Capital Hill. This is partly due to a belated realization by some lawmakers that after years of spending largesse the U.S. is left staring at a massive debt load. As deficit reduction starts to drive the political agenda in Washington, future defense spending plans will naturally fall under the microscope of Congressional budget committees. The Navy’s 30-year shipbuilding plan is based upon an average funding allotment of $15.9 billion per year in constant 2010 dollars. However the Congressional Budget Office (CBO) estimates that the naval plan would instead require 19 percent more in annual funding - an average of $19 billion per year for new construction, or $21 billion per year for total shipbuilding costs. If the CBO estimate is proven correct, this mismatch in projections will inevitably lead to fewer ships. Several issues contribute to the emerging gap between the Navy’s projections and what it will ultimately receive. First is the aforementioned fiscal environment. As Washington’s financial ledger hemorrhages red ink the cost of servicing U.S. debt rises ever upward, thus crowding out areas of discretionary spending. Encumbered by widening budget deficits, unsustainable debt and benefits promised to an aging demographic, going forward the U.S. government will have but little choice than to seek budgetary savings. The end result is that defense expenditures - already being squeezed from within by competing pressures related to maintaining the all- volunteer force and reequipping the military - will inevitably be sliced. When defense earmarks shrink the tendency is for service branches to be pitted against the other in a fight to protect their own rearmament interests. Expensive warships - much like expensive jet fighter programs - become vulnerable to the budget scalpel. Second, the overwhelming mismatch between American naval capabilities and those of any other country renders the Navy vulnerable to Pentagon demands to eliminate wasteful programs and seek more affordable solutions. Though the current size of the Navy is in the 280-ship range - its smallest figure since 1916 - Defense Secretary Robert Gates has called into question critics who maintain naval cuts will result in capability gaps. Acknowledging that the U.S. Navy will need to maintain trans-oceanic power projection capabilities, Gates remains nonplussed by the argument that the focus on the irregular wars is chipping away at the Navy’s ability to counter China’s expanding maritime claims.

## Navy trade-of Disad (2)

### Sea basing is a key deterrent factor, and prevents great power wars.

James Conway et. al, 2007, U.S. marine corps, “A Cooperative Strategy for 21st Century Seapower,” <http://www.navy.mil/maritime/MaritimeStrategy.pdf>

This strategy reaffirms the use of seapower to influence actions and activities at sea and ashore. The expeditionary character and versatility of maritime forces provide the U.S. the asymmetric advantage of enlarging or contracting its military footprint in areas where access is denied or limited. Permanent or prolonged basing of our military forces overseas often has unintended economic, social or political repercussions. The sea is a vast maneuver space, where the presence of maritime forces can be adjusted as conditions dictate to enable flexible approaches to escalation, de-escalation and deterrence of conflicts. The speed, flexibility, agility and scalability of maritime forces provide joint or combined force commanders a range of options for responding to crises. Additionally, integrated maritime operations, either within formal alliance structures (such as the North Atlantic Treaty Organization) or more informal arrangements (such as the Global Maritime Partnership initiative), send powerful messages to would-be aggressors that we will act with others to ensure collective security and prosperity. United States seapower will be globally postured to secure our homeland and citizens from direct attack and to advance our interests around the world. As our security and prosperity are inextricably linked with those of others, U.S. maritime forces will be deployed to protect and sustain the peaceful global system comprised of interdependent networks of trade, finance, information, law, people and governance. We will employ the global reach, persistent presence, and operational flexibility inherent in U.S. seapower to accomplish six key tasks, or strategic imperatives. Where tensions are high or where we wish to demonstrate to our friends and allies our commitment to security and stability, U.S. maritime forces will be characterized by regionally concentrated, forward-deployed task forces with the combat power to limit regional conflict, deter major power war, and should deterrence fail, win our Nation’s wars as part of a joint or combined campaign. In addition, persistent, mission-tailored maritime forces will be globally distributed in order to contribute to homeland defense-in-depth, foster and sustain cooperative relationships with an expanding set of international partners, and prevent or mitigate disruptions and crises. Credible combat power will be continuously postured in the Western Pacific and the Arabian Gulf/Indian Ocean to protect our vital interests, assure our friends and allies of our continuing commitment to regional security, and deter and dissuade potential adversaries and peer competitors. This combat power can be selectively and rapidly repositioned to meet contingencies that may arise elsewhere. These forces will be sized and postured to fulfill the following strategic imperatives: Limit regional conflict with forward deployed, decisive maritime power. Today regional conflict has ramifications far beyond the area of conflict. Humanitarian crises, violence spreading across borders, pandemics, and the interruption of vital resources are all possible when regional crises erupt. While this strategy advocates a wide dispersal of networked maritime forces, we cannot be everywhere, and we cannot act to mitigate all regional conflict. Where conflict threatens the global system and our national interests, maritime forces will be ready to respond alongside other elements of national and multi-national power, to give political leaders a range of options for deterrence, escalation and de-escalation. Maritime forces that are persistently present and combat-ready provide the Nation’s primary forcible entry option in an era of declining access, even as they provide the means for this Nation to respond quickly to other crises. Whether over the horizon or powerfully arrayed in plain sight, maritime forces can deter the ambitions of regional aggressors, assure friends and allies, gain and maintain access, and protect our citizens while working to sustain the global order. Critical to this notion is the maintenance of a powerful fleet—ships, aircraft, Marine forces, and shore-based fleet activities—capable of selectively controlling the seas, projecting power ashore, and protecting friendly forces and civilian populations from attack.

# \*\*\*A2 Environment Adv\*\*\*

## A2 CO2 in atmosphere

### Volcanoes prove that geoengineering solves warming.

JL. Stenchikov et. al, Fall 2008, V. Delworth, T. L. Stouffer, “Use of Volcanic Eruptions as a Natural Analog for Evaluating Effectsof Stratospheric Geoengineering on the Hydrological Cycle,” OceanHeat Content, and Sea Level American Geophysical Union, Fall Meeting

Large-scale human intervention into natural systems, geoengineering, is considered as a means to counterforce global warming. Among the discussed geoengineering schemes one of the most feasible (because of its relatively low cost and existing natural analog) is based on injection of sulfur aerosols or their precursors into the stratosphere (therefore here we call it "stratospheric geoengineering") to increase the Earth's planetary albedo and cool the Earth. Recent model studies, however, indicated reduction of precipitation as a side effect of injection of scattering aerosols in the lower stratosphere, and did not assess the forced long-term effect on ocean circulation and thermal structure. In this study we take advantage of the analogy between stratospheric geoengineering and volcanic impacts to better quantify the effects of geoengineering on hydrological cycle and the ocean that are crucial for assessing biospheric and economic consequences of geoengineering. We employ the coupled climate model CM2.1, developed at NOAA's Geophysical Fluid Dynamics Laboratory, and simulate responses to quasi-permanent geoengineering forcing, as well as transient impacts of the 1991 Pinatubo and 1815 Tambora eruptions. Testing volcanic model simulations against observations allows us to more reliably estimate the range of climate system responses to stratospheric aerosols, their dependence on the magnitude of forcing, and associated characteristic times. We found that stratospheric aerosol cooling intensifies ocean vertical mixing and tends to strengthen the meridional overturning circulation. Sea ice appears to be sensitive to volcanic forcing, especially during the warm season. Volcanic ocean temperature signals scale roughly linearly with respect to radiative forcing, but ocean overturning circulation response is less than linear. In two-three years after injection of aerosols, while ocean temperatures decrease and the global hydrological cycle remains suppressed, precipitation over land tends to recover. The quasi-permanent cooling from geoengineering aerosols penetrate into the deep ocean.

### Geoengineering is the only realistic approach to combat anthropogenic emissions.

T.M.L Wigley, 2006, National , A Mitigation/ Combined Mitigation Geoengineering Approach to Climate Stabilization – Center for Atmospheric Research, <http://www.essc.psu.edu/essc_web/seminars/fall2006/WigleySci06.pdf>

In the absence of policies to reduce the magnitude of future climate change, the globe is expected to warm by approximately 1–6°C over the 21st century.Estimated CO2 concentrations in 2100 lie in the range from 540 ppm to 970 ppm, sufficient to cause substantial increases in ocean acidity. Mitigation directed towards stabilizing CO2 concentrations addresses both problems; but presents considerable economic and technological challenges.Geoengineering could help reducefuture climate change, but does not address the ocean acidity problem. Mitigation is therefore necessary, but geoengineering could provide additional time to address the economic and technological challenges faced by a mitigation-only approach. The geoengineering strategy examined here is the injection of aerosol or aerosol precursors (such as sulfur dioxide, SO2) into the stratosphere to provide a negative forcing of the climate system and so offset part of the positive forcing due to increasing greenhouse-gas concentrations.Volcanic eruptions provide ideal experimentsthat can be used toassess the effects of large anthropogenic emissions of SO2 on stratospheric aerosols and climate. We know, for example, thatan eruption like that of Mt. Pinatubo caused detectible short-term cooling, but did not seriously disrupt theclimate system. Deliberately adding aerosols or aerosol precursors to the stratosphere so that the loading is similar to the maximum loading from Pinatubo should therefore present minimal climate risks.

## Uniqueness

### Oil is at the heart if relations - Saudi looks to adjust prices.

Alexander Cockburn, 10-7-2007, editor, “U.S. and Saudi Relations on Oil” Common Dreams

Pose a threat to the stability of Saudi Arabia, as the Shiite upsurges are now doing in Qatif and al-Awamiyah in the country's oil-rich Eastern Province, and you're brandishing a scalpel over the very heart of the long-term U.S. policy in the Middle East. The fall of America's ally, the Shah of Iran, in 1979 only magnified the strategic importance of Saudi Arabia. In 1945, the chief of the State Department's Division of Near Eastern Affairs wrote in a memo that the oil resources of Saudi Arabia are a "stupendous source of strategic power and one of the greatest material prizes in world history." The man who steered the Saudi princes towards America and away from Britain, was St. John Philby, Kim Philby's father, and with that one great stroke he wrought far more devastation on the Empire than his son ever did. These days, the U.S. consumes about 19 million barrels of oil every 24 hours, about half of them imported. At 25 percent, Canada is the lead oil supplier. Second comes Saudi Arabia at 12 percent. But the supply of crude oil to the U.S. is only half the story. Saudi Arabia controls the Organization of Petroleum Exporting Countries' oil price and adjusts it carefully with U.S. priorities in the front of their minds.

### Saudis need oil at current or higher prices to maintain a rebound.

Economic Times, 7-6-2011, <http://economictimes.indiatimes.com/news/international-business/saudis-not-serious-about-cutting-oil-price-clyde-russell/articleshow/9121843.cms>

However, the Saudis have effectively signalled that they believe the market is well supplied at current prices and they see no need to offer bigger discounts. In their defence, they may well have a point. Refining margins in Asia are fairly healthy and the Saudis would be justified in arguing it isn't their job to boost the profitability of refiners. In fact, the increase in the price of the Arab Medium and Arab Heavy grade probably reflects recent strength in fuel oil cracks, as these grades produce more of the residue. But if you wanted to place additional crude volumes, as the Saudis indicated they did after the Organization of the Petroleum Exporting Countries failed to agree to increase output quotas, then you needed to cut prices a lot more than what the Saudis did. The physical market seems to be bearing out the view that the Saudis aren't really pushing more crude onto the market, with JPMorgan analysts saying in a research note that tanker bookings don't point to an increase in Middle East liftings in coming weeks and are currently "well behind the pace in June." The Saudi decision to keep their August prices near those of July has shown the green light to the hedge funds to have another go at driving oil higher.

## Sustainable oil – general

### The oil supply is abundant if not infinite.

Larry Kudlow, 7-11-2008, CEO of Lawrence Kudlow & Co, http://www.nationalreview.com/corner/164404 /mccain-exactly-wrong-energy/larry-kudlow

When asked about gas prices at the pump, and whether they could go any lower, Sen. McCain said he didn’t think so because “You’ve got a finite supply, basically, and a cartel controlling it.” This is exactly wrong. There is no finite supply, or if there is we are 100 years away from it. I don’t know who has put this thought into the senator’s mind, but it is a bad thought in terms of energy and a bad thought in terms of the politics of this campaign. Look, we have the Bakken fields, the outer continental shelf and all the offshore drilling opportunities, ANWR, and so forth. There’s probably over a trillion barrels worth of reserves out there. And Republicans in the Senate are trying to move a deregulated drilling bill through the process. McCain should be backing this and talking about it.

### There are more proven reserves every year – history proves.

George Giles, 7-6-2006, <http://www.lewrockwell.com/orig6/giles6.html>

If we consider that the world is consuming a lot of oil, and that the consumption grows each and every year, the key question becomes how long until we run out? I calculate this to be about 49 years at current consumption rates. These could actually be too low and thus we could be burning it faster than that depending on rates of consumption in growing economies like India and China. The flaw in this argument is that every year we have more proven reserves at the end of the year than we did at the beginning, thanks to vigorous exploration and improved extraction technologies. This has been the consistent theme for as long as oil reserves have been calculated. There has never been a time that the oil industry has had less proven reserves at the beginning of the year than at the end, even with the intervening 365 days of consumption being factored in. Odd circumstances indeed for a scarce resource!

## Sustainable oil – technology

### Technological innovations increase oil outputs.

Jad Mouawad, 3-5-2007, NY Times, 3-5, http://www.nytimes.com/2007/03/05/business/05oil1.html?ei=5087% 0A&em=&en=115684c949c827ab&ex=1173243600&pagewanted=all

The Kern River oil field, discovered in 1899, was revived when Chevron engineers here started injecting high-pressured steam to pump out more oil. The field, whose production had slumped to 10,000 barrels a day in the 1960s, now has a daily output of 85,000 barrels. In Indonesia, Chevron has applied the same technology to the giant Duri oil field, discovered in 1941, boosting production there to more than 200,000 barrels a day, up from 65,000 barrels in the mid-1980s. And in Texas, Exxon Mobil expects to double the amount of oil it extracts from its Means field, which dates back to the 1930s. Exxon, like Chevron, will use three-dimensional imaging of the underground field and the injection of a gas — in this case, carbon dioxide — to flush out the oil. Within the last decade, technology advances have made it possible to unlock more oil from old fields, and, at the same time, higher oil prices have made it economical for companies to go after reserves that are harder to reach. With plenty of oil still left in familiar locations, forecasts that the world’s reserves are drying out have given way to predictions that more oil can be found than ever before.

### New tech can uncover abundant untapped resources.

Jad Mouawad, 3-5-2007, NY Times, 3-5, http://www.nytimes.com/2007/03/05/business/05oil1.html?ei=5087% 0A&em=&en=115684c949c827ab&ex=1173243600&pagewanted=all

In a wide-ranging study published in 2000, the U.S. Geological Survey estimated that ultimately recoverable resources of conventional oil totaled about 3.3 trillion barrels, of which a third has already been produced. More recently, Cambridge Energy Research Associates, an energy consultant, estimated that the total base of recoverable oil was 4.8 trillion barrels. That higher estimate — which Cambridge Energy says is likely to grow — reflects how new technology can tap into more resources.

### Peak-oil theorists fail to see that new tech can increase oil output.

Jad Mouawad, 3-5-2007, NY Times, 3-5, http://www.nytimes.com/2007/03/05/business/05oil1.html?ei=5087% 0A&em=&en=115684c949c827ab&ex=1173243600&pagewanted=all

Many oil executives say that these so-called peak-oil theorists fail to take into account the way that sophisticated technology, combined with higher prices that make searches for new oil more affordable, are opening up opportunities to develop supplies. As the industry improves its ability to draw new life from old wells and expands its forays into ever-deeper corners of the globe, it is providing a strong rebuttal in the long-running debate over when the world might run out of oil. Typically, oil companies can only produce one barrel for every three they find. Two usually are left behind, either because they are too hard to pump out or because it would be too expensive to do so. Going after these neglected resources, energy experts say, represents a tremendous opportunity.

### Even if oil is finite - tech makes sure we will never reach peak oil.

Jad Mouawad, 3-5-2007, NY Times, 3-5, http://www.nytimes.com/2007/03/05/business/05oil1.html?ei=5087% 0A&em=&en=115684c949c827ab&ex=1173243600&pagewanted=all

“Yes, there are finite resources in the ground, but you never get to that point,” Jeff Hatlen, an engineer with Chevron, said on a recent tour of the field. In 1978, when he started his career here, operators believed the field would be abandoned within 15 years. “That’s why peak oil is a moving target,” Mr. Hatlen said. “Oil is always a function of price and technology.”

## Sustainable Oil – Technology

### Current tech prevents optimal oil extraction, new tech will increase production.

Kevin Bullis, 5-3-2006, MIT Tech Review, <http://www.technologyreview.com/energy/16767/page1/>

The amount of accessible oil worldwide could eventually be increased by roughly 30 percent with the help of new drilling, imaging, and oil extraction technologies, including the use of microbes, say MIT researchers. Theoretically, this number could be even higher; in a best-case scenario, the amount of oil that could be produced would double. On average, using current techniques, about two-thirds of the oil in an oil field gets left behind, says Richard Sears, a vice president at Shell International Exploration and Production, Houston, TX. "The fundamental problem is basic physics. It's not like the oil is in big tanks. We produce oil from rock -- sandstone. The oil is actually held in the very small spaces between the grains of sand. The problem is, when you try to move that oil out of the rocks, because of the size of the spaces, you end up with a layer of oil coating the insides of the rocks." About one-third of the oil in fields will always be inaccessible. That leaves one-third that could be recovered with new technologies -- which is equal to the amount that would have already been extracted.

### Electromechanical energy and microbes can be utilized to greatly improve production.

Kevin Bullis, 5-3-2006, MIT Tech Review, <http://www.technologyreview.com/energy/16767/page1/>

Future innovative technologies could include new methods for breaking the adhesion forces that trap oil inside tiny pores in rock. These include technologies for focusing acoustic and electromechanical energy to disrupt the surface forces between oil and rock; new chemicals and even microbes could also help. The microbes would work in part by digesting the long hydrocarbons of thick oil into shorter, lighter ones that flow more readily. If the new technologies prove out, the results could be dramatic. "In the U.S., there could be as much as 40 billion barrels that could be produced, and global the figures are much, much more," Toksöz says. The 40 billion barrels is about four times the amount thought to be recoverable from the controversial plan to drill in the Arctic National Wildlife Refuge.

### New technologies are economically feasible and will increase production.

Michael Lynch, 8-24-2009, Former Director for Asian Energy and Security at the Center for International Studies at MIT, <http://www.nytimes.com/2009/08/25/opinion/25lynch.html>

In the end, perhaps the most misleading claim of the peak-oil advocates is that the earth was endowed with only 2 trillion barrels of “recoverable” oil. Actually, the consensus among geologists is that there are some 10 trillion barrels out there. A century ago, only 10 percent of it was considered recoverable, but improvements in technology should allow us to recover some 35 percent — another 2.5 trillion barrels — in an economically viable way. And this doesn’t even include such potential sources as tar sands, which in time we may be able to efficiently tap. Oil remains abundant, and the price will likely come down closer to the historical level of $30 a barrel as new supplies come forward in the deep waters off West Africa and Latin America, in East Africa, and perhaps in the Bakken oil shale fields of Montana and North Dakota. But that may not keep the Chicken Littles from convincing policymakers in Washington and elsewhere that oil, being finite, must increase in price. (That’s the logic that led the Carter administration to create the Synthetic Fuels Corporation, a $3 billion boondoggle that never produced a gallon of useable fuel.)

## Oil depend DA (1)

### Low oil prices perpetuate dependency and blocks the transition to renewables.

Vivienne Walt, 2008, times business writer, TIME, “OPEC wants you to pay more for gas”

For many consumers, the only silver lining on the global financial crisis has been the falling oil price it has precipitated. But OPEC is determined to put an end to the relief at the gas pump. Concerned to protect their countries' financial health, oil ministers from the 13 members of the cartel of oil-producing countries meet in Vienna on Friday with only one item on their agenda — cutting their oil output in order to drive up world prices. Oil prices have been slashed by more than half in just three months, from $147 a barrel in July to as low as $67.50 a barrel on Wednesday. That has prompted current OPEC president, Algerian Oil Minister Chakib Kjelil, to propose that the group cut up to 2 million barrels from its daily 32-million barrel output, hoping to push the price back up to about $90 a barrel. The effect would be to raise prices in the U.S. and Europe, just when Western leaders are scrambling to soften the landing of their slowing economies. OPEC's proposal, fumed British Prime Minister Gordon Brown last Friday, "is absolutely scandalous." Never much loved outside of its member states, OPEC is a convenient whipping boy for leaders responding to consumer pain, but oil analysts say it may not deserve all the blame. Its members have certainly earned mammoth windfalls from rocketing oil prices over the past year, but some face the prospect of domestic political upheaval if oil prices fall too low. The recent windfall has, for example, given Iran — OPEC's second-biggest oil producer — a cushion to neutralize the impact of Western sanctions over its nuclear program, and to ameliorate the effect of a struggling economy. But because Iran imports crucial refined diesel to keep its cars and factories running, it needs to sell its crude oil for $60 a barrel or more, according to oil analysts. So, President Mahmoud Ahmadinejad has plenty of incentive to push his OPEC colleagues to vote for production cuts: If falling prices force his government to cut its heavy gasoline subsidies, he won't help his chances of reelection in a tough presidential race next June. "There is a lot of popular unrest when they cut subsidies or put on gas quotas," says Robert Johnston, Director of Energy for the Eurasia Group in Washington. For similar reasons, Venezuela President Hugo Chavez wants OPEC to cut production by about 1 million barrels a day, warning that his country would face dire economic problems if oil prices continue falling. The needs of gas-guzzling Western nations, however, are exactly the opposite. Ironically, though, a falling world oil price negates the goal stated by Barack Obama and John McCain to cut America's dependence on foreign oil, especially from the volatile Middle East. That's because although it only accounts for about one-fifth of U.S. imports, oil from Saudi Arabia, Kuwait and other Middle Eastern countries is much cheaper to produce than the more politically popular alternative of oil drilled in Canada or the United States. Even more than the lower prices, OPEC leaders have been jolted by the lightning speed with which they have tumbled. But their influence over prices is more limited than many in Western countries believe, or OPEC members would like: OPEC members, in fact, produces only one-third of the world's oil; the rest comes from Canada, Russia, Mexico, and several smaller countries. The cartel sets production quotas for each member, but those are routinely violated by bigger players, like Saudi Arabia, whose well usually have spare capacity. "We saw that when prices went up to $145 a barrel OPEC was helpless," says Fadhil Chalabi, executive director of the Center for Global Energy Studies in London, who was an OPEC official during the last global oil crisis of the 1970s. Nor did they anticipate the sharp fall in demand which has helped send the price of their oil plunging. "This is not like the 1970s," says Chalabi. "OPEC has become a price-taker, not a price-maker." Still, if taking a couple of million barrels a day off the market has its desired effect, OPEC will once again be cast among the villains of the current economic downturn.

## Oil depend DA (2)

### Dependence on foreign oil funds terrorism, allows for national security holes, and creates potential economic collapse.

Brian R. Stuart, April 2007, USAF, Major in the U.S. air-force, “Oil and Security Don’t Mix: Why the US can’t Ignore Dependency”

The issue of United States (US) dependence on foreign oil impacts most Americans. Every time "prices rise at the pump." Americans feel and recognize the impact on the economy and their income. However, the price of gasoline is one very small aspect of the larger issues revolving around the amount of oil the US consumes, and more precisely, the amount of oil the US imports. The American lifestyle is currently dependent upon an uninterrupted flow of foreign oil into the US to meet the current and future needs of the nation. Halting or interrupting the flow of oil would have a detrimental impact on the US economy and way of life. From an economic perspective, the nation would sec an increase in the price of transporting goods and services, which would drive higher prices for all consumer goods without a corresponding increase in wages. Additionally, economists predict sharp spikes in oil and gasoline prices could easily drive the US into a prolonged recession. "All economic downturns in the United States since 1973...have been preceded by sharp increases in the price of oil."1 "Even a relatively minor disruption of the global oil supply has the potential to cause economic dislocation for tens of millions of Americans."2 But the economic implications are only part of the issue. The US military would suffer from budgetary constraints. Reasonable forecasts for the price of gasoline for tanks, airplanes, and vehicles establish the military fuel budget. A sharp and unexpected price increase would wreak havoc on the military budget. The military could be forced to cut spending in order to pay for gasoline required to maintain readiness and fight the Global War on Terrorism (GWOT). The ability of the US to utilize all instruments of power depends upon an uninterrupted supply of foreign oil. The United States dependence on foreign oil is significant national security concern. Oil dependence erodes national security, constrains US actions and diplomatic effectiveness, and retards global development by perpetuating corruption and terrorist activity. Political influences in regions of the world that supply oil are limited, and this is no secret. This fact inhibits the US' ability to promote its stated objectives and pursue national interests; at the same time, it strengthens terrorist networks. "The US has been forced to coddle some of the world's worst despots just because they held the key to our prosperity hence compromising American values and principles.'"

## Oil countries look to U.S.

### Oil countries look very closely to U.S. consumption – it’s about perception.

Paul Roberts, 2004, energy expert and writer for Harpers,“The End of Oil”

Within the oil world, no decision of any significance is made without reference to the U.S. market, nor is anything left to chance. Indeed, the world’s oil players watch the American oil market as attentively as palace physicians once attended the royal bowels: every hour of every day, every oil state and company in the world keeps an unblinking watch on the United States and strains to find a sign of anything — from a shift in en­ergy policy to a trend toward smaller cars to an unusually mild winter —that might affect the colossal U.S. consumption. For this reason, the most important day of the week for oil traders anywhere in the world is Wednes­day, when the U.S. Department of Energy releases its weekly figures on American oil use, and when, as one analyst puts it, “the market makes up its mind whether to be bearish or bullish.”

## Renewables cause oil prices drop

### Renewable energy causes prices to drop – turns case.

Gavin Longmuir & Stanley Alhajji, 2-26-2007, petroleum engineer/Energy economist and associate professor at Ohio Northern University, "Need for a Balancing Act: Reducing Oil dependence Without triggering A Global Crisis,” Middle East Economic Survey

The paradox of today’s quest for energy independence is that pursuing it actually increases energy insecurity. However much politicians who call for energy independence might prefer it otherwise, the market has chosen oil as a staple energy source. So governments should ignore neither the valid interests of oil exporters, on whom consumers in their countries depend, nor exporters’ reaction to the rhetoric of energy independence or to steps taken to achieve it. Isolationist politicians may not care about other countries, but they should think twice lest they harm their own. The biggest threats to the world’s energy security are not terrorist attacks or embargoes by oil-producing countries – short-term events that can be dealt with quickly and effectively through various measures, including reliance on strategic petroleum reserves, increases in production, and diversion of oil shipments. Instead, the main threat to the long-term sustainability of energy supplies is the mismatch between investment in additional capacity and energy infrastructure, on one hand, and growth in demand for energy on the other. Major oil exporters could respond in a variety of ways to political posturing on energy, most of which would exacerbate rather than ameliorate the global energy situation. One of the most plausible scenarios in response to calls by governments and politicians around the world to reduce or even eliminate dependence on oil is a relative decline in investment in additional production capacity in the oil-producing countries. An energy crisis in this case is almost certain if those who press for energy independence fail to provide a workable alternative in a timely manner. Of course, these efforts will almost surely fail to replace oil within a reasonable time, as they are not market-driven and require heavy subsidies. Indeed, confronted by political leaders’ hostile rhetoric, oil producers have a strong incentive to increase production in order to lower oil prices to levels that undermine the economic feasibility of alternative energy sources – a logical interventionist policy to counter the anti-oil interventionist policies of consuming countries. After all, a collapse in oil prices would be a death sentence for several new energy technologies, and, not incidentally, would increase demand for oil. Even if the oil producing countries do not intentionally bring about an oil price collapse, they might accelerate production as much as they could in the short term, while oil still had some value. But lower oil prices, coupled with expectations of a decline in demand, would in turn put pressure on oil-producing countries to reduce planned investments in production capacity or even to mothball major projects, as they have done in the past, leading to a decline in oil supplies. Thus, if alternative energy technologies did not come on-line by the time oil production started to fall, global shortages would become inevitable, while closing the investment deficit would take years, even in the face of rising oil prices. In spite of these possibilities, let’s assume that plans for energy independence succeed, and that several European countries, the United States, Japan, China, and India become self-sufficient. Major oil exporters could then seek to use their now less-valuable oil at home as cheap fuel for an expanded heavy industrial sector. Instead of exporting oil directly, they could export their energy embedded in metals, chemicals, and manufactured products at prices that undercut anything producers in the oil-consuming countries, especially Europe and the US, could match, given their dependence on higher-cost alternative energy sources. Energy independence thus could destroy entire industries, especially petrochemicals, aluminum, and steel. In fact, cheap energy in oil-producing countries might make their new industries competitive with those in China, India, and Southeast Asia. The net result would be a loss of jobs and weakened economies. Countries might end up energy-independent, only to become steel-dependent or petrochemical-dependent. So what would come next? Would politicians, with their perpetual fascination with “independence,” attempt to eliminate dependence one commodity at a time? Put another way, would the cause of “energy independence” seek to reverse globalization? Oil is a finite resource. Only long-term, market-oriented, economically viable, and sustainable energy options can ensure economic growth in both producing and consuming countries. Isolationist policies, by contrast, always lead to shortages and discontent. No matter how energy independence is pursued, it will never amount to anything other than an unattainable – and potentially dangerous – fantasy.

# \*\*\*Counterplans\*\*\*

## CTL CP

### CTL best option and better solves their warming advantage.

WCO (World Coal Association), 12-12-2011, ”Coal to Liquids,” <http://www.worldcoal.org/coal/uses-of-coal/coal-to-liquids/>

Benefits of CTL: Coal to liquids has a number of benefits: Coal is affordable and available worldwide enabling countries to access domestic coal reserves – and a well-supplied international market - and decrease reliance on oil imports, improving energy security. Coal liquids can be used for transport, cooking, stationary power generation, and in the chemicals industry. Coal-derived fuels are sulphur-free, low in particulates, and low in nitrogen oxides. Liquid fuels from coal provide ultra-clean cooking fuels, alleviating health risks from indoor air pollution Increasing energy demand and rises in vehicle ownership means that it is important for countries to review the balance of their energy supply mix. 96% of all energy used in transport comes from petroleum; it therefore dominates the transport sector. CTL – along with gas-to-liquids (GTL) and biomass-to-liquids (BTL) - allows countries the option of diversifying the liquid fuel supplies. Interest in constructing CTL plants tends to increase when the oil price is high and countries are concerned about the cost of their oil imports. When the oil price drops, the economics of coal to liquids plants are less favourable.

### CTL solves long term - oil is finite.

Scientific American, 3-29-09, “Turning Coal to Liquid Fuel The U.S.--and the world--has an abundant supply of coal. So does it make sense to turn it into a replacement for oil?,” <http://www.scientificamerican.com/podcast/episode.cfm?id=turning-coal-to-liquid-fuel-09-03-26>

Coal is everywhere. It can be dirty and dangerous to wrest from the ground, but we're probably not going to run out of it anytime soon. And, unlike oil, the U.S. has a large domestic supply. As a result, some have suggested that for "energy security" transforming coal into a liquid fuel alternative for cars might make sense. To do that, coal is mixed with oxygen and steam at high temperatures and pressure to produce a gas. This gas is then reacted in the presence of a catalyst to produce a synthetic oil. Already, several industrial conversion plants exist, and the U.S. Air Force, for one, has used the resulting fuel to fly planes. But there are two flaws with turning coal into oil, beyond its cost. First, it takes a lot of energy to loosen up the carbon bonds in coal. Second, all that energy use results in the emission of a lot of carbon dioxide—the most ubiquitous greenhouse gas causing climate change. In the journal Science this week, chemical engineers suggest that incorporating hydrogen produced from solar, wind or nuclear-derived electricity into the process could eliminate this problem. Of course, it would take billions of dollars to do that and there might be a few better uses for that money, electricity or even hydrogen: advanced biofuels, electric cars or fuel cell vehicles. After all, electric cars running on juice from coal-fired power plants use no foreign oil, less coal and even emit less CO2 overall than cars burning gasoline.

### CTL development in the Air force is key to saving the airline industry.

Timothy Ryan, 6-25-2008, serves on house armed services committee, serves in legislative sub comitte on energy development and four term representative, a.k.a badass, "Coal, Not Oil, Could be Defining Issue of 2008 Election," Lexis Nexis

Such an achievement would have tremendous positive impact on national security, energy security, and the economy as a whole. In addition to its use by the military, CTL based jet fuels could provide an important price break to the struggling commercial airline industry. If the Air Force and the airline industry – two extremely large energy consumers - converted to CTL, there would likely be significant downward pressure on fuel prices across the entire industry, including the prices we pay at the pump. It would provide a significant boost to the coal industry, to the states where the conversion plants would be built (where new jobs constructing the plants and running them after they are built would be created), and to the airline and tourism industries.

## CTL solves airpower

### Only CTL can solve the collapse of air readiness.

James T. Bartis, 2008, senior policy researcher for the RAND Corporation's Project Air Force, a federally funded think tank, "Producing liquid fuels from coal," <http://www.rand.org/pubs/monographs/2008/RAND_MG754.pdf>

Addressing Budget Impacts of Fuel-Price Volatility. The U.S. Air Force and Navy interest in unconventional fuels is motivated in part by recent budgetary shortages created by unexpected, rapid increases in the price of fuels. A 2006 Office of the Secretary of Defense briefing on energy costs noted that the “recent dramatic increase in fuel costs was not programmed and puts pressure on [the] DoD budget. Further increases are likely. DoD is considering alternatives and options to alleviate pressure on [the] budget and increase energy security” (Illar, 2006). In a recent 12-month period, the U.S. Air Force saw its per-gallon price for JP-8 rise 31 percent, from $1.74 to $2.53 per gallon. The Air Combat Command found itself facing a shortfall of $825 million in must-pay funds (Wicke, 2006). In 2006, the U.S. Air Force paid more than $5.8 billion for jet fuel, more than twice the $2.6 billion it spent in 2003, even though 2006 fuel consumption was significantly below 2003 levels. Supplemental funding has prevented such rising fuel costs from interfering with combat missions. But these dramatic increases have forced DoD to make adjustments elsewhere, e.g., in cutting flying hours in pilot-training programs, trimming personnel, and postponing repairs at military installations (Montgomery, 2007). Such changes can lead to lower combat readiness of aircrews and reduced quality of life for airmen (Wicke, 2006). Although our research did not directly address instability of prices, we are able to make some observations about how to mitigate this problem. In particular, by using contracts that incorporate longer-term future prices, for either conventional or CTL based fuels, whichever is less expensive, the U.S. Air Force could lock in prices during the programming phase of the Planning, Programming, Budgeting, and Execution System process. It could then employ those prices to buy conventional or unconventional fuels during the execution phase. Alternatively, DoD could adjust the revolving fund it has used for many years to manage changes in energy prices between a programming phase and an execution phase.11 By recapitalizing the fund and changing operating targets in it, DoD could allow it to absorb larger unexpected fuel-price increases than it has apparently been able to accommodate in recent years. DoD could then use monies from the fund to buy conventional or CTL-based fuels, whichever would be more cost-effective.

## Iraq net-benfit

### Dependence hurts operability in Iraq.

Yochi Dreazen, pub. date: 5-21-2008, Wall Street Journal, "US Military Launches Alternate Fuel Push,” accessed: 9-24-08, Lexis Nexis

Just as important, the military is increasingly concerned that its dependence on oil represents a strategic threat. U.S. forces in Iraq alone consume 40,000 barrels of oil a day trucked in from neighboring countries, and would be paralyzed without it. Energy-security advocates warn that terrorist attacks on oil refineries or tankers could cripple military operations around the world. "The endgame is to wean the dependence on foreign oil," says Air Force Assistant Secretary William Anderson.

### Nuclear War

Jerome Corsi, pub. date: 1-8-2008, PhD Harvard university in Political Science, World Net Daily, "War with Iran is imminent," accessed: 9-25-08, Lexis Nexis

If a broader war breaks out in Iraq, Olmert will certainly face pressure to send the Israel military into the Gaza after Hamas and into Lebanon after Hezbollah. If that happens, it will only be a matter of time before Israel and the U.S. have no choice but to invade Syria. The Iraq war could quickly spin into a regional war, with Israel waiting on the sidelines ready to launch an air and missile strike on Iran that could include tactical nuclear weapons. With Russia ready to deliver the $1 billion TOR M-1 surface-to-air missile defense system to Iran, military leaders are unwilling to wait too long to attack Iran. Now that Russia and China have invited Iran to join their Shanghai Cooperation Pact, will Russia and China sit by idly should the U.S. look like we are winning a wider regional war in the Middle East? If we get more deeply involved in Iraq, China may have their moment to go after Taiwan once and for all. A broader regional war could easily lead into a third world war, much as World Wars I and II began. Odds are that we will not enter 2008 with all three of these leaders – Bush, Olmert, and Ahmadinejad – as heads of state. If President Bush does go the military route in the Middle East, he will bet his presidency on that decision.

### CTL can solve.

Alex Michelini, pub. date: 12-10-2004, Great Possibilities, "Ghost Gold Mill COming Back to Life," accessed: 9-20-08, Lexis Nexis

They've dusted off the crushing equipment, swept out the engineering and administrative offices and brushed a fresh coat of brown paint on the interior tanks, and yellow and green paint on the railings.The spiffing-up at the shuttered Grant Gold Mill on the gentle slopes of Ester Dome in central Alaska, 10 miles northwest of here, is part of the effort to convert the mill into a demonstration plant producing liquid fuel from low-grade Alaska coal that could provide a significant answer to the world's oil crisis."We're all cleaned up and ready to convert. We have everybody on standby," said Garry Anselmo, CEO of Silverado Gold Mines Ltd., whose subsidiary, Silverado Green Fuel Inc., ("green" as in environmentally-friendly) is inching closer to obtaining the government and private funding to get the project rolling.The “green fuel” process involves crushing the subbituminous coal, found in enormous quantities in Alaska's Beluga coalfields, into very fine particles that are then pressure-heated to release some of the water. The resulting combustible mixture of particles suspended in water is earmarked for use in industrial boilers and big diesel engines.And maybe some day in jetliners and automobiles."It's very safe, very clean and a low-cost replacement for industrial burning of oil," said Anselmo from his Vancouver-based Silverado offices. Anselmo said "green fuel" can be made from Alaska coal for $14 an equivalent barrel of oil -- even less, $9 a barrel, from coal in the Wyoming-Montana coal region.With oil prices surging and calls for alternative fuel reaching a clamor, the conversion of Grant Gold Mill into a demonstration plant has taken on new urgency. "All these developments have given new life to our project," said Anselmo. "Raw oil burning is expensive and too dirty."Over the next couple of months, Silverado executives will meet with key members of the Alaska congressional delegation, the Department of Energy, the Department of Defense and the Department of Homeland Security to discuss funding for the project and the potential of the liquid fuel for use in the war on terror -- specifically, in Iraq.

## CTL switches the world from oil

### Other countries are willing to model us they see the infeasibility of a continued reliance on oil. Only the plan would be able to help the rest of the world transition.

David Sandalow, 6-21-2007, Energy and environment scholar @ Brookings. and David. Goldwyn President of Goldwyn International Strategies, <http://www.cfr.org/publication/13911/energy_security.html?breadcrumb=%2Feducators%2Fmultimedia%3Fpage%3D20>

It is an extremely high producer of heat-trapping gases. The Sasol plant in South Africa is the single largest point source of carbon dioxide in the world.  And if you move from oil to liquid coal without advanced sequestration technologies, you're almost doubling the amount of global warming gases you put in the atmosphere.  So, from that regard, it is an extremely unattractive solution.  It's also quite expensive. And as I understand the commercial dynamics right now in this country, the vendors who are, including Sasol, who are looking for opportunities here are looking for 20-year contracts from the Department of Defense in order to assure the success of their investment. GOLDWYN:  But countries are going to use it. And as the statistical review just showed, carbon concentrations are increasing, demand for coal is increasing.  Half the carbon is from China, all of that's from new coal plants.  You know, so countries are going to do it whether we like it or not, and so are we. So I think the answer is that we've got to in the interim make serious investments in carbon sequestration.  And we've got to get the Congress to some extent out of the business of picking which state the project is going to be in.  And there's a study, this MIT study that John Deutch and Ernie Moniz did, who said, you know, you've got to have big investments, big three different technologies and try and commercialize it because otherwise you're not going to be able to tell countries not to use coal.  You've got to focus on -- SANDALOW:  Countries are going to use coal for all electricity generation for sure.  I think it's much less sure that they'll be moved towards coal to liquids to -- for our fleets.

### Additionally, with this global boom of CTL, the technology has taken off globally within the last 15 years and is feasible.

James T. Bartis, 2008, senior policy researcher for the RAND Corporation's Project Air Force, a federally funded think tank, "Producing liquid fuels from coal," <http://www.rand.org/pubs/monographs/2008/RAND_MG754.pdf>

Shared Technology Base. While commercial-scale experience with FT CTL is extremely limited, the technology base has moved considerably forward, especially over the past 15 years. This is because the front end (i.e., gasification and gas cleaning) of an FT CTL plant uses much the same technology as do other systems that involve coal gasification, and the back end uses much the same technology as do modern GTL plants, as shown in Figure 3.1. According to a worldwide survey, at least 27 new facilities based on coal gasification began operations between 2000 and the end of 2007 (NETL, 2007f). Nearly all of these coal-gasification facilities are devoted to producing synthesis gas for the manufacture of chemicals, mainly ammonia and methanol. Three facilities are dedicated to producing electric power using a combination of gas and steam turbines that is often referred to as an integrated gasification combined cycle (IGCC). Coal-gasification facilities, whether for chemicals or power, involve much the same operations as would be required at the front end of a modern FT CTL plant—namely, preparing and feeding coal to a pressurized gasifier, deeply cleaning the synthesis gas, removing and handling the ash or slag rejected by the gasifier, managing heat transfers, and, in some cases, shifting the carbon-monoxide-to-hydrogen ratio and removing carbon dioxide.

## Cement CO2 advantage CP

### Cement C02 sequestration solves better for global warming.

David Biello, 8-7-2008, Scientific American's associate editor for environment and energy, Scientific American, “Cement from CO2: A Concrete Cure for Global Warming?,” <http://www.scientificamerican.com/article.cfm?id=cement-from-carbon-dioxide>

Today, this flue gas wafts up and out of the power plant's enormous smokestacks, but by simply bubbling it through the nearby seawater, a new California-based company called Calera says it can use more than 90 percent of that CO2 to make something useful: cement. It's a twist that could make a polluting substance into a way to reduce greenhouse gases. Cement, which is mostly commonly composed of calcium silicates, requires heating limestone and other ingredients to 2,640 degrees F (1,450 degrees C) by burning fossil fuels and is the third largest source of greenhouse gas pollution in the U.S., according to the U.S. Environmental Protection Agency. Making one ton of cement results in the emission of roughly one ton of CO2—and in some cases much more. While Calera's process of making calcium carbonate cement wouldn't eliminate all CO2 emissions, it would reverse that equation. "For every ton of cement we make, we are sequestering half a ton of CO2," says crystallographer Brent Constantz, founder of Calera. "We probably have the best carbon capture and storage technique there is by a long shot." Carbon capture and storage has been identified by experts ranging from the U.N.'s Intergovernmental Panel on Climate Change to the leaders of the world's eight richest nations (G8) as crucial to the fight against climate change. The idea is to capture the CO2 and other greenhouse gases produced when burning fossil fuels, such as coal or natural gas, and then permanently store it, such as in deep-sea basalt formations.