Ethanol diplomacy: The international enforcements toward enlargement and consolidate of ethanol as massive energy source

Paulo Manduca
Interdisciplinary Center of Energy Planning – University of Campinas - UNICAMP
Universidade Paulista - UNIP

Mauro Berni
Interdisciplinary Center of Energy Planning – University of Campinas UNICAMP

Introduction: energy security

The processes of energy generation, directly or indirectly affect a significant part of political and economic agenda (international and domestic) and any goal that involves rising standards of welfare, economic and social development, political autonomy are the power supply. Thus, the choices in the energy field imply challenges in almost all sectors of social life. For example, reflects investment in research and development (R & D), without which the industry does not move and strangling the supply necessarily lead to reduction targets originally set. Also the vector to generate energy has become a choice fraught with risk because it can lead to negative impacts in the environmental, social, security and political aspect.

The issues of energy entering the field of international politics by the fact that the great countries do not produce all the energy they consume. The ideal situation of energy security for the whole nation is energy self-sufficiency, ie, when all the supply that the country needs to move the economy and supply its armed forces is produced within their own borders. Most major economies today depend on energy supply from other countries. In this situation the energy dependent nations seek to exert maximum control over suppliers and the conditions of supply. Energy security makes sense to consider all aspects. In fact, energy security, given the nature of the phenomenon in question, always involves an approach because, in most situations.

We can realize that energy is not a regular product only but it is a strategic resource it means, who has it would use it in many ways, denying or providing to someone for any reason. Any maneuvering of the great actors - producers or consumers - causes systemic impacts .That is reason that energy means energy security by states worldwide.

If we analyze the energy policy of the last 40 years we can observe the impacts of various forms of crises: skyrocketing prices in the international market and its side effects on the global economy especially for poor countries, the increased competition among nations for niches opportunities, disputes with potential conflicts generator whose use of force is justified or legitimized by the way you use energy resources they have. The oil crises have led to overestimation of the role energy-supplying countries, and it always causes an imbalance in the system international.

All these aspects were observed in the energy crisis due to the oil shocks of the 1970s and since then there is an intense debate about energy security.

An overview of energy security was given by Haluzan. Firstly, we can understand energy security through excellent source natural aspect. That is the Haluzan's point: *Energy security is a term that refers to the availability of natural resources for energy consumption in a given period*

of time (short or long-term period in order to estimate future energy security). (Ned Haluzan http://www.renewables-info.com/energy_definitions/energy_security_definition.html)

A specific country would have enough natural resources but they should know how exploit it. That's other important issue. A further factor is the countries need Money to start de exploitation and finally, a logistical system to share it.

Thus far, the international energy problem orbits oil. In the first half of the twentieth century expansion of the petroleum industry was so strong and the conditions that the big oil companies met in producing countries was so good that oil became the main source of energy for transport in the world offering unbeatable prices compared any other energy source. However conditions have changed greatly in recent years with the creation of OPEC in 1960 and the emergence of movements of nationalization of reserves. Since then, the major consumers realized how dependent they are on this energy resource. Since then, the powers seek ways to influence the behavior of the supplier countries.

The internal face of the problem has to do with the management system of production and distribution. The problems focus on system capacity, the interruptions due to strikes or accidents affecting the supply of energy and also the discontinuity of investments that will affect your upgrade technical/technological. In the 1990´s and 2000´s Brazil and Argentina had period of blackouts due to problems in the transmission of electricity while in 2002 a prolonged strike in the Venezuelan company PDVSA left Caracas runs out of gas. Bolivia involves serious problems of leakage of investment and downgrade technique to keep the production wells.

The external face of energy security involves factors that are outside the control of the states but on which states attempt to exercise some level of control. Until recently the most important aspects of energy security were focused on the possibility of interruption of supply and price stability. In this field the core countries and major oil corporations seek to influence the political regimes in exporting countries in Africa and the Middle East. Not always is this attempt to influence was welcomed by the governments or societies. The most disastrous example of an attempt to control the political system was the U.S. policy towards Iran before the Islamic Revolution. But there are more successes than failures when referring to the initiatives of the powers and transnational corporations to influence oil-producing countries. The current problem is the powers of the increasing cost of maintaining such a policy. Besides the factor of political instability in many exporting countries, there are new international actors both within companies and among the powers. China is an appropriate example to illustrate this statement.

China has become a central player in the energy field. The voracity with which the Chinese economy consumes energy resources has been one of the factors that justify the persistence of oil prices at high levels. Indeed, China has developed an intense diplomatic activity in relation to a number of countries, especially in Africa, to ensure a special relationship that will ensure supply. In this field China is able to perform the most daring maneuvers because China has an easy time dealing with difficult situations (crisis countries social, political and humanitarian) by restricting their actions by any principle in the field of human rights, democracy or the environment as United States and Europe do.

There is something different in the scenario. The market was dominated by the same group of U.S. companies (the seven sisters) for decades saw the rise of emerging companies (Petrobras, Petronas, and Gazpron). There is something important to note from these data. Is that some of the major oil companies today are under the control of their governments. Then they are widely used as instruments of foreign policy but it is far become a problem.

The direct involvements of the national government as producer finally give greater stability to the market. The political regimes are largely dependent on oil exports money when the energy nationalism reborn. Venezuela is a classic example of a system dependent on oil that has an openly anti-American diplomacy and whose government would not survive without the sale of oil to the United States. This interdependence makes foreign trade between the two countries absolutely stable.

On the other hand, the involvement of national states removes the major consumers of oil corporations and transnational responsibility for system security and on reinvestments. This is the case of the pre-salt reserves in Brazil. To promote its exploitation of the Brazilian government gave concession contracts. With this, the government placed the entire risk of the operation and the responsibilities of developing technology and to raise money on the back of the state company Petrobras. Thus, companies that join her in the pre-salt will be providing technical services for which they receive a portion of the extracted product. Similar model was adopted in Venezuela and Bolivia and has been copied by other countries of South America to transnational companies the apparent loss of space in the transition to nationalist models of regulation is largely compensated by the reduction of risk as the know-how and capacity to mobilize resources in the international market participants makes them indispensable in Brazil, Venezuela or Bolivia.

The energy nationalism also leads to a number of other points to consider: political instability in supplier countries, the legal uncertainty due to threats or uncertainties about the rules for the participation of transnational corporations and get an artificial control of supply.

The price factor is a component of the concerns in the field of energetic security. In recent years the high demand for oil has justified the high prices. The factors affecting prices are the same factors that affect supply, but supply / demand do not determine the price of petroleum. Speculation of financial agents on any fact involving producers leads to artificial increase in prices of oil. Speculation becomes unreal price of the product and higher prices as more undesirable partners Toward Money flows (like Iran). There is an inconsistency in the more important countries policy. The speculators are being tolerated by then due to complex web of interests. Recently, president Barak Obama asked for improvement of the CFTC (Commodity Futures Trading Commission authority) the authority to oversee energy markets and to punish the speculators (Obama proposal would rein in oil speculation April 17, 2012|By Jessica Yellin, CNN Chief White House Correspondent http://articles.cnn.com/2012-04-17/politics/politics_obama-oil-speculation_1_oil-market-market-manipulation-energy?_s=PM:POLITICS)

The struggle to control the players of the scrip market in the United States comes from the first oil crisis. In 1974 during the first oil crisis the American Congress established the CFTC to Avoid speculation over oil prices. Josh Clark wrote about it.

> *The CFTC was established by Congress in 1974 specifically to prevent speculation from artificially inflating the price of commodities. Over time, its powers were slowly stripped. The scope of the CFTC's power to regulate is limited to trading within the formal setting of the New York Mercantile Exchange (NYMEX). Traders on this exchange must file daily reports on exchanges so the commission can keep an eye on speculation.* (In response to calls for better regulation of oil futures, Congress introduced the Consumer-First Energy Act in May 2008. Josh Clark http://money.howstuffworks.com/oil-speculation-raise-gas-price2.htm)

On national security approach the energy security means firstly to keep plants saves of any attack from enemies or natural disasters like earthquakes or floods.

But the strategic focus of foreign policy and become a matter of defense when the nation is at risk. The National Security Strategy of the United States de 1991 refers to energy security in this way.

Security of oil supplies is enhanced by a supportive foreign policy and appropriate military capabilities. We will work to improve understanding among key participants in the oil industry of the basic fundamentals of the oil market. We will also maintain our capability to respond to requests to protect vital oil facilities, on land or at sea, while working to resolve the underlying political, social and economic tensions that could threaten the free flow of oil.

(http://digitalndulibrary.ndu.edu/cgi-bin/showfile.exe?CISOROOT=/strategy&CISOPTR=4823&CISOMODE=print)

The terrorist attacks of September 11 th Represents a new phase to energy security because it has shown how fragile the producer and logistic system of energy sources are. Moreover, how fragile the oil nations are dependents. That is the Brawn et al (2003) point: *After September 11, 2001, policymakers and industry have had to consider the threat of intentional damage to a much greater degree than before*. (Brown, M ; R, Christie and Gagliano, T *Energy Security* the National Conference of State Legislatures, Washington, D.C: 2003)

The issue of plant safety is domestic, but for countries highly dependent on the international market, the predicament is also international. On this view, issue the defense of this entire infrastructure spread almost all over the world that involves platforms, refineries, pipelines, ports, boats etc. is enormous and would be extremely costly to maintain a system of permanent defense. The United States imports significant quantities of oil from the Persian Gulf countries and security analysts fear the fragility of the security of facilities depending on the bases of operation of Al Qaeda in the region. (Luft and Korin, 2003). This requires the United States an active diplomacy in the region as a way to get permission to install the base operating system of your own safety.

Anyway, the problem of security infrastructure is a recurring problem in all countries where there is a political crisis because there is always the risk that conflicting groups want to control the sources of financial resources from governments that fight. This has recently been observed in Nigeria in constant attack from militia units and production pipelines.

Secondly, energy security is a national security component since the war is powered by fuels and every army need fuels to move the war machinery. The First World War started the age of war powered by oil. Since First WW the oil supplies is essential to armies worldwide and they have to protect their sources. Cherp and Jewell (2011) wrote: *The term 'oil weapon' was used for the first time by the League of Nations considering sanctions against Italy in 1935.* (Aleh Cherp and Jessica Jewell The three perspectives on energy security: intellectual history, disciplinary roots and the potential for integration http://dx.doi.org/10.1016/j.cosust.2011.07.001)

If we apply the Clausewitz conception on war - war is policy - the war is an instrument of the state to achieve his goal. So, any potency needs energy to do it, consequently the armies need energy to fight for state goals (energy).

In our days after two wars in the Persian Gulf it could be conclude that the link between war and energy sources are strongest than never.

That's the point of **Joseph McMillan (2008):**

The link between energy security and national security has become so strong that even countries rejecting the idea of war over other issues seem prepared to contemplate the use of military force to ensure energy supplies in extremis. http://digitalndulibrary.ndu.edu/cgi-bin/showfile.exe?CISOROOT=/ndupress&CISOPTR=2119&CISOMODE=print

The US military presence to protect the oil supply complex in unstable regions of the world like Persian Gulf bring lot problems in the diplomatic and military fields to US. Both have high cost. But it is not about the Money only. The edge between the "US military presence stabilizes" and the "US military presence contributes to worsen" that situation is not clear.

About the costs of military presence in the middle east Paul N. Leiby (2007) analyzed how difficult is to measure that cost, specially because the military presence there is not only to protect oil supplies but also for other compromises and american goals.

> *It is very difficult to attribute military costs, and specific activities and forces, to oil consumption or imports per se. Military activities, even in world regions that represent vital sources of oil imports, undoubtedly serve a broader range of security and foreign policy objectives than simply protecting oil supplies. Furthermore, these costs may not vary in any measurable way with incremental variations in oil use. The scope and duration of any specific U.S. military activities that were undertaken for the purpose of protecting imported oil supplies seem unlikely to be tailored to the actual volume of petroleum imports from the regions where they take place. As a consequence, annual expenses to support U.S. military activities do not seem likely to vary closely in response to changes in the level of oil imports prompted by conservation efforts or other policies. More specifically, reductions in gasoline use resulting from this final rule seem unlikely to result in identifiable savings in the military budget that could be included as additional benefits. This does not mean that there is no relation between military costs and oil security concerns, but that estimating the magnitude of incremental effects from changing oil use is problematic.* (Paul N. Leiby Estimating the Energy Security Benefits of Reduced U.S. Oil Imports 2007 http://www.epa.gov/oms/renewablefuels/ornl-tm-2007-028.pdf)

Until now, we pointed some traditional conceptions of energy security. The global conditions enhance the energy security´s role but it is impossible understand it without a new perspective. Indeed as time pass, people get aware that it should not produce and consume energy without responsibility over it consequences to the other people or to the planet overall. So social responsibility, environmental concerns and food security are the new dimensions of the energy security.

The environmental approach is probably the most important new energy security´s dimension after big disasters (Exxon Valdez leaking in Alaska, the BP leaking in Mexican Gulf, Fukushima nuclear leaking, and others) and global warming.

The thesis' about burning of fossil fuels is strongly linked to the global warm is more accepted as time pass by. Recently, we realize several American conservative leaders changed mind about that. The reducing of oil consuming became imperatival for reasons economic, political, strategic, and environmental. That's the Lei by's (2007) point:

> *To the extent that diverse sources of fuel energy reduce the dependence on any one source, the risks, both financial as well as strategic, of potential disruption in supply or spike in cost of a particular energy source is reduced. This reduction in risks is a measure of improved energy security. Reduced oil use also provides sustained benefits over the long run even in undisrupted markets, by reducing global demand pressure during what is expected to be an extended period of strong global demand, substantial OPEC market power and higher world oil prices.* (Paul N. Leiby Estimating the Energy Security Benefits of Reduced U.S. Oil Imports 2007 http://www.epa.gov/oms/renewablefuels/ornl-tm-2007-028.pdf)

So, Governments worldwide concern over how preparing the transition to the New Economic standard less oil. Security energy now to find means to substitute oil.

Changes in patterns of production and consumption are difficult to accept for some emerging powers and the powers do not accept the imposition of standards that limit their emissions, since in general the engine of economic growth in these countries is the inclusion of large sections of the poor in consumer market. In the first case the U.S. are the paradigm. The U.S. economy depends on the hyper-consumer society is a wasting, and therefore the energy shortage is likely to be faced with the search for more sources, and not with the rationalization of consumption. In the second case, one can cite that Brazil has managed to remain immune from the latest international crises that have rocked U.S. and Europe due to the domestic consumer market. Over the past 20 years has promoted the integration of the poor to the consumer market and increasing the consumption capacity of

the middle class. This explains, for example, the strength of the Brazilian automotive industry.

Both the U.S. and Brazil's economy is closely related to the elections and no political party accepts reduce their chances with radical environmental proposals. The positions of Brazil and the U.S. in international environmental regimes are consistent with their economic prospects and policies. U.S. and Brazil were at opposite poles in international environmental regimes but the potential is enormous successes and confluences. The U.S. needs new energy sources and Brazil, have to sell. The problem for each countries and emerging economies is therefore to find alternative sources that do not have negative impacts on the environment, promote energy independence; poverty does not create or cause problems for the food supply (food security).

Biofuels as an alternative to oil

Biofuels have emerged as an alternative to oil. Currently, there are important initiatives for the development of a biofuel in North America, Brazil, Colombia, in some African countries, India, China and others. This was in accordance with the advantages that biofuels offer over any other alternative, especially in transport.

De Castro showed Five of these advantages:

• *Widely available resource: Biomass resources are diverse and widespread,* often in large volumes. Bioenergy can be produced, in principle, wherever trees and food are grown and wherever food and fibre are processed. This is in marked contrast to the geographic concentration of the oil and gas resources that drive today's industrial activity.

• *Available on demand: Biomass is a form of stored energy and can therefore provide energy at all times, without the need for expensive storage devices such as batteries. In this respect bioenergy is like fossil fuels and differs markedly from intermittent renewable energy sources such as solar, wind, wave and hydropower, with their nightly, seasonal or sporadic supply shut-downs. Bioenergy is also presently much cheaper – and further advanced – than likely alternatives for non-intermittent renewable energy supplies, such as stored hydrogen derived from wind or solar photovoltaics (PV) via the electrolysis of*

water.

• *Convertible to convenient forms: Biomass can provide all the major energy carriers – electricity, gases, liquid fuels for transport and stationary uses, and heat, and it is well-suited to doing this on a decentralised (stand-alone) basis. Biomass can therefore substitute for fossil fuels or other energy supplies in many contexts; and is well-suited to supply the fuels and power at small scales that are needed to underpin poverty reduction, development and growth for the two billion or so people who now lack access to modern forms of energy. Modern bioenergy technologies can also serve similar ends by replacing traditional cooking fuels with clean, smokeless, efficient and easily-controlled liquid and gas alternatives based on renewable biomass rather than fossil fuels.*

• *Potential to contribute to greenhouse gas reductions and other environmental objectives: Bioenergy can be climate friendly. In contrast to fossil fuels, its production and use emits little or no carbon dioxide, a potent greenhouse gas, provided that the biomass is ustainably generated. In this case, the carbon dioxide that is released when biomass fuels are burned will be re-absorbed from the atmosphere during biomass re-growth. It is important, however, to also consider the net life-cycle*

• *Source of rural livelihoods: Much of the value added and income-generation from bioenergy systems is retained locally and can help to reduce rural poverty – in sharp contrast to fossil fuel or central electricity production and distribution systems, and to many other renewable energy technologies. Indeed, modern bioenergy is widely thought to be a key means of promoting rural development. In many developed countries, biomass fuel production has been promoted as a way of supporting and diversifying unstable farm incomes. In developing countries, modern bioenergy can provide a basis for rural employment and income generation, thus helping to vitalize rural economies and curb urban migration. For many forestry and agro-processing industries biomass provides an abundant, dependable and cheap fuel which can reduce energy costs and earn substantial revenues*

from the sale of surplus power to the electricity grid or biofuels to urban demand centres or export markets.(Júlio F.M. de Castro Biofuels – An overview Final Report May 2007 Prepared for: DGIS/DMW/IB http://www.biofuel-africa.org/2007/IMG/pdf/Biofuels_Final_Report.pdf)

The boom in biofuels is new but has reached a great importance in the world. Not yet as massive market but as a potential market, which arouse the interests and investments made in this field?

Ethanol and biodiesel are biofuels that concentrate attention. For them there were three major players: Brazil, EU and U.S...

In Brazil biofuels are almost a consensus. Governments, businesses, NGOs and scientists are almost unanimous in the defense as a biofuels affordable alternative to oil. After Almost 40 years since it has started the massive Brazilian ethanol program (named Pro-alcohol) in Sao Paulo state. Brazil Achieved a very high Productivity and Low Cost. The Brazilian model of ethanol production is based on sugarcane and Allows it to generate electricity based on Straw remained. Moreover, Brazil developed the logistical system, auto parts (like sensors), engines, mills, processes, and it is able to compete in the market international in different fronts.

As a result, Brazil Have Been Able to Enhance its participation in the international arena. In 2007, During trip to Sao Paulo, President Bush signed a deal with Brazil's president Lula. The "ethanol pact" put Brazil and a superpower in symmetric Positioning. It never Happened before. The ethanol is Brazilian passport to be a global player and it wants to improve the ethanol market to enhance its own international capability.

Europe, in a simple overview, looks like a huge market for every renewable energy source. EU through the European Parliament has showing the path to Reduce the gas through the New Economic emotion standard - the low carbon economy level. Indeed, the EU has established a radical target. Consequently, Europe needs to find new energy sources and the biofuels are the most important Between the options.

The goals of reducing greenhouse gas emissions on transport area are not accepted by British government under Conservative Party. But the EU programs for energy generation alternatives results of the confluence of interests inside Europe.

Actually, Europe is the producer of the Remarkable Technologies in biofuels, and Its corporations are Able to Develop and gain part of Several That market. So, firstly, Europe is leading the creations of a huge market for biofuels and secondly it is Promoting Economic grows in new phase of low carbon economy.

In The Other hands we consider most strategical Analysis. That approach in the strategic interests of Europe are quite obvious because time is passing, increases the dependence of Europe in relation to gas and petroleum so coming from Russia and that Russia's ability to use the oil to achieve political goals against Western affinities (U.S. and Its Allies) in the eastern part of the continent or in North Africa. Furthermore, the EU must be prevident about Often crises Between Russia and Ukraine. (Richard B. Andres and Michael Kofman European Energy Security: Reducing Volatility of Ukraine-Russia Natural Gas Pricing Disputes STRATEGIC FORUM National Defense University February 2011 ww.ndu.edu/inss SF No. 264 1)

In the US, the society view over biofuels is different that from Europe and Brazil. The debate about biofuels has been intense in the US as wrote LANE (2012): *in the US, where the Renewable Fuel Standard is coming under blistering attack from the coalition of oil, food and environmental groups that successfully sold the myth of "food vs fuel".* **(Perception vs reality: The 8 most common biofuels myths** Jim Lane | June 8, 2012 http://www.biofuelsdigest.com/bdigest/2012/06/08/perception-vs-reality-the-8-most-common-biofuels-myths/)

The biofuels rest right now in the republicans vs. democrat's crossfire. Recently, in the early 2012 the Senate vetoed the Pentagon program for development and incentive to biofuels. The republicans lead an opposition against some kinds of biofuels program, particularly against the algae biofuel program. In the other hand, the non consensus on the biofuels is results of oil companies Power and its influence on the political system especially on the conservative wing. Other important remarkable point is: Petrobras in the Brazil case and BP (and others) in the European case got inside of the biofuels market while American oil companies do not. It is remarkable that Shell and the most important Brazilian ethanol producer (Cosan) have associated to create a huge company to sale both fuels.

But in the case of American program on algae biofuel, some GOP leaders are using the Pentagon program of algae biofuels to attack Obama's administration targeting elections. But that program was created by Ronald Reagan, the remarkable Republican leader. That's de point of Lane *(2012)*

> *Well, it may be little known, but the commencement of envelopment of algal biofuels is an initiative of the Reagan Administration, continued under first Bush Administration, cancelled under the Clinton Administration due to extremely low oil prices prevalent in the 1990s, and revived under George W. Bush. It is decidedly a Republican renewable fuels program, not that there's anything wrong with that.* (**(Perception vs reality: The 8 most common biofuels myths** Jim Lane | June 8, 2012 http://www.biofuelsdigest.com/bdigest/2012/06/08/perception-vs-reality-the-8-most-common-biofuels-myths/)

In 2012 the Senate vetoed funding for the program and the Pentagon to buy development of biofuels. The program has the goal of replacing petroleum-based fuels by biofuels. The goal of the Pentagon is shown as bold Daly (2012)

> *The United States Armed Forces, which currently fuels 77 percent of its machinery with petroleum-based fuel, has announced an aggressive goal, to be petroleum free by 2040. The Air Force intends to use biofuels for 50 percent of its domestic aviation needs by 2016.* (U.S. Military Gets Serious About Biofuels By **John Daly** | Mon, 26 March 2012 http://oilprice.com/Alternative-Energy/Biofuels/U.S.-Military-gets-Serious-about-Biofuels.html)

The intensive use of biofuels by the Air Force and Navy would have a strong impact in the biofuels market by the fact that the government (and within the government, the Pentagon) to be the single largest consumer of fuel. The program of fuel switching would therefore be an incentive for production and development of new sources. In addition, the program would have the advantage of reducing the U.S. dependency on oil. In the fragment below, we highlight a speech by the Secretary of the Air Force about the goals of the biofuels program.

"We care about energy because we want the warfighters to have what they need to fight downrange," said Undersecretary of the Air Force Erin Conaton. "The dependence we've seen on fossil fuels creates vulnerability not only from a supply aspect but a cost aspect, so that drives us to both decrease our demand for these resources and to diversify the sources of supply."
Conaton elaborated on the criticality of energy awareness in modern-day practical terms.

> *"Every dollar we're not spending on fuel is a dollar that can either be put toward reducing the country's deficit or reinvested toward the warfighting capabilities that make our Soldiers, Airmen, Marines and Sailors more effective wherever they're being deployed," Conaton said.* http://advancedbiofuelsusa.info/air-force-army-team-up-to-explore-green-solutions

The problem noted by the Senate was the cost of biofuels compared to the cost of regular fuel. Daly (2012) fragment below shows the comparative figures between biofuel and regular fuel:

> *In October 2010 the Navy purchased 20,055 gallons of algae biofuel at an eye-watering cost of $424/gallon. Nevertheless, the contract was one of the biggest U.S. purchases of a non-corn ethanol biofuel up to that time. A year later, the Navy reportedly spent $12 million for 450,000 gallons*

of biofuel. The bad news was that the biofuel's cost worked out to around $26.67 per gallon, roughly six times the current cost of traditional gas. U.S. Military Gets Serious About Biofuels By **John Daly** | Mon, 26 March 2012 http://oilprice.com/Alternative-Energy/Biofuels/U.S.-Military-gets-Serious-about-Biofuels.html

The American society is divided about every environmental issues as Kyoto protocol, exploiting prohibition in Alaska, moratorium in Mexico Gulf and high prices of fuels since 2005 put pressure on the political system powering conservative leaders. Another widely view is showed by scientific institutions and producers´ think tanks, The arguments to convince the American society are the systemic advantages of biofuels.

Biofuels are a means to a number of ends. Governments may consider supporting the establishment of a biofuels industry as a way of achieving any combination of four policy goals: export development (foreign currency earnings plus related benefits of improved trade balance through reduced energy imports) rural development (greater income generation and greater value addition in rural areas; maintenance of agrarian systems) energy security (given rising global energy prices and uncertainty of supply) climate change mitigation (where life-cycle greenhouse gas emissions are less than those from fossil fuels). (Sustainable Development OPINION Feb 2008 Sonja Vermeulen, Annie Dufey and Bill Vorley Biofuels: making tough choices http://pubs.iied.org/17032IIED.html)

The internal debate is so polarized between those whish the end of the environmental constraints to further exploration of petroleum and those who support biofuels but between the advocates of biofuels there is no consensus about the benefits of ethanol based on corn.

Across the producers of ethanol based on corn exerts strong pressure on Congress for the maintenance of subsidies and barriers against the entry of ethanol from Brazil. Furthermore there is no consensus on the impact of ethanol based on corn over food security. Some teams rests wing democrat to be in the uncomfortable position of some then.

U.S Biofuels develops quickly. The starts were the United States in March is the Renewable Fuels Standard (RFS), 2005. This program promoted the use of ethanol as oxygenator for gasoline. After that production and consumption of ethanol significantly increased. But, the ethanol production in the U.S. got turbinated after the Energy Independence and Security Act of 2007 (EISA). The EISA is a reaction against the oil troubles(the right prices, political instability and domestic electoral Impacts). Secondly, it was the answer for environmental pressure over Bush administration. The EISA has established Reduction of oil consumption and the goals it appointed an important rule for the biofuels shown by the fragment of the text from the U.S. Department of Energy's Internet site.

EISA includes provisions to increase the supply of renewable alternative fuel sources by setting a mandatory Renewable Fuel Standard, which requires transportation fuel sold in the United States to contain a minimum of 36 billion gallons of renewable fuels annually by 2022. In addition, the law sets the Corporate Average Fuel Economy (CAFE) standard at 35 miles per gallon for passenger cars and light trucks by the year 2020. EISA also includes grant programs to encourage the development of cellulosic biofuels, plug-in hybrid electric vehicles, and other emerging electric vehicle technologies. The law is projected to reduce greenhouse gas emissions by 9% by 2030. (http://www.afdc.energy.gov/afdc/laws/index.php?p=eisa&print=y)

The challenges of biofuels

Biofuels have the potential to become the flagship in the process of substitution of energy patterns. The potential market for ethanol in this field is also invaluable since the energy consumption is steadily increasing and ethanol fuel is versatile. So it can be used in

various forms of energy generation. But there are still no conditions for ethanol has a role in the international market. Featuring some of the challenges that the most important players are facing the ethanol to prepare the future of ethanol and biofuels for the overall medium term, 2030

All problems can be summarized in establishing the market for biofuels. This means on one hand the sufficient production with prices competitive with petroleum-based fuels, the car industry needs to market vehicles with engines compliant with the precariousness and consumer biofuels be encouraged to use biofuels and finally the countries need to adopt substitution programs, and for a time, offer subsidies until the market stabilizes.

Standardization

The path to the construction of the international market Began with the Initiatives for the Standardization of biofuels in Brazil, U.S. and EU firstly individually and collectively secondly. Brazil established standards for ethanol in the 1970's because Brazilian massive ethanol market is early Compared to Europe and U.S.. U.S. Stated it in 2005 When U.S. Environmental Protection Agency (EPA) established Renewable Fuels Standard (RFS). I started to move Toward biofuels with standard DIRECTIVE 2003/30/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 May 2003 L 123/42. It has established the goals and the Fuel Quality Directive. (Official Journal of the European Union EN 17.5.2003).

Two international conferences happened to establish an international biofuels standard.

2nd International Conference on Biofuels Standards. The first in 2007 and the second one in 2009. The conference was organized in cooperation with the US, EU, Brazil.

Expansion of production and stability of stocks.

The U.S. production is not sufficient either for the U.S. market. Brazil is a remarkable ethanol exporter but it could not supply the whole market even in the current volumes.

Unless there is enough ethanol competitively priced and there is no way to establish an international market for the product. Some initiatives are underway in Central America and the Caribbean from the joint action of U.S. and Brazil. In Africa Brazilian and European companies develop Several projects to Associated Governments. Mozambique attracts attention of global players in the biofuels sector. That country has large potential to Develop Whose were feedstock crops to biofuels. Some NGOs criticize That the government plans to offer lands for the international companies from Brazil and Europe.

The transformation of ethanol into a commodity is an important step advocated by Brazil to expand investments in the production and spread the market.

The increasing of the ethanol productivity would promote low prices. It depends to New technologies to convert cellulose to ethanol. That's the goose that lays golden eggs because would be possible to producing ethanol based on every vegetable. For now, that second generation of ethanol stills in development and it seems that until 2015 it will not be produced in large scale. *(Júlio F.M. de Castro Biofuels – An overview Final Report May 2007 Prepared for: DGIS/DMW/IB http://www.biofuel-africa.org/2007/IMG/pdf/Biofuels_Final_Report.pdf)*

Conclusion

The focus of analysis is the evolution of international acceptability of biofuels as an alternative to oil. The entire chain of production of energy alternatives to oil constitutes a large industry involving companies, governments and scientific institutions.

Biofuels produced from biomass are used as energy source for the transport sector. Indeed there is production and consumption of biofuels on a large scale for cars and trucks, and the use of biofuels in aircrafts, ships and military vehicles is still experimental stage.

What puzzles us is the speed with which this industry is growing and it's potential to transform the international politics. The almost consensus about the necessity and appropriateness of biofuels as a substitute for oil is the first phenomenon we must excel in our approach. So several governments, state agencies, International Organizations, non-governmental Organizations and companies share that Idea even under opposition of the American oil lobby.

In fact the Brazilian model of ethanol production and the American production based on corn are not absolutely consensus, but the charges has not been enough to decry the biofuels overall.

There are several concerns over new farmlands or forestlands to be using to the biofuels production, but neither in this case are enough to condemn the biofuels overall.

We realize specific interests of the different players in the biofuel industry. Firstly, we have appointed the main players and their interests and way of play. The US is a specific case because we do not realize a consensus over American society on biofuels large productions based on corn and the US´s oil companies have almost overwhelming power on the political system. Brazil, EU we observe a social consensus in part due a symbioses between governmental (or commentary) agencies and universities and companies. The ethanol becomes Brazil a global player in the first time in its history. Europe can find new path to economic growth and achieve its environmental goals through Biofuels. The US can reduce its dependency of that problematic fuel.

Secondly, we have observed different justifications to improvement biofuels programs worldwide. Most of them can be related to energy security but it is a multidimensional concept now. It evolves the military conception of security, supplying, human security, food security, environmental issues and others.

Several countries develop same kind of biofuels before last oil cries that got the prices high then never. Every player has their own experience on that. Different experiences on each one. Brazil´s ethanol is the most advanced experience because it has created a complete system from crops until engine. Brazilian ethanol industry is most efficient than everybody on perspective environmental and on economic.

After 2005, countries have given the first steps to create a biofuels international market. So the mains players - US, EU and Brazil – were running toward a standardization of ethanol and biodiesel. Further decision to avoid negative impact on social, environmental and food security was expected but never has done. After that, players have enforced to spread biofuel crop feedstock over Latin America and Africa because it's essential to have an enough production of biomass to have a strong market. In addition, large consumers have contributed put an important rule on the energetic matrix in the future not far from. Yet that the biofuels potential market asks for a new approach. The players run for developing other resources and more productive systems. So there is several ways to achieve it but the main target is the cellulosic ethanol which would improve ethanol productivity and makes it cheaper. Brazil and WE started a cooperation program to developing the second generation of ethanol in 2007.

Brazil and EU defend open market on biofuels. Inside EU biofuels do not represent a risk to the medium farmers and to the EU´s agricultural policy. US government is always on the press ion of farmers to keep subsidies to ethanol based on corn. The Brazilian farmers want to sale more and look for open market. In the other hand, they defend to convert ethanol as commodity.

References:

Energy security definition Thursday, 09 February 2012 06:36 Ned Haluzan
http://www.renewables-info.com/energy_definitions/energy_security_definition.html

McMillan, Joseph Energy Security in South Asia: Can Interdependence Breed Stability? *Strategic Forum* No. 232 September 2008
http://digitalndulibrary.ndu.edu/cgi-bin/showfile.exe?CISOROOT=/ndupress&CISOPTR=2119&CISOMODE=print

David L Goldwyn Energy Security: The New Threats in Latin America and Africa
Current History; Dec 2006; 105, 695; Research Library
pg. 441

STRATEGIC FORUM - NATIONAL DEFENSE UNIVERSITYNUMBER 130
INSTITUTE FOR NATIONAL STRATEGIC STUDIESOCTOBER 1997
Patrick Clawson Energy Security in a Time of Plenty

Paul N. Leiby Estimating the Energy Security Benefits of Reduced U.S. Oil Imports 2007
http://www.epa.gov/oms/renewablefuels/ornl-tm-2007-028.pdf

Aleh Cherp and Jessica Jewell The three perspectives on energy security: intellectual history, disciplinary roots and the potential for integration 2011
www.sciencedirect.com

Fernando Quadros da Silva A Convenção da ONU sobre o Direito do Mar
R. CEJ, Brasília, n. 12, p. 46-50, set./dez. 2000 http://www.estig.ipbeja.pt/~ac_direito/ConvMar.pdf

Energy supply security and geopolitics: A European perspective
Aad Correlje. , Coby van der Lindeb,c Energy Policy 34 (2006) 532–543

Energy [R]evolution 2008 – a sustenable world energy perspective
Krewitt, W at all *Energy Policy* 37 (2009)
WWW.elsevier.com/locate/enpol

Einaudi, L. Brazil and the United States: The need for strategic engagement
Strategic Forum National Defense University, March 2011
http://www.ndu.edu/press/lib/pdf/StrForum/SF-266.pdf
Brown, M ; R, Christie and Gagliano, T
Energy Security the National Conference of State Legislatures, Washington, D.C: 2003

Luft, Gal and Korin, Anne Terror's next target
The Journal of International Security Affairs, December 2003.
http://www.iags.org/n0111041.htm

Interagency Task Force on Commodity Markets , Interim Report on Crude Oil, Washington D.C. July 2008
http://www.cftc.gov/ucm/groups/public/@newsroom/documents/file/itfinterimreportoncrudeoil0708.pdf

Obama proposal would rein in oil speculation
April 17, 2012|By Jessica Yellin, CNN Chief White House Correspondenthttp://articles.cnn.com/2012-04-17/politics/politics_obama-oil-speculation_1_oil-market-market-manipulation-energy?_s=PM:POLITICS
In response to calls for better regulation of oil futures, Congress introduced the Consumer-First Energy Act in May 2008. Josh Clark
http://money.howstuffworks.com/oil-speculation-raise-gas-price2.htm

The fallacy of blaming oil 'speculators' **By Robert J. Samuelson, Published: May 2**
http://www.washingtonpost.com/opinions/the-fallacy-of-oil-speculation/2012/05/02/gIQAk7bkwT_story.html

Júlio F.M. de Castro Biofuels – An overview Final Report
May 2007 Prepared for: DGIS/DMW/IB
http://www.biofuel-africa.org/2007/IMG/pdf/Biofuels_Final_Report.pdf

Sonja Vermeulen, Annie Dufey and Bill Vorley Biofuels: making tough choices *Sustainable Development OPINION* Feb 2008 http://pubs.iied.org/17032IIED.html)
From Barracks to the BattleField
clean energy innovation and america's armed Forces
THE PEW PROJECT ON NATIONAL SECURITY, ENERGY AND CLIMATE
2011
http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Report/DoD-Report_FINAL.pdf

Perception vs reality: The 8 most common biofuels myths Jim Lane | June 8, 2012
http://www.biofuelsdigest.com/bdigest/2012/06/08/perception-vs-reality-the-8-most-common-biofuels-myths/

Reenergizing America's Defense How the Armed Forces Are Stepping Forward to Combat
Climate Change and Improve the U.S. Energy Posture
THE PEW PROJECT ON NATIONAL SECURITY, ENERGY AND CLIMATE
http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Report/Reenergizing%20Americas%20Defense.pdf

Richard B. Andres and Michael Kofman European Energy Security: Reducing Volatility of Ukraine-Russia Natural Gas Pricing Disputes STRATEGIC FORUM National Defense University February 2011
ww.ndu.edu/inss SF No. 264 1