



Public-Private Alliance Foundation



Ethanol and Bioenergy

Meeting at the United Nations, 17 June 2009

Next Steps in Business Model Innovation for investment Partnerships

Background

A group of 25 high-level participants from the Dominican Republic, the US, Haiti and the United Nations met on 17 June, 2009 in continuation of PPAF's 7 May Third Annual Partners Against Poverty event at the UN. The May event was a facilitated discussion for Business Model Innovation (BMI) on the development and production of ethanol and biofuels. Participants in the 17 June meeting used the same approach to examine more deeply financial sector challenges and opportunities for bioenergy. Members of the private-banking community, private investors, the Inter-American Development Bank (IDB), the United Nations Environment Programme (UNEP), the UN Foundation and related organizations participated. Also present were directors of biofuel companies, energy consultants and strategists, and finance attorneys.

Summary

PPAF Executive Director Dr. David Stillman welcomed the participants and summarized the consensus reached in May for business model innovation that would bring together local and international stakeholders to create innovative ways to build collaboration and to identify ways better to address profitability, poverty reduction and environmental issues.

ResearchPAYS President Tom Kadala facilitated the discussions and drew out from the group a number of key issues and strategies for investments in the biofuels arena, with examples from the US and the Dominican Republic.

After a lively exchange the group concluded that ethanol production on its own was currently not profitable but it could be a significant element of a diversified revenue stream. Accordingly it would be vital to operate at the right scale, and be alert to government policies, subsidies and duties, as well as timing, marketing, and other elements, especially the trends in oil prices. The recent Dominican law and its implementation for promoting the development of renewable energy sources (Law 57-07) could have an important influence.

Participants felt that biofuels should be viewed as an interim step towards a longer term realignment of alternative energy sources, most of which would eventually be used to produce electricity along an internationally shared grid. Thus biofuels in countries like the Dominican Republic have a window of opportunity for the next twenty years or so. Accordingly, local as well as international off-take of product should be cultivated, and domestic as well as

international financing, so as to mitigate risks and maximize benefits. The financial experts insisted that project ideas have to make economic sense or other goals can't be achieved. Group members also noted that potential social benefits of biofuel production could serve as a positive externality for investment decision-making.

Finally, discussants felt public and private investments would be critical to achieving technological and production breakthroughs but would demand strategies to reduce risk in relation to various specific investment hurdles. Examples included the need to align with existing revenue streams, sourcing from multiple feedstock types, and producing biofuels using both proven and advanced yield processes. Given the current international economic situation, the required long-term funding for biofuels investments would need to be met by a series of sequential short term loans that collectively provide improved investment protection.

Discussion

Participants opened the discussion by noting current trends in making decisions by financial houses. Analysts can no longer rely on cash flow projections and asset valuations to approve actions. Rather they have been charged with becoming technical experts where their valuations must accommodate for the phasing in and out of breakthrough technologies. They must also evaluate plant designs, potential markets, and the size of financing capable of withstanding an unfavorable business environment. Oil prices have long remained low in relation to biofuels, and their full costs not counted. Also, financiers have moved away from taking equity positions and favor issuing high interest debt. They prefer large sized transactions (i.e. \$100 million) where syndicate participation can offer greater protection. Alternative investment opportunities, including high-interest bonds guaranteed by the US government, have further reduced access to credit for biofuels-related projects.

The group identified three key components in the production of biofuels. They are:

1. The availability of and the alternative usage demands for biomass **Feedstock**
2. The **Processing Plant** used to convert biomass .
3. The **Off-Take** which includes the sale and distribution for biofuels.

Participants observed that market driven prices were a significant factor and they discussed innovative ways to instill greater control, especially as concerned items # 1 and #3, to hedge against investment risks.

1. Feedstock

Key feedstock issues identified included availability, accessibility, market demand and alternative byproduct pricing. Feedstock such as sugar cane can be used to produce a variety of products including sugar or ethanol, while soy beans, castor beans and other plants can be processed into oil for biodiesel fuel plus meal for animal feed. Market demands for each product determine the availability of feedstock for biofuels plants. This is a serious exposure for biofuels investors, since fluctuating feedstock prices can create havoc for a production plant that

requires a steady supply to operate at a profit. The reverse is true too where oil price increases can adversely affect the supply of food crops.

According to one biodiesel production participant, feedstock price hedging through future purchase commitments are not available for more than three to four months at a time. Alternative risk hedging tools for feedstock might include land ownership or purchase contracts from a group of farmers, so as to ensure a steady supply for a nearby plant. Currently plant investors require purchase contracts for extended periods of time from farmers (i.e. 10-15 years); however, if market prices change dramatically, farmers may renege on their agreements and sell their feedstock to other plants or purposes for higher prices. One important hedge against falling oil prices would be to allocate a portion of biofuels production for local sales. The benefits of local biofuels sales include offsetting oil imports, a fuel independence strategy.

Feedstock was also categorized as having either a positive or negative cost. Negative cost feedstock would include waste materials from, for example, forest and agricultural debris and municipal garbage. These items could be viewed as a common solution to two issues: the production of biofuels and the recycling of undesirable waste.

2. Processing Plant

Group members noted that banks and private investors feel pressured by the lack of control for the feedstock and off-take segments of a biofuels investment and have responded with short term loan preference in relation to processing plants and related costs. This hinders the chances for many promising ideas that require longer term investment horizons. Bankers fear plant obsolescence due to technological breakthroughs that may occur prior to their achieving a reasonable return on investments. Resale values of biofuels plant equipment are similar to those of technology companies where asset liquidation values offer limited protection. One participant cited a corn ethanol plant in upstate New York that was built for \$110 million but was recently purchased for \$8 million.

Participants felt that deleveraging biofuels processing plant investments might best be accomplished by decoupling the facility into processing components. For example, in the production of ethanol from sugar cane, the fermentation and distillation process is proven technology that has little room for improvement. On the other hand the conversion process to extract the sugars needed for the fermentation and distillation process may see considerable improvement as technologies change. Biofuels investors are essentially betting on various yield-enhancement technologies that can greatly enhance the efficiency of a processing plant, including evolution to cellulosic and algae-based ethanol. With oil prices comparatively low, the focus on yield-based technology is vital to keep biofuel production competitive. As oil prices rise and any existing public subsidies are removed, investors backing producers with low costs and increased yields are more likely to survive an industry shakeout. As already foreseen, those with patience and deep pockets will be best placed.

Proper industrial infrastructure to run a processing plant is critical. For example, reliable electricity, ample water supplies, discharge facilities, and paved roads are basic needs that present an 'industrial park' investment opportunity for future plants. Also, sugar workers villages, called 'batayes' in the DR, offer another type of investment opportunity as sites for building economically sustainable infrastructures or developing tax bases from growing communities. Some of these communities could become part of a feedstock cooperative that sells to a nearby biofuels plant or crushes seed oils for future processing using a mobile mini plant.

Another option would be to build community-based, mini biodiesel production plants that would supplement local fuel needs while boosting sustainable economic activity. One participant highlighted a micro-financing project in Ghana that helps farmers produce their own biodiesel using a simple oil seed-crushing process. Farmers use the fuel for their own needs and sell the excess to their neighbors.

3. Off-Take

Participants noted that the greatest influence on the off-take, or sale and distribution, of biofuels is the price of oil. The group agreed that the price of oil remains low, for the most part is indirectly subsidized, and does not include costs incurred from the generation of pollutants and climate change. Setting oil and biofuels pricing more equally would create a more compelling case for biofuels adoption, an effort that governments are seeking to achieve through 'cap and trade' legislation on carbon-based greenhouse emissions. In the meantime it was argued that governments should become buyers-of-last-resort for biofuels by passing legislation requiring fuel blending and flex-fuel auto manufacturing. This supportive role could be pivotal to reducing risk exposure and attracting investment capital, as well as helping to address issues of global climate change. Participants recognized renewable energy laws passed recently in the Dominican Republic and elsewhere that set increasing ethanol blending goals over the next decade. Also government attention to conversion of fallow land to feedstock production would be viewed favorably by investors who are concerned about fallout from the 'food v fuel' debate.

Biofuels Investment Hedging Strategies

After considerable discussion, the group concluded that short term credit restraints ruled out ethanol production as a stand-alone viable investment. They cited various factors related to this. For example the sugar cane feedstock requires a 24 hour turnaround time from harvest to processing in order to avoid losing nearly half of the sugar content. Also, the 190 day harvest season in the Dominican Republic leaves a plant without feedstock for nearly half the year. Biodiesel has advantages since the oils produced can be stored prior to processing, allowing a steady flow of feedstock. However they commented that biodiesel production is more attractive at small-scale than large-scale levels.

The group concluded that to attract investors ethanol distilleries could be placed alongside sugar mills and treated as an additional revenue stream from existing operations. Currently

mill revenues in the Dominican Republic include 70 % from sugar sales and the remaining 30 % from byproducts, including sales of molasses for rum, electricity from burning bagasse, (residue of the crushed cane), fertilizer, and Kyoto CDM carbon credits (Clean Development Mechanisms). Adding ethanol and other relevant revenue streams would favorably contribute to the overall production, profitability and risk reduction of investments.

Diversifying revenue streams could also be extended to design of plants for multiple technologies to co-exist in the production of several biofuels alternatives and for farmers to grow according to market demand. Feedstock diversity, from sugar cane, sweet sorghum and soya beans, could hedge against individual price fluctuations. Off-take diversity could include the ability of vehicles to accept a greater percentage of ethanol in their fuel and also for flex-fuel arrangements to give consumers a choice between gasoline and ethanol based on current market pricing. Such cars have been produced in Brazil for some time.

Investing in a portfolio of ethanol, biodiesel and other bioenergy including production of electricity from agricultural residues and municipal waste could leverage applications as a diversified hedge. Purchase/sale contracts from both sides of a supply chain could be useful. Also arrangements for funds to invest in biofuels projects located in different countries could provide protection against political, weather and other risks. Finally, group members felt that since investors will demand short term hurdles to be met prior to future funding, stacking of viable projects with short term credit could add up to the longer term investments required.

Conclusion

Wrapping up the meeting, group members agreed to proceed on two tracks. First, participants from the 7 May and 17 June meetings would engage in further detailed work to develop one or more viable project proposals with precise figures. This would focus on New York as the primary base of activity, and include individual and small group meetings, drafting and possibly teleconferencing.

The second track would be for PPAF and ResearchPAYS to organize an introductory-level meeting of mainly Dominican stakeholders in Santo Domingo. The President of the National Energy Commission of the DR had already encouraged this during the 7 May meeting, and the head of the Dominican Mission to the UN has invited a proposal to this effect. The meeting would bring together a broad range of participants from government, business, NGOs, academia, and the UN family, along with potential investors to explore issues, options and what is financeable in today's business environment.

Eventually the two tracks would merge with a focus on work in the Dominican Republic and possible activity in other countries.

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Appendix A

List of Those Present

PARTICIPANTS

Tom Apperson, Managing Director, Investment Banking, Bradley Woods & Co., Ltd
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Timothy K. Judge, Vice President, External Relations and Operations, Masada Resource Group, LLC, www.masadaonline.com

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Francis Lorenzo, Ambassador, Mission of the Dominican Republic to the UN; PPAF Vice-Chair.
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