

## **The Philippines Biofuels Law and World Hunger**

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## **THE PHILIPPINES BIOFUELS LAW AND WORLD HUNGER**

### **Biofuels: An Introduction**

Biofuels are fuel derived from relatively and recently dead biological matters which can either be plant material or animal waste, and are distinguished from fossil fuels such as petroleum, coal and natural gas. Biofuels primarily consist of two different types: biodiesel and ethanol. Since such plant material or animal wastes are replenished when needed, biofuels are considered a source of renewable energy.

Biodiesel is a clean-burning alternative to petroleum fuel that is made from renewable resources and is usually used as an additive to petroleum fuels or used by itself in unmodified diesel engines.<sup>1</sup> A 1998 study sponsored by the US Department of Energy and the US Department of Agriculture concluded that biodiesel reduces net carbon dioxide emissions, a leading source of global warming, by 78 percent compared to petroleum diesel.<sup>2</sup> Thus, the use of biodiesel could possibly reduce pollutants which include hydrocarbons and carbon monoxide, as compared to emissions from ordinary diesel fuel.

Ethanol, on the other hand, can also be used as an alternative fuel or as an additive to petroleum-derived fuel used in car gasoline engines. Similar to bioiesel, ethanol burns

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<sup>1</sup>Enrique Rene De Vera, *The WTO and Biofuels: The Possibility of Unilateral Sustainability Requirements*, 8 *CHIJIJL* 661, 663 (2008).

<sup>2</sup>See National Biodiesel Board, FAQs, P 11 (2009), at <http://www.biodiesel.org/resources/faqs/default.shtm> [last accessed on March 1, 2009].

without particulate emissions and produces less carbon monoxide and nitrogen oxide than gasoline.<sup>3</sup> According to a report issued by Argonne National Laboratories, ethanol use can reduce total greenhouse gas emissions by up to 87 percent.<sup>4</sup>

Over the past few years, petroleum prices have remained stubbornly high. Since the middle of 2005, the average price of crude oil originating from OPEC countries has remained above \$50 per barrel.<sup>5</sup> This troubling fact has increased the desirability and motivation for countries to lay the foundation for the use of biofuels in the hope that it would reduce their dependence on foreign crude oil. Moreover, car manufacturers have developed car engines to make it less costly and more adaptable in the use of biofuels.<sup>6</sup> This thereby makes biofuels readily available and accessible to ordinary consumers around the world.

Global warming has also pressured countries to come up with solutions to reduce their emissions of greenhouse gases. Adopting biofuels technology could be one way of complying with a country's obligations and commitments under the Kyoto Protocol, which is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas emissions.<sup>7</sup>

## The US and EU Example

At the forefront of technological developments in the biofuels industry are the United States of America (US) and the European Union (EU).

The biofuel industry in the US was born as early as 1908.<sup>8</sup> The focus then was on the development of ethanol as an additive for petroleum fuel.<sup>9</sup> Prior to World War II, Standard

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<sup>3</sup>David Cohen, *Green Fuel Earns Its Stripes in 24-Hour Endurance Test*, NEW SCIENTIST 19, June 19, 2004.

<sup>4</sup>US Department of Energy, *Ethanol: The Complete Energy Lifecycle Picture*, 2, March 2007, at <http://www.transportation.anl.gov/pdfs/TA/345.pdf> [last accessed on March 1, 2009].

<sup>5</sup>See Energy Information Administration, *OPEC Countries Spot Price FOB Weighted by Estimated Export Volume (Dollars per Barrel)*, Oct 3, 2007 at <http://tonto.eia.doe.gov/dnav/pet/hist/wtotopecw.htm> [last accessed on January 1, 2009].

<sup>6</sup>Melissa Allison, *Investors Pump Up Biodiesel's Prospects; Imperium Reels in \$113 Million for More Refiners: One in Grays Harbor*, SEATTLE TIMES, E1, February 22, 2007.

<sup>7</sup>See Kyoto Protocol at [http://unfccc.int/kyoto\\_protocol/items/2830.php](http://unfccc.int/kyoto_protocol/items/2830.php) [last accessed on March 23, 2009].

<sup>8</sup>See generally Joseph DiPardo, Energy Info. Admin., *Outlook for Biomass Ethanol Production and Demand* (2002), <http://www.eia.doe.gov/oiaf/analysispaper/biomass.html> (last visited Jan. 15, 2007); Anthony Radich, Energy Info. Admin., *Biodiesel Performance, Costs, and Use*, <http://tonto.eia.doe.gov/FTP/ROOT/environment/biodiesel.pdf> (last visited Jan. 1, 2009).

<sup>9</sup>*Id.*

Oil marketed a 25% ethanol blend fuel on the east coast.<sup>10</sup> After World War II, however, the ethanol industry in the United States lost support due to advances in the technology and supply of petroleum.<sup>11</sup> The industry did not regain strength in the US until the 1970s.<sup>12</sup>

Similarly, the biofuel industry was also present in Europe prior to World War II. In contrast however to the pre-World War II biofuel industry in the US, which focused on ethanol, Europe's biofuel industry focused on biodiesel.<sup>13</sup>

Recently, the US under former President George W. Bush Jr. enacted the Energy Policy Act of 2005 (EPA05) to advance biofuels as a means to reduce oil dependence by: (1) implementing and expanding goals for a renewable fuel content in gasoline; (2) maintaining and extending financial incentives for soybean oil biodiesel and corn ethanol; and by (3) adding tax incentives to research, develop, and introduce other promising biofuels options to market.<sup>14</sup>

EPA05 charged the Environmental Protection Agency (EPA) Administrator to “promulgate regulations to ensure that gasoline sold or introduced into commerce in the United States . . . on an annual average basis, contains the applicable volume of renewable fuel . . . .”<sup>15</sup> This Act set an original applicable volume of 7.5 billion gallons by 2012,<sup>16</sup> and the EPA promulgated the Renewable Fuel Standard Program (RFS) on September 1, 2007.<sup>17</sup>

Moreover, EPA05 also established a biofuels and bioproducts program, which aims to bring the most promising biofuels to the market by partnering “with industry and institutions of higher education” to develop commercial bioenergy applications, including “integrated biorefineries that may produce biopower, biofuels, and bioproducts.”<sup>18</sup> These programs intend to advance biofuels production processes that produce fuel, electricity, and other products through the use of biomass, and avoids to utilize crops grown for food. By doing so, any competition between crops used for biofuels and food purposes will be minimized if not eliminated.

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<sup>10</sup>*Id.*

<sup>11</sup>*Id.*

<sup>12</sup>*Id.*

<sup>13</sup>*Id.*

<sup>14</sup>Energy Policy Act of 2005, [Pub. L. No. 109-58, 119 Stat. 594 \(2005\)](#) (codified as amended in scattered sections of 42 U.S.C., 7 U.S.C., 30 U.S.C., 16 U.S.C., 15 U.S.C., 10 U.S.C., 33 U.S.C., [25 U.S.C.](#), & [26 U.S.C.](#)).

<sup>15</sup>Energy Policy Act of 2005 §1501(c)(2)(A)(i), 119 Stat. at 1068 amending [42 U.S.C. §7545](#) [hereinafter Energy Policy Act of 2005].

<sup>16</sup>*Id.* § 1501(c)(2)(B)(i), 119 Stat. at 1069.

<sup>17</sup>Renewable Fuel Standard, [40 C.F.R. §80.1100 \(2007\)](#).

<sup>18</sup>Energy Policy Act of 2005, *supra* note 15, §932(b), 119 Stat. at 871 amending [42 U.S.C. §16232](#).

The EU passed two directives in 2003 that work together to promote and offer excise reductions for biofuels.<sup>19</sup> First, a directive was passed instructing all Member States to formulate plans for increasing biofuels' share of total fuel consumption.<sup>20</sup> That directive mandated that biofuels make up 2 percent of fuel consumed by 2005, and 5.75 percent by 2010.<sup>21</sup> While this directive sets out a clear benchmark for EU Member States to meet, it does not specify how EU Member States should achieve this goal.<sup>22</sup> Perhaps due to this lack of instruction, the 2 percent goal was not reached in 2005.<sup>23</sup> And, while some Member States such as France and Germany reached the 2 percent goal by the end of 2006, it is not likely, given current projections, that Member States will meet the 5.75 percent requirement by 2010.<sup>24</sup> However, the European Commission is still pursuing compliance with this goal.<sup>25</sup> It has already instructed all Member States to provide an estimate of the percentage of total fuel used that biofuels will account for and the way in which the Member States will promote biofuels.<sup>26</sup>

While the EU has taken steps to promote increased market share for biofuels, its approach has consisted largely of mandates, with very little legislation directly controlling Member States' treatment of the biofuel industry.<sup>27</sup> Because of its supranational structure, the EU has not passed enough incentives to encourage Member States to meet the EU's mandates.<sup>28</sup>

## The Philippine Biofuels Law

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<sup>19</sup>Council Directive 2003/30, 2003 O.J. (L 123) (EC); Council Directive 2003/96, 2003 O.J. (L 283) (EC).

<sup>20</sup>Council Directive 2003/30, 2003 O.J. (L 123) (EC).

<sup>21</sup>*Id.*

<sup>22</sup>*Id.*

<sup>23</sup> Gain Report, European Union Oilseeds and Products: European Union promotion of the use of biofuels for transport at [www.fas.usda.gov/gainfiles/200108/125681496.pdf](http://www.fas.usda.gov/gainfiles/200108/125681496.pdf) [last accessed on March 1, 2009].

<sup>24</sup> Communication from the Commission: An EU Strategy for Biofuels, COM (2006) 34 final (Aug. 2, 2006).

<sup>25</sup> See Council Directive 2003/30, art. 3, 2003 O.J. (L123) 42, 44 (EC); One-on-One: Valerie Corre, Director-General of the European Union of Alcohol Producers, Europe Energy, Apr. 22, 2005, available at 2005 WLNR 6597626.

<sup>26</sup>*Id.*

<sup>27</sup>Christine Benson, *Putting Your Money Where Your Mouth Is: The Varied Success of Biofuel Incentive Policies in the United States and the European Union*, 16 TRNATLCP 633, 657 (2007).

<sup>28</sup>*Id.*

On 2005, President Gloria Macapagal-Arroyo released an Energy Independence Agenda or Plan for the Philippines that called for a 60% energy self-sufficiency by 2010.<sup>29</sup> The action plan focuses on addressing the nation's energy needs in three areas, including energy independence, power sector reform and energy conservation.

Pursuant to the aforementioned action plan, RA 9367 also known as the Biofuels Act of 2006 was enacted into law on January 11, 2006. It was made the policy of the State "to reduce dependence on imported fuels with due regard to the protection of public health, the environment, and natural ecosystems consistent with the country's sustainable economic growth that would expand opportunities for livelihood by mandating the use of biofuels."<sup>30</sup>

Biofuels are defined as bioethanol and biodiesel and other fuels made from biomass and primary used for motive, thermal power generation, with quality specifications in accordance with the Philippine National Standard consistent with section 26 of R.A. No. 8749 otherwise known as the Philippine Clean Air Act of 1999.<sup>31</sup>

The law provides that all liquid fuels for motor vehicles sold in the country "shall contain locally produced bio-fuel components."<sup>32</sup> A 10% blend would be mandated within four years from the law's enactment, with the approval of the National Bio-fuels Board, which will also be created under the law.<sup>33</sup> A 1% biodiesel blend was imposed within three months from the law's enactment and it was to be increased to 2% after two years thereafter.<sup>34</sup>

Thus, Section 5 of the Implementing Rules and Regulations of RA 9367 states the following:

"Pursuant to Section 5 of the [Act](#), all liquid fuels for motor vehicles shall contain locally-sourced biofuels components as follows:

#### 5.1 Bioethanol

- a) Within two (2) years from the effectivity of the [Act](#), at least five percent (5%) bioethanol shall comprise the annual total volume of gasoline fuel actually sold and distributed by each and every oil company in the country, subject to the requirement that all bioethanol blended gasoline shall contain a

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<sup>29</sup> Administrative Order No. 126 "Strengthening Measures to Address the Extraordinary Increase in World Oil Prices, Directing the Enhanced Implementation of the Government's Energy Conservation Program" dated August 13, 2005.

<sup>30</sup>The Biofuels Act of 2006, Republic Act No. 9367, Section 2.

<sup>31</sup>The Biofuels Act of 2006, Republic Act No. 9367, Section 3(f).

<sup>32</sup>The Biofuels Act of 2006, Republic Act No. 9367, Section 5.

<sup>33</sup>*Id.*

<sup>34</sup>*Id.*

minimum five percent (5%) bioethanol fuel by volume: *Provided*, That the bioethanol blend conforms to the PNS.

- b) Within four (4) years from the effectivity of the [Act](#), the NBB created under Section 8 of the [Act](#) is empowered to determine the feasibility and thereafter recommend to the [DOE](#) to mandate a minimum of ten percent (10%) blend of bioethanol by volume into all gasoline fuel distributed and sold by each and every oil company in the country: *Provided*, That the same conforms to the PNS.

## 5.2 Biodiesel

a) Within three (3) months from the effectivity of the [Act](#), a minimum of one percent (1%) biodiesel by volume shall be blended into all diesel fuels sold in the country: *Provided*, That the biodiesel blend conforms to the PNS.

b) Within two (2) years from the effectivity of the [Act](#), the NBB is empowered to determine the feasibility and thereafter recommend to [DOE](#) to mandate a minimum of two percent (2%) blend of biodiesel by volume which may be increased after taking into account considerations including, but not limited to, domestic supply and availability of locally-sourced biodiesel component.

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Among the incentives designed to encourage the production and use of biofuels are an exemption of the ethanol/biodiesel portions of fuel blends from specific taxes and an exemption from value-added taxes for biofuels raw materials.<sup>35</sup> There are also favorable loan policies available from banks for biofuel investors and producers.<sup>36</sup>

According to an executive summary on the recently concluded Bioenergy Forum 2008 in Bangkok, Thailand, the Philippines through the enactment of the Biofuels Act of 2006 is at the forefront of biofuels development and use in the world.<sup>37</sup> The law was praised for having a decisive mandate on the use of coco-biodiesel and fuel-ethanol,

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<sup>35</sup>The Biofuels Act of 2006, Republic Act No. 9367, Section 6(a) and (b).

<sup>36</sup>The Biofuels Act of 2006, Republic Act No. 9367, Section 6(d); Also See *The Philippines Biofuels Activities*, APEC at [http://www.biofuels.apec.org/me\\_philippines.html](http://www.biofuels.apec.org/me_philippines.html) [last accessed on March 26, 2009]

<sup>37</sup>Executive Summary, Presentation of the State of Food and Agriculture, Bioenergy Forum 2008, Bangkok, Thailand, May 2008.

specifically, by ensuring that the feedstocks needed for biofuel production will not compete with the demands for food production.<sup>38</sup>

Nevertheless, despite the worldwide hype over the use of bio-fuels as an alternative to petroleum, serious concerns over its effects on the world's food supply remains. "World agriculture has entered a new, unsustainable and politically risky period," says Joachim von Braun, the head of the International Food Policy Research Institute in Washington DC.<sup>39</sup> Its impact on world agriculture has brought about a huge debate on whether bio-fuels is indeed the solution to the world crisis or whether it has instead brought about the worsening of the world's diminishing food supply.

### **A Stable Food Supply**

"Food riots have erupted in countries all along the equator. In Haiti, protestors chanting 'We're Hungry' forced the prime minister to resign; 24 people were killed in riots in Cameroon; Egypt's president ordered the army to start baking bread; the Philippines made hoarding rice punishable by life imprisonment."<sup>40</sup>

The abovementioned events clearly demonstrate the overwhelming influence of food supply on the political and governmental policies of countries. RA 9367 attempts to address the issue of food security by attempting to ensure the steady domestic supply of sugar, coconut and other raw materials to be used in producing biofuels. The Sugar Regulatory Administration (SRA) and the Philippine Coconut Authority (PCA) will be tasked to monitor and regulate the export and import of such goods.

To ensure the stability of domestic sugar supply, Section 10 of the law tasks the SRA to monitor the supply and price of sugar at all times. To this end, the SRA shall recommend and the other government agencies shall undertake the importation of sugar whenever necessary and shall make appropriate adjustments to the minimum access volume parameters for sugar in the Tariff and Customs Code. Accordingly, Section 16 of the Implementing Rules and Regulations of RA 9367 provides that the SRA shall at all times ensure that the supply of sugar is sufficient to meet the domestic demand and that the price of sugar is stable. Moreover, the SRA together with other government agencies shall implement policies supporting the National Biofuels Program and submit the same to the [Secretary of the Department of Agriculture](#) for consideration.

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<sup>38</sup>*Philippine Biofuels Law a Model for Other Countries*, PHILIPPINE DAILY INQUIRER, May 3, 2008 at <http://business.inquirer.net/money/breakingnews/view/20080503-134286/Philippine-biofuels-law-a-model-for-other-countries> (last accessed March 23, 2009).

<sup>39</sup>*The New Face of Hunger*, THE ECONOMIST, April 17, 2008 at [http://www.economist.com/world/international/PrinterFriendly.cfm?story\\_id=11049284](http://www.economist.com/world/international/PrinterFriendly.cfm?story_id=11049284) (last accessed January 28, 2009).

<sup>40</sup>*Id.*

RA 9367 does not specifically address the duties of the PCA but Section 17 of the Implementing Rules and Regulations finds authority in Presidential Decree (PD) 1468, the law that amended PD 961 otherwise known as the Coconut Industry Code. Section 17 states that pursuant to the PCA's mandate to formulate and adopt a general program of development for the coconut and other palm oil industry in its all aspects, under PD 1468, Article II, Section (3) (a), the [PCA](#) shall develop, implement policies within the coconut industry in support of the National Biofuels Program.

The Department of Agriculture (DA), is on the other hand, required to comply with the directives listed under Section 11(d) of the law which includes ensuring increased productivity and the sustainable supply of biofuel feedstocks. It shall also institute a program that would guarantee a sufficient and reliable supply of feedstocks for allocation in biofuel production.

Furthermore, to address the concern over the supply of feedstocks for the production of biofuels, Section 28 of the Implementing Rules and Regulations of RA 9367 states that the [DA](#) shall ensure increased productivity and sustainable supply of biofuels feedstocks. Towards this end, the [DA](#) in consultation with [PCA](#), [SRA](#), and other entities concerned, shall develop and implement appropriate programs and guidelines in order to ensure a reliable supply of biofuel feedstocks.

The question however remains whether the provisions in RA 9367 addressing sugar, coconut, and feedstock supply would be sufficient to avoid, avert and prevent a food crisis from happening in the country. RA 9367 and its implementing rules and regulations does not directly address but instead ignores the possible effects of the law on the prices of basic commodities other than sugar and coconuts, nor does it establish a mechanism wherein the prices of such basic commodities are monitored and regulated.

It is true that food prices have increased in response to many factors: higher energy and fertilizer prices; increased demand for biofuels, especially in the U.S. and the European Union; and droughts in Australia and other countries.<sup>41</sup> Nevertheless, the increase in demand for biofuels is attributed to have forced global food prices by 75% - "far more than previously estimated according to a confidential World Bank report."<sup>42</sup>

The International Monetary Fund's (IMF) index of internationally traded food commodities prices<sup>43</sup> increased 130% from January 2002 to June 2008 and 56% from January 2007 to June 2008.<sup>44</sup>

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<sup>41</sup>*High Food Prices: A Harsh New Reality*, WORLD BANK DATA AND RESEARCH, February 29, 2008 at [http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/0,,contentMDK:21665883~\\_pagePK:64165401~piPK:64165026~theSitePK:469372,00.html](http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/0,,contentMDK:21665883~_pagePK:64165401~piPK:64165026~theSitePK:469372,00.html) [last accessed on March 23, 2009].

<sup>42</sup> *Secret Report: Biofuel Caused Food Crisis*, THE GUARDIAN, July 3, 2008 at <http://www.guardian.co.uk/environment/2008/jul/03/biofuels.renewableenergy/print> [last accessed on January 27, 2009].

<sup>43</sup>A nominal dollar index of food commodity prices using global export value weighs.

<sup>44</sup>DONALD MITCHELL, A NOTE ON RISING FOOD PRICES:THE WORLD BANK DEVELOPMENT PROSPECTUS GROUP, 3 (JULY 2008).

The increase in food commodities prices was led by grains which began sustained price increases in 2005 despite a record global crop in the 2004/05 crop year that was 10.2% larger than the average of the three previous years and a near record crop in 2005/06 that was still 8.9% larger.<sup>45</sup> Global stocks of grain increased in 2004/05 but declined in 2005/06 as demand increased more than production.<sup>46</sup> From January 2005 until June 2008, maize prices almost tripled, wheat prices increased 127% and rice prices increased 170%.<sup>47</sup> The increase in grain prices was followed by increases in fats & oils prices in mid-2006, and that also followed a record 2004/05 global oilseed crop that was 13% larger than in the previous year and an even larger crop in 2005/06.<sup>48</sup>

Fats and oils prices have shown similar increases to grains, with palm oil prices up 200% from January 2005 until June 2008, soybean oil prices up 192%, and other vegetable oils prices increasing by similar amounts.<sup>49</sup> Other foods prices (sugar, citrus, bananas, shrimp and meats) increased 48% from January 2005 to June 2008.<sup>50</sup>

Rice, although not used in biofuels, has also been affected due to the increase in prices of other commodities. Rice prices almost tripled from January to April 2008 despite little change in production or stocks.<sup>51</sup> This increase was mostly in response to the surge in wheat prices in 2007 (up 88% from January to December) which raised concerns about the adequacy of global grain supplies and encouraged several countries to ban rice exports to protect consumers from international price increases, and caused others to increase imports.<sup>52</sup>

### **Impact on the Domestic Food Supply**

Although the Biofuels Act of 2006 is a relatively young law, questions as to its effects on the national food supply has already been raised. 1998 Nobel laureate for chemistry Dr. Hartmut Michel warned that the Philippine government's biofuels program could both endanger the country's food security and harm the environment instead of

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<sup>45</sup>*Id.* at 4.

<sup>46</sup>*Id.*

<sup>47</sup>*Id.*

<sup>48</sup>*Id.*

<sup>49</sup>*Id.*

<sup>50</sup>*Id.*

<sup>51</sup>*Id.* at 13.

<sup>52</sup>*Id.*

improving it.<sup>53</sup> On April 16, 2008, senators also urged the government to consider a moratorium on the implementation of the biofuels law and the conversion of irrigated lands to ensure food security.<sup>54</sup> Senator Rodolfo Biazon among others said the use of food sources like corn and sugar cane for alternative fuels might have to be reassessed and it must also be ensured that the lands planted with corn, sugar cane and jatropha for alternative fuels were indeed not suitable for rice, the country's primary staple.<sup>55</sup>

The proponents of biofuel technology argues that in addition to being environmentally friendly, biofuels will speed the rate of economic development experienced by countries as biofuels will increase the demand for domestic crops and reduce oil imports.<sup>56</sup> The fuel needed for industrial expansion will come from domestic farmers and money otherwise used to import energy will be kept in the country.<sup>57</sup>

The Philippines however is an archipelago with a limited resource in terms of land fit for agricultural purposes. The law of supply and demand in economics partly explains why prices of food commodities in the Philippines have increased. Crops used for biofuel would be competing with crops used for the country's food supply in terms of the agricultural land where such crops are to be planted.

Thus, due to an increase in demand in the use of agricultural land and also due to shifts in farmers' decisions to plant biofuel related crops which are to be relatively more lucrative instead of crops for the food market, the prices of basic food commodities will thereby increase. As of 2008, there are currently 10 million hectares of land now devoted to agriculture and there are 4 million hectares of idle public land that can be planted with various crops, including biofuel crops.<sup>58</sup>

Several hectares of rice lands are however also sought to be converted for biofuel production purposes.<sup>59</sup> Given the fact that rice farmers only earn about P20,000 to P40,000 per hectare per cropping season, the temptation to shift to biofuel crops that can guarantee much higher incomes cannot be ignored.<sup>60</sup>

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<sup>53</sup>Ron Mahibir, *Rethinking Biofuels in the Philippines*, ASIA CLEANTECH, January 24, 2008 at <http://asiacleantech.wordpress.com/2008/01/24/rethinking-biofuels-in-the-philippines/> [last accessed on March 26, 2009] [hereinafter *Rethinking Biofuels*].

<sup>54</sup>*Biazon Seeks Review of Biofuels Law Implementation*, THE PHILIPPINE STAR, April 17, 2008 at <http://www.philstar.com/Article.aspx?articleId=56588> [last accessed on March 22, 2009].

<sup>55</sup>*Id.*

<sup>56</sup>Raci Spaulding, *Fuel from Vegetables? A Modern Approach to Global Climate Change*, 13 TRNATLCP 277, 297 (2003).

<sup>57</sup>EBAN GOODSTEIN, *ECONOMICS AND ENVIRONMENT*, 478-511 (3rd ed., 2002).

<sup>58</sup>*Rethinking Biofuels*, *supra* note 51.

<sup>59</sup>*Ban on Riceland Conversion Feared to Hit Biofuels Development*, GMA NEWS, June 10, 2008 at <http://www.gmanews.tv/story/100191/Ban-on-riceland-conversion-feared-to-hit-biofuels-devt> [last accessed on March 22, 2009].

<sup>60</sup>*Rethinking Biofuels*, *supra* note 51.

Foreign investors have also expressed interest in massive jatropha planting programs, encouraging local government units to offer large tracts of land.<sup>61</sup> A Special Report on Energy in the International Herald Tribune also noted that a British firm, NRG Chemical Engineering (NRG Chemical), will invest \$600 million in jatropha plantations in the Philippines that will cover over a million hectares, mainly in Palawan and Mindanao.<sup>62</sup> NRG Chemical has set up a joint venture with the Philippine National Oil Company (PNOC) to build a biodiesel refinery and two bioethanol distilleries.<sup>63</sup> Over a million hectares will be tapped because jatropha needs vast areas to produce a substantial amount of oil.<sup>64</sup>

The Department of Agriculture has also been approached by 15 companies interested in producing biofuel feedstock here whose projects will require 725,300 hectares of land.<sup>65</sup>

On the opposite spectrum, the demand for fuel in general will increase yearly. Based on a study by the PCA, the country's transport-industry consumes an estimated 7 billion liters of diesel per year and this amount is expected to increase over the years.<sup>66</sup>

The supply of biofuels is so limited and its demand so great in the Philippines, that the National Biofuels Board on January 2009 authorized the oil companies to import bioethanol as the local supply cannot afford them to comply with the Philippine Biofuels Law of mixing 5% ethanol in the gasoline they sell at the pumps.<sup>67</sup>

The Philippines will require 208 million liters of ethanol in 2009 in order to comply with the Biofuel Law.<sup>68</sup> As of 2009, there are only two companies in the Philippines producing bioethanol in commercial quantities. These are the San Carlos Bioenergy Inc. and the Leyte Agri Corp, both of which can produce only 19% of the 208 Million liter requirement of the Philippines.<sup>69</sup>

As the biofuels industry in the Philippines grows, a larger and larger share of the supposedly food production is to be used to feed the huge mills that produce ethanol. This was precisely what happened in the United States of America (US). As the US biofuels

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<sup>61</sup>*Id.*

<sup>62</sup>*Id.*

<sup>63</sup>*Id.*

<sup>64</sup>*Id.*

<sup>65</sup>*Id.*

<sup>66</sup>Conrad Carino, *Agriculture Gears up for Massive Biofuel Production*, MANILA TIMES, March 2, 2008 at [http://www.manilatimes.net/national/2008/mar/02/yehey/top\\_stories/20080302top2.html](http://www.manilatimes.net/national/2008/mar/02/yehey/top_stories/20080302top2.html) [last accessed on March 26, 2009].

<sup>67</sup>NBB *Authorizes Oil Companies to Import More Bioethanol*, ALTERNATIVES, January 27, 2009 at <http://www.alternative.com/biofuel/2009/01/27/nbb-authorizes-oil-companies-to-import-more-bioethanol> [last accessed on March 23, 2009].

<sup>68</sup>*Id.*

<sup>69</sup>*Id.*

industry grew, wheat and rice prices surged to decade highs, because even as those grains were increasingly used as a food source, farmers were allotting more acres for biofuels production and fewer acres with other crops.<sup>70</sup>

The poultry and swine industry could also be affected with this phenomenon. According to Vernon Eidman, a professor emeritus of agribusiness management at the University of Minnesota, higher feed costs will cause returns to fall sharply, especially in the poultry and swine sectors.<sup>71</sup> Thus, if returns will drop, production will decline, and the prices for chicken, pork, milk, eggs and other derivatives will ultimately rise.

An increase in food prices would certainly hurt consumers' pockets, especially those in poor developing countries including the Philippines. The World Bank as early as 2001 has estimated that 2.7 billion people in the world were living on the equivalent of less than USD 2 a day; to them, even marginal increases in the cost of staple grains could be devastating.<sup>72</sup>

### **Sugar and Biofuels**

Sugar is one of the primary sources of biofuel in the Philippines today. Despite the increase in food prices, Senator Juan Miguel Zubiri, the principal author of the Biofuels Act of 2006, denied that the biofuels program is the reason behind the increase in world food prices. According to him, "the increase in food prices is commensurate to the increase in the price of fuel. Producers spend more for transportation and fertilizer, which is a fossil oil by-product."<sup>73</sup> He further pointed out that the feedstock for bioethanol in the Philippines is sugar, a mere food additive.<sup>74</sup>

This assessment however ignores the fact that sugar is an important commodity in the Philippines, a major input in food processing industries. In 2007, the Department of Agriculture reported that by 2001 about 8.5 M metric tons of sugarcane will be needed to fulfill the mandated blending of gasoline with 10% ethanol, which already represents around 37% of the total sugarcane produced in the country in 2005.<sup>75</sup>

Moreover, in an article published in the Philippine Agricultural Scientist, UPLB economist Prof. U-Primo E. Rodriguez and Dr. Liborio Cabanilla, dean of the College of

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<sup>70</sup>FORD RUNGE and BENJAMIN SENAUER, FOREIGN AFFAIRS, Volume 86 No. 3, 42, (2007) [hereinafter Foreign Affairs].

<sup>71</sup>*Id* at 45.

<sup>72</sup>*Id* at 42.

<sup>73</sup>Efren Danao, *Oil Companies Behind Smear Drive vs. Biofuels*, MANILA TIMES, June 28, 2008 at [http://www.manilatimes.net/national/2008/june/28/yehey/top\\_stories/20080628top6.html](http://www.manilatimes.net/national/2008/june/28/yehey/top_stories/20080628top6.html) [last accessed on March 25, 2009].

<sup>74</sup>*Id*.

<sup>75</sup>*Sugar As Biofuel In The Philippines May Not Be As "Sweet" as Promised*, PRLOG, March 20, 2009 at <http://www.prlog.org/10202240-sugar-as-biofuel-in-the-philippines-may-not-be-as-sweet-as-promised.html> [last accessed on March 25, 2009].

Economics and Management, noted that using sugarcane as source of energy may have adverse effects. “Devoting sugarcane as biofuel feedstock would probably raise the average domestic prices of agricultural, fishery and forest products, which in turn will make production costs higher and therefore increase prices of food products in the market.”<sup>76</sup>

According to the research’s simulation, there are significant impacts which would greatly affect the sugar industry. First would be the increase of about 18.5% of sugar prices due to the stimulating demand for sugarcane.<sup>77</sup> This would induce significant increases in the value added and employment in the sugar industry.<sup>78</sup>

The big expansion of the sugar industry, however, will just be the only reason for the general expansion of the agriculture, fishery and forestry sector.<sup>79</sup> Rodriguez explained that the expanding sugar industry will affect industries such as corn, livestock and poultry, probably due to the possible allocation of resources to sugar planting.<sup>80</sup>

## Conclusion

There is no doubt that the Biofuels Act of 2006, if implemented properly and effectively, would help address the Philippines’ dependence on foreign oil. There is also no debate that the law is a good starting point for the country’s program to become self-sufficient in energy production.

Addressing the oil crisis alone, however, could be disastrous for the country’s food supply. The oil crisis as well as the food crisis must be tackled hand in hand to come up with a good and viable policy and solution. Ignoring one or the other would only raise more problems than there was to begin with.

The government through the proper agencies could also explore other sources of biofuels that would require land that would not necessarily be fit for agricultural purposes. Doing so could help eliminate the competition between biofuel crops and food crops and thereby mitigate any adverse effects on the prices of the basic food supply. It has already been discovered that ethanol made entirely from cellulose (which is found in trees, grasses, and other plants) has an energy ratio between 5 and 6 and emits 82 to 85% less greenhouse gases than does gasoline.<sup>81</sup> This alternative, if enhanced, could be rewarding as grasses and trees can be grown on land poorly suited on food crops or in climates hostile to the usual biofuel crops such as sugarcane, corn, and soybeans.

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<sup>76</sup>*Id.*

<sup>77</sup>*Id.*

<sup>78</sup>*Id.*

<sup>79</sup>*Id.*

<sup>80</sup>*Id.*

<sup>81</sup>Foreign Affairs, *supra* note 70 at 53.

A promising development is the use of malunggay as a source of both biofuels and food. Unlike jatropha, all parts of the plant can be used either for food or for fuel.<sup>82</sup> The leaves of malunggay can be eaten, while oil can be drawn from the seeds to produce fuel. The malunggay seedlings will take one to two years to mature, half the time required for jatropha. Malunggay can also be grown in land not necessarily fit or devoted for agricultural purposes.

Other alternatives may exist yet its discovery would depend on whether the government would acknowledge that the food supply is threatened by factors including the increase in demand for biofuel crops. Moreover, even if acknowledged, the solution to both the oil and food crisis must take into consideration its effect on one another. Only then will the Philippines truly lead the way to ensuring food and energy sustainability for Filipinos.

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<sup>82</sup>*Philippines Cultivates New Biofuel Wonder Crop*, ENERGY CURRENT, November 4, 2008 at <http://www.energycurrent.com/index.php?id=3&storyid=9922> [last accessed on March 27, 2009].