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## **The Root's Necessity:**

### **A Critique of the Top-Down Approach to International Standards for Genetically Modified Crops and Biofuels**

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#### **I. Introduction**

Initially touted as panaceas to the world's food and energy crises, Genetically Modified (GM) crops and biofuels have now engendered debate about their long-term costs and benefits. Although both GM crops and biofuels may potentially increase global sustainability in the long run, both have in the short-term increased rural inequality, pollution, and deforestation in the short-term.

With careful control of their costs and accurate measurement of their benefits, GM crops and biofuels can play a role in solving some of the world's food and energy problems. Critics of biofuels emphasize the role of international organizations, such as the Roundtable on Sustainable Biomaterials (RSB) and the Roundtable on Responsible Soy (RTRS), in developing voluntary certification standards to self-regulate the industry.<sup>1</sup> However, this high-flown policy making has thus far ignored the important role of local rural organizations in identifying and addressing the problems associated with GM crops and biofuels.<sup>2</sup> If international organizations want to develop

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<sup>1</sup> See Jane Earley, *Biofuels and Climate Change Redux—International Trade and Regulation Update*, 13 No. 2 A.B.A. AGRIC. MGMT. COMMITTEE NEWSL. 16 (2009); Jolene Lin, *The Environmental Regulation of Biofuels: Limits of the Meta-Standard Approach*, 5 CARBON & CLIMATE L. REV. 34, 42-43 (2011); Richard L. Ottinger, *Biofuels—Potential, Problems & Solutions*, 19 FORDHAM ENVTL. L. REV. 253, 259-60 (2009); Richard L. Ottinger & Steven E. Miller, *Bioenergy in Developing Countries: Potential and Risks*, 1 RENEWABLE ENERGY L. & POL'Y REV. 23, 29 (2010).

<sup>2</sup> See ROUNDTABLE ON SUSTAINABLE BIOMATERIALS, MEMBERS, <http://rsb.org/about/organization/rsb-members/> (last visited Oct. 08, 2014) (listing eight rural organizations out of 106 members; of which only one is located in a country in the top twenty-five producers of soy in the world); see ROUNDTABLE ON RESPONSIBLE SOY, MEMBERS, <http://www.responsiblesoy.org/> (last visited Oct. 09, 2014) (listing twelve civil

comprehensive solutions, then these organizations cannot be satisfied by the token presence of a few local organizations. International organizations must actively seek out and include in-country organizations in their discussions and decision-making. These in-country organizations give voice to the specific needs of rural populations most affected by GM crops and biofuels. By engaging local organizations as equals, the international community can rein in the harms of biotechnology while extending its benefits to all people.

## II. The Basics of Genetically Modified Crops and Biofuels

GM crops and biofuels present issues with significant overlap. The majority of biofuels are produced from GM crops. For example, in the United States, GM corn and soybeans, which are common sources of biofuels, occupy an estimated 80-94% of all acreage dedicated to corn and soy.<sup>3</sup> Consequently, understanding the issues associated with biofuels requires awareness of the issues surrounding GM crops.

### A. Defining and Discussing Genetically Modified Crops

GM crops are “derived from organisms whose genetic material (DNA) has been modified in a way that does not occur naturally[.]”<sup>4</sup> Crops are genetically modified to increase their yield, make them resistant to certain chemicals, and enhance certain desired qualities. Advances in biotechnology during the “Green Revolution” helped many countries to dramatically increase their crop production.<sup>5</sup> Many scientists and developmental experts consider GM crops essential to addressing the world’s increasing demand for food.<sup>6</sup>

Unfortunately, the Green Revolution has also led to increased rural inequality. Small farmers in developing countries cannot afford the expensive farming equipment, seeds, and chemicals needed to grow GM crops.<sup>7</sup> Only large farmers have profited from

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society groups from the developing world out of 177 members; of which only a few appear to be rural organizations).

<sup>3</sup> See USDA ECON. RES. SERVICE, ADOPTION OF GENETICALLY ENGINEERED CROPS IN THE U.S. (2014), [http://www.ers.usda.gov/media/185551/biotechcrops\\_d.html](http://www.ers.usda.gov/media/185551/biotechcrops_d.html).

<sup>4</sup> *Food, Genetically Modified Foods*, WORLD HEALTH ORG., [http://www.who.int/topics/food\\_genetically\\_modified/en/](http://www.who.int/topics/food_genetically_modified/en/) (last visited Sept. 19, 2014).

<sup>5</sup> See William S. Gaud, Administrator, Agency for Int’l Dev., Department of State, Address Before The Society for International Development: The Green Revolution: Accomplishments and Apprehensions (Mar. 8, 1968), <http://www.agbioworld.org/biotech-info/topics/borlaug/borlaug-green.html>.

<sup>6</sup> See Alex B. Berezow, *Embracing the Promise of GMOs*, WALL ST. J. (Oct. 17, 2012, 10:00 PM), <http://online.wsj.com/news/articles/SB10000872396390443675404578060303927928978> (“The world must embrace GMOs. It is not only pro-science. It is pro-humanity”).

<sup>7</sup> See Carmen G. Gonzalez, *Trade Liberalization, Food Security and the Environment: The Neoliberal Threat to Sustainable Rural Development*, 14 TRANSNAT’L L. & CONTEMP. PROBS. 419, 442–43 (2004) (discussing how the Green Revolution favored wealthy farmers because it required significant capital investment).

the higher yields of GM crops.<sup>8</sup> The increase in production has led to a decrease in crop prices, which has further deprived many small farmers of their livelihoods.<sup>9</sup> Even though global food prices decreased between 1974-1987,<sup>10</sup> world hunger still persisted.<sup>11</sup> This world hunger problem continues because “problems in food security do not necessarily result from inadequate food supplies, as is widely believed, but from a lack of purchasing power on the part of nations and of households.”<sup>12</sup> Developing countries are unable to compete with the developed world in terms of purchasing power, so many GM crops like soy or corn, which could be used to feed the hungry, are instead diverted to more profitable ends, such as feeding livestock or creating biofuels.<sup>13</sup>

GM crops have also led to a 75% decrease of the world’s crop diversity as large monoculture farms have replaced small traditional farms.<sup>14</sup> The loss of local farming techniques and native seeds means less agricultural diversity, which leaves the global food supply dependent on a few crops. Uniform crops are risky because failure in a single variety could cause a systemic failure in the global food supply.<sup>15</sup> Symptoms of this type of collapse have already appeared: GM crop producers now struggle with herbicide resistant “superweeds” which have led farmers to increase their use of chemicals.<sup>16</sup>

## B. Defining and Discussing Biofuels

Biofuels are “combustible materials directly or indirectly derived from biomass, commonly produced from plants, animals and micro-organisms but also from organic wastes.”<sup>17</sup> Biofuels are considered a way to reduce greenhouse gases and reduce reliance on oil.<sup>18</sup> First-generation biofuels, such as ethanol and biodiesel, are made from

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<sup>8</sup> See *id.*

<sup>9</sup> See *id.*

<sup>10</sup> See *Food Outlook: Biannual Report on Global Food Markets*, UN FOOD AND AGRICULTURAL ORGANIZATION 70 (Nov. 2013), available at <http://www.fao.org/docrep/019/i3473e/i3473e.pdf>.

<sup>11</sup> See WORLD BANK, POVERTY AND HUNGER: ISSUES AND OPTIONS FOR FOOD SECURITY IN DEVELOPING COUNTRIES 1 (1996), available at [http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/1999/09/17/000178830\\_98101901455676/Rendered/PDF/multi\\_page.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/1999/09/17/000178830_98101901455676/Rendered/PDF/multi_page.pdf).

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

<sup>13</sup> See Richard L. Ottinger & Steven E. Miller, *Bioenergy in Developing Countries: Potential and Risks*, 1 RENEWABLE ENERGY L. & POL’Y REV. 23, 24 (2010).

<sup>14</sup> See Carmen G. Gonzalez, *Climate Change, Food Security, and Agrobiodiversity: Toward a Just, Resilient, and Sustainable Food System*, 22 FORDHAM ENVTL. L. REV. 493, 496 (2011) (discussing how diversity was lost as farmers abandoned local varieties in favor of GM crops).

<sup>15</sup> See *id.* at 497 (illustrating the dangers of crop uniformity through the example of the Irish Potato Famine).

<sup>16</sup> See, e.g., Natasha Gilbert, *A Hard Look at GM Crops*, NATURE, May 1, 2013, available at: [http://www.nature.com/polopoly\\_fs/1.12907!/menu/main/topColumns/topLeftColumn/pdf/497024a.pdf](http://www.nature.com/polopoly_fs/1.12907!/menu/main/topColumns/topLeftColumn/pdf/497024a.pdf).

<sup>17</sup> UN ENVIRONMENT PROGRAMME, TOWARDS SUSTAINABLE PRODUCTION AND USE OF RESOURCES: ASSESSING BIOFUELS 25 (2009), available at [http://www.unep.org/pdf/biofuels/Assessing\\_Biofuels\\_Full\\_Report.pdf](http://www.unep.org/pdf/biofuels/Assessing_Biofuels_Full_Report.pdf).

<sup>18</sup> See *id.* at 23.

conventional food crops, particularly corn, sugarcane, and soy.<sup>19</sup> Second-generation biofuels are made from non-food biomass such as agricultural residues,<sup>20</sup> wild grasses, and industrial waste.<sup>21</sup> The Kyoto Protocol<sup>22</sup> and other policies aimed at reducing greenhouse gases have led to increased demand for biofuels.<sup>23</sup>

The international push to reduce greenhouse gases has led to several unforeseen consequences. The increased demand for biofuels was a “significant contributor” to soaring food prices that began in 2008<sup>24</sup> and were “in sight of their all time peak” in August 2012.<sup>25</sup> Biofuels may do “more harm than good to the environment including soil erosion, air and water pollution, water shortages and a reduction of biodiversity.”<sup>26</sup> Deforestation due to expanding biofuel production can actually lead to a net increase in greenhouse gases.<sup>27</sup> Forests and peat land are valuable for their carbon storage and when they are eliminated, the carbon dioxide released eliminates the benefit of the biofuels.<sup>28</sup>

### III. Paraguayan Context

Paraguay, a country the size of California, is the fourth largest soy exporter in the world,<sup>29</sup> with 80% of its cropland dedicated to soy.<sup>30</sup> This huge soy production is possible because the agricultural land is concentrated in just a few industrial farms. Paraguay has the worst land inequality in Latin America, with 1.6% of landowners owning 80% of the agricultural land.<sup>31</sup> Corporations or companies control 49.5% of the total productive land<sup>32</sup> and at least 25% of productive land is foreign-owned.<sup>33</sup>

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<sup>19</sup> See Ottinger & Miller, *supra* note 12, at 24.

<sup>20</sup> Ganesh D. Saratale & Sang Eun Oh, *Lignocellulosics to ethanol: The future of the chemical and energy industry*, 11 AFR. J. BIOTECHNOLOGY 1002, 1003 (2012) (defining agricultural residues as including corncobs, corn stover, sorghum stalks, and sugarcane bagasse).

<sup>21</sup> See *id.* (defining industrial waste as including waste from paper, textiles, and wood industries).

<sup>22</sup> See generally Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, available at <http://unfccc.int/resource/docs/convkp/kpeng.pdf>.

<sup>23</sup> See UN ENVIRONMENT PROGRAMME, *supra* note 16, at 16.

<sup>24</sup> See *World Bank Chief: Biofuels Boosting Food Prices*, NPR (Apr. 11, 2008, 12:01 AM), available at [www.npr.org/templates/story/story.php?storyId=89545855](http://www.npr.org/templates/story/story.php?storyId=89545855) (quoting World Bank President Robert Zoellick).

<sup>25</sup> See *Food Price Watch: Home*, WORLD BANK (May 2014), <http://www.worldbank.org/en/topic/poverty/publication/food-price-watch-may-2014>.

<sup>26</sup> Ottinger & Miller, *supra* note 12, at 26.

<sup>27</sup> See UN ENVIRONMENT PROGRAMME, *supra* note 16, at 18–19.

<sup>28</sup> See *id.*

<sup>29</sup> See P. Theones, *Soybean International Commodity Profile*, UN FOOD AND AGRICULTURE ORGANIZATION 19 (2006) available at [http://siteresources.worldbank.org/INTAFRICA/Resources/257994-1215457178567/Soybean\\_Profile.pdf](http://siteresources.worldbank.org/INTAFRICA/Resources/257994-1215457178567/Soybean_Profile.pdf).

<sup>30</sup> See *id.* at 16.

<sup>31</sup> See Arantxa Guereña, *The Soy Mirage: The limits of corporate social responsibility: the case of the company Desarrollo Agrícola del Paraguay*, OXFAM RESEARCH REPORTS 8 (Aug. 2013), available at

This dramatic inequality in land ownership has its roots in Paraguay's history of domination by foreign interests and dictatorships. As a result of the Triple Alliance War (1865-70), Paraguay lost much of its territory, and saw its government taken over by foreign interests.<sup>34</sup> Between 1904 and 1954, Paraguay had thirty-one dictator-presidents, most of whom were removed from office by force.<sup>35</sup> The culmination of Paraguay's history of foreign and dictatorial domination was Alfredo Stroessner's rule from 1954-1989. During Stroessner's rule, he distributed ten million hectares of land, much of it to his political allies and supporters.<sup>36</sup> In 1989, Paraguay began the transition towards democracy, but the country has been unable to undo centuries of corruption and mismanagement.

Paraguay's land inequality, combined with the second largest per capita rural population in South America,<sup>37</sup> places many small farms on the front lines of the mass production of GM crops for biofuels. As soy production grew, land inequality also increased. Between 1991 and 2008, the number of farms of 10,000 hectares<sup>38</sup> or more grew from 351 to 600.<sup>39</sup> These 600 farms control 40% of all agricultural land in Paraguay.<sup>40</sup> Squeezed in between these enormous farms, 37% of Paraguay's entire population tries to survive on small family farms.<sup>41</sup> Over one-third of rural families own less than 10 hectares, the minimum amount of land needed to support a family.<sup>42</sup> Large farmers intimidate their smaller neighbors into abandoning their farms by purposely spraying agrochemicals on rural homes<sup>43</sup> and hiring strong-armed thugs.<sup>44</sup> Although there is no definitive scientific proof that agrochemicals are harmful to health, farmers

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<http://www.oxfam.org/sites/www.oxfam.org/files/rr-soy-mirage-corporate-social-responsibility-paraguay-290813-en.pdf>.

<sup>32</sup> See *id.* at 8.

<sup>33</sup> See *id.* at 14.

<sup>34</sup> See, e.g., C.I.A., WORLD FACTBOOK, PARAGUAY: BACKGROUND, *available at*

<https://www.cia.gov/library/publications/the-world-factbook/geos/pa.html> (last updated June 20, 2014).

<sup>35</sup> See generally LIBR. OF CONGRESS FED. RES. DIVISION, *History, PARAGUAY: A COUNTRY STUDY* (Dannin M. Hanratty & Sandra W. Meditz, eds., 1988), <http://countrystudies.us/paraguay/>.

<sup>36</sup> Guereña, *supra* note 31, at 10.

<sup>37</sup> See *id.*

<sup>38</sup> For perspective, an American football field is approximately half a hectare. Thus, a 10,000-hectare farm is approximately the size of 20,000 football fields.

<sup>39</sup> See Guereña, *supra* note 31, at 9.

<sup>40</sup> See *id.* at 8.

<sup>41</sup> See *Rural Population*, WORLD BANK,

<http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS/countries/1W?display=default> (last visited Sept. 26, 2014).

<sup>42</sup> See Guereña, *supra* note 31, at 8.

<sup>43</sup> See John Ahni Schertow, *Paraguayan Village Sprayed With Toxic Chemicals*, IC MAGAZINE, Nov. 12, 2009, <http://intercontinentalcry.org/paraguayan-village-sprayed-with-toxic-chemicals/>.

<sup>44</sup> See Mario Machado, *Monoculture Soy and the Future of the Paraguayan Campesino*, HUFFINGTON POST (Jan. 25, 2014, 5:59 AM), [http://www.huffingtonpost.com/mario-machado/not-with-a-bang-but-a-soy\\_b\\_3851685.html](http://www.huffingtonpost.com/mario-machado/not-with-a-bang-but-a-soy_b_3851685.html).

attribute migraines, birth defects, and other ailments to the chemicals.<sup>45</sup> Those resisting the expansion of soy often risk their lives: the proponents of industrial farms have killed protestors and rural leaders.<sup>46</sup> Although GM crops and biofuels did not create the land inequality in Paraguay, they have exacerbated it and other problems for rural populations.

#### IV. Responses to GM Crops and Biofuels in Paraguay

Coordinadora Nacional de Mujeres Trabajadoras Rurales e Indígenas (CONAMURI), the national organization of rural and indigenous women, leads Paraguay's response to the rise of GM agriculture. In 1999, Paraguayan women involved in disparate rural organizations decided to break away from those organizations and form one focused on their specific goals.<sup>47</sup> International networks played a crucial role in the decision to form CONAMURI. In 1995, Magui Balbuena, the founder of CONAMURI, along with a small delegation of women from Paraguay, participated in the IV Global Conference by the United Nations on Women in Beijing. Participating in this conference helped the Paraguayan women to identify their need for their own organization. Although many Paraguayan women were members of rural organizations, they did not have a voice in the decisions of these groups.<sup>48</sup> The women came to realize that their oppression was the result of intersecting circumstances: their status as rural farmers and their gender.<sup>49</sup> In response to this multifaceted hardship, the women formed their own group to focus on issues such as rural health, conservation of native seeds, and women's rights.

CONAMURI was the first rural organization in Paraguay to focus on health issues correlated with the use of agrochemicals.<sup>50</sup> CONAMURI brought the first successful legal case against soy farmers or "sojeros" in Paraguay.<sup>51</sup> Due in large part to the national and international attention that CONAMURI brought to the legal proceedings, the court found the landowners guilty of causing the death of a child, Silvino Talavera, through willfully negligent fumigation.<sup>52</sup> The struggle to bring this case to justice brought together many rural community organizations throughout Latin

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<sup>45</sup> See Jonathan Gilbert, *In Paraguay, the Spread of Soy Strikes Fear in Hearts of Rural Farmers*, TIME, Aug. 9, 2013, available at <http://world.time.com/2013/08/09/in-paraguay-rural-farmers-fear-the-spread-of-soy/>.

<sup>46</sup> See *id.*

<sup>47</sup> See CONAMURI, MUJERES EN REBELDIA Y RESISTENCIA: NUESTRO CAMINO 7 (2009).

<sup>48</sup> See MAGUI BALBUENA & ELIZABETH ROIG: SEMILLA PARA UNA NUEVA SIEMBRA 293 (2008).

<sup>49</sup> CONAMURI, *supra* note 47, at 7.

<sup>50</sup> See *id.* at 13.

<sup>51</sup> See Moli Molinas Cabrera, *The People Responsible for the Death of Silvino will go to Jail*, LA VIA CAMPESINA (Dec. 2, 2006, 3:24), <http://viacampeina.org/en/index.php/main-issues-mainmenu-27/human-rights-mainmenu-40/238-the-people-responsible-for-the-death-of-silvino-will-go-to-jail>.

<sup>52</sup> See *A courtcase on (in)justice for Silvino Talavera*, LA SOJA MATA – SOY KILLS (Feb. 20, 2007), <http://www.lasojamata.net/en/node/43>.

America and set an important precedent throughout those regions.<sup>53</sup> Rural organizations do not have many resources,<sup>54</sup> so the decision in the Talavera case was a “David and Goliath” moment for CONAMURI and other similar organizations.<sup>55</sup>

Despite the success of CONAMURI in documenting illnesses correlated with agrochemicals, these health concerns are not directly addressed by the RTRS and RSB. The RTRS has been accused of whitewashing the issues with a lenient certification standard due to “weak requirements with regard to the use of pesticides, respect for the rights of the local population, and deforestation.”<sup>56</sup> The RSB mandates minimizing pollution harmful to human health and specifically identifies the need to avoid open air burning, but does not mention fumigation.<sup>57</sup> Throughout the RSB’s “Principles and Criteria,” the RSB often fails to identify the relevant issues within the criteria.<sup>58</sup> This continues in the RSB’s discussion of rural development. Here, the RSB focuses on the potential for job creation by producers and processors, but does not recognize that GM production causes small farmers to lose their livelihoods and that GM processing often occurs after export.<sup>59</sup>

Although RSB and RTRS state on their websites that they invite participation of all stakeholders, their membership is heavily skewed toward producers, retailers, and international organizations. Over 80% of RSB members are biofuels producers or international organizations that either do not understand or care about the specific

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<sup>53</sup> See, e.g., Louise Gray, *GM soy: the high cost of the quest for ‘green gold’*, THE TELEGRAPH (May 17, 2011, 9:26 AM), <http://www.telegraph.co.uk/science/science-news/8518048/GM-soy-the-high-cost-of-the-quest-for-green-gold.html> (“Now Silvino’s story has been taken up by environmentalists concerned about the spread of GM crops in parts of the world where communities have little power to fight back when big agri-businesses arrive in town”); see also Molinas Cabrera, *supra* note 50 (“Under the leadership of CONAMURI, various peasant organizations, women’s groups, and human rights, environmental and activist organizations from all over the world denounced this unjustifiable delay in the legal procedure”).

<sup>54</sup> When I conducted my research in 2010, CONAMURI had no digital cameras and no staff attorneys.

<sup>55</sup> See María Isabel Cárcamo, *Legal victories in Latin America: Paraguay Death*, PESTICIDES NEWS (Mar. 2007), at 17, available at <http://www.pan-uk.org/pestnews/Issue/pn75/pn75%20p15-17.pdf> (describing how it was possible for poor rural populations to win against powerful landowners); see also Moli Molinas Cabrera, *supra* note 50 (describing how the Paraguayan decision set a precedent as peasants generally do not have the resources to take agrochemical cases to court).

<sup>56</sup> See Guereña, *supra* note 31, at 23.

<sup>57</sup> See ROUNDTABLE ON SUSTAINABLE BIOMATERIALS, PRINCIPLES & CRITERIA FOR SUSTAINABLE BIOFUEL PRODUCTION 24 (May 11, 2010), available at <http://rsb.org/pdfs/standards/11-03-08%20RSB%20PCs%20Version%202.1.pdf> (discussing generally the need to reduce and contain potential hazards to human health).

<sup>58</sup> *Id.*

<sup>59</sup> See Gonzalez, *supra* note 7, at 442-43; see Jeremy Hobbs, *Paraguay’s Destructive Soy Boom*, N.Y. TIMES (July 2, 2012), [http://www.nytimes.com/2012/07/03/opinion/paraguays-destructive-soy-boom.html?\\_r=0](http://www.nytimes.com/2012/07/03/opinion/paraguays-destructive-soy-boom.html?_r=0) (“In 2010, 5.7 million tons of its total [soy] harvest were exported as raw bean while only 1.5 million tons were processed.”).

needs of the developing world.<sup>60</sup> RSB only has eight rural organization members out of a total of 106 members.<sup>61</sup> Of these eight, only one is from the top twenty-five soy-producing countries in the world.<sup>62</sup> Over 70% of RTRS members are from industry or production and no indigenous peoples or farmers participated.<sup>63</sup> The limited representation in these roundtables limits the ability of these organizations to identify all the issues, establish comprehensive standards, and build legitimacy.<sup>64</sup> According to Balbuena, rural and indigenous people are suspicious of non-governmental organizations, like RSB and RTRS, because these groups seldom represent the needs of marginalized citizens.<sup>65</sup> When asked how rural and indigenous women received CONAMURI, she said, “the women cannot reject [CONAMURI] because we too are rural women and they know what we are fighting for is what they are fighting for.”<sup>66</sup> If RSB, RTRS, and other international organizations attempting to establish regulations want any credibility with those most affected by the negative consequences of biofuels, these organizations must actively seek out in-country organizations, encourage their input, and develop standards that incorporate their needs alongside corporate and international interests.

## V. Conclusion

The perspectives and priorities of local organizations are necessary for developing a comprehensive solution to GM crops and biofuels. The international community has relied too heavily on the top-down approach to problem solving; it is time to balance that with grassroots perspectives and priorities. Many county-specific issues, such as health, gender-relations, and suspicion of outsiders are entangled in the controversy surrounding GM crops and biofuels. International organizations that ignore these county-specific needs will develop regulations that fail to comprehensively address the issues associated with GM crops and biofuels. Local organizations provide a necessary counter-weight to the international perspective on regulating GM crops and biofuels. Actively engaging with local organizations to address their concerns about

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<sup>60</sup> See ROUNDTABLE ON SUSTAINABLE BIOMATERIALS, MEMBERS, <http://rsb.org/about/organization/rsb-members/> (last visited Oct. 08, 2014) (Out of 106 members: 54 members are farmers, producers or retailers; 24 members are IGOs; 10 members are conservation groups from the developed world).

<sup>61</sup> See *id.* (RSB also lists four “Rights-based NGOs (including land, water, human, and labour rights) & Trade Unions,” but this label is misleading as three of these groups are unions, which focus on workers rights rather than rural farmers’ rights, and the other group is a sugarcane certifier based in France.)

<sup>62</sup> See *id.*; see Theones, *supra* note 29, at 17.

<sup>63</sup> See Guereña, *supra* note 31, at 23; see ROUNDTABLE ON RESPONSIBLE SOY, MEMBERS, <http://www.responsiblesoy.org/> (last visited Oct. 09, 2014).

<sup>64</sup> Marion G. Bastos Lima, *Biofuel Governance and International Legal Principles: Is It Equitable and Sustainable?*, 10 MELB. J. INT’L L. 470, 484-85 (2009) (“[The roundtables] are clearly more focused on promoting biofuels than on regulating their production or addressing their wider impacts.”)

<sup>65</sup> Interview with Magui Balbuena, Director, in Asunción, Paraguay (May 20, 2010) (on file with author).

<sup>66</sup> *Id.*



GM crops and biofuels will allow the true costs and benefits of these scientific advances to be measured, balanced, and shared by all.