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## Existing Protection of Plant-Related Intellectual Property in International Agreements

### A Summary of TRIPS and UPOV<sup>1</sup>

A full assessment of the potential impact of the plant-related provisions of the TPP first requires an understanding of the international agreements that the TPP references. Ascension to the 1991 UPOV is considered a TRIPS-plus measure because the TRIPS agreement merely requires nations to afford some measure of plant variety protection, without specifying what such protection should entail. In contrast, the 1991 UPOV requires nations to provide plant breeders with a substantial set of rights. Unfortunately, these rights benefit breeders to the detriment of farmers and overall food security in developing nations.

#### TRIPS

Article 27 of the TRIPS agreement defines what subject matter is eligible for patent protection. **This article explicitly allows TRIPS signatories to exclude plants from patentability.**<sup>2</sup> However, it requires members to:

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<sup>1</sup> Public Citizen's Global Access to Medicines Program. For more information, please contact Peter Maybarduk at [pmaybarduk@citizen.org](mailto:pmaybarduk@citizen.org); Burcu Kilic at [bkilic@citizen.org](mailto:bkilic@citizen.org); or Hannah Brennan at [hbrennan@citizen.org](mailto:hbrennan@citizen.org).

<sup>2</sup> The full text of Article 27 of the TRIPS agreement reads:

1. Subject to the provisions of paragraphs 2 and 3, patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application. Subject to paragraph 4 of Article 65, paragraph 8 of Article 70 and paragraph 3 of this Article, patents shall be available and patent rights enjoyable without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced.
2. Members may exclude from patentability inventions, the prevention within their territory of the commercial exploitation of which is necessary to protect *ordre public* or morality, including to protect human, animal or **plant life** or health or to avoid serious prejudice to the environment, provided that such exclusion is not made merely because the exploitation is prohibited by their law.
3. Members may also exclude from patentability:
  - (a) diagnostic, therapeutic and surgical methods for the treatment of humans or animals;
  - (b) **plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof.** The provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement.

**“[P]rovide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof.”<sup>3</sup>**

Thus, under TRIPS, countries have three options for plant-related intellectual property protection:

1. They can make patents available for plants;
2. They can design and implement their own system of plant IPRs as long as it provides a measure of protection for plant varieties; or
3. They can do both.

Because the TRIPS agreement does not specify what type of unique system would satisfy its requirement of “an effective *sui generis* system” nor reference any preexisting intellectual property agreements, the TRIPS agreement affords member states great latitude in designing their own plant variety protection laws.

### UPOV

The International Convention for the Protection of New Varieties of Plants (UPOV) is considerably **more restrictive than the TRIPS agreement**. The UPOV requires signatories to provide plant variety protection to breeders for any plant that is novel, distinct, homogenous, and stable.<sup>4</sup> This treaty prohibits farmers and other consumers from selling and using certain plant varieties, with certain exceptions. Furthermore, **this treaty has two principal versions—the 1978 version and the 1991 version—with the later version allowing significantly less flexibility than the earlier version.**

### 1978 UPOV

The 1978 UPOV introduces a set of IPR obligations, including: 1) a definition of the applicable subject matter, 2) eligibility requirements, 3) exclusive rights, 4) national treatment and reciprocity conditions, 5) terms of protection, and 6) exceptions and limitations to exclusive rights.

#### **Subject Matter**

- The 1978 UPOV requires member nations to protect some plant varieties created through classical breeding methods.<sup>5</sup>

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Agreement on Trade-Related Aspects of Intellectual Property Rights, art. 27, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 33 I.L.M. 1197, 1869 U.N.T.S. 299.

<sup>3</sup> *Id.* art. 27 § 3.

<sup>4</sup> International Convention for the Protection of New Varieties of Plants art. 5(1), Mar. 19, 1991; International Convention for the Protection of New Varieties of Plants art. 6, Oct. 23, 1978.

<sup>5</sup> International Convention for the Protection of New Varieties of Plants art. 4, Oct. 23, 1978.

- Because article 6.1(a) specifies that a protected variety may result from a natural source of initial variation, it has been inferred that the agreement requires signatories to protect plant varieties that have been discovered.<sup>6</sup>
- **Nevertheless, the 1978 act does not require signatories to protect all plant varieties.**
  - Instead, article 4 provides that member states are to extend protection progressively to an increasing number of genera or species, beginning with five on the date the treaty enters into force for that state and ending with twenty-four within eight years.<sup>7</sup>
  - Additionally, parties are free to confine the Act’s application within a particular genus or species to varieties with a specific manner of reproduction or a certain end-use.<sup>8</sup>
- Finally, article 2(1) of the 1978 UPOV prohibits signatories from granting both patent protection and plant variety protection “for one and the same botanical genus or species.”<sup>9</sup>

### Eligibility Requirements

- Even if a plant variety falls within a class of protected genera or species, it is only eligible for protection under the 1978 UPOV if it is<sup>10</sup>:
  1. **New;**
  2. **Distinct from existing or commonly known varieties;**
  3. **Homogenous or uniform; and**
  4. **Stable.**
- A plant variety cannot qualify as “new” if it has been sold on the market for more than a specified period of years prior to the date of application for protection.
  - This provision ensures that farmers and other consumers can continue to purchase plant varieties that were widely available prior to ascension to the UPOV.<sup>11</sup>
- The 1978 UPOV defines distinct as “clearly distinguishable by one or more important characteristics from any other variety whose existence is a matter of common knowledge at the time when protection is applied for.”<sup>12</sup>
- Homogeneity refers to “the particular features of [the plant’s] sexual reproduction or vegetative propagation,”<sup>13</sup> and the UPOV Guidelines state that, to qualify as

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<sup>6</sup> LAURENCE R. HELFER, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTELLECTUAL PROPERTY RIGHTS IN PLANT VARIETIES INTERNATIONAL LEGAL REGIMES AND POLICY OPTIONS FOR NATIONAL GOVERNMENTS 22, (2004), *available at* <http://www.fao.org/3/a-y5714e.pdf>.

<sup>7</sup> International Convention for the Protection of New Varieties of Plants art. 4(3)(b), Oct. 23, 1978.

<sup>8</sup> *Id.* art. 4(3)(c).

<sup>9</sup> *Id.* art. 2(1).

<sup>10</sup> *Id.* art. 6.

<sup>11</sup> *Id.* art. 6(1)(b). The 1978 UPOV specifies the maximum number of years during which such pre-application sales have occurred, with different periods of time set for different types of plants as well as for sales within the territory of the applicant state versus the territory of other states.

<sup>12</sup> *Id.* art. 6(1)(a).

<sup>13</sup> *Id.* art. 6(1)(c).

homogeneous, a variation displayed by a plant variety must be “as limited as necessary to permit accurate description and assessment of distinctness and to ensure stability.”<sup>14</sup>

- However, commentators have criticized this requirement “as discouraging variability in plant varieties that are often useful for sound agricultural practices and as denying protection to breeders of cultivated landraces that exhibit diversity traits.”<sup>15</sup>
- The stability requirement “is a temporal one, requiring the breeder to show that the essential characteristics of its variety are homogeneous or uniform over time, even after repeated reproduction or propagation.”<sup>16</sup> Due to its similarity to the homogeneity requirement, the stability requirement has garnered similar critiques.<sup>17</sup>

### Scope of Protection

- In terms of what the 1978 UPOV protects, the Act requires its signatories to protect a variety’s **reproductive or vegetative propagating material**.<sup>18</sup>
- The Act **does not require protection of harvested material**, with the exception of ornamental plants that are used for commercial propagation purposes.<sup>19</sup>
- Under article 5, if a plant is protected, a person must obtain authorization from the breeder holding that protection before:<sup>20</sup>
  1. Producing the protected plant for purposes of commercial marketing;
  2. Offering that plant for sale; and
  3. Marketing that plant.
- **Critically, the 1978 UPOV does not require member states to extend these exclusive rights to harvested material or other marketed products.** Therefore, farmers in nations that are 1978 UPOV signatories may sell the fruit or flowers of protected plants: the exclusive breeder rights **do not extend** to the harvests of the protected plants.

### National Treatment

- Members of the UPOV must grant exclusive breeders’ rights **to both national breeders and foreign breeders from other 1978 UPOV states**.<sup>21</sup> Members who provide greater

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<sup>14</sup> HELFER, *supra* note 6, at 23.

<sup>15</sup> *Id.* at 23; see Special Rapporteur on the Right to Food, *Report on Seed Policies and The Right to Food*, General Assembly, ¶ 39, U.N. Doc. A/64/170 (July 23, 2009) (by Olivier De Schutter) [Hereinafter “DeSchutter, *Report on Seed Policies*”] (“Intellectual property rights reward and encourage standardization and homogeneity, when what should be rewarded is agrobiodiversity, particularly in the face of the emerging threat of climate change and of the need, therefore, to build resilience by encouraging farmers to rely on a diversity of crops. In addition, intellectual property rights — particularly patents granted on plants or on genes or DNA sequences — can constitute a direct impediment to innovation by farmers.”), available at [http://www.srfood.org/images/stories/pdf/officialreports/20091021\\_report-ga64\\_seed-policies-and-the-right-to-food\\_en.pdf](http://www.srfood.org/images/stories/pdf/officialreports/20091021_report-ga64_seed-policies-and-the-right-to-food_en.pdf); HELFER, *supra* note 6, at 22-24.

<sup>16</sup> HELFER, *supra* note 6, at 23.

<sup>17</sup> *Id.*

<sup>18</sup> International Convention for the Protection of New Varieties of Plants art. 5(1), Oct. 23, 1978.

<sup>19</sup> *Id.*

<sup>20</sup> *Id.*

<sup>21</sup> *Id.* art. 3.

protection than required by the 1978 UPOV may choose to extend that protection to foreign breeders or reserve it for national breeders only.

### **Term of Protection**

- The 1978 Act also requires a **minimum term of protection of fifteen years**, with the exception of vines, forest trees, fruit trees and ornamental trees, which are to be protected for no less than eighteen years.<sup>22</sup>

### **Exceptions and Limitations to Breeders' Rights**

- The 1978 UPOV carves out two major exceptions to the exclusive rights it affords breeders:
  1. **A breeders' exemption<sup>23</sup>; and**
  2. **A farmers' privilege.**
- **The breeders' exemption** set forth in article 5(3) precludes member states from granting breeders the right to authorize or refrain from authorizing other breeders' use of their protected variety to create new varieties or to market those new varieties.<sup>24</sup>
  - **In other words, breeders may not wield their rights to prevent other breeders from creating new varieties or marketing those new varieties.**
  - According to the International Association of Plant Breeders and the International Seed Federation, this breeders' exemption "is essential for continued progress from plant breeding."<sup>25</sup>
- **The farmers' privilege** enables farmers to use the seeds (and other propagating materials) of protected plant varieties for noncommercial purposes without the breeders' prior authorization.
  - Under the 1978 UPOV, nations have a considerable degree of latitude in defining the scope of the farmers' privilege: "some nations only permit farmers to plant seeds saved from prior purchases to be used on their own land holdings, while others allow them not only to replant but also to sell limited quantities of seeds for reproductive purposes, a practice often referred to as 'brown bagging.'"<sup>26</sup>
- Finally, Article 9 of the 1978 UPOV permits members to issue compulsory licenses on protected plant varieties for "reasons of public interest." However, this mechanism is underutilized.

## **1991 UPOV**

The relatively tempered scope of the 1978 UPOV gave way to more stringent requirements in 1991. The 1991 UPOV provides breeders with more exclusive rights at the expense of farmers' rights. The major revisions of the 1991 Act are as follows.

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<sup>22</sup> *Id.* art. 8.

<sup>23</sup> *Id.* art. 5(3).

<sup>24</sup> *Id.*

<sup>25</sup> FIS/ASSINSEL, ESSENTIAL DERIVATION AND DEPENDENCE: PRACTICAL INFORMATION (1999).

<sup>26</sup> HELFER, *supra* note 6, at 25.

### Subject Matter

- The 1991 UPOV requires states to protect **at least fifteen plant genera or species upon ratifying or acceding to the Act**, and to extend protection to **all plant varieties within ten years**.<sup>27</sup>
- The 1991 UPOV also provides a definition of the term “plant variety,”<sup>28</sup> whereas the 1978 Act did not set forth a definition for this term, indicating that the earlier treaty allowed member states greater latitude in determining the characteristics of plant groupings that would qualify for protection.
  - The 1991 UPOV defines “variety” as a “plant grouping within a single botanical taxon of the lowest known rank” which can be “defined by the expression of the characteristics resulting from a given genotype or combination of genotypes; distinguished from any other plant grouping by the expression of at least one of the said characteristics; and considered as a unit with regard to its suitability for being propagated unchanged.”<sup>29</sup>
- Under this language, multinational seed manufacturers, such as Monsanto, can obtain plant variety protection for their seeds. In other words, genetically modified crops can qualify for plant variety protection.
- In response to demands from breeders in industrialized countries,<sup>30</sup> the 1991 Act **removed the 1978 Act’s ban on dual protection and now permits member states to protect the same plant variety with both a breeders’ right and a patent**.
- Finally, the 1991 UPOV makes explicit the 1978 Act’s implicit requirement that discovered varieties be protected.<sup>31</sup>

### Eligibility Requirements

- The 1991 UPOV’s eligibility requirements mirror those of the 1978 UPOV.<sup>32</sup> Thus, the 1991 Act, like its predecessor, encourages genetic standardization, thereby disfavoring plant diversity, traditional varieties, and cultivated landraces.

### National Treatment

- Unlike the 1978 Act, granting rights only on condition of reciprocity is not permitted under the 1991 UPOV.
- **Member states must provide the nationals of other countries the same exclusive rights that they provide to their own citizens.**<sup>33</sup>

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<sup>27</sup> International Convention for the Protection of New Varieties of Plants art. 3(2), Mar. 19, 1991.

<sup>28</sup> *Id.* art. 1(vi).

<sup>29</sup> *Id.* art. 1(vi).

<sup>30</sup> J. WATAL, INTELLECTUAL PROPERTY RIGHTS IN THE WTO AND DEVELOPING COUNTRIES 149 (2000).

<sup>31</sup> International Convention for the Protection of New Varieties of Plants art. 1(iv), Mar. 19, 1991.

<sup>32</sup> *Id.* at 6-9.

<sup>33</sup> *Id.* at art. 4.

### Term of Protection

- The 1991 UPOV extends the term of protection to twenty years, and requires a twenty-five year term for tree and vine varieties.<sup>34</sup>

### Expansion to the Scope of Breeders' Rights

- Nevertheless, the two most significant changes that the 1991 revisions brought about were to the scope of breeders' exclusive rights.
- **First, the 1991 UPOV significantly extended the reach of breeders' exclusive rights.**
  - The 1978 Act only prevented non-rights holders from 1) producing the protected plants for purposes of commercial marketing, 2) offering protected plants for sale, and 3) marketing protected plants.<sup>35</sup>
  - The 1991 UPOV now excludes non-rights holders from 1) producing or reproducing protected plants, 2) conditioning protected plants for the purpose of propagation, 3) offering protected plants for sale, 4) selling or marketing protected plants, 5) exporting protected plants, 6) importing protected plants, and 7) stocking protected varieties for commercial or propagation purposes.<sup>36</sup>
  - **More importantly, these exclusive rights now apply not only to propagating materials but also to harvested materials, where the harvest has been obtained through an unauthorized use of the propagating material and the breeder has not had a reasonable opportunity to exercise his right in relation to that material.**
    - This change in the scope of protection is critical: while the 1978 Act only prevents farmers from selling protected varieties and their propagating materials, the 1991 act also **prohibits farmers from selling fruits and flowers harvested from those varieties.**
    - In other words, the 1991 Act extends the breeders' monopoly to the harvests of farmers' crops.
    - "If the farmer sowed his or her field to a PVP variety without paying the royalty fee, the breeder can claim ownership of the output (e.g. wheat) and the products of the output (e.g. wheat flour)."<sup>37</sup>
    - **This revision gives breeders greater control over trade in processed foods, ornamentals, and other high-value commodities.**
- **Second, the 1991 UPOV meaningfully limited the scope of exceptions and limitations to breeders' exclusive rights.**
  - **The 1991 UPOV restricts the application of the breeders' exception<sup>38</sup> to new varieties that are not "essentially derived" from protected varieties.<sup>39</sup>**

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<sup>34</sup> *Id.* art. 19(2).

<sup>35</sup> International Convention for the Protection of New Varieties of Plants art. 5(1), Oct. 23, 1978.

<sup>36</sup> International Convention for the Protection of New Varieties of Plants art. 14(1)(a), Mar. 19, 1991.

<sup>37</sup> GAIA/ GRAIN, *Ten Reasons not To Join UPOV*, GRAIN (May 1998), <http://www.grain.org/article/entries/1-ten-reasons-not-to-join-upov>.

- According to one expert in the field, “[t]he drafters added this restriction to prevent second generation breeders from making merely cosmetic changes to existing varieties in order to claim protection for a new variety.”<sup>40</sup>
- Nevertheless, the scope of this concept has proved difficult to define: breeders have been “unable to agree on a definition of the minimum genetic distance required for second generation varieties to be treated as not essentially derived from an earlier variety and thus outside of the first breeder’s control.”<sup>41</sup>
- **Yet, is it clear that the overarching effect of this change to the UPOV has been an expansion in the exclusive rights of first generation breeders.**
- **The 1991 UPOV also further limited the farmers’ privilege.**
  - Although signatories may allow farmers to use harvested materials that they obtained from planting a protected variety “on their own holdings” for propagating purposes “on their own holdings,” **this privilege must now be exercised “within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder.”**<sup>42</sup>
    - That is to say, farmers may use the fruits or flowers obtained from cultivating a protected plant variety on their land to further grow that plant on their own land, but this right or “privilege” is subject to the interests of breeders.
    - **According to the International Association of Plant Breeders, the “reasonable limits” language in article 15(2) requires states to restrict the acreage, quantity of seed, and species subject to the farmers’ privilege, while the requirement to safeguard breeders’ “legitimate interests” requires farmers to pay some form of remuneration to breeders for their “privileged” acts.**<sup>43</sup>
    - As one commentator points out, however, “[t]he latter assertion is controversial,” and “has not been enacted in the national laws of all the 1991 Act member states.”<sup>44</sup>
  - Moreover, unlike the 1978 UPOV, **the 1991 revisions do not permit farmers to sell or exchange seeds with other farmers for propagating purposes.**<sup>45</sup>
    - Farmers in developing countries traditionally save, exchange, and sell seeds and other propagating materials informally. In these countries, “farmers’ systems of seed supply and crop

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<sup>38</sup> International Convention for the Protection of New Varieties of Plants arts. 14(5)(a) & 15(1)(ii), Mar. 19, 1991.

<sup>39</sup> *Id.* art. 14(5).

<sup>40</sup> HELFER, *supra* note 6, at 28.

<sup>41</sup> *Id.* (citing FIS/ASSINSEL, ESSENTIAL DERIVATION AND DEPENDENCE: PRACTICAL INFORMATION (1999)).

<sup>42</sup> International Convention for the Protection of New Varieties of Plants art. 15(2), Mar. 19, 1991.

<sup>43</sup> FIS/ASSINSEL, POSITION PAPER ON FARM SAVED SEED (2001).

<sup>44</sup> HELFER, *supra* note 6, at 29.

<sup>45</sup> *Id.* (citing) J. WATAL, *supra* note 30, at 141.



improvement are by far the most important sources of seeds, playing a fundamental role in ensuring household food security.”<sup>46</sup>

- Informal seed trading systems also enable farmers to access a stock of different plant genes. Access to gene diversity is crucial to the improvement and conservation of traditional varieties that are well adapted to local environments.
- Nevertheless, the **1991 UPOV does make explicit two important farmers’ rights.**
  - First, the 1991 UPOV clarifies that private, noncommercial activities with respect to new varieties are outside of breeders’ control.
    - **This exception permits subsistence farmers to use protected seeds and other propagating material for their own consumption.**
  - The 1991 Act also recognizes that breeders cannot restrict “acts done for experimental purposes.”
    - **This exception permits research and testing of protected plants for scientific purposes that do not lead to commercial exploitation.** Finally, article 17 of the 1991 Act continues to permit nations to issue compulsory licenses on protected varieties for reasons of public interest.

**In sum, the 1991 revisions to the 1978 UPOV brought about two critical changes:**

- 1) Breeders now have the right to control not only the propagating materials of protected plant varieties, but also the **harvested** materials of such varieties, where the harvest has been obtained through an unauthorized use of the propagating material and the breeder has not had a reasonable opportunity to exercise his right in relation to that material; and
- 2) The 1991 UPOV **prohibits farmers from selling or exchanging seeds with other farmers** for propagating purposes.<sup>47</sup> These revisions restrict farmers’ rights, further subjugating them to the rights of breeders.

To see a chart comparing the 1991 and 1978 UPOV see: BERNE DECLARATION, OWNING SEEDS, ACCESSING FOOD: A HUMAN RIGHTS IMPACT ASSESSMENT OF UPOV 1991 BASED ON CASE STUDIES IN KENYA PERU AND THE PHILIPPINES 12 (2014), available at [http://www.bernedeclaration.ch/media/press-release/press/stronger\\_plant\\_variety\\_protection\\_may\\_threaten\\_the\\_right\\_to\\_food/](http://www.bernedeclaration.ch/media/press-release/press/stronger_plant_variety_protection_may_threaten_the_right_to_food/).

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<sup>46</sup> Claudio Chiarolla, *The Right to Food and Intellectual Property for Plant Genetic Resources*, in RESEARCH HANDBOOK ON HUMAN RIGHTS AND INTELLECTUAL PROPERTY 13 (Edward Elgar ed., 2014).

<sup>47</sup> J. WATAL, *supra* note 30, at 141.

## Membership of the UPOV

Currently, 72 nations are UPOV signatories: 52 have ascended to the 1991 UPOV, 19 to the 1978 UPOV, and 1 to a 1972 version. Although UPOV's 72-nation membership may appear large, in comparison to the TRIPS agreement's 160 signatories, UPOV's list of signatories is still relatively small. Furthermore, of the 52 nations that have acceded to the 1991 UPOV, only 22 are low- or middle-income countries. The other 11 low- or middle-income UPOV members have only acceded to the 1978 version. The table below depicts membership to the 1991 and 1978 UPOVs by national income.<sup>48</sup>

Income Level	1978 UPOV	1991 UPOV
<b>Upper-Middle-Income Economies (\$4,126 to \$12,745 Gross National Income per Capita)</b>	Argentina Brazil China Colombia Ecuador Mexico South Africa	Albania Azerbaijan Belarus Bulgaria Costa Rica Dominican Republic Hungary Jordan Macedonia Panama Peru Romania Serbia Tunisia Turkey
<b>Lower-Middle-Income Economies (\$1,046 to \$4,125 Gross National Income per Capita)</b>	Bolivia Nicaragua Paraguay	Georgia Kyrgyzstan Moldova Morocco Ukraine Uzbekistan Viet Nam
<b>Low-Income Economies (\$1,046 or less Gross National Income per Capita)</b>	Kenya	

<sup>48</sup> This memorandum relies on the World Bank's classification of low- and middle-income countries. See *Country and Lending Groups*, THE WORLD BANK, [http://data.worldbank.org/about/country-and-lending-groups#Low\\_income](http://data.worldbank.org/about/country-and-lending-groups#Low_income) (last visited Sept. 30, 2014).