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Citation: Farran, Sue and Forsyth, Miranda (2013) Intellectual Property and Food Security in Least Developed Countries. *Third World Quarterly*, 34 (3). pp. 516-533. ISSN 0143-6597

Published by: Taylor & Francis

URL: <http://dx.doi.org/10.1080/01436597.2013.785345>  
<<http://dx.doi.org/10.1080/01436597.2013.785345>>

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# **Intellectual Property and Food Security in Least Developed Countries**

Miranda Forsyth and Sue Farran

## **Abstract**

This paper analyses the impact of intellectual property laws on food security in Least Developed Countries, taking the Pacific Islands countries as an example. It argues that IP laws are increasingly impacting upon food security, but are not being adequately taken into account in national policy development. Consequently, national IP regimes are developing in ways that undermine, rather than promote, food security. The paper argues that the particular context of LDCs, including a lack of technological development and reliance upon traditional agricultural systems, requires an approach to intellectual property that is substantially different to the “one size fits all” approach mandated by the Agreement on Trade-Related Aspects of Intellectual Property Rights.

## **Introduction**

The debate about intellectual property laws and food security has taken place almost exclusively in the context of developed and developing countries, which rely heavily on commercial seeds and technology in agriculture. Little attention to date has been paid specifically to the effect of intellectual property laws on least developed countries (LDCs) and other countries that are far behind the technological frontier. It may be that this is because it is assumed that the issues are the same for these countries as for more developed countries, or that intellectual property laws are simply not relevant – after all in such countries the majority of the population are not in waged employment, public and private spending on research and development is almost non-existent, and a large percentage of

people live in rural areas where their daily needs are primarily met by fishing, foraging and the cultivation of staple food crops. This paper challenges both assumptions. First, it shows the growing relevance of global, regional and national intellectual property regimes to food security in such countries. Second, through investigating what type of intellectual property regime would best suit LDCs, it demonstrates that there are good reasons against adopting the same policies as those used in more technologically developed countries (even though they may still be ‘developing’). The paper focuses on the South Pacific islands region as a case-study, as this region includes a number of LDCs and many other technologically limited countries.

The paper first considers the local and regional context of food security in the Pacific Island countries and queries how intellectual property rights are relevant. We identify a number of ways that intellectual property rights impact on this topic, and also show how at present they are generally being overlooked by those involved in food security policy, leading to a lacuna in any national policy development. The paper then examines what types of intellectual property frameworks are being implemented in Pacific Island countries and what the drivers behind these are. We show that new regulatory frameworks are being driven by international players such as the World Trade Organisation (WTO) and other trading partners, who often require IP regimes to be introduced as pre-requisites to membership of Free Trade Agreements, rather than responding to local needs. These organisations advocate strong intellectual property regimes on the basis that they promote innovation and diffusion of new technologies. However, the paper queries the extent to which such regimes are in fact likely to result in new agricultural innovations or diffusion of new developments in agriculture in the context of LDCs. It examines who is currently actually conducting innovative research and disseminating new agricultural technology and knowledge in the region, and what

incentivises them. We find that this area is almost exclusively dominated by regional research programs and local NGOs, with no commercial ventures playing a significant role. Finally, the paper identifies a regulatory approach that has the best chances of maximising the development and distribution of new agricultural technology in such contexts.

The paper thus contributes to the developing body of literature on intellectual property and food security in three main ways. First, it articulates the perspectives of LDCs, who are far behind the “technological frontier,” and whose circumstances are thus radically different from many of the developing Asian countries most commonly discussed in the literature.<sup>1</sup> Second, it presents qualitative empirical evidence to challenge many of the claims made about intellectual property and development by those promoting the “one size fits all” approach exemplified by the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). In particular, it challenges the claims made regularly by institutions such as the World Intellectual Property Organisation (“WIPO”) that “the creation, protection, management and use of intellectual property rights [in LDCs] would contribute to economic development by facilitating the transfer of technology, increasing employment and creating wealth.”<sup>2</sup> Third, it makes explicit the links between trade agreements, intellectual property policy-making and sustainable agricultural development, as too often these are not viewed together.<sup>3</sup>

### **Part 1: How relevant are intellectual property laws to food security in LDCs?**

Most of the countries in the Pacific Islands region are among the least developed in the world.<sup>4</sup> Their imports largely exceed exports and the latter consist mostly of natural resources or agricultural produce. All depend on regular injections of foreign aid, some

almost entirely. Whilst there are many differences throughout the region that have major effects on their vulnerability to food poverty, there are a number of common factors that cause IP laws to have, or to be likely to have, an impact in this area.

***(a) International, multilateral and bilateral trade agreements***

At an international level there are a number of intellectual property conventions that have the potential to impact on food security in the region. Arguably the most important of these is TRIPS which sets out the minimum levels of intellectual property laws required for a country to join the WTO. Currently six Pacific island countries are members of the WTO<sup>5</sup> and one is in the process of acceding. TRIPS requires members to provide effective regimes for the patenting of micro-organisms and some form of plant variety protection. The majority of developed countries have adopted an international convention known as UPOV<sup>6</sup> as being the most appropriate system for securing the interests of industrial plant breeders and promoting uniformity in agriculture. Although a *sui generis* framework, UPOV is a TRIPS Plus requirement, but may be mandated by WTO accession negotiations, as has for example occurred in the case of Vanuatu.<sup>7</sup> UPOV protects the rights of plant breeders provided they develop plant varieties which are new, distinct, uniform and stable (article 5 (1)). These criteria are not as stringent as for patents, making it easier for commercial plant breeders to secure monopolies, while at the same time their lower requirements for stability and uniformity operate to exclude varieties developed by farmers which tend to be variable and not uniform. Under the terms of the 1978 version, UPOV made two exceptions to the commercial monopoly. Farmers were allowed to save seed for their own use and breeders were allowed to freely use PVP varieties to develop newer ones. These exemptions are restricted in the 1991 version, although there are possible limited exemptions in respect of

farmers' rights,<sup>8</sup> research,<sup>9</sup> and public interest. The 1991 version of UPOV, which is what a number of LDCs have recently been required to implement as part of WTO accession, thus effectively undermines farmers' rights in favour of enhancing protection for commercial plant-breeders' rights.<sup>10</sup>

While only a few Pacific Island countries are currently members of the WTO, most are involved in regional level free trade agreements with neighbouring states. These also have potential intellectual property and food security consequences because the rationale behind them is often to mandate intellectual property regimes favourable to trading partners. Although initially the trading field was reasonable level, with the exclusion of Australia and New Zealand from the 2003 Pacific Island Countries Trade Agreement (PICTA),<sup>11</sup> subsequent free trade agreements, which include Australia and New Zealand, notably PACER (the Pacific Agreement on Closer Economic Relations),<sup>12</sup> and PACER Plus,<sup>13</sup> and also the European Union Partnership Agreements, are likely to give rise to greater pressure for countries to introduce TRIPs compliant intellectual property regimes.

The result of TRIPs consistent IP laws is that access to new germplasm and new technology is controlled by the owners of that technology, who are likely to overwhelmingly be foreign international companies. This means that the costs for farmers in the region in accessing this technology are likely to rise, and also that they are not free to share it amongst other members of the community. This is likely to be increasingly problematic as propertised seeds arrive via foreign aid programs (as often occurs for example in the wake of a tsunami or cyclone) and breeding programs are set up with foreign donor money. As Chiarolla argues, "strong restrictions on access to plant genetic resources may augment the technological divide

between those who have reached the technological frontier and latecomers who rely on adaptation of foreign technologies and germplasm for their domestic food needs.”<sup>14</sup>

IP laws are also likely to have negative effects on biodiversity, which has been identified as essential to food security in the region. The Special Rapporteur on the Right to Food stated in a 2009 Report:

The expansion of intellectual property rights can constitute an obstacle to the adoption of policies that encourage the maintenance of agrobiodiversity and reliance on farmers’ varieties. 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.<sup>15</sup>

***(b) Changes in population densities and consumption habits and climate change***

There are a number of demographic shifts taking place in the region that have considerable impact upon food security. In many there is rapid population growth, whilst in others there is a shrinking population due to migration, either to other islands within the country – leaving some islands severely under-populated - or abroad.<sup>16</sup> There is also noticeable urban drift, creating the situation where many people have no, or very limited, access to land for growing their own food, or keeping domestic animals.<sup>17</sup> Urban dwellers are therefore dependent on purchasing food, either from local markets, or from stores. This has two consequences: first, more food has to be grown and transported to local markets to meet demand, and second there is greater dependency on imported food stuffs such as rice. Consequently there is a need for land to produce higher yield crops, which in turn requires changes in agricultural

techniques and plant varieties, and hence an intellectual property regime that encourages the development of these, and also their diffusion.

Climate change is also likely to have a significant effect on the region, either through salt-water inundation, or the more frequent incidence of cyclones, irregular rainfall patterns and changing temperatures.<sup>18</sup> These changes in turn require changes in agricultural technology, such as the introduction of new species resilient to salinity, drought and flood, and new techniques for food preservation to help populations through periods of natural disaster. This also has consequences for intellectual property policy as it suggests the need for measures to stimulate the development of new varieties and agricultural technology, and the equitable sharing of these developments.

***(c) Faltering of traditional agricultural exchange systems***

A final factor to affect food security in the region that has consequences for intellectual property policy is the faltering of the traditional economy, and particularly traditional crop development and exchange. Traditional farming relies heavily on root or plant material propagation and the gifting or exchange of plants. The traditional economy is still critical in many countries in the region, although more so in Melanesia than the atoll countries. For example, at present, food gardens are the main source of villagers' food in Vanuatu and provide an estimated 70-85% of calorie needs, depending on location.<sup>19</sup> The literature on the operation of these traditional systems is extremely limited, but what does exist suggests that the development of new varieties of staple crops has been overwhelmingly conducted by individual farmers who then distribute these varieties through their kinship and other networks (church, work etc). These inflows of new varieties of root crops are crucial to

maintaining food security in the region for a number of reasons. The first is they help to overcome the problem of viruses. The root crops that form the staple diet in the region are propagated vegetatively rather than by seeds, which means that unlike with seed propagation, viruses are propagated with the plants, and over time these can reduce the yield of the variety. New varieties produced through sexual reproduction carry fewer viruses and so are likely to be higher yielding. Freedom to develop new varieties with different properties will also become increasingly important in the future to address the challenges brought by climate change. The traditional distribution system means that farmers are generally self-reliant for planting material (thus reducing costs of production) and it has allowed subsistence food production to function with a high degree of resilience in the wake of both natural and man-made disasters, as well as increasing population. It has also meant that the varieties best suited to their environment are able to be promoted to the benefit of everyone, and that yield can therefore be maintained without the need to use expensive fertilizers or pesticides. It is clear that this system should be supported if the region's current food security is not to be jeopardised.

The traditional incentive to distribute new varieties widely in a number of countries in the region comes from the customary norm of naming the new varieties by their place of origin or after the person or who gave them to the place. An ethnobiologist working in the northern islands of Vanuatu (Vanua Lava) explains:

In fact if a man, or more rarely a woman, gives his name to a new taro that he or she has discovered in a fallow pond, his descendants will conserve it as part of their heritage. In Vanuatu, there are not so much property rights but usufruct rights. An individual owns what he plants and not the soil that nourishes the crops. The new taro

holds the seal of its discoverer. The farmer will plant it, multiply it and distribute it with attention as his 'invention,' as the range of its dispersion will be the measure of his renown while alive and after his death.<sup>20</sup>

There are however, challenges to the traditional agricultural system which mean it requires active support, and also cannot be entirely relied upon for food security in the future. First, there is pressure on land to produce higher yields to meet the demands of a growing population and land-poor urban dwellers, and to produce cash-crops to satisfy the need for disposable income. Secondly, there is a significant decline in biodiversity in agricultural food production.<sup>21</sup> Traditionally there was considerable genetic variation in all of the staple root crops, but this is no longer the case. For example, a researcher in Vanuatu observed:

On Malo I recorded language names, and, in many cases, stories for over 100 yam varieties across seven species, five of which are 'indigenous'. I never sighted many of these despite surveying literally hundreds of gardens, implying that they are no longer cultivated; effectively lost though their names and stories may still be recalled by older folk.<sup>22</sup>

This loss of biodiversity is of a concern in the context of adapting cultivars to climate change, and cultivating crops which are resilient to pests and diseases. This decline is partly attributable to population pressures which mean farmers tend to concentrate on the highest yielding crops, and also on cash-cropping which tends to promote mono-crops.<sup>23</sup> It is also associated with a loss of cultural traditions related to traditional ways of life, as certain cultivars were also preserved for the social value of their story of origin.<sup>24</sup> A final threat is

the underlying vulnerability of traditional crops due to their narrow genetic base, making the introduction of new genetic material imperative to avert future epidemics and disasters.<sup>25</sup>

These observations suggest that an intellectual property policy that supports food security in countries where the traditional economy is still important, or potentially important, needs to be one that creates an enabling environment for preserving the indigenous diversity of foods. This requires, amongst other things, recognition and promotion of the traditional knowledge and customary regulatory systems that have evolved to promote food security in the past.

## **Part 2: The disjunction between food security policy and intellectual property policy in the Pacific Islands region**

The intellectual property systems in the region were first laid down by colonial governments, and these were generally rolled over into the new legal regimes created upon independence of the countries in the region.<sup>26</sup> However, intellectual property regimes have not played a significant role in practice in most countries in the region until recently, when a number of countries commenced reinvigorating and reforming their intellectual property systems.<sup>27</sup> The stimulation for doing so has overwhelmingly been accession to Free Trade Agreements such as the WTO, and also as a result of pressure from organisations such as WIPO, which promotes a view that intellectual property aids development. In contrast, national and regional organisations involved in promoting food security and climate change strategies have overlooked intellectual property policy as an issue almost completely, despite its relevance as outlined above. As a result, the new IP regulatory frameworks being introduced correspond to priorities of international bodies and trading partners, rather than responding to local needs. This is problematic in at least the following four fundamental respects.

***(a) Western IP rights are not likely to promote innovation and diffusion of new technology in agriculture in the PICs***

The state of technological under-development in almost all the countries in the region means that it is highly unlikely that a western intellectual property rights regime will in fact stimulate the development of new agricultural innovation necessary for increased food security in the region. These countries are far behind the “technological frontier” and have few, if any, commercial enterprises operating in the area, and an almost complete lack of infrastructure. They therefore lack the capacity to transform genetic resources, which is what TRIPS consistent IP laws incentivize. Fieldwork conducted in Samoa, Fiji and Vanuatu in 2011<sup>28</sup> found that there has been almost no development of new plant or animal genetic varieties or agricultural technology in the past few decades (outside of the regional mechanisms discussed below). One exception to this was the development of the Fiji Fantastic Sheep in Fiji which was a joint project between Australia and Fiji over the 1980s to mid 1990s.<sup>29</sup> Despite its success, however, it has not been replicated either with new breeds of sheep or other livestock. The reasons given for this by the Director of the Animal Health and Production Division, Ministry of Primary Industries, is that Fiji has neither the facilities nor the expertise, as there are no qualified animal breeders in the country. Moreover, the overall cost of conducting such a program in Fiji is higher than if Fiji relies on other institutions overseas to do the research for them.<sup>30</sup> A similar issue arose in another example of agricultural innovation in Fiji, where a local engineer succeeded in inventing, and obtaining a local patent over, a new method of producing coconut oil. However, he was unable to find a way of commercialising it due to lack of manufacturing capacity and lack of institutional support. In reflecting on why his invention has not been further developed, and why there have been so few similar innovations, the inventor cited a general shortage of skilled and qualified personnel in the public sector, and a lack of awareness of the importance

of innovation and technology generally.<sup>31</sup> These examples suggest that while there is scope for in-country research and development if sufficient resources are invested, the economic viability of such endeavours is highly questionable regardless of the availability of intellectual property rights. Further, it appears that only governments and foreign aid donors have either the expertise or resources to conduct such research, and as they are prompted by general developmental concerns, the stimulation of a patent is not required in order for them to conduct research.

***(b) A western IP system deflects attention from the need to support the organisations actually generating agricultural innovation in the region***

An investigation into agricultural innovation in the region shows that developments in these areas are overwhelmingly occurring in the context of regional research programmes and local non-government organisations. Research and the conservation of existing biodiversity is heavily dependent on regional co-operation and external funding,<sup>32</sup> as many countries simply lack the resources to develop their own research. There are many positive examples of such regional endeavours. For example, in 2008 a ‘Centre of Excellence for Atoll Agriculture Research and Development in the Pacific’ was established in Kiribati.<sup>33</sup> Funded primarily by the International Fund for Agricultural Development, the aim of the centre is to work on new technologies for atoll farmers and to document existing farming practices.<sup>34</sup> The research is aimed at “improving food security through enhanced soil fertility and the development of crop varieties that can grow in these areas”.<sup>35</sup> Another example is the regional germplasm centre, The Centre for Pacific Crops and Trees (CePaCT), which was established in 1998 as a result of realisation of the serious dangers posed to biodiversity due to climate change and the outbreak of pests and diseases.<sup>36</sup> The aim of the Centre is to conserve and provide access to the region’s genetic resources for staple food crops such as yam, banana, taro, and sweet

potato.<sup>37</sup> It has encouraged the development of a regional inventory for existing germplasm collections, the establishment of national genebanks, the documentation of cultivars in Kiribati and Federated States of Micronesia and research into the storage of taro seed in Papua New Guinea.

There are also a number of NGOs that are active in this area, for example the Kastom Gaden Association in Solomon Islands<sup>38</sup> and the Island Food Community of Pohnpei.<sup>39</sup> These projects have mixed aims and agendas but share an interest in promoting local foods through cultivation and use, and identify the need to conserve crop varieties and improve access to plant resources.<sup>40</sup> They also express concern about the loss of traditional knowledge and the cultural values associated with local foods.

Both regional organisations and NGOs need funding and support to continue the work they are doing. They are unlikely to be incentivised by intellectual property rights as their focus is on distributing the new developments as widely as possible, which goes against the proprietary rights emphasis of intellectual property laws. In developing an intellectual policy for food security it makes sense to develop regimes that support and promote those who are actually doing the innovative work, rather than those that would appeal to commercial interests that simply do not exist in the region. Such an approach would see funds earmarked for implementing expensive regulatory schemes, such as those required by UPOV, replaced by grants and awards for regional bodies and NGOs producing innovative technology.

***(c) The introduction or strengthening of western intellectual property systems may undermine the systems currently responsible for producing and diffusing new agricultural technology and genetic resources***

There is a danger that western intellectual property systems will undermine the work of the regional organisations and NGOs just discussed, and also the customary systems that are responsible for the development and diffusion of new varieties of plants in many countries in the region.

The customary system operates in very different ways to the western intellectual property system. The latter operates by granting a monopoly of control to individual inventors and breeders to allow them to make commercial gains; whereas a customary approach tends to be directed at benefit sharing, collective control or management, and indefinite recognition through naming practices. There is a risk that the introduction of UPOV type plant variety systems or patent laws may have a negative impact upon the current operation of the traditional system of genetic distribution. The concern is that it may change the mind-set of people away from the current relatively open access approach towards improved varieties towards a more proprietary, exclusive access mind-set. This is because, as Merry argues, “[l]aw is not simply a set of rules exercising coercive power, but a system of thought by which certain forms of relations come to seem natural and taken for granted.”<sup>41</sup> There is thus a clear danger that once the idea of a “genetic resource owner” takes hold, there may be far less willingness to share access to genetic resources for the common good. For example, an analogous transformation has occurred in Vanuatu in the past thirty years as a result of the Constitution recognising customary “land owners.” McDonnell argues:

The idea that this landownership is based in custom creates a legal nomenclature that at once looks like offering a model of recognition for the ‘other’ indigenous identity, while at the same time destabilising the foundation of this identity, reconfiguring indigenous relationships to land by asserting that land must be ‘owned.’<sup>42</sup>

As discussed below, the challenge therefore is to find a framework in which both customary and state intellectual property systems operate to enhance, rather than diminish, the other’s effectiveness.

A western intellectual property system may also undermine regional research endeavours. This potential problem is illustrated by a case-study into the development of taro leaf blight resistant taro. In 1993 most of Samoa’s taro was wiped out by taro leaf blight. As well as affecting local consumption, this had a profound effect on Samoa’s taro export market to New Zealand. As a result, the Ministers of Agriculture for six ACP countries decided in 1996 that a taro breeding programme should be established<sup>43</sup> The programme is a partnership between the University of the South Pacific (USP), via its agricultural school based in Samoa, the Secretariat of the Pacific Community (SPC), the Samoan Ministry of Natural Resources and the Environment (MNRE), and Samoan farmers. SPC, through CePaCT, supplied the taro germplasm, lines of which came from Palau, the Philippines, Niue and South-East Asia. USP was mostly responsible for doing the breeding and producing seedlings of new varieties, although the breeder was partially funded by SPC and considerable technical assistance was provided by Australia. Finally, the MNRE and Samoan farmers were responsible for raising the seedlings and assisting with the evaluation and selection. The programme was funded primarily through regional and donor funds. There were no legal agreements or even any MOUs concerning the programme, and perhaps as a result there is considerable divergence of

views over who has the right to benefit from the new blight-resistant varieties that have been produced.

The breeders and those at CePaCT are firmly of the belief that the programme is a regional one, and as such should benefit everyone in the region. A breeder commented “As a breeder, this is for the whole region.”<sup>44</sup> He emphasised that the breeding programme has benefited from regional germplasm and Australian technical expertise, and was concerned that if any move was made to try to patent the new varieties then other countries would stop sending their germplasm, and that this would undermine food security. On the other hand, some government officials in agriculture departments in both Samoa and Fiji stressed that where economic interests are involved then national ownership of plant varieties should be considered. One Samoan official stated that the government had spent a lot of resources and time and effort into breeding new varieties that are leaf blight resistant, and in the meantime Fiji had taken over the taro export market from Samoa as they have not had leaf blight. He was concerned that if Fiji does get the leaf blight, it would be unfair for it to be able to simply free-ride on all the developments that Samoa has done in leaf-blight resistance over the past decade.<sup>45</sup> This is felt particularly keenly because Samoa has not been able to recover its market from the Fijians, as New Zealand consumers still prefer the taro that is known as *tausala ni Samoa* (“Samoa taro”) despite its being cultivated in Fiji.<sup>46</sup> An officer in the Fijian department of Agriculture also commented that when it comes to trade and competition between Pacific island countries then Fiji’s national interests need to be protected, rather than having its genetic resources shared by the region.<sup>47</sup>

A third perspective is provided by the Samoan farmers who have reportedly been claiming rights over the more successful of the seedlings they are given to raise and select.<sup>48</sup> For

example, in one village the farmers found that a particular new taro variety grew very well and gave them a competitive market advantage. The village therefore put a ban on the distribution of the genetic material, only allowing it to be distributed within the village and refusing to give the plants back to the MNRE when they came to get it back to redistribute. However, as the MNRE had back-up materials they were able to access the genetic materials anyway and so the ban has been lifted. Now the MNRE buys it back from the farmers and redistributes it to other farmers so they can benefit. The farmers argue that their work in raising, evaluating and selecting varieties means that they should get some benefits from them, but one breeder argued that this recognition should be limited to naming rights.<sup>49</sup>

This case study demonstrates that there are clear tensions between regulation of plant varieties for food security and for commercial opportunities and trade. The former objectives require an environment where the best genetic resources are freely shared, whilst the latter encourage countries to utilise their genetic resources for their own benefit to gain commercial advantage over the others, and also promotes nationalism over regionalism. In many ways this is symptomatic of what is happening on an international level, where conventions are pulling in opposite directions, some in favour of biodiversity and environmental conservation, others in favour of trade,<sup>50</sup> meaning that the demands being made on signatory or member states are incompatible and that the property regimes being advocated are incoherent. While at present there are relatively few areas where the Pacific Island countries compete with each other for export opportunities, this has the potential to change in the new era of Free Trade Agreements, all of which stress open markets to a limited range of (mostly agricultural) Pacific island exports. This demonstrates that the discourse of western intellectual property rights and their strengthened presence in the region has the potential to

undermine regional initiatives to promote food security through the sharing of plant genetic resources.

The taro case study also illustrates that there are very different viewpoints about access to genetic resources amongst different sectors in the region, particularly between those involved in cultivation of resources and those involved in trade. Policy decisions in the region on issues such as the sharing of genetic resources are often taken at a sectoral level without whole-of-government consultation, meaning that different ministries are working with quite different agendas. For example, a decision was made in 2009 to put all of the germplasm collection in CePaCT into the multi-lateral system of the International Treaty on Plant Genetic Resources for Food and Agriculture (“PGRFA Treaty”). Such a decision could have significant effects on trade, as demonstrated by the taro example, and yet the decision was made by a Heads of Agriculture and Forestry meeting without any input or consultation with those involved in trade.<sup>51</sup>

***(d) A western IP system is inconsistent with many cultural values held by the inhabitants of the region***

Finally, the granting of rights over plant, animal and human genetic material is inconsistent with the cultural values of many in the region.<sup>52</sup> This was vividly demonstrated in the public furore that was generated in the mid 2000s when the University of Hawa’ii sought to obtain patents over varieties of hybridised taro. Under pressure from activists in 2006 the University gave up all claims to rights and royalties, or ownership on patents from the three varieties of hybridised taro which had been developed.<sup>53</sup> Three factors seem to have played a key role in informing the opposition, the first was some misunderstanding about the nature of the research being undertaken, the second was fear that GM taro would cross-breed with

Hawaiian native taro and thereby contaminate or mutate the native taro. This concern was strongly linked to the third and overriding concern, which was the cultural association with taro by native Hawaiians as a plant of origin.<sup>54</sup>

### **Part 3: An alternative approach to IP regulation in Least Developed Countries**

This section draws together the various strands of this paper to identify a regulatory approach to agricultural innovation that has the best chances of maximising the potential for food security in LDCs.

In the discussion above we have identified two primary goals for such a regulatory policy. The first is ensuring the continued traditional development and distribution of genetic diversity of crop species, especially those crop species which are central to local diets: yams, taro, bananas, sweet potato and cassava. The second is stimulating the development of new agricultural technology, including new plant varieties, that increase yield, ensure biodiversity and provide resilience to a range of environmental factors, and ensuring these are accessible (physically and economically) to the small scale farmers of the region.

To meet these goals we propose a four stranded strategy as follows.

***(a) Develop a clear, whole of government and whole of region approach to intellectual property that explicitly embraces open access***

We have seen that despite the potential for intellectual property laws to have considerable impact upon food security in the region, they have tended to be overlooked by policy makers. As a result, the intellectual property regimes in a number of countries, particularly those involved in Free Trade Agreement negotiations, are being largely dictated by the desires of

foreign countries. Another consequence of addressing intellectual property issues in the current *ad hoc* and piecemeal fashion is that in many countries different government departments and sectors adopt opposing positions on access issues, leading to potential undermining of beneficial programmes, such as the taro example demonstrated. To overcome these problems, all governments in the region, and the region as a whole, should be encouraged to develop national and regional intellectual property policies that set out a vision of intellectual property to be incorporated into all policy developments where such issues arise. This intellectual property policy should be one that embraces open-access to the broadest extent possible, in recognition of the fact that the region is one which has vastly more to gain from sharing in new innovations from elsewhere than in excluding others from its own, particularly in the area of food security. Chiarolla similarly argues that plant genetic resources for food and agriculture “should be managed in an openly accessible manner, because they can generate high social value and positive externalities in the form of public goods.”<sup>55</sup> Open-access is also arguably far more consistent with indigenous views in relation to intangible property,<sup>56</sup> at least in respect of genetic resources.<sup>57</sup> Such a policy needs to be championed at all levels for it to work, as otherwise there is the risk of certain individuals, sectors or countries feeling resentment or holding back new innovations which may be of general utility, or benefitting at the risk of negative consequences to others. It may be that such a policy could be introduced in such a way that capitalises upon the current concerns about climate change, as this is a threat against which all Pacific islanders should join forces if they are to have the best chances to combat it. Another mechanism that could be used to drive momentum in this area is the ratification of the Treaty on Plant Genetic Resources for Food and Agriculture.

***(b) Strengthen traditional agricultural practices***

Traditional economies have been a major factor in maintaining food security in the region. However, they are currently under threat from a number of angles. National governments and donors need to support programs that strengthen traditional practices, particularly in regard to the identification and distribution of new varieties, as these will be important in building resilience to climate change. Examples of such programs are prizes for new and improved varieties at agricultural shows or in national competitions, the promotion of education in the cultivation and use of traditional foods, revival programs for traditional agricultural practices (such as yam towers in Erromango),<sup>58</sup> documenting and recording existing traditional knowledge in respect of Pacific flora and fauna such as the development of salt-water resistant swamp-taro in Lord Howe Island in Solomon Islands,<sup>59</sup> and mainstreaming the distribution of new varieties of essential food-crops, such as is occurring through the Solomon Islands Kastom Gaden program.<sup>60</sup> Customary protocols that encourage the sharing of genetic resources, such as the practice of naming new varieties after the person responsible for their introduction or the place they came from, should be deliberately built upon. At the same time, care should be taken not to introduce notions of exclusionary rights into programmes concerning traditional knowledge, as is unfortunately occurring in a number of drafts of traditional knowledge legislation throughout the region.<sup>61</sup> There is a danger that such laws, which take a broadly proprietary approach, will impede the current relatively open-access model to genetic resources, and so exceptions for maintaining food security should be explicitly incorporated.<sup>62</sup> As the Special Rapporteur on Food observed, “[r]ather than preventing access to traditional varieties and associated knowledge by creating a new system of enclosures, what is required is proactive support for their development.”<sup>63</sup>

***(c) Promote innovation in agriculture through government and donor funded local and regional programs***

Governments and donor agencies also need to increase their funding of regional and national research programs such as the Solomon Islands Planting Materials Networks, CePACT, PAPGREN, and the Community Gardens scheme in FSM. Such programs are able to focus the limited expertise available in the region on crucial issues in agriculture and, ideally, then distribute the benefits throughout the region. If benefits are to be shared equitably and traditional innovation encouraged, then research and development have to remain in the public domain and work collaboratively with traditional knowledge.<sup>64</sup> However, as demonstrated in the case-study on taro, such initiatives are threatened when national and regional interests are in conflict or trade policies are in conflict with those which focus on future food security. The undermining nature of these conflicts is exacerbated when there are no clear cross-sectoral policies or legal frameworks on access to genetic materials. As we saw, this has led to undercurrents of resentment that do not bode well for future regional co-operation programmes. These problems are compounded by the short institutional memory of many government departments and institutions in the region, meaning that people coming in after a project has been established are unlikely to be conversant with its aims and objectives. One way to counter these problems is the development of national and regional open access policies as discussed above.

***(d) Adopt a minimalist approach to state-based intellectual property laws***

Western intellectual property laws, particularly patents and plant variety rights, carry with them considerable potential to undermine food security in the region. This is because they

create monopoly rights which may act as barriers to access to new agricultural technologies, especially for small-scale farmers upon whom food security is largely dependent in the region. Moreover, as we have seen in two case-studies, such laws are unlikely to bring with them the same benefits (such as incentive to research) that they do in more developed countries due to a number of factors, including the current undeveloped state of private research and development in the region. Countries in the region should therefore adopt a minimalist approach to such types of intellectual property.<sup>65</sup> This approach can be applied in a number of layers depending upon the circumstances of each country. The first layer involves not introducing western-style intellectual property laws without first doing a comprehensive analysis about how they ‘fit’ with indigenous regimes and values, and how they are likely to affect development in the country, including food security. Second, the inclusion of intellectual property provisions in Free Trade Agreements should be actively resisted. Third, if certain minimum intellectual property provisions in Free Trade Agreements cannot be avoided (such as joining the WTO), any TRIPs Plus requirements such as the obligation to join UPOV, should be avoided and all possible flexibilities built into any new laws that are introduced as a result. Finally, any awareness-raising activities done by organisations such as the WIPO, that seek to promote intellectual property rights, should be carefully monitored to ensure that balanced and locally contextualised information about the advantages *and* disadvantages of intellectual property is presented.

## **Conclusion**

This paper has demonstrated that intellectual property laws potentially have significant impact upon food security in Pacific Island countries, and by analogy other LDCs. Further,

while it has been recognised that strategies to address food security have to be cross and multi-sectoral,<sup>66</sup> this paper has identified a lack of coherent policy development at national and regional levels that is sufficiently grounded in the realities and experience of food production and harvesting in Pacific island states. Internationally, food security in the region tends to be either seen as linked to disaster risk management initiatives, or to trade and development strategies. While both of these aspects are important, they do not engage with the challenges of ensuring that best use is made of existing traditional knowledge and practices in food cultivation, nor do they explore how these can be used for ensuring future food security for producers and consumers. The challenge is one of balancing and rewarding indigenous, local farmers and cultivators as well as researchers and innovators of modern agricultural bio-technology. As has recently been argued, “preserving and enhancing systems of small-holder agriculture . . . . could well be a significant part of the solution to hunger, displacement and environmental and energy crises.”<sup>67</sup> Through a number of case-studies we have shown that caution should be exercised in assuming that the answer lies in importing western intellectual property regimes. This paper has therefore suggested that an alternative, four-pronged approach to intellectual property and food security in LDCs: the development of a coherent whole-of government open access intellectual property policy, the strengthening of traditional agricultural innovation practices and distribution processes, the promotion of agricultural innovation through local and regional government and donor funded programs, and the adoption of an explicitly minimalist approach to western intellectual property laws. Such an approach is most likely to ensure the support of those individuals and institutions best placed to develop and diffuse new agricultural technology and genetic resources in the specific context of LDCs.

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<sup>1</sup> See for example C. Chiarolla, *Intellectual Property, Agriculture and Global Food Security: The Privatization of Crop Diversity*, UK: Cheltenham, Edward Elgar, 2011.

<sup>2</sup> See [http://www.wipo.int/ldcs/en/ip/seoul\\_declaration.html](http://www.wipo.int/ldcs/en/ip/seoul_declaration.html). Australia committed \$2 million in 2012 to helping LDCs in the ASIA-Pacific region strengthen their IP systems: see <http://keionline.org/node/1443>

<sup>3</sup> Chiarolla argues that many of these issues have become “decoupled.” See above note 1, 24.

<sup>4</sup> For the 2011 UN HDI ranking for PICs see Human Development Reports <http://hdr.undp.org/en/statistics/>.

<sup>5</sup> Fiji, Solomon Islands, Papua New Guinea, Tonga, Samoa and Vanuatu

<sup>6</sup> Union Internationale pour la Protection des Obtentions Végétales.

<sup>7</sup> See Vanuatu’s accession to the WTO package, available at <http://vanuatu-wto.blogspot.com.au/>

<sup>8</sup> Article 15 of the 1991 UPOV Convention allows nations to restrict breeders’ rights “in order to permit farmers to use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting (. . .) the protected variety.” This does not however, allow sharing or exchange of the propagating material.

<sup>9</sup> National legislation can provide exceptions for “acts done privately and for non-commercial purposes [and] for experimental purposes” (art 15(1)(i) and (ii)). In the Pacific scope and resources for in-country research are extremely limited as will be shown.

<sup>10</sup> See O. De Schutter ‘Right to Food’ UN Report A/64/170 (23 July 2009) para 14. [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)

<sup>11</sup> Previous preferential trade agreements included the 1981 South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA) and the Lomé Convention in the 1970s.

<sup>12</sup> This came into effect in 2002.

<sup>13</sup> Launched in 2009 at the instigation of Australia, supported by Forum leaders this latest FTA promises job opportunities, capacity building, higher standards of living and economic growth: Australian Government, Department of Foreign Affairs. <http://www.dfat.gov.au/fta/pacer/index.html>. See further: the Pacific Institute of Public Policy Briefing Paper 11, October 2009 ‘Casting the Net to Define the PACER ‘Plus’’. <http://www.pacificpolicy.org/wp-content/uploads/2012/05/D11-PiPP.pdf>

<sup>14</sup> Chiarolla, above note 1, 75.

<sup>15</sup> Special Rapporteur (A/64/170), above note 10, 14.

<sup>16</sup> As experienced in Cook Islands, Niue and Tokelau.

<sup>17</sup> It has been estimated that by 2020 more than half the population in a majority of the Pacific island countries will live in towns. See

<http://siteresources.worldbank.org/INTPACIFICISLANDS/Resources/Chapter+1.pdf>

<sup>18</sup> See CSIRO (Commonwealth Scientific and Industrial Research Organisation (Australia)) ‘New Insight into Climate Change in the Pacific’ 25/11/ 2011, <http://www.csiro.au/Portals/Media/New-insight-into-climate-change-in-the-Pacific.aspx>.

<sup>19</sup> R. Bourke, ‘Vanuatu Agricultural System Survey’, April-May 1999, 1 (manuscript on file with author)

<sup>20</sup> S. Caillon and V. Lanouguère-Bruneau, ‘Taro diversity in a village of Vanua Lava island (Vanuatu): Where, What, Who, How and Why?’ (2004) Third Taro Symposium, Nadi, Fiji, 22-24, 8.

<sup>21</sup> This is a common problem throughout the region. See e.g., M. Taylor, ‘New Regional Genebank in Fiji was made-to-Order for Pacific Island Nations’ *Bio Science*, 16(4), 2000, pp. 19-21, 19.

<sup>22</sup> Private correspondence to M. Forsyth from M. Allen, 5/12/2011.

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<sup>23</sup> McGregor et al, 'Assessing the Social and Economic value of Germplasm and Crop Improvement as a Climate Change Adaptation Strategy: Samoa and Vanuatu Case Studies' (2011), (manuscript on file with authors), 26..

<sup>24</sup> Caillon above, note 20, 8.

<sup>25</sup> See McGregor et al. above, note 23, 2.

<sup>26</sup> Farran, S. *South Pacific Intellectual Property Law*, Supplement, 51 International Encyclopaedia of Laws, Kluwer International, The Hague, 1999, pp 1-96 (Second edition)

<sup>27</sup> Forsyth, M. 'Cargo Cults and Intellectual Property in the South Pacific' *Australian Intellectual Property Journal* 14, 2003, pp193 – 207..

<sup>28</sup> The data in this paper is based on two months of fieldwork in 2011 in Samoa, Vanuatu and Fiji. One hundred and ten loosely structured interviews were conducted with a range of stakeholders including government ministries in the areas of trade, health, education and agriculture, development partners, customary leaders, local businesses, educational institutions and research stations. This research was made possible by a three year ARC Discovery grant (2011-2014). The findings presented in this paper are part of a larger enquiry into intellectual property rights and development in Pacific Island countries: see <http://www.ippacificislands.org> for a full description of the project and its outputs.

<sup>29</sup> The Fiji Fantastic Sheep is a breed of sheep bred in Fiji that has the following characteristics: high fecundity, good amount of meat, and a small amount of wool that is self-shed by eighteen months of age making them tolerant of tropical conditions.

<sup>30</sup> Interview with Director of the Animal Health and Production Division, Ministry of Primary Industries, Suva, Fiji, 5/10/2011.

<sup>31</sup> See M. Forsyth, 'Tales of Intellectual Property in the South Pacific' SSGM Discussion Paper Series 2012/2

[http://ips.cap.anu.edu.au/ssgm/publications/discussion\\_papers/dplist.php?searchterm=2012](http://ips.cap.anu.edu.au/ssgm/publications/discussion_papers/dplist.php?searchterm=2012)

<sup>32</sup> The conservation of coconut biodiversity is a case in point

[http://www.spc.int/lrd/index.php?option=com\\_content&view=article&id=655:conservation-of-traditional-coconut-varieties&catid=78:training-and-workshops-&Itemid=30](http://www.spc.int/lrd/index.php?option=com_content&view=article&id=655:conservation-of-traditional-coconut-varieties&catid=78:training-and-workshops-&Itemid=30)

<sup>33</sup> See for an update 'Atoll Agricultural Conference "The future is here; dialogue for setting the direction for atoll food production, research and development" April 2010

<http://www.faopacific.ws/Portals/167/publications/Reports/Communique%20for%20Atoll%20Conference.pdf>.

<sup>34</sup> Press Release, SPC, 24 July 2008. About 200,000 US\$ start up fund was used.

<sup>35</sup> IFAD

[http://www.ruralpovertyportal.org/web/guest/region/voice/tags/oceania/kiribati\\_island](http://www.ruralpovertyportal.org/web/guest/region/voice/tags/oceania/kiribati_island).

<sup>36</sup> Funding was provided by AusAID, the Australian Centre for International Agricultural Research (ACIAR), and the EU.

<sup>37</sup> Plantlets are distributed free of charge to SPC countries: email communication Dr. M. Taylor to S. Farran 2/02/2012.

<sup>38</sup> Formed in 2001, The Customary Gardening Association operates locally and through a Melanesian network of farmers. <http://kastomgaden.org/about/>. A key aspect is the Plant Material Network which provides members with improved seed and rootstock varieties.

<sup>39</sup> Initially a two year project running from 2005-2007, this community based project is still going strong and has developed to include projects to document pandanus and banana varieties in order to build a data base of plant resources to protect their gene bank. Its current work is funded by the US Forestry, Australian Government and SPC.

<sup>40</sup> See 'Island Food Community of Pohnpei' Report on the Strategic Planning Retreat, 2004 <http://www.islandfood.org/publications/strategy.pdf>.

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<sup>41</sup> Merry Sally Engle, 'Legal Pluralism,' *Law & Society Review*, 22(5), 1988, pp. p. 869-896, 889.

<sup>42</sup> McDonnell, Siobhan, 2011, 'Masters not Mistresses of Modernity: Preliminary Thoughts on the 'Cultural Power' of Land Law in Vanuatu'. Paper presented at the Sally Engle Merry Workshop, 9 March 2011, Australian National University.

<sup>43</sup> See Taylor above. note 21, 19.

<sup>44</sup> Interview with T. Iosefa, Lecturer in Crop Science, USP, Apia, Samoa, 8/04/2011.

<sup>45</sup> Interview with an officer in MNRE, Apia, Samoa, 5/04/2011.

<sup>46</sup> In Samoa it is known as "Niue taro" as it originally came from Niue, demonstrating that the custom of naming a variety from the place it came from is widespread in the region.

<sup>47</sup> Interview with an officer in Ministry of Primary Industries, Suva, Fiji, 27/09/2011.

<sup>48</sup> See H. Jaenicke, 'Indigenous agricultural knowledge in the Pacific: (with special reference to article 9 of the International Treaty for plant genetic resources for food and agriculture)' Suva, Secretariat of the Pacific Community, 2011, 11 <http://www.spc.int/>

<sup>49</sup> Interview with T. Iosefa, Lecturer in Crop Science, USP, Apia, Samoa, 8/04/ 2011.

<sup>50</sup> This is not just in the Pacific. See P. Cullett 'Plant Variety Protection in Africa: towards Compliance with the TRIPS Agreement' *Journal of African Law*, 45(1), 2001, pp 97-122.

<sup>51</sup> Interview with Dr M.Taylor, Land Resources Division, SPC, Suva, 22/09/ 2011.

<sup>52</sup> See A. Te Pareake Mead and S. Ratuva (eds) *Pacific Genes and Life Patents*, Call of the Earth Llamado de la Tierra and The United Nations University Institute of Advanced Studies, 2007, 111

<sup>53</sup> 'Hawaiian Taro Patent discussions' <http://manoa.hawaii.edu/ovcrge/taro.html>

<sup>54</sup> 'Honolulu Star Bulletin May 25, 2005

<http://archives.starbulletin.com/2005/05/25/news/story4.html>. This interrelatedness of people and landscape is found throughout the Pacific, see e.g., the Maori *whakapapa*.

<sup>55</sup> Chiarolla, above note 1, 29.

<sup>56</sup> See e.g., the 1993 Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples; the 1988 Declaration of Belem; the 1999 Indigenous Peoples Seattle Declaration and the 1995 South Pacific UNDP Regional consultation on Indigenous Peoples and Intellectual Property Rights (which some Pacific islands seem to have lost sight of).

<sup>57</sup> S. Ratuva and A. Mead (eds) above note 52.

<sup>58</sup> L. Bolton, 'Describing Knowledge and Best Practice in Vanuatu' in E. Hviding and K. Rio (eds) *Made in Oceania: Social Movements, Cultural Heritage and the State in the Pacific*, Sean Kingston Publishing, 2011, p 302-321.

<sup>59</sup> A project between local people and the Anglican church assisted by the Episcopal Relief and Development Fund: See G. Kiriau 'Pacific Region: Food Security' Anglican Alliance 2011

[http://clients.squareeye.net/uploads/anglican/documents/Food\\_security\\_in\\_the\\_Pacific.pdf](http://clients.squareeye.net/uploads/anglican/documents/Food_security_in_the_Pacific.pdf)

<sup>60</sup> See <http://kastomgaden.org/>

<sup>61</sup> See M. Forsyth, 'Do You Want it Giftwrapped? Protecting Traditional Knowledge in the Pacific Island Countries' in Drahos, P. and Frankel, S. (eds) *Indigenous Peoples' Innovation: IP Pathways to Development* Australia: ANU ePress, 2012 pp.189-214; M. Forsyth, 'Lifting the Lid on 'The Community': who has the Right to Control Access to Traditional Knowledge and Expressions of Culture?' *International Journal of Cultural Property*, 19, (2012 pp. 1-33; M. Forsyth, 'How can Traditional Knowledge Best be Regulated? Comparing a Proprietary Rights Approach with a Regulatory Toolbox Approach' *The Contemporary Pacific*, 25(1), 2013 pp. 1-31; and M. Forsyth, 'The Traditional Knowledge Movement in the Pacific Island Countries: the Challenge of Localism' *Prometheus* 29(3), 2011, pp 269-286

<sup>62</sup> See Jaenicke, above note 48, 17.

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<sup>63</sup> See Special Rapporteur (A/64/170), above note 10, 14.

<sup>64</sup> E.g., by securing access and benefit sharing agreements rather than plant breeder rights and restrictions.

<sup>65</sup> These dangers are not as pronounced with regard to other types of intellectual property laws, such as trade-marks and geographic indications, which may in fact be of considerable utility to the region.

<sup>66</sup> See e.g., the FAO briefing note ‘Climate Change and Food Security in the Pacific’ 2009, <ftp://ftp.fao.org/docrep/fao/012/i1262e/i1262e00.pdf>, p 6, and the ADB publication ‘Food Security and Climate Change in the Pacific: Rethinking the Options’ Pacific Studies Series, Philippines, 2011, <http://www.adb.org/publications/food-security-and-climate-change-pacific-rethinking-options>, and the mixed menu of measures for imports, exports and domestic markets suggested by OXFAM Australia and New Zealand, ‘The Future is Here: climate change in the Pacific’ OXFAM Briefing Paper 2009, <http://reliefweb.int/report/fiji/future-here-climate-change-pacific>.

<sup>67</sup> Philip McMichael & Mindi Schneider (2011): Food Security Politics and the Millennium Development Goals, *Third World Quarterly*, 32:1, 119-139