Open Research Online

The Open University's repository of research publications
and other research outputs

Private rights and Public goods: conflicts in agriculture R&D

Conference or Workshop Item

How to cite:

Muraguri, Lois (2006). Private rights and Public goods: conflicts in agriculture R&D. In: DIME conference on Intellectual Property Rights for Business and Society, 14-15 Sep 2006, University of London.

For guidance on citations see FAQs.

© [not recorded]

Version: [not recorded]

Copyright and Moral Rights for the articles on this site are retained by the individual authors and/or other copyright owners. For more information on Open Research Online's data policy on reuse of materials please consult the policies page.

oro.open.ac.uk

Private rights and Public goods: conflicts in agriculture R&D

Lois Muraguri*

August 2006

*Queen Mary Intellectual Property Research Institute, University of London
Comments to L.Muraguri@qmul.ac.uk

Private rights and Public goods: conflicts in agriculture R&D

Introduction

The last two decades have seen the private sector play an increasing role in agricultural R&D. There has equally been an increase in the number of collaborative initiatives between the public and private sectors in this field some of which have intellectual property implications. The public sector is awakening to the idea of using IP which has partially been accelerated by its interaction with the private sector, particularly in developing countries. This paper will explore the link firstly, between public agriculture research institutes and the provision of public goods (food and agriculture); and secondly, the implications of implementing IP on the provision of the said goods by the public sector. The focus will be on developing countries.

The first tier of the enquiry will examine the nature of public goods, and whether their characteristics dictate which sector (private or private) is best suited for their provision. The second section will inquire into the effect of applying IP in the provision of public goods by the public sector. This will specifically dwell on the agricultural sector and will look at the Consultative Group on International Agricultural Research (CGIAR) as the largest public investor in agricultural R&D in developing countries. The main question this section will attempt to answer is whether the application of IP conflicts with the institutions' mandates to provide public goods and the challenges faced by public research organisations in the application of IP.

I public research institutes and the provision of public goods

The main line of inquiry in this part is whether the characteristics of a good determine what sector is best suited to provide the said good. It will necessarily begin with the examination of the nature of public and private goods. The ultimate goal is to determine whether the public sector is the generally most suited sector to provide public goods and if so, what happens when the exception pertains.

Definitions

The debate on classification of goods can be traced back to Samuelson[1] and Musgrave.[2] Samuelson used the "jointness of consumption" as the main attribute to divide all goods into two classes: private consumption goods and public consumption goods. According to Samuelson, "collective consumption goods" are those goods

> '… which all enjoy in common in the sense that each individual's consumption of such a good leads to no subtraction from any other individual's consumption of that good…'[3]

Jointness of consumption is also referred to as non rivalry, nonrivalry of consumption or indivisibility of benefits. Some authors do indeed use the terms interchangeably.[4]

[1] Paul Samuelson, 'The Pure Theory of Public Expenditure', *The Review of Economics and Statistics,* 36/4 (1954), 387-89.
[2] R. A. Musgrave, *The Theory of Public Finance* (New York: McGraw-Hill, 1959).
[3] Samuelson *supra* note 1 at p. 387

Musgrave on the other hand argued that a different attribute – whether someone can be excluded from benefiting once the good is produced (excludability) – was more important that Samuelson's rivalness attribute. Both aimed to show when market forces would perform optimally in the provision of specific classification of goods and when markets would fail. [5]

Public goods are contrasted to private goods which are said to be rivalrous and excludable. Because few goods fall neatly into these two categories, other categories such as impure public goods and common pool resource are now recognised in addition to the two classical groups. Drahos underscores this by stating that 'a public good is not a single good, but an effect with complex antecedents made up of a set of complementary goods (private and public) and different types of social actors.'[6] Generally, these two criteria are used to distinguish pure public goods from private goods.

Pure public goods are therefore non-rivalrous and non-excludable so as to be accessible to growing numbers of people without any marginal cost. This quality – wide dispersion of benefits – renders them unsuitable for private entrepreneurship. Pure public goods are thus best provided for by the state.

Examples of pure public goods have been dwindling since the critique of the classical examples of the light house and of national defence. It is now widely acknowledged that goods rarely fall neatly within the above criteria hence the recognition of club goods and common pool resources.[7] According to Samuelson, rivalrous goods, whether excludable or not could be efficiently provided through market mechanisms while Musgrave, arguing that excludability was the determining factor, contended that market mechanisms are preferable for those goods that are excludable whether rivalrous or not. Similarly, Cornes & Sandler argue that nonexcludability is the crucial factor in determining which goods must be provided by the public sector.

The difficulty at assigning goods along the rivalry – excludability spectrum impacts on policy decisions on the provision of goods. Samuelson himself conceded that many goods commonly termed as public goods do not fit within his definition;[8] a significant amount of literature has been generated since some of which attempts to clarify and develop models relating to 'mixed goods' – those that lie somewhere between the extremes of pure private and pure public goods.[9]

---

[4] Richard Cornes and Todd Sandler, *The Theory of Externalities, Public Goods and Club Goods* (2nd edn.; Oxford: Oxford University Press, 1996). use nonrivalry of consumption and indivisibility of benefits interchangeably.

[5] "The classification debate was a major policy concern over the role of government in allocating resources." See Elinor Ostrom, 'How Types of Goods and Property Rights Jointly Affect Collective Action', *Journal of Theoretical Politics,* 13/3 (2003), 239-70.

[6] Peter Drahos, 'The Regulation of Public Goods', in Keith Maskus and Jerome Reichman (eds.), *International Public Goods and Transfer of Technology under a Globalized Intellectual Property Regime* (Cambridge: Cambridge University Press, 2004).

[7] See Cornes & Sandler supra note 4 on club goods – those which are excludable but non-rival; common pool resources are rivalrous but non excludable.

[8] Paul Samuelson, 'A Diagramatic Exposition of a Theory of Public Expenditure', *Review of Economics and Statistics,* 37 (1955), 350-56.

[9] An example is S Holtermann, 'Externalities and Public Goods', *Economica,* 39/153 (1972), 78-87.

Indeed some public goods appear to have a mixture of private goods and public goods characteristics. Examples can be found in education, health, agriculture and the justice system where these are not consumed in equal amounts by everyone and one person's consumption decreases the amount available for other people to consume. Holtermann[10] distinguishes between a public good's provision and utilisation in that a public good's provision may be public in so far as it is equally available for everyone's consumption but its utilisation may contain aspects of private goods in that utilisation is different for different individuals and an increase in one person's utilisation decreases the amount available to others. Similarly, Pickhardt observes that most goods which give rise to private benefits also involve externalities in varying degrees thereby combining both public and private good characteristics.[11]

In determining if a good is a pure public good or a mixed good, Holtermann maintains that this will depend on whether an individual consumption unit can be defined and secondly, whether consumption is in the control of the consumer, at least in principle. He however concedes that the dividing line is not clear. Vaknin[12] advances the argument further by asserting that technology plays a part in blurring the distinction between public and private goods. Given that the world is finite, resources in it are finite too and the economic concept of scarcity applies ubiquitously so that public goods are not exempt. Strict non rivalry is therefore not possible.[13]

The foregoing highlights the difficulty in clearly demarcating goods into pure public and private goods. Most goods lie in the public goods private goods continuum.

Agriculture and public goods

Gardner and Lesser[14] argue that agricultural research does not produce pure public goods but "impure public goods" as *some* users cannot be excluded or charged for *some* uses of the goods produces. Agriculture is no doubt a mixed good in that it contains both elements of public and private goods. The end product of agriculture – food- is a private good in so far as it is both rivalrous (once consumed, it no longer exists) and excludable (its owner can exclude others from consuming it). The land on which food is grown is likewise a private good. However, the technology and knowledge required in growing agronomically appropriate crops of high quality and yield is non-rivalrous. Further, the benefits of a healthy well fed nation impact on society as a whole. As such, government involvement in the provision of this mixed good is vital in order to ensure the overall positive social effect. This is particularly

[10] Ibid.
[11] Michael Pickhardt, 'Fifty Years after Samuelson's "The Pure Theory of Public Expenditure": What Are We Left With?' *58th Congress of the International Institute of Public Finace (IIPF)* (Helsinki, 2002).
[12] Sam Vaknin, 'Is Education a Public Good?' (2003).
[13] As observed by Musgrave *supra* note 2 and in R. A. Musgrave, 'Provision for Social Goods', in Margolis J and Guitton H (eds.), *Public Economics* (London: McMillan, 1969).
[14] Bruce Gardner and William Lesser, 'International Agricultural Research as a Global Public Good', *Amer. J. Agr. Econ.,* 85/3 (2003), 692-97.

important in the present time given the growing disparity in wealth allocation exacerbated by changes brought about by globalisation.[15]

IPRs and the correction of market failure

In an ideal market, the price of each good should be equal to the cost borne by society in consuming it. If goods are produced above marginal cost, they will be under-consumed; if they are provided at marginal cost (free) they will tend to be under-produced as they will be no incentive to invest in their production. Pure public goods represent the second scenario. Different mechanisms are used to correct this market failure; IPRs and government intervention are but two ways.

IPRs alter the nature of technology from public to private by introducing excludability although not rivalry.[16] The downside is that the application of IPRs can result in under-consumption such as when IPRs result in vital drugs being prohibitively expensive so as to be out of reach of poor people. Barder distinguishes between the application of IPRs to rival goods from their application to non-rival goods.[17] He posits that when a good's consumption is rival, imposition of property rights helps to improve the use of scarce resources but argues that when applied to non-rival goods (such as knowledge), IPRs move society away from an optimum allocation of resources.

Barder explores different ways of rewarding creators of knowledge observing that the different ways have different distributional implications, different welfare impacts and influence nature of R&D differently. IPRs may lead to the pricing of important welfare goods e.g. crops protected by plant variety rights out of poor people's reach. The infamous "golden rice" where extensive patenting hampered delivery of rice to those in need is a case in point.[18] Application of IPRs may also distort research priorities such as when private companies choose to invest in commercial crops and neglect pro-poor orphan crops.[19] This is especially important given that six companies hold 75percent of all agricultural patents[20] increasing the risk of non-delivery of agricultural inventions to the poor.

Even Adam Smith, the most ardent advocate of laissez-faire, recognised the need for government intervention in some select areas. Government intervention in areas such as health, education and agriculture is needed to reverse market failure, reduce transaction costs so as to enhance consumption or supply and hence positive externalities. Government intervention is needed to redirect research according to

[15] Alex Duncan, 'Agricultural Research, Globalisation and Global Public Goods', *Rural Forum,* (2002). discusses agriculture research and the provision of global public goods from a globalisation perspective.
[16] Vaknin *supra* note 12 at p3 argues that technology converts some public goods into private goods and vice versa; "education used to be a private good with positive externalities. Thanks to technology and government largesse it is no longer the case. It is being transformed into a non pure public good."
[17] Most of the following part is drawn from Owen Barder, 'Intellectual Property and Market Failure', (2003).
[18] Rafi, 'Golden Rice and Trojan Trade Reps: A Case Study in the Public Sector's Mismanagement of Intellectual Property', (2000).
[19] In the health industry, it is reported that drug companies spend ten times more researching cures for baldness and obesity than they do on cures for malaria.
[20] Ronald Phillips et al., 'Intellectual Property Rights and the Public Good', *The Scientist,* 18/14 (2004).

social value so as to promote creation of knowledge in areas with highest social return rather than according to the highest opportunity for rent extraction. This is particularly important given that the distributional impact of IP, social welfare costs and distortion of R&D are greater now than ever before. Research into problems affecting the poor is increasing marginalised over the development of IP for which rich consumers are willing to pay.

II The implications of applying IP in the provision of public goods

It has been asserted that IP law is modelled on private gains and is therefore more compatible with private sector research.[21] The interface between application of IPRs in the provision of public goods has been briefly discussed in the preceding section. This section is an enquiry on the challenges encountered by agricultural public research organisations in the application of IPRs. The Consultative Group on International Agricultural Research (CGIAR) is the largest public investor in agriculture R&D in developing countries and will therefore be the subject in this section. The main task will be an analysis of IP policies in the CGIAR to elucidate the underlying principles guiding the application of IP in public agricultural research organisations.

IPRs and public goods

As earlier seen, IPRs introduce excludability into pure public goods. IPRs can be said to reverse Holtermann's classification thus:

Holtermann: Pure Public goods	Provision → **Public CCCs**	utilisation → **Private CCCs**
	Equally available to all	Different for different people – one person's consumption reduces the amount available for others
IPRs reverse this: Pure Public goods to which IPRs are applied	Provision → **Private CCCs**	utilisation → **Public CCCs**
	Not equally accessible (available but not accessible to all)	Non-rivalrous – one person's consumption does not subtract from others' consumption

The main end objective of public research organisations is presumed to be the provision of research products for the general public. Most organisations will

[21] John Mugabe, 'Intellectual Property Protection and Traditional Knowledge: An Exploration of International Policy Discourse', (WIPO, 1998).

particularly focus on the marginalized sections of the public. The assumption is that the products of their research are equally available and accessible to everyone.

In theory therefore, there is an innate conflict in the application of IPRs to the provision of public goods. How does a public research organisation apply IPRs (which introduce excludability) while still maintaining their mandate to provide goods equally available and accessible to all? This inherent theoretical conflict has been the subject of many a debate and requires careful and creative formulation of policy to ensure balancing these conflicting interests.

Having established that there is an inherent conflict (at least in theory) of the application of IPRs to the provision of public goods, it has to be asked why public research organisations are faced with this dilemma. Why apply IPRs at all?

Why/when do public research organisations apply IPRs?

The past decade has seen a constant decline in funds allocated for research in agriculture. In the face of many competing claims on donor aid, international agricultural research no longer commands priority in funding.[22] In the backdrop of the environment that International Agriculture Research Centres (IARCs) find themselves having to operate in is the increasing privatisation and globalisation of R&D and the growing assertion of ownership of agricultural resources through the application of IPRs by both the private and the public sectors.

The changing agricultural R&D scene has raised vital issues which IARCs and other public research organisations have to address. Not the least of these is the question of whether income generation is consistent with the wider mandate of public research organisations to serve the needs of the poor farmers and maximise benefits to society as a whole.[23] Public research organisations have to find means to balance the need for income generation and that of the delivery of public goods.

The advent of the IP regime has had a significant impact on the CGIAR. One of the ways in which this has occurred relate to the temptation to seek IP protection for CG germplasm by third parties. A number of high- profile cases occurring in the late 90s bear evidence to this.[24] Research by the Action group on Erosion, Technology and Concentration (the ETC group, then known as the Rural Advancement Foundation International, RAFI) indicates that there could be more cases of this nature.[25] In

---

[22] Michael Blakeney, 'Agricultural Research: Intellectual Property and the Cgiar System', in Peter Drahos and Mayne Ruth (eds.), *Global Intellectual Property Rights: Knowledge, Access and Development* (Hampshire: Pelgrave Macmillan, 2002).

[23] See K Fischer and D Byerlee, 'Managing Intellectual Property and Income Generation in Public Research Organisations ', in D Byerlee and R Echeverria (eds.), *Agricultural Research Policy in an Era of Privatisation* (Oxon: CABI Publishing, 2002). for a more thorough discussion of issues such as how the public sector can provide free flow of genetic resources to maintain diversity of sustainable systems; what the balance should be in public research between commercialisation of its products and serving the needs of poor farmers; how the public sector can gain access to proprietary tools and technologies to serve the poor; and when it should take out IPRs on its own products.

[24] In 1998, PBR applications were made in Australia for accessions obtained from ICARDA and ICRISAT, see R Edwards and I Anderson, 'Seeds of Wrath', *New Scientist* 14/2121 (14 February 1998).

[25] See the then RAFI press release, 1998 at http://www.biotech-info.net/moratorium.html

developing countries, it is likely that such abuse of CG germplasm could be carried out not only by the private sector in the form of the numerous small seed companies, but also by partners in National Agriculture Research Institutes (NARIs) in spite of the MTAs.[26]

The past two decades have seen an increase in private sector involvement in agriculture R&D particularly since the inception of agriculture biotechnology. This, in addition to the mandatory global IP regime have contributed to a rapidly changing IPR environment to which the CG Centres have to continually adapt.

Protecting technology has in some cases attracted the involvement of the private sector. In some of the collaborations with the private sector, the probability of developing proprietary technology with significant commercial implications cannot be ruled out as an important lure for the private sector. In other cases, private seed companies, recognising the competitively high quality of Centre bred material, have been reluctant to distribute seed from Centres unless they can do so exclusively.

Dealings with the private sector have heightened the need for public research institutions to be IP savvy not in the least because of the danger of infringing IP belonging to a third party.[27]

These are only a snapshot of the challenges that CG Centres have to address in the context of commercialisation and protection of its products.

Are there alternatives to using IPRs to address these problems?

With regard to income generation, although the sale of IP protected research products can be beneficial in funding research costs, there is little formal analysis of the significance of the gains from using IP protection as a strategy for generating new revenues for research.[28] IARCs and other public research organisations can employ a number of ways to generate income to offset their budget deficit. Sale of non-research products and services such as soil and chemical testing, diagnostic tests, sale of commercial seed and vaccines and staff consultancies[29] are income generating activities that are generally within the mandate of public research organisations.

In biotechnology inventions, IARCs and other public research organisations can opt for defensive publishing in order to keep an invention in the public domain. Other

[26] The CG 1998 Mid Term Meeting agreed on the procedure Centres should follow if violation of an MTA occurs. This starts with a request of an explanation from the germplasm recipient and where this is not satisfactory, a notification that a violation has occurred and a 'cease and desist' request. The Centres should also notify the regulatory authority in the relevant country that an MTA has been violated and that the granting of IPR should be void. The Centre should also notify the FAO Commission on Genetic Resources

[27] See R Wolson, 'Intellectual Property Tools, Innovation and Commercialisation of R&D: Options to Assist Developing Countries in Positioning Themselves to Reap the Benefits of a Stronger Intellectual Property Regime, with Special Reference to the Role of Intellectual Property Management in Research Organisations', *ICTSD/UNCTAD/TIPS Regional Dialogue on Intellectual Property Rights, Innovation and Sustainable Development in Eastern and Southern Africa* (Cape Town, South Africa, 2004).

[28] M Maredia, ' Application of Intellectual Property Rights in Developing Countries: Implications for Public Policy and Agricultural Research Institutes', (Geneva: WIPO, 2001).

[29] Ibid.

non-IPR protection strategies include biological protection through hybridisation, conventional seed law through certification and use of contracts such as the ever-popular MTAs.[30]

The preceding concedes that there are occasions where public research organisations have to apply or at least deal with IPRs. Clear guidelines have to be made and followed to ensure that pursuit of mandate is primal. The following is a brief analysis of the CGIAR policy on IP.

The CGIAR

The Consultative Group on International Agricultural Research (CGIAR or CG) is a strategic alliance of countries, international and regional organizations, and private foundations supporting 15 international agricultural Centres. These CG Centres work with national agricultural research systems and civil society organizations including the private sector. The CGIAR's mission is "to achieve sustainable food security and reduce poverty in developing countries through scientific research and research-related activities in the fields of agriculture, forestry, fisheries, policy, and environment."[31] The CGIAR expressly states that it "generates global public goods that are available to all."

The CGIAR and Intellectual Property

The Convention on Biological Diversity (CBD) is an international, legally binding framework for the conservation and sustainable use of biodiversity. Given its pivotal position, it has a direct bearing on all institutions in the field of conservation including the CGIAR. The CBD has three main objectives: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from such use.[32] The CBD was the first global agreement to cover all aspects of biological diversity: genetic resources, species and ecosystems and also the first to recognize that the conservation of biological diversity is integral part of sustainable development.

Material held by the CG Centres falls broadly under two categories: the *Ex situ* germplasm collection held in trust otherwise known as designated germplasm; and breeding material developed by the individual Centres. *Ex situ* collections fall into two categories, those that were collected after the 1992 Convention on Biological Diversity (CBD) came into force and are therefore covered by the CBD, and those that were collected prior to the CBD entry into force whose legal status has been subject to much debate. Generally, distribution of the *Ex situ* material is governed by the 1994 Agreement between the Centres and the FAO which placed all the collections of plant germplasm collected before the CBD came into force under the auspices of FAO. The distribution of breeding material developed by individual

[30] See N Louwaars et al., *Impacts of Strengthened Intellectual Property Rights Regimes on the Plant Breeding Industry in Developing Countries* (London: Overseas Development Institute, 2005). for a more thorough discussion of these.
[31] see the CGIAR website http://www.cgiar.org/who/index.html last accessed 18 Aug 2006
[32] Convention on Biological Diversity, (1992), 31 ILM 818, available at http://www.biodiv.org/convention/articles.asp

centres is governed by the CGIAR Guiding Principles and Material Transfer Agreements (MTAs).

IP policy in the CGIAR system

The CG contemplated developing working principles on IP as early as 1991. These have had to be continually reviewed owing to a number of factors. To begin with, the CBD came into force in 1993 with great implications for access to genetic resources. In addition, the Centres entered into an agreement with FAO in 1994 bringing their germplasm collection under the international network of *ex situ* collections. Further, WTO Multilateral Trade Agreement under which the Trade Related Aspects of Intellectual Property (TRIPs) falls came into force in 1995. TRIPs obliges all WTO member countries to enact and enforce legislation governing intellectual property. All CGIAR member countries are members of the WTO and virtually all countries within which the CGIAR operates are WTO members.

A panel on IPRs was set up in 1994 whose report included recommendations on IP management by Centres. The Guiding Principles on IP and Genetic Resources emanated from these recommendations. The Guiding Principles address various issues such as sovereignty, farmers' rights, biosafety and IP protection.[33]

IP on Designated Germplasm and Centre Bred Material

It is well known that the vast majority of germplasm held in the CG was collected from countries in the South. There has been considerable debate over the status of this genetic material, to whom the CG is accountable and whether or not it is subject to IP protection. The status of germplasm collected before the CBD came into force was an outstanding issue to be resolved through the FAO.[34] After years of negotiations, the FAO Conference adopted the International Treaty on Plant Genetic Resources for Food and Agriculture (the ITPGR), in November 2001.[35] This legally-binding Treaty differs substantially from its predecessor, the non-binding International Undertaking for Plant Genetic Resources. The ITPGR finally addresses ex-situ collections collected before the CBD came into force.[36]

Some of the core issues on IP policy in the CG include one, whether the CG Centres *can* seek IP protection for research products from both designated germplasm and for centre bred material; whether they *should;* whether the CG Centres have the authority to allow third parties to seek protection for research products from both designated germplasm and centre bred material; and whether they *should* allow this. These questions are addressed below.

[33] CGIAR, The Guiding Principles on Intellectual Property and Genetic Resources available at www.cgiar.org
[34] See S Bragdon and D Downes, 'Recent Policy Trends and Developments Related to the Conservation, Use and Development of Genetic Resources ', *Issues in Genetic Resources No. 7* (Rome: IPGRI, 1998).
[35] through Resolution 3/2001
[36] Art 15 of the ITPGR available at www.fao.org

Can third parties seek IP protection for research products from designated germplasm and centre bred material?

Under the CG Guiding Principles, designated germplasm is not subject to IP protection or legal claim by Centres or other recipients. The FAO-CG Centres' Agreement categorically states that the 'Centre shall not claim legal ownership over the designated germplasm, nor shall it seek any intellectual property rights over that germplasm or related information.'[37] This was further reaffirmed by the Centre Directors in the CDC Statement on the Guiding Principles on IPRs relating to Genetic Resources.

Designated germplasm or Centre bred material can be used by recipients for breeding purposes, research and training. The recipients include the private sector. The recipients may seek protection for the *resulting products* of breeding through UPOV or other *sui generis* systems. The recipients cannot preclude others from using the original material. Unlike patenting which requires Centre approval, third parties do not need Centre permission to seek PBRs on research products from designated germplasm or centre bred material. The Guiding Principles fail to address this.

Do CG Centres have the authority to allow third parties to seek IP protection for research products from designated germplasm and centre bred material?

There has been considerable debate by scholars on the question of the Centres' authority to permit third parties to exploit genetic resources held in trust. Designated germplasm is generally considered to be held in trust by the CG Centres.[38] Under the trustee principle, a trustee's duty is to keep control of and preserve trust property. One of the issues arising from this is whether a CG Centre can permit a third party to secure IP rights over germplasm held in trust.[39] This question does not seem to have been answered directly by the CGIAR at the policy level although it can be argued that if the ultimate end of allowing third parties to seek IP protection for research products from designated germplasm and centre bred material is to benefit the poor, and facilitate the CG Centre fulfil its mandate, then it would appear that the CG Centre would be acting within its trustee obligations. As the various policy documents currently stand, this issue of trusteeship does not seem to be appreciated thereby allowing for the IP protection of material by third parties for their own commercial interests.

Can CG Centres seek IP protection for research products from designated germplasm and centre bred material?

As per the terms of the CG IP policy and MTA, Centres can only seek IP protection where either, protection is needed to facilitate technology transfer, or protection is otherwise needed to protect the interests of developing nations. A template for IP

[37] Article 3(b)
[38] See http://www.cgiar.org/corecollection/docs/cg8810g.pdf under the heading 'ownership' which states that 'collections assembled as a result of international collaboration should not become the property of any single nation, but should be held in trust for the use of present and future generations of research workers in all countries throughout the world.'
[39] See Blakeney *supra* note 22 for a more thorough discussion of the trustee principle and the problems raised.

Policy statements recently approved by the CG Committee on Genetic Resources Policy places emphasis on the Centres' need for full disclosure into the public domain, sharing of materials, data and information generated by Centres. It exhorts that Centres should hold as their basic IP Policy the pursuit of publication and should only seek IP Protection when necessary to serve the poor. The template list situations where this may be acceptable as:

> " i. To engage in public and private partnerships which pursue mission-based research;
> ii. to ensure ready access;
> iii. to avoid possible restrictions arising from "blocking" patents and to ensure Centre's ability to pursue its research without undue hindrance;
> iv. to ensure the effective transfer of technology, research products and other benefits to the resource poor.
>
> The Centre will disclose the reasons for seeking protection"

Although the template is not intended to replace the IP policy statements or the MTAs, it is important in that it clarifies statements in the previous documents and is intended to ensure that individual Centres' statements address all the relevant issues "in a consistent and harmonious manner."

The policy and MTAs emphasise that IP protection should not be seen as a means for securing financial returns although in some cases the reality is that IP protection may be a source of operating funds.

Cells, organelles, genes and molecular constructs can be patented, even those isolated from designated germplasm. Permission from the relevant Centre has to be sought however, and this will be given only after consultation with countries of origin of the relevant germplasm (where this is known or can be readily identified). This is in accordance with the requirements of the Convention on Biological Diversity (CBD).

Should CG Centres seek IP protection for research products from designated germplasm and centre bred material?

An instance where protection may be sought is if it helps promote collaborative partnerships which speed up the development of new products and services and facilitates their deployment to the end users – the poor farmers in developing countries. CG Centres may enter into agreement with right holders of protected material but only to facilitate access and availability of the material to developing nations and only when the benefits of such collaboration outweigh the potential disadvantages. In all cases, the requirements mentioned above must be met.

In deciding whether or not to seek IP protection, CG Centres must consider the transaction cost and the incident management burden.[40] Even though monetary gains

[40] Maredia & Erbisch discuss some of the issues that public research institutes have to consider and summarise them as: what type of IP should be sought? How should the institute use its protected technology – should it license it to others to generate income, license it to others royalty free, or use it as a bargaining chip in negotiations with the private sector? In the case of patenting, and where the

by themselves should not determine the decision of the CG Centres whether or not to protect a technology, they are nonetheless important and have to be considered in the decision making process.

The Centre Directors' Committee Statement to MTM 1998 on Genetic Resources, Biotechnology and Proprietary Science, identified areas that need further clarification. Among these was the issue of benefit sharing for IPRs on Centre bred material and whether and when to allow for IP protection on Centre-bred material where there was no significant input by the recipient or when more than one recipient in a country requests permission to apply for IPRs.[41]

III CONCLUSION

The characteristics of goods determine which sector should provide them. 'Publicness' and 'privateness' are often not innate properties – goods move along the public good – private good continuum. Agricultural research is an impure public good and its provision requires a multiple of authorities and actors, as do most mixed goods. Given the fact that it is of vital social value, and the increasing inequalities in resource allocation owing mainly to globalisation, government intervention in the provision of agricultural research products (read food) is crucial.

IPRs introduce excludability to pure public goods. There is an inherent theoretical conflict in the application of IPRs to public goods. Public research organisations are increasingly finding themselves in situations where they have to protect their research products through IPRs or where they use products protected by third parties. As such, public research organisations need to creatively formulate clear IP and incident guidelines and ensure these are followed in order to ascertain the pursuit of their ultimate objective – the provision of research products that are equally available and accessible to all.

---

technology is protected by third parties, a public research institute has to decide whether it should license the technology or invent around it; and should it negotiate a license with a third party right holder, what terms and conditions it should ensure are included to allow for its freedom to operate. See K Maredia and F Erbisch, 'Capacity Building in Intellectual Property Management in Agricultural Biotechnology', in F Erbisch and K Maredia (eds.), *Intellectual Property Rights in Agricultural Biotechnology* (Oxon: CABI Publishing, 1998).

[41] See Susan Bragdon, 'Recent Intellectual Property Rights Controversies and Issues at the Cgiar', in V Santaniello et al. (eds.), *Agriculture and Intellectual Property Rights: Economic, Institutional and Implementation Issues in Biotechnology*. (Oxon: CABI Publishing, 2000). for a more thorough discussion on the outstanding issues.

REFERENCES

Barder, Owen (2003), 'Intellectual Property and Market Failure', <http://www.owen.org/musings/ip>, accessed 10 Aug 2006.

Blakeney, Michael (2002), 'Agricultural Research: Intellectual Property and the CGIAR System', in Peter Drahos and Mayne Ruth (eds.), *Global Intellectual Property Rights: Knowledge, Access and Development* (Hampshire: Pelgrave Macmillan).

Bragdon, S and Downes, D (1998), 'Recent Policy Trends and Developments Related to the Conservation, Use and Development of Genetic Resources ', *Issues in Genetic Resources No. 7* (Rome: IPGRI).

Bragdon, Susan (2000), 'Recent Intellectual Property Rights Controversies and Issues at the CGIAR', in V Santaniello, et al. (eds.), *Agriculture and Intellectual Property Rights: Economic, Institutional and Implementation Issues in Biotechnology.* (Oxon: CABI Publishing).

Cornes, Richard and Sandler, Todd (1996), *The Theory of Externalities, Public Goods and Club Goods* (2nd edn.; Oxford: Oxford University Press).

Drahos, Peter (2004), 'The Regulation of Public Goods', in Keith Maskus and Jerome Reichman (eds.), *International Public Goods and Transfer of Technology under a Globalized Intellectual Property Regime* (Cambridge: Cambridge University Press).

Duncan, Alex (2002), 'Agricultural Research, Globalisation and Global Public Goods', *Rural Forum*.

Edwards, R and Anderson, I (1998), 'Seeds of Wrath', *New Scientist* 14 (2121).

Fischer, K and Byerlee, D (2002), 'Managing Intellectual Property and Income Generation in Public Research Organisations ', in D Byerlee and R Echeverria (eds.), *Agricultural Research Policy in an Era of Privatisation* (Oxon: CABI Publishing).

Gardner, Bruce and Lesser, William (2003), 'International Agricultural Research as a Global Public Good', *Amer. J. Agr. Econ.,* 85 (3), 692-97.

Holtermann, S (1972), 'Externalities and Public Goods', *Economica,* 39 (153), 78-87.

Louwaars, N, et al. (2005), *Impacts of Strengthened Intellectual Property Rights Regimes on the Plant Breeding Industry in Developing Countries* (London: Overseas Development Institute).

Maredia, K and Erbisch, F (1998), 'Capacity Building in Intellectual Property Management in Agricultural Biotechnology', in F Erbisch and K

Maredia (eds.), *Intellectual Property Rights in Agricultural Biotechnology* (Oxon: CABI Publishing).

Maredia, M (2001), ' Application of Intellectual Property Rights in Developing Countries: Implications for Public Policy and Agricultural Research Institutes', (Geneva: WIPO).

Mugabe, John (1998), 'Intellectual Property Protection and Traditional Knowledge: An Exploration of International Policy Discourse', WIPO < http://www.acts.or.ke/paper%20-%20intellectual%20property.htm>, accessed 20 Aug 2006.

Musgrave, R. A. (1969), 'Provision for Social Goods', in Margolis J and Guitton H (eds.), *Public Economics* (London: McMillan).

Musgrave, R. A. (1959), *The Theory of Public Finance* (New York: McGraw-Hill).

Olson, Mancur (1965), *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge: Harvard University Press).

Ostrom, Elinor (2003), 'How Types of Goods and Property Rights Jointly Affect Collective Action', *Journal of Theoretical Politics,* 13 (3), 239-70.

Phillips, Ronald, et al. (2004), 'Intellectual Property Rights and the Public Good', *The Scientist,* 18 (14).

Pickhardt, Michael (2002), 'Fifty Years after Samuelson's "The Pure Theory of Public Expenditure": What Are We Left With?' paper given at 58th Congress of the International Institute of Public Finace (IIPF), Helsinki, 26-29 August.

RAFI (2000), 'Golden Rice and Trojan Trade Reps: A Case Study in the Public Sector's Mismanagement of Intellectual Property', 66, <http://www.etcgroup.org/documents/com_goldenrice.pdf#search=%22golden%20rice%20ISAAA%22>, accessed 20 Aug 2006.

Samuelson, Paul (1954), 'The Pure Theory of Public Expenditure', *The Review of Economics and Statistics,* 36 (4), 387-89.

--- (1955), 'A Diagramatic Exposition of a Theory of Public Expenditure', *Review of Economics and Statistics,* 37, 350-56.

Vaknin, Sam (2003), 'Is Education a Public Good?' <http://www.buzzle.com/editorials/10-27-2003-46976.asp >, accessed 10 Aug 2006.

Wolson, R (2004), 'Intellectual Property Tools, Innovation and Commercialisation of R&D: Options to assist Developing Countries in Positioning Themselves to Reap the Benefits of a Stronger Intellectual

Property Regime, with Special Reference to the Role of intellectual Property Management in Research Organisations', ***ICTSD/UNCTAD/TIPS Regional Dialogue on Intellectual Property Rights, Innovation and Sustainable Development in Eastern and Southern Africa*** **(Cape Town, South Africa).**

CGIAR, CDC Statement on the Guiding Principles on Intellectual Property Rights Relating to Genetic Resources <www.cgiar.org> accessed 10 Aug 2006

---, Material Transfer Agreement for Plant Genetic Resources Held in Trust by the Centres <www.cgiar.org> accessed 10 Aug 2006

---, The Guiding Principles on Intellectual Property and Genetic Resources <www.cgiar.org> accessed 10 Aug 2006

Convention on Biological Diversity, (1992), 31 ILM 818, <http://www.biodiv.org/convention/articles.asp>, accessed 10 Aug 2006

FAO, The Agreement Between CGIAR Centres and the Food and Agriculture Organisation of the United Nations (FAO) Placing Collection of Plant Germplasm under the Auspices of FAO

The FAO International Treaty on Plant Genetic Resources <http://www.ukabc.org/ITPGRe.pdf#search=%22FAO%20International%20Treaty%20PGRs%22>, accessed 10 Aug 2006