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Building Intellectual Property Management Capacity in Public Research Institutions in Vietnam: Current Needs and Future Directions

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Note

Building Intellectual Property Management Capacity in Public Research Institutions in Vietnam: Current Needs and Future Directions

Laurel Kilgour[*]

This paper presents a case study of intellectual property (IP) awareness and management in public agricultural research institutions in Vietnam and discusses the significance of the findings in relation to the wider issue of how public research institutions in developing countries can build IP management capacity in a way that best harmonizes with their public mission.

First, it reviews the current framework of the international intellectual property rights regime and the research climate and IP landscape of Southeast Asia. Second, it provides a brief review of the current state of Vietnam's economy and investment in research and development, with a particular focus on the state of public agricultural research. Third, it highlights ongoing discussions on the normative responsibilities of public land grant institutions in handling intellectual property issues. The article then discusses institutional challenges identified through survey responses from three government research institutes in Vietnam and interviews with government officials, legal professionals, and research staff from eleven other institutions in Vietnam that were conducted in July of 2006 by the author. Finally, the article concludes with policy options for addressing these issues.

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I. INTERNATIONAL FRAMEWORK

A. TRADE-RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS AND THE INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS.

The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) is an international treaty, enacted in 1995, that binds all member nations of the World Trade Organization (WTO) to a standard level of intellectual property regulation.[1] Article 27(1) requires all member nations to provide for patents "for all inventions, whether products or processes, in all fields of technology".[2] Plants and animals, but not microorganisms, may be excluded from patentability under Article 27(3)(b).[3] Developing countries were given longer transition periods to implement the necessary changes to their laws and enforcement systems since many aspects of the TRIPS system were a "considerable novelty" in countries not accustomed to implementing such broad and stringent levels of IP protection.[4]

Agricultural innovations may fall under a wide variety of IP protection methods covered by TRIPS, ranging from patents, copyrights, and trademarks to trade secrets. Plant innovations, by contrast, are covered primarily by patents, sui generis protection, or a combination thereof, as mandated by TRIPS.[5] Patents on plants, or inventions directed to plants or plant products, are allowed in the United States and under more limited conditions in the European Union, Canada, Australia, and Japan.[6] Developing countries use only sui generis

1. Agreement on Trade-Related Aspects of Intellectual Property Rights, Art. 22(1), Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Legal Instruments - Results of the Uruguay Round, 33 I.L.M. 1125 (1994) [hereinafter TRIPS Agreement or TRIPS].

2. TRIPS, *supra* note 1, Art. 27(1).

3. TRIPS, *supra* note 1, Art. 27(3)(b).

4. William Cornish, *Intellectual Property*, *in* 1 ENGLISH PRIVATE LAW 465, 469 (Peter Birks ed., Oxford University Press 2000).

5. TRIPS, *supra* note 1, Art. 27(3)(b).

6. *See* Bonwoo Koo et al., *Plants and Intellectual Property: An International Appraisal*, 306 SCI. 1295, 1295 (2004); AGRIC. AND RURAL DEV. DEP'T, WORLD BANK, INTELLECTUAL PROPERTY RIGHTS: DESIGNING REGIMES TO SUPPORT PLANT BREEDING IN DEVELOPING COUNTRIES 6 (2006) [hereinafter WORLD BANK REPORT].

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protection, often called plant breeders' rights (PBR).[7] TRIPS mandates that a sui generis system must be "effective," but gives no criteria for determining what constitutes an acceptable alternative or supplement to patent protection for plant varieties.[8]

The International Union for the Protection of New Varieties of Plants (UPOV) established a series of Conventions (1961, 1972, 1978, and 1991) that set out possible sui generis systems.[9] The terms a plant innovation must meet to qualify a breeder for a legal monopoly under UPOV are less stringent than for utility patents, but include several comparable mandatory exceptions (use for noncommercial acts, experimental purposes, or breeding other varieties).[10] Article 15(2) of UPOV recognizes traditions unique to agricultural innovation by providing an optional exception for seed-saving by farmers. Successive versions of the Convention have trended toward increasingly stringent protection terms. Most controversially, the 1991 revision extended the protection period from ten or fifteen years up to twenty or twenty-five years—a change that critics say makes the system too patent-like.[11] It also mandates that signatories must eventually protect all plant varieties, rather than only plants on a selective list drawn up by a country itself as in previous Conventions.[12] Further, it restricts farmers' freedom to buy seed from sources besides the original breeders.[13]

Sixty-three nations were members of UPOV as of November 24, 2006, with most adopting the 1991 revision of the Convention. Only a small portion of early signatories retained

7. *See* Bonwoo, *supra* note 6, at 1295.

8. *Id.*

9. *Id.* at 1295–96.

10. *Id.* at 1296.

11. Bongo Adi, *Intellectual Property Rights in Biotechnology and the Fate of Poor Farmers' Agriculture*, 9 J. WORLD INTELL. PROP. 91, 106 (2006).

12. WORLD BANK REPORT, *supra* note 6, at 7.

13. UNCTAD-ICTSD PROJECT ON IPRS AND SUSTAINABLE DEV., INTELLECTUAL PROPERTY RIGHTS: IMPLICATIONS FOR DEVELOPMENT 107 (2003), *available at* http://www.ictsd.org/pubs/ictsd_series/iprs/PP/PP_3CH_07.pdf [hereinafter UCTAD-ICTSD] (the UNCTAD-ICTSD joint project on Intellectual Property Rights (IPRs) and Sustainable Development is being implemented by the International Centre for Trade and Sustainable Development (ICTSD) and the secretariat of the United Nations Conference on Trade and Development (UNCTAD)).

prior versions.[14] Most low-income countries are not UPOV members; only eight percent of countries with that classification had joined as of 2004.[15] This is due in part to objections from some developing countries that the UPOV Conventions, particularly the 1991 revision, are overly protective of private versus public interests. Thus India, for example, has created a sui generis system that differs from UPOV in significant ways. The Indian Protection of Plant Varieties and Farmers' Rights Act of 2001 requires applicants to provide information about the origin of genetic material used in an innovation, forbids protection of "terminator" technology that inhibits development of viable seed, and grants farmers extensive rights to save, share, use or sell seed of a protected variety.[16] But the lack of low-income country representation in UPOV primarily reflects a general lack of plant rights regimes in these countries: one survey found that as of 2004, only twenty-two of sixty-one low-income countries had any statutory protection in place for plants.[17]

In 2005, UPOV released an impact study on the effect of introducing plant variety protection, finding a variety of benefits for implementing such a scheme.[18] One "almost universal" finding was that membership in UPOV was correlated with more investment by foreign breeders.[19] Some of this investment may involve bringing elite germplasm into developing countries.[20] Another advantage of UPOV is that it cuts down on transaction costs by enabling members to share

14. INT'L UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS, MEMBERS OF THE INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS (2006), http://www.upov.int/en/about/members/pdf/pub423.pdf [hereinafter UPOV MEMBERS].

15. WORLD BANK REPORT, *supra* note 6, at 15.

16. Bonwoo, *supra* note 6, at 1296.

17. *Id.*

18. INT'L UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS, UPOV REPORT ON THE IMPACT OF PLANT VARIETY PROTECTION (2005), *available at* http://www.upov.int/en/about/pdf/353_Executive_Summary.pdf.

19. *Id.* at 8.

20. MYWISH K. MAREDIA, APPLICATION OF INTELLECTUAL PROPERTY RIGHTS IN DEVELOPING COUNTRIES: IMPLICATIONS FOR PUBLIC POLICY AGRICULTURAL RESEARCH INSTITUTES 29 (2001), *available at* http://www.wipo.int/about-ip/en/studies/pdf/study_k_maredia.pdf.

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test data with each other.[21]

Nonetheless, there is concern that overly stringent IP protection causes a displacement effect in terms of the areas of innovation on which a country focuses its research. Private sector agricultural research, which is typically boosted by the introduction of an enforceable IP system, tends to have a different focus than public sector agricultural research.[22] There is also some indication that plant variety protection (PVP) has contributed to increasing concentration in seed sectors.[23] Thus, stringent IP protection may shift a nation's overall research output away from key areas of broad public interest, such as those involving minor and subsistence crops, to larger and more profitable markets, such as ornamentals.[24] A study of thirty UPOV member countries that were members of UPOV in 2001 found that ornamentals represent 52% of PVP grants while agricultural crops represent only 30%.[25] Moreover, the study found that grants in the agriculture category were highly concentrated among about ten crop varieties; while most others did not seem to receive any stimulus for innovation from PVP.[26] The same argument applies to other kinds of IP protection besides plant protection. For example, Pardey et al. speculate that stringent IP terms may cause a shift away from research on farm-level technologies.[27]

B. WHAT IS AN OPTIMAL LEVEL OF IP PROTECTION FOR DEVELOPING COUNTRIES?

One topic at the heart of many debates over the emerging international IP framework is whether there are different optimal levels of IP protection for countries at different stages of

21. WORLD BANK REPORT, *supra* note 6, at 6.

22. MAREDIA, *supra* note 20, at 19.

23. WORLD BANK REPORT, *supra* note 6, at 30.

24. *See* UNCTAD-ICTSD, *supra* note 13, at 106; Robert Lettington, UNCTAD-ICTSD, *Small-scale Agriculture and the Nutritional Safeguard Under Article 8(1) of the Agreement on Trade-Related Aspects of Intellectual Property Rights: Case Studies from Kenya and Peru* 7 (Nov. 2003) (working paper, *available at* http://www.iprsonline.org/unctadictsd/docs/lettingtonfinaldraft.pdf).

25. C.S. Srinivasan, *The International Trends in Plant Variety Protection*, 2 ELEC. J. OF AGRIC. & DEV. ECON. 182, 188 (2005) *available at* ftp://ftp.fao.org/es/ESA/ejade/srinivasan.pdf.

26. *Id.*

27. MAREDIA, *supra* note 20, at 19.

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development. Proponents of the optimality view point to earlier periods in the history of developed countries such as the United States and Japan in which more relaxed levels of IP protection corresponded to great bursts of innovation across society.[28] Pertinent features of Japan's IP system in the 1950s through the 1980s included "pre-grant disclosure, rapid opposition to patent grants, narrow patent claims, local reliance on utility models and advantages for licenses"; factors that favored small-scale innovation, rapid diffusion, and licensing of new technologies.[29]

Economic literature also indicates that developing countries, acting for themselves, would tend to benefit most from protection levels lower than the global standard, in order to take advantage of IP from more developed nations.[30] Imposing on less developed countries the IP protection level of countries that have already reached an advanced stage of development may hamstring the ability of the former to take advantage of the same path to development.[31] Indeed, econometric studies have found that there is a "threshold effect" for development; such that strengthening patent laws has a positive impact on trade flow and inward foreign direct investment (FDI) only for middle-income and large developing countries, and not at all for smaller developing or least developed countries.[32] Moreover, any gains in technology flow and FDI may be offset by increased licensing costs to developing country firms as patents become more profitable to their owners.[33] Proponents of the optimality argument contend that developing countries were motivated to adopt TRIPS not due to perceived domestic benefits of patent protection, but because they were threatened with a loss of trade access via bilateral sanctions if they did not accede.[34]

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28. *See* Derek E. Bambauer, *Why Intellectual Property Rights Matter to Less-Developed Countries,* 1 INFO. TECH. & INT'L DEV. 63 (2004).

29. Keith E. Maskus and Jerome H. Reichman, *The Globalization of Private Knowledge Goods and the Privatization of Global Public Goods,* 7 J. INT'L ECON. L. 279, 290 (2004).

30. *Id.* at 283.

31. *Id.* at 285–86.

32. *Id.* at 288.

33. *Id.*

34. Brian D. Wright & Philip G. Pardey, *The Evolving Rights to Intellectual Property Protection in the Agricultural Biosciences*, 2 INT. J. TECH.

Applying this view to plant variety protection, an optimal sui generis system would take into account

> the type of domestic seed industry that exists, the level of use of farm-saved seed, the current capacity of breeders, local (national) breeders' aims in the next 5-10 years, the country's biotechnology capacity, the goals and realistic expectation[s] of the biotechnology sector, and the types of strategic alliances likely to be entered into.[35]

Many countries are instead being pushed towards adopting a uniform system of protection that does not address such individual needs. PVP registration and maintenance fees are another area that affects innovation rate; yet countries currently have little guidance on this matter, so "it is likely that current fee rates do not provide an optimal set of incentives for national plant breeding industries."[36] In some countries, a PVP application for a single variety may cost the equivalent of half of the annual budget for a typical researcher.[37] Use of a PVP system that is stricter than a country's optimal level of protection may have a negative impact on food security by enabling a narrow selection of monoculture crops to push out minor crop varieties, by restricting farmer access to certain seed sources, and by increasing the risk of disease outbreak through promotion of genetic uniformity.[38]

TRIPS signatory nations are allowed a variety of flexibilities that enable them to adapt their IP policies in light of important public health goals and they may also choose a sui generis system other than UPOV. However, many countries do not take advantage of these freedoms to enact policies that are responsive to their individual needs. One study from 2005 found that many developing countries have not made full use of TRIPS flexibilities such as transition periods and certain exceptions to patentability.[39]

There are several potential reasons for the under-usage of flexibilities. First, developing countries often lack the expertise

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& GLOBALISATION 12, 18 (2006).

35. MAREDIA, *supra* note 20, at 38.

36. WORLD BANK REPORT, *supra* note 6, at xv.

37. WORLD BANK REPORT, *supra* note 6, at 23.

38. MAREDIA, *supra* note 20, at 86.

39. CECILIA OH & SISULE MUSUNGU, COMM'N ON INTELLECTUAL PROP. RIGHTS, INNOVATION AND PUB. HEALTH, WORLD HEALTH ORG., THE USE OF FLEXIBILITIES IN TRIPS BY DEVELOPING COUNTRIES: CAN THEY PROMOTE ACCESS TO MEDICINES? 7–8, 98 (2005), *available at* http://www.who.int/intellectualproperty/studies/TRIPS_flexibilities/en/index.html.

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and resources to draft legislation that addresses their specific needs.[40] Instead, they may take their terms directly from TRIPS language or from legislation of another country—even one that is far more developed.[41] Second, many countries have been required to refrain from adopting certain TRIPS flexibilities, or have been made to adopt terms that are more stringent than TRIPS requirements, as a condition of bilateral trade agreements (bilaterals).[42] When the trade agreements are made with countries that are much more developed and economically powerful, the developing country partner often has little leverage for negotiating better terms.[43] Some bilaterals have even required developing countries to adopt IP terms that are more stringent than those the developed country partner has enacted for itself.[44] Membership of UPOV is not an uncommon requirement of these kinds of agreements.[45] Joining UPOV today means signing the 1991 treaty, rather than any of the less stringent preceding versions.[46]

Having considered some of the issues involved in determining an "optimal" level of IP protection for a developing country, it is worth stepping back to consider where IP ranks in importance compared with other factors that shape today's global agricultural challenges. The World Bank predicts that PVP will only have a modest impact on the direction of domestic commercial markets in the near future, "given that most PVP systems in developing countries cannot control farmer seed

40. Maskus & Reichman, *supra* note 29, at 286.

41. J. Michael Finger, *The WTO's Special Burden on Less Developed Countries*, 19 CATO J. 425, 430 (2000).

42. *See* Susan K. Sell, *What Role for Humanitarian Intellectual Property? The Globalization of Intellectual Property Rights*, 6 MINN. J.L. SCI. & TECH. 191, 207 (2004).

43. *Id.* at 208.

44. *See, e.g.*, *Implementation of the Dominican Republic-Central America Free Trade Agreement (DR-CAFTA) Before the H. Comm. on Ways and Means*, 109th Cong. 206–13 (2005), *available at* http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_house_hearings&docid=f:23918.pdf (statement of Joseph E. Brenner & Ellen R. Shaffer, Center for Policy Analysis on Trade and Health).

45. PETER DRAHOS, OXFAM, BILATERALISM IN INTELLECTUAL PROPERTY 10 (2001), *available at* http://oxfam.intelli-direct.com/e/d.dll?m=234&url=http://www.oxfam.org.uk/what_we_do/issues/trade/downloads/biltateralism_ip.rtf.

46. UNCTAD-ICTSD, *supra* note 13, at 107.

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saving and possess very limited enforcement capabilities."[47] Trends such as the worldwide slowdown in agricultural research and development (R&D) and the decline of research into developing country food crops by international research centers have a greater negative influence on food security in developing countries than IP rights.[48] Neither is intellectual property the only area of regulation that can constrain agricultural innovation; strict and expensive bio-safety regulations can have a chilling effect as well.[49] Such broad contexts should not be lost sight of in crafting solutions to problems associated with IP rights.

There are compelling reasons to keep IP issues on the radar, however. First, IP rights can exacerbate the negative effects of other societal trends that affect agricultural research. There is also a risk that "restrictive actions, or threats thereof, involving dubious patents could be made much more effective by the changes mandated by TRIPS."[50] Wright and Pardey contend that a dubious U.S. patent could be used "to persuade local patenting authorities in the country of [a] potential competitor to approve a local patent application."[51] Most compellingly, although IP may be a lesser factor in agricultural development in the short-run, in the long-term it is sure to have a greater impact as enforcement systems improve and nations progress to more advanced stages of development.

II. RESEARCH CLIMATE AND IP LANDSCAPE OF SOUTHEAST ASIA

Developing countries, as a group, have performed a majority of the world's public agricultural R&D since the 1990s.[52] Southeast Asian countries have played a significant part in this trend. The top three investors in R&D in Southeast Asia are Singapore, Malaysia, and Thailand, whose recent annual R&D budgets have been $4 billion, $600 million, and $300 million, respectively (*see* Table I). As with other developing countries, and in contrast to developed countries, the

47. WORLD BANK REPORT, *supra* note 6, at xv.
48. Koo et al., *supra* note 6, at 1297.
49. Wright & Pardey, *supra* note 34, at 109.
50. *Id.* at 106.
51. *Id.*
52. Philip Pardey et al., *Agricultural R&D Spending at a Cultural Crossroads*, 3 FARM POL'Y J. 1, 4 (2006).

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vast majority of agricultural R&D in the Asia and Pacific Region is public rather than private.[53] In 2000, only eight percent of agricultural R&D in this region was private; a figure that is slightly above the global average for developing countries.[54] Singapore and Malaysia are the only countries in Southeast Asia where private sources of R&D investment (64% and 65% of R&D funds, respectively) exceed public sources.[55] These rates are on a par with the China's 63% private funding rate for R&D in 2002.[56]

Though research investment rates remain low in most Southeast Asian countries, intellectual property protection has been steadily increasing in the region.[57] Here again, Singapore is the regional leader (*see* Table I). Most of the increase is due to more protection-seeking by foreign firms; whereas the percentage of patents going to local citizens remains low.[58] Thailand boasts a 14% local patenting rate, the highest in Southeast Asia; yet this figure is less than half of China's local patenting rate of 37% (*see* Table I).

Singapore's leading role in Southeast Asian R&D is also reflected in the 2.25% of its annual Gross Domestic Product that goes towards R&D (GERD).[59] This percentage is higher than any other country in Southeast Asia (*see* Table I), and compares favorably the 2% GERD percentage of GDP of most OECD

53. *Id.*

54. *Id.*

55. *Id.*; MALAYSIAN SCI. & TECH. INFO. CTR., MALAYSIAN SCIENCE AND TECHNOLOGY INDICATORS 2004 REPORT 8 (2004) [hereinafter MASTIC REPORT], *available at* http://www.mastic.gov.my/servlets/sfs?s=rXCJhmHvWxmZ8J39OpI&t=/contentManager/onStory&i=1108620651187&b=1108620651187&l=0&e=UTF-8&active=no&ParentID=1116297677695&sort=Price&StoryID=1120535028937.

56. Wang Yuan, *China's Government R&D Institutes: Changes and Associated Issues*, 10 SCI., TECH. & SOC'Y 11, 12 (2005).

57. *See* Letter from Professor Alain Pompidou, President, European Patent Office, Welcome to the EC-ASEAN Intellectual Property Rights Cooperation Programme (ECAP II), http://www.ecap-project.org/welcome/ epo.html (last visited Jan. 18, 2008).

58. *See* ASS'N OF SE. ASIAN NATIONS, ASEAN INTELLECTUAL PROPERTY RIGHT ACTION PLAN 2004-2010, http://www.aseansec.org/17071.htm (last visited Dec. 21, 2007).

59. AGENCY FOR SCI., TECH. & RESEARCH, NATIONAL SURVEY OF R & D IN SINGAPORE 2004, 4 (2005), *available at* http://www.a-star.edu.sg/astar/about/action/about_astar_pub_annualrnd.do.

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countries.[60] Singapore has aggressive plans to further improve its international standing. The country plans to spend $13.55 billion on R&D from 2006 to 2010; nearly double its R&D budget of the preceding five years.[61] Singapore currently hosts eighty-five biotech companies, and this number is expected to hit one hundred in 2006.[62]

The other R&D leaders in Southeast Asia also have ambitious plans for the future. Malaysia's Prime Minister introduced a National Biotechnology Policy in 2005 to boost biotech R&D capacity, through initiatives such as offering matching grants for biotech R&D and commercialization, financial support in patent applications, funds for training of skilled workers, and 100% tax relief for ten years to corporations that invest in Malaysian biotechnology.[63] Thailand's National Biotechnology Policy Framework (2004-2009) likewise features major investment and tax relief schemes, with goals of establishing over one hundred new biotech companies and increasing the number of biotechnology-related patents by at least 200% by 2009.[64]

60. NGUYEN VO HUNG & TRAN NGOC CA, NAT'L INST. FOR SCI. & TECH. POL'Y & STRATEGY STUDIES, THE ROLE OF ACADEMIC INSTITUTIONS IN ECONOMIC DEVELOPMENT: THE CASE OF VIETNAM 4 (2006) (on file with author).

61. MINISTRY OF TRADE & INDUS. SING., SCIENCE AND TECHNOLOGY PLAN 2010, at 56 (2006).

62. KOUSHIK MURTHY, FROST & SULLIVAN, LIFE SCIENCES MARKET: WILL IT PROVIDE A FRESH LEASE OF LIFE TO THE SINGAPORE UPS INDUSTRY? (2005), http://www.frost.com/prod/servlet/market-insight-top.pag?docid=36393711.

63. Yab Dato' Seri Abdullah Bin Haji Ahmad Badawi, Prime Minister of Malaysia, Address at the Launch of Biomalaysia 2005, 5 (Apr. 28, 2005), *available at* http://www.biotechcorp.com.my/biotechinmalaysia/pmspeech.pdf.

64. NAT'L CTR. FOR GENETIC ENG'G & BIOTECH., NAT'L SCI. & TECH. DEV.T AGENCY, THAILAND'S NATIONAL BIOTECHNOLOGY POLICY FRAMEWORK 2004-2009, at 3 (2d. ed. 2005), *available at* http://www.biotec.or.th/document/W-Eng/FrameWork9-11-2548.pdf.

TABLE I

SE Asian Country	**GDP (USD), Growth rate**	**Annual R&D Budget (USD), % of GDP**	**No. patent applications, No. granted per year**	**% patents[65] granted to citizens**
Brunei	9.5B, 0.4% (2005 est.)[66]	1.5M (2003), 0.026% (2002)[67]	23 app., 23 granted (2005)[68]	0%
Myanmar	9.6B, 2.6% (2006 est.)[69]	----	----	-----
Cambodia	6.6B, 13.4% (2006 est.)[70]	12M (2002), 0.053% (2002)[71]	----	----
East Timor	349M, 1.8% (2005 est.)[72]	----	----	----
Indonesia	264B, 5.4% (2006 est.)[73]	55M (2004)[74], 0.054 (2001)[75]	3492 app., 2902 granted (2003)[76]	----

65. To keep comparisons consistent, only invention patents were included, not design patents.

66. CENT. INTELLIGENCE AGENCY, THE 2007 WORLD FACTBOOK: BRUNEI, *available at* https://www.cia.gov/library/publications/the-world-factbook/geos/bx.html#Econ.

67. ASEAN STI/TIC, FINANCIAL RESOURCE STATISTICS, *available at* http://aseank.kisti.re.kr/sntind/add_frs.jsp.

68. EC-ASEAN INTELLECTUAL PROP. RIGHTS COOPERATION PROGRAMME, APPLICATIONS AND REGISTRATIONS OF PATENTS, TRADEMARKS, AND INDUSTRIAL DESIGNS FROM 1994 TO 2005: BRUNEI, http://www.ecap-project.org/fileadmin/ecapII/pdf/en/information/brunei/brunei_stats.pdf (last visited Dec. 20, 2007).

69. CENT. INTELLIGENCE AGENCY, THE 2007 WORLD FACTBOOK: BURMA, *available at* https://www.cia.gov/library/publications/the-world-factbook/geos/bm.html.

70. CENT. INTELLIGENCE AGENCY, THE 2007 WORLD FACTBOOK: CAMBODIA, *available at* https://www.cia.gov/library/publications/the-world-factbook/geos/cb.html.

71. ASEAN STI/TIC, *supra* note 67.

72. CENT. INTELLIGENCE AGENCY, THE 2007 WORLD FACTBOOK: EAST TIMOR, *available at* https://www.cia.gov/library/publications/the-world-factbook/geos/tt.html.

73. CENT. INTELLIGENCE AGENCY, THE 2007 WORLD FACTBOOK: INDONESIA, *available at* https://www.cia.gov/library/publications/the-world-factbook/geos/id.html.

74. MASTIC REPORT, *supra* note 55 at 42.

75. ASEAN STI/TIC, *supra* note 67.

76. WORLD INTELLECTUAL PROP. ORG., WIPO GUIDE TO INTELLECTUAL PROPERTY WORLDWIDE: INDONESIA 5, http://www.wipo.int/about-ip/en/ipworldwide/pdf/id.pdf (last visited Dec. 20, 2007).

Lao PDR	2.8B, 7.2% (2006 est.)[77]	0.6M (2002), 0.036% (2002)[78]	7 app., none granted (2005)[79]	N/A
Malaysia	132B, 5.5% (2006 est.)[80]	600M (2002)[81], 0.69% (2002)[82]	4800 app., 6749 granted (2006)[83] *includes utility innovations	1.5 % (2005)[84]
Philippines	$117B, 5.4% (2006 est.)[85]	$48M,[86] 0.3% (2004)[87]	2431 app., 1666 granted (2005)[88]	0.9% (2005)[89]
Singapore	$122B, 7.4% (2006 est.)[90]	$4B, 2.25% (2004)[91]	9164 app.,[92] 7390 granted (2006)[93]	5.8% (2006)[94]

77. CENT. INTELLIGENCE AGENCY, THE 2007 WORLD FACTBOOK: LAOS, *available at* https://www.cia.gov/cia/publications/factbook/geos/la.html#Econ

78. ASEAN STI/TIC, *supra* note 67.

79. EC-ASEAN INTELLECTUAL PROP. RIGHTS COOPERATION PROGRAMME, APPLICATIONS AND REGISTRATIONS OF PATENTS, INDUSTRIAL DESIGNS AND TRADEMARKS, FROM 2000 TO 2006: LAO PDR, http://www.ecap-project.org/fileadmin/ecapII/pdf/en/information/laos/ip_statistics_year_2006.pdf (last visited Dec. 20, 2007).

80. CENT. INTELLIGENCE AGENCY, THE 2007 WORLD FACTBOOK: MALAYSIA, *available at* https://www.cia.gov/cia/publications/geos/my.html.

81. MASTIC REPORT, *supra* note 55 at 17.

82. ASEAN STI/TIC, *supra* note 67.

83. INTELLECTUAL PROP. CORP. OF MALAYSIA, APPLICATION AND REGISTRATION OF PATENT AND UTILITY INNOVATIONS FROM 1986 TO 2007, http://www.myipo.gov.my/index.php?option=com_content&task=view&id=3&Itemid=10 (last visited Dec. 20, 2007).

84. *Id.*

85. CENT. INTELLIGENCE AGENCY, THE 2007 WORLD FACTBOOK: PHILIPPINES, *available at* https://www.cia.gov/library/publications/the-world-factbook/geos/rp.html.

86. MASTIC REPORT, *supra* note 55, at 42.

87. DEP'T OF SCI. & TECH., NATIONAL SCIENCE AND TECHNOLOGY PLAN FOR 2002-2020, 24, *available at* http://www.dost.gov.ph/images/storiesNSTP0220.pdf.

88. INTELLECTUAL PROP. OFFICE OF THE PHIL., STATISTICAL REPORT (2005), *available at* http://www.ipophil.gov.ph/statreport/statistics.htm.

89. *Id.*

90. CENT. INTELLIGENCE AGENCY, THE 2007 WORLD FACTBOOK: SINGAPORE, *available at* https://www.cia.gov/library/publications/the-world-factbook/geos/sn.html.

91. AGENCY FOR SCI., TECH. & RESEARCH, *supra* note 59, at 4.

92. INTELLECTUAL PROP. OFFICE OF SING., NUMBER OF PATENT APPLICATIONS FILED IN SINGAPORE, http://www.ipos.gov.sg/topNav/pub/sta/pat/ (last visited Dec. 15, 2007).

93. INTELLECTUAL PROP. OFFICE OF SING., NUMBER OF SINGAPORE PATENT GRANTS / REGISTRATIONS IN SINGAPORE, http://www.ipos.gov.sg/topNav/pub/sta/pat/No.+of+Singapore+patent+grants +registrations.htm (last visited Dec. 15, 2007).

Thailand	$196.6B, 4.8% (2006 est.)[95]	$300M (2004)[96], 0.24% (2002)[97]	6340 app.,[98] 533 granted (2005)[99] *Invention patents	14%, invention (2005)[100]
Vietnam	$48.3B, 7.8% (2006 est.)[101]	71.3M (2002),[102] 0.5% (2003)[103]	1864 app., 649 granted (2005)[104]	3.9%, invention (2005) [105]

All Southeast Asian countries except for Laos and East Timor are members of the WTO and are therefore subject to the terms of the TRIPS Agreement (*see* Table II). In regards to plant variety protection, only four Asian countries (China, South Korea, Singapore and Vietnam) were members of UPOV as of April 2006.[106] While Singapore and Vietnam are currently the only Southeast Asian countries of this group, several other nations in the region are on track to join in the near future (*see* Table II). Malaysia has been consulting with the UPOV Council on how to adapt its PVP legislation[107] to conform to the 1991

94. *Id.*

95. CENT. INTELLIGENCE AGENCY, THE 2007 WORLD FACTBOOK: THAILAND, *available at* https://www.cia.gov/library/publications/the-world-factbook/geos/th.html.

96. MASTIC REPORT, *supra* note 55, at 42.

97. ASEAN STI/TIC, *supra* note 67.

98. EC-ASEAN INTELLECTUAL PROP. RIGHTS COOPERATION PROGRAMME, NUMBER OF PATENT APPLICATIONS: THAILAND, http://www.ecap-project.org/fileadmin/ecapII/pdf/en/information/thailand/statistics/thailand_patent_application_2006.pdf (last visited Dec. 23, 2007).

99. *Id.*

100. *Id.*

101. CENT. INTELLIGENCE AGENCY, THE 2007 WORLD FACTBOOK: VIETNAM, *available at* https://www.cia.gov/library/publications/the-world-factbook/geos/vm.html [hereinafter CIA VIETNAM REPORT].

102. GERT-JAN STADS & NGUYEN VIET HAI, INT'L FOOD POL'Y RES. INST., ASTI COUNTRY BRIEF: VIETNAM 1 (2006), *available at* http://www.asti.cgiar.org/pdf/Vietnam_CB33.pdf.

103. HUNG & CA, *supra* note 60, at 4.

104. EC-ASEAN INTELLECTUAL PROP. RIGHTS COOPERATION PROGRAMME, ASEAN IP Legislations, Filing Procedures and Statistics: Vietnam, http://www.ecap-project.org/fileadmin/ecapII/pdf/en/information/vietnam/ip_vn_statistics_2006.pdf (last visited Dec. 23, 2007).

105. *Id.*

106. UPOV MEMBERS, *supra* note 14.

107. Protection of New Plant Varieties Act, No. 634 (2004) (Malay.).

Convention.[108] Cambodia has signed a bilateral agreement with the United States that commits it to achieving membership as well.[109]

In contrast, Thailand has adopted PVP legislation that is a purposeful departure from the UPOV Conventions.[110] The legislation aims to promote conservation and to protect the interests of local communities, as well as to encourage the creation of new varieties of plants.[111] One innovative aspect of the legislation is that it sets different lengths of protection for different kinds of plants: annual crops are protected for twelve years, perennials for seventeen, and trees for twenty-seven.[112] The law also features exemptions for research and for farmers' uses.[113] It is uncertain how long the Thai will be able to retain their unique model, given pressure from ongoing bilateral negotiations with the United States and the European Union.[114]

108. International Union for the Protection of New Varieties of Plants, *Report from the Council of the Twenty-Second Extraordinary Session*, ¶¶ 7–9 (Apr. 8, 2005), *available at* http://www.upov.int/en/documents/c_extr/22/c_extr_22_3.pdf.

109. COMM'N ON INTELLECTUAL PROP. RIGHTS, INTEGRATING INTELLECTUAL PROPERTY RIGHTS AND DEVELOPMENT POLICY, Table 8.1 (2002), *available at* http://www.iprcommission.org/papers/pdfs/final_report/ CIPRfullfinal.pdf.

110. PLANT VARIETIES PROTECTION ACT, B.E. 2542 (1999), (Thail.), *available at* http://www.biothai.org/cgi-bin/content/pvp/show.pl?0001.

111. Witoon Lianchamroon, Dir., BioThai, TRIPS-Plus Provisions and Its Negative Consequences on Agriculture in Thailand, Presentation during EFTA Lobbying Trip organized by the Berne Declaration (June 2006), http://www.evb.ch/cm_data/witoon.pdf.

112. Sutat Sriwatanapongse, *Impact of Intellectual Property Right on Development and Use of Hybrid Crop Varieties in Developing Countries: Thailand Experience* [sic], 6 A.U. J. TECH. 125, 127 (2003), *available at* http://www.journal.au.edu/au_techno/2003/jan2003/index.html.

113. *Id.*

114. Lianchamroon, *supra* note 111; Open letter from Julien Reinhard, Representative, Berne Declaration, et al., to the Trade and Foreign Ministers of EFTA's States Regarding the Negotiations with Thailand, (Jan. 19, 2006) (http://www.evb.ch/en/p10564.html).

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TABLE II

SE Asian Country	**WTO Member?**[115]	**PCT Member?**[116]	**UPOV member?**[117]	**PVP Legislation**
Brunei	Yes	No	No	---------
Myanmar	Yes	No	No	None
Cambodia	Yes	No	Not yet; but planned under US-Cambodia bilateral agreement[118]	None
East Timor	No	No	No	----
Indonesia	Yes	Yes	No, but PVP Law is based on 1978 Act[119]	Plant Variety Protection Law, 2000
Lao PDR	Observer	Yes	No	----
Malaysia	Yes	Yes	Consulting, will enact 1991 Act.[120]	Protection of New Plant Varieties Act 2004
Philippines	Yes	Yes	No	Republic Act No 9168, an Act to Provide Protection to New Plant Varieties (2002)
Singapore	Yes	Yes	Yes; conforms to 1991 Act	Plant Varieties Protection Act 2004
Thailand	Yes	No	No	Plant Varieties Protection Act, B.E.2542 of 1999

115. Column information from: World Trade Organization, Understanding The WTO: The Organization, Members and Observers, http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm (last visited July 23, 2007).

116. Column information from: World Intellectual Property Organization (WIPO), The PCT Applicant's Guide Annex A (Last Updated Mar. 13, 2008), http://www.wipo.int/pct/guide/en/ (last visited Mar. 24, 2008).

117. Column information from: *UPOV MEMBERS*, *supra* note 14.

118. COMM'N ON INTELLECTUAL PROP. RIGHTS, *supra* note 109, at 163.

119. WORLD BANK REPORT, *supra* note 6 at 6.

120. International Union for the Protection of New Varieties of Plants, *supra* note 108, at 2.

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Vietnam	Yes	Yes	Yes; conforms to 1991 Act	Intellectual Property Law 50/2005/QH10, Part Four: Rights for the Plant Variety.[121]

III. VIETNAM: ECONOMY, EDUCATION AND R&D INITIATIVES

A. ECONOMY

Although Vietnam is still a poor country, its economy has experienced strong growth since 1995, when the government introduced the "Doi Moi" policy that initiated the country's transition to a market economy. The Economist Intelligence Unit estimates that Vietnam's average real GDP growth between 2002 and 2006 was 7.8%.[122] Similarly the average per capita income increased from $180 in 1993 to $640 in 2005.[123] The CIA Factbook estimates that Vietnam's 2006 GDP was $48.3 billion, with a growth rate of 7.8%.[124] These figures make Vietnam the sixth largest economy and the fastest growing in Southeast Asia (*see* Table I). Vietnam's recent accession to the WTO and government initiatives such as new legislation for improving the operating environment for private enterprises and investment are likely to further boost the economy.[125] Vietnam's average per capita income is predicted to hit $1000 by 2010.[126]

B. EDUCATION OVERVIEW

Vietnam has historically placed a high value on primary

121. INTELLECTUAL PROPERTY LAW 50/2005/QH10, PART FOUR: RIGHTS FOR THE PLANT VARIETY (Vietnam), *available at* http://www.noip.gov.vn/noip/resource.nsf/vwResourceList/55B534AABF670ADE4725718E003B0A5B/$FILE/Law_50_on_IP_eng__BTP_gui_.doc.

122. Economist.com, Vietnam Factsheet (Mar. 7, 2008), http://www.economist.com/countries/Vietnam/profile.cfm?folder=Profile-FactSheet (last visited Mar. 26, 2008).

123. Jane Perlez, *U.S. Competes with China for Vietnam's Allegiance*, N.Y. TIMES, June 19, 2006 at A3.

124. CIA VIETNAM REPORT, *supra* note 101.

125. Economist.com, *supra* note 122.

126. Perlez, *supra* note 123.

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education, as evidenced by the country's literacy rate of over 90%.[127] The higher education system, however, has yet to capitalize on this impressive foundation in primary skills. Not one of the country's institutions of higher learning has broken into rankings of the top 100 universities of Asia.[128] As in many developing countries, only a minority of lecturers hold advanced degrees.[129]

Science and technology organizations in Vietnam are either general scientific and engineering institutions, or higher education institutions.[130] General scientific and engineering institutions include: research institutes, research centers, consultant centers, laboratories, experimental stations, and observatory stations.[131] The largest scientific and engineering organization is the Vietnam Academy of Science and Technology (VAST), which consists of eighteen research institutes and nine regional branches, with a total staff of about 3000 people.[132] VAST has established sixteen start-up enterprises, twenty-one scientific centers, and sixteen higher education institutions.[133]

The funding structure of science and technology organizations in Vietnam differs according to category. The government fully funds research institutes.[134] The government plans to reduce this funding percentage, however, to make the institutes more self-sufficient.[135] As a consequence, researchers will soon have to start applying for funding on a project by project basis.[136] In contrast, universities receive funding from a variety of sources. While the general operating budget for universities comes almost entirely from the central government and from tuition, research projects tend to rely less on the

127. CIA VIETNAM REPORT, *supra* note 101.

128. *See, e.g.*, Webometrics Rankings of World Universities, Top Asia (Jan. 2007), http://www.webometrics.info/top100_continent.asp?cont=asia (last visited Mar. 25, 2008).

129. Vietnam Education, Ministry of Education and Training, http://en.moet.gov.vn/?page=6.13&view=4404 (last visited Mar. 26, 2008).

130. HUNG & CA, *supra* note 60, at 5.

131. *Id.*

132. *Id.*

133. *Id.*

134. Interview with Tran Linh Thuoc, Dean of Biology Faculty, Vietnam Nat'l Univ., in Ho Chi Minh, Vietnam (July 19, 2006).

135. *Id.*

136. *Id.*

central government.[137] One study from 2005 found that universities in Vietnam receive 15.3% of their R&D budget from the central government, 29.2% from enterprises, 6.7% from other organizations, and 48.8% from international sources.[138] These proportions vary for different categories of R&D, however. For instance, Dr. Tran Linh Thuoc of Vietnam National University (VNU) reports that when his institution receives funding from international organizations, it is almost always for plant preservation and other development projects, and never for biotech projects.[139]

C. RESEARCH COMMERCIALIZATION

Research institutions in Vietnam were not permitted to engage in commercialization of their research in the era of the centralized economy.[140] Decree No. 35 of 1992 first reorganized the science and technology sector, which permitted public science and technology organizations to engage in commercial contracts and set up affiliate centers for commercial purposes.[141] Universities gained the ability to engage in commercialization more directly through the 2000 Law on Science and Technology and the 2001 Law on Organization of the Government.[142] Decree No. 115/2005/ND-CP of 2005 sets out terms that allow universities to collect revenue from scientific research and technology transfer.[143]

A recent report from the Ministry of Education and Training shows that research institutions have been taking advantage of these new freedoms. Between 2001 and 2006, labs in the fields of agriculture, fisheries, and forestry signed over 10,000 contracts worth a total of US $625 million.[144] Several

137. *Id.*

138. HUNG & CA, *supra* note 60, at 8 (citing Tran Ngoc Ca et al., *Impact of Policy on Development of E-Commerce in Vietnam*, *in* E-COMMERCE IN THE ASIAN CONTEXT: SELECTED CASE STUDIES 71 (Renald Lafond & Chaitali Sinha eds., 2005)).

139. Interview with Tran Linh Thuoc, *supra* note 134.

140. Interview with Nguyen Vu Quan, Trademark Assoc., WINCO, in Hanoi, Vietnam (July 5, 2006).

141. *Id.*

142. *Id.*

143. Letter from Nguyen Vu Quan, Trademark Assoc., WINCO, to author (Aug. 4, 2006) (on file with author).

144. *Colleges Find There's Money In Research*, VIET NAM NEWS, June 22, 2007, http://vietnamnews.vnagency.com.vn/showarticle.php?num=

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institutions visited by the author in 2006 reported plans to form new commercial partnerships with multinational companies such as Syngenta.[145] Given Vietnam's economic growth and commitment to boost its scientific capacity, it is likely that the trend of increasing commercial activity by research institutions will continue to gain momentum.

D. R&D INITIATIVES

As with higher education in general, Vietnam's R&D investment levels have lagged behind regional leaders.[146] Vietnam's annual R&D budget of $71.3 million (2005) represents 0.5% of the country's GDP, placing its percentage investment third in Southeast Asia (*see* Table 1). This rate is far off the 2% average of OECD countries.[147]

Raising Vietnam's science and technological capacity to the level of regional leaders is one of the major goals of the country's current five-year plan on science and technology. Decision No. 67/2006/QD-TTg sets out the plan, signed on March 21, 2006.[148] Other goals of the plan include improving the quality and efficiency of scientific research, increasing international research collaborations, and building a strong scientific work force.[149] Along these lines, the Vietnam Education Foundation has started a program to award fellowships to Vietnamese students to pursue doctoral studies in the United States, requiring that students return to Vietnam upon the completion of their programs.[150] The Ministry of Education and Training has partnered with the U.S. National Academies to sponsor a further 250 Vietnamese students in

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01EDU220607.

145. Interview with Nguyen Gia Lap, Deputy-Dir. of the Int'l Cooperation Dept., Vietnamese Acad. of Sci. and Tech., in Hanoi, Vietnam (July 10, 2006); Interview with Vu Dinh Hoa, Dir. of the Office of Research Affairs and Int'l Coop., Hanoi Agric. Univ., in Hanoi, Vietnam (July 12, 2006); Interview with Tran Linh Thuoc, *supra* note 134.

146. *See supra* table 1.

147. HUNG & CA, *supra* note 60, at 4.

148. Decision No. 67/2006/QD-TTg, AG BIOTECH VIETNAM, Apr. 20, 2006, http://www.agbiotech.com.vn/en/?mnu=preview&key=642&PHPSESSID=c88f102f9fa3da4a051fcc38f5ccef1d.

149. *Id.*

150. *Science Education Under Microscope,* VIET NAM NEWS, Aug. 6, 2007, at 4, *available at* http://english.vietnamnet.vn/education/2007/08/726755/.

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U.S. graduate institutions.[151]

E. AGRICULTURE AND BIOTECHNOLOGY INITIATIVES

WTO membership is expected to unleash "fierce competition" from other Asian countries for Vietnam's agricultural market.[152] Accordingly, Vietnam's Ministry of Agriculture and Rural Development (MARD) has issued plans to boost investment in agriculture, and aims to upgrade the technology in the processing sector.[153] MARD has also proposed introducing some tax exemptions and waivers of land fees for an enterprise's first decade of operation in response to its findings that approximately one-third of all agricultural enterprises in Vietnam have been running losses.[154]

The Vietnamese government identified biotechnology as an area of top priority in Resolution N.18 of 1994 on "The Development of Vietnam's Biotechnology Up to the Year 2010."[155] This resolution elaborated goals to build up Vietnam's biotechnology industry through increasing investment in R&D and subsidizing companies doing biotechnology work through tax credits and other incentives.[156] In 2003, the government approved $400 million (U.S.) to fund biotechnology research from 2003 to 2010.[157] The government also planned to create five national biotechnology labs (along with twelve more in other fields) by the end of 2005.[158] However, as of June 2007

151. *Id.*

152. *Vietnam WTO Membership, Both Threat and Opportunity for Farmers*, AG BIOTECH VIETNAM, May 2006, http://www.agbiotech.com.vn/en/?mnu=preview&key=742&PHPSESSID =c88f102f9fa3da4a051fcc38f5ccef1d.

153. *MARD Plans Makeover of Agricultural Exports*, AG BIOTECH VIETNAM, May 2006, http://www.agbiotech.com.vn/en/?mnu=preview&key=742&PHPSESSID=c88f102f9fa3da4a051fcc38f5ccef1d.

154. *Over 5000 Agricultural Enterprises Incur Losses*, AG BIOTECH VIETNAM, May 2006, http://www.agbiotech.com.vn/en/?mnu=preview&key=742&PHPSESSID=c88f102f9fa3da4a051fcc38f5ccef1d.

155. *Roadmapping the Development of Vietnam's Biotechnology 2006-2010*, ASEAN TECH. FORESIGHT & SCAN NEWSL. (ASEAN Foresight and Scan Project of the ASEAN Sub-Comm. on S&T Infrastructure & Resource Dev., Bangok, Thail.), Sept. 2005, at 6, http://www.apecforesight.org/asean_foresight/docs/asean_newsletter11_September05.pdf [hereinafter *ASEAN ROADMAP*].

156. *Id.*

157. Jen Lin Liu, *Vietnam to Refocus Biotech*, NATURE NEWS, July 12, 2004, http://www.nature.com/news/2004/040712/pf/bioent819_pf.html.

158. *Snail-Paced Construction of Key National Labs*, VIETNAM ECON. TIMES, June 12, 2007, http://www.vneconomy.com.vn/eng/?param=

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the government had only converted the Genetic Technology Lab of the Biotechnology Institute to function as a national lab, pushing back the construction deadline for the other labs to the end of 2008.[159]

The government also recently approved the Key Programme on Development and Application of Biotechnology in Agriculture and Rural Development Through 2020, which aims to boost agricultural biotechnology.[160] That program "will gradually improve the training of human resources; build technical infrastructure; boost international cooperation; promote the implementation of research and production projects, with the aims of encouraging technology transfer . . . ."[161] The government aims to have over 70% of the nation's total crop area consist of new crop varieties created with biotechnology by 2020.[162] Likewise, the government anticipates that the biotechnology industry will meet over 70% of the demand for disease-resistant plant varieties, and that biotechnology-produced fertilizers and plant protection products will be used on over 80% of the area under fruit and vegetable cultivation.[163]

Nonetheless, significant challenges remain in the implementation and coordination of these development plans.[164] The ambitious plans laid out by Singapore, Malaysia, and Thailand, discussed above, suggest that Vietnam will continue to find itself chasing its regional peers.[165]

IV. IP LANDSCAPE OF VIETNAM

A. LEGISLATIVE HISTORY AND REGISTRATION

Vietnam has been a member of the World Intellectual

article&catid=10&id=fe9a4cd2645f6b.

159. *Id.*

160. News Release, Vietnam News Agency, Biotechnology Applications in Agriculture Promoted in Vietnam (Feb. 12, 2006), *available at* http://www.seedquest.com/News/releases/2006/february/14843.htm.

161. *Id.*

162. *Id.*

163. *Id.*

164. *See* ROADMAPPING, *supra* note 155, at 7–8 (discussing logistical and goal-setting challenges involved in managing this transition).

165. *See supra* Part II.

Property Organization (WIPO) since 1976, and is a signatory to the Paris Convention, the Madrid Agreement, and the Patent Cooperation Treaty (PCT).[166] The country was granted WTO accession in November 2006, after twelve years of negotiation.[167] Vietnam first adopted intellectual property regulation in 1981, in the form of an administrative measure (Decree 31-CP) that gave inventors only limited remuneration.[168] The State vested itself the right to use the inventions.[169] Unlike the U.S. Patent and Trademark Office, Vietnam's National Office of Intellectual Property (NOIP) assesses whether an invention is contrary to morality or public order as part of its patentability analysis.[170]

The 1989 Ordinance on the Protection of Industrial Property Rights established the foundation for a more extensive IP system, and specifically recognized patent rights as exclusive rights.[171] Vietnam adopted the Civil Code of 1995 to meet the minimum obligations of TRIPS, including implementation of a twenty-year patent term.[172] Various decrees and circulars subsequently adopted update or clarify parts of the Civil Code.[173] Since such "sub-laws" do not have the same force as legislatively enacted laws, the proliferation of these measures caused confusion about the official requirements of the IP system.[174] The National Assembly enacted Intellectual Property Law 50/2005 to eliminate this confusion and to implement the remaining changes necessary to comply with TRIPS.[175]

Unlike U.S. patent law, Vietnam's IP regime features a

166. VISION & ASSOCS., GUIDE TO IP PROTECTION IN VIETNAM: OVERVIEW, http://www.vision-associates.com/IP_protect8.htm (last viewed Oct. 18, 2007).

167. Richard Waddington, *Communist Vietnam Will Become WTO's 150th Member*, REUTERS, Nov. 7, 2006, *available at* http://www.reuters.com/article/worldNews/idUSL0770676720061107.

168. Nguyen Nguyet Dzung, *Vietnam Patent Law: Substantive Law Provisions and Existing Uncertainties*, 6 CHI.-KENT J. INTELL. PROP. 138, 138–39 (2007).

169. *Id.* at 139.

170. *Id.* at 142.

171. *Id.* at 140.

172. *Id.*

173. *Id.*

174. Interview with Nguyen Vu Quan, *supra* note 140.

175. Intellectual Property Law, *supra* note 121; Interview with Nguyen Vu Quan, *supra* note 140.

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category of patent protection known as utility solutions.[176] The government grants utility solutions for the same subject matter as regular patents, but for a term of ten years rather than twenty.[177] Previous legislation did not require any inventive step for utility solutions, but the new IP law introduces an inventiveness requirement.[178] The level of inventiveness required is less stringent than the inventive step requirement for regular patents.[179] Vietnam currently does not grant patents for new plant or animal varieties, or for essentially biological processes yielding plants and animals.[180]

Vietnam joined UPOV in December 2006[181] and adopted the 1991 Convention to fulfill requirements of bilateral trade agreements with both Switzerland (1999)[182] and the United States (2000).[183] The U.S.-Vietnam agreement went beyond the 1991 Convention terms by requiring Vietnam to eventually provide patent protection on all forms of plants and animals that are not varieties.[184]

In addition to enacting new IP legislation, Vietnam has also taken steps to modernize the NOIP. Since 2000, Vietnam has received assistance from the Japanese government to improve office operations.[185] As a result of this effort, the NOIP released

176. Dzung, *supra* note 168, at 144.

177. *Id.*

178. *Id.* at 148.

179. *Id.*

180. Dzung, *supra* note 168, at 142.

181. World Intellectual Property Organization, International Convention for the Protection of New Varieties of Plants, UPOV Notification No. 100: Accession by the Socialist Republic of Vietnam, Nov. 24, 2006, http://www.wipo.int/edocs/notdocs/en/upov/treaty_upov_100.html.

182. *Bilateral Agreements Imposing TRIPS-Plus Intellectual Property Rights on Biodiversity in Developing Countries*, GRAIN UPDATE (GRAIN, Barcelona, Spain), Aug. 2007, at 4 n.39, http://www.grain.org/rights/tripsplus.cfm?id=68 (citing Abkommen: zwischen dem Schweizerischen Bundesrat und der Sozialistischen Republik Vietnam über den Schutz des geistigen Eigentums und über die Zusammenarbeit auf dem Gebiet des geistigen Eigentums, Switz.-Vietnam, July 7, 1999, *available at* http://www.admin.ch/ch/d/ff/2000/1521.pdf).

183. *Id.* at 5 (citing Agreement on Trade Relations, U.S.-Vietnam, ch. II, art. 1, § 3 & art. II, § 7.2(c), July 13, 2000, *available at* 2001 WL 1792868).

184. *Id.*

185. *Digital Library and E-Filling Boost IP Protection* [sic], VIET NAM NEWS, Aug. 9, 2007, http://english.vietnamnet.vn/tech/2007/08/728041/.

an IP digital library and e-filing system in August 2007.[186] Although online search is currently limited to title and abstract, NOIP anticipates that it will be able to make downloadable documents available by the end of 2007 and software-based translation of documents into English and other language by mid-2008.[187] Japan's investment in NOIP assistance projects is slated to continue until 2009.[188]

B. PIRACY AND INFRINGEMENT ISSUES

The U.S. Trade Act of 1974 contains "Special 301" provisions that require the U.S. Trade Representative to identify "foreign countries that deny adequate and effective protection of intellectual property rights or fair and equitable market access for US persons that rely on intellectual property protection."[189] The Special 301 Report for 2006 continued to list Vietnam as a "Watch List" country.[190] The report commended Vietnam for its new legislation, but emphasized that "IPR infringement remains rampant in Vietnam" and "authorities have considerable work to do with respect to IPR enforcement."[191]

The Special 301 Report concentrates on copyright infringement.[192] The International Intellectual Property Alliance estimates that trade losses due to copyright piracy in Vietnam amounted to $58 million in 2006, with a loss level of 95% for the music/sound recordings and 88% for business software.[193] There are no such statistics available for patent infringement, though the prevalence of copyright piracy may

186. *Id.*

187. Interview with Mr. Mai Van Son, Head of Int'l Cooperation Div., Nat'l Office of Intellectual Prop., in Hanoi, Vietnam (July 25, 2007).

188. *Id.*

189. OFFICE OF THE U.S. TRADE REP., BACKGROUND ON SPECIAL 301, at 1, http://www.ustr.gov/assets/Document_Library/Reports_Publications/2005/2005_Special_301/asset_upload_file223_7646.pdf (last visited May 22, 2007).

190. OFFICE OF THE U.S. TRADE REP, 2006 SPECIAL 301 REPORT 44, http://www.ustr.gov/assets/Document_Library/Reports_Publications/2006/2006_Special_301_Review/asset_upload_file473_9336.pdf (last visited May 22, 2007).

191. *Id.* at 45.

192. *Id.*

193. INT'L INTELLECTUAL PROP. ALLIANCE, 2007 SPECIAL 301 REPORT: VIETNAM 459 (Feb. 12, 2007), http://www.iipa.com/rbc/2007/2007SPEC301VIETNAM.pdf.

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indicate that Vietnam does not adequately observe patent rights either. Whatever the figures, anecdotal evidence suggests that observance of patent rights has been improving. Foreign companies working in the agricultural sector of Vietnam still remember egregious instances of patent infringement that went unaddressed in the past, such as the government-owned Southern Seed Company's appropriation of a maize hybrid variety from Monsanto in the mid-1990s.[194] In the last few years, such companies have been increasing their patent investments in Vietnam.[195]

The general "lack of a legal habit" among Vietnam businesses compounds infringement issues.[196] Currently, even the most prominent domestic businesses tend not to seek legal advice prior to entering into contracts, instead seeking law firm counsel only after conflict has arisen.[197] In this cultural context it is not surprising that most public research institutions have not yet sought IP counsel and education on a systematic basis.

C. ENFORCEMENT TRENDS

On paper, there are two major routes for enforcement in Vietnam: the administrative system and the court system.[198] In practice, however, the majority of rights owners handle infringement issues through the administrative system, because that route is quicker and more effective than the court system.[199] Although the administrative route is effective at stopping infringement (and having counterfeit goods destroyed if necessary) and the infringer generally pays a substantial fine to the court, this system does not provide any compensation to

194. Interview with Duong Ba Cau, Head of Seeds Sector, Syngenta Vietnam Ltd., in Dong Nai Province, Vietnam (July 18, 2007).

195. *Id.*

196. Interview with Nguyen Vu Quan, *supra* note 140.

197. *Id.*

198. VISION & ASSOCS., GUIDE TO IP PROTECTION IN VIETNAM: ENFORCEMENT OF INTELLECTUAL PROPERTY RIGHTS, http://www.vision-associates.com/IP_protect8.htm (last visited July 23, 2007).

199. Interview with Nguyen Vu Quan, *supra* note 140; *see* THE EC-ASEAN INTELLECTUAL PROP. RIGHTS COOPERATION PROGRAMME, VIETNAM: ENFORCEMENT OF INTELLECTUAL PROPERTY RIGHTS (IPRS) (May 31, 2006), *available at* http://www.ecap-project.org/how_to_enforce_your_ipr/vietnam.html.

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the owner of the infringed invention.[200] The court system does provide this kind of compensation, but the process is long and enforcement is not very effective. In addition, officers in the court system have little familiarity with patents.[201]

Reliance on the court system regarding non-patent intellectual property matters has increased in recent years: a press release by the law firm D&N International shows a 32% increase in IP infringement cases, mostly in trademarks and industrial designs, from 2004 to 2005.[202] This increase was paralleled by an increase in applications for IP.[203] Thus it is not clear whether the rise in infringement cases was a product of increased performance or trust in the system, or whether it simply reflected the heightened application rate. Meanwhile, no patent cases have yet come to court.[204] This should change once the government enacts its plans to introduce a specialized IP court.[205] But the timeline is for this plan is not yet known.[206]

The government of Vietnam has taken other steps to address intellectual property rights violations, such as issuing Inter-Circular No.129/2004/TTLT/BTC-BKHCN Guiding Border Control Measures for Industrial Property of Import Export Goods, and Decision No.12/2005/QD-BNV on the establishment of the Vietnam Anti-Counterfeit and Intellectual Property Protection Association of Foreign-Invested Enterprises (VACIP).[207] In May 2007, Vietnam signed an agreement with Microsoft that requires all governmental offices in Vietnam to use licensed computer software.[208]

Lawyers in Vietnam anticipate that interpretation issues will emerge in the wake of the new IP law and of the new

200. *Id.*

201. *Id.*

202. *32% Increase in Industrial Property Infringement Cases in 2005* [sic], D&N INT'L, Apr. 21, 2006, http://www.dnlaw.com.vn/Home/index.php?mdl=NE&typ=news&id=53&PHPSESSID=f9a84c2866e892be109b16483ce5d0b7.

203. *Id.*

204. Interview with Nguyen Nguyet Dzung, Manager of IP Practice, Vision & Assocs., in Hanoi, Vietnam, (July 6, 2006).

205. *Id.*

206. *Id.*

207. OFFICE OF THE U.S. TRADE REP., 2006 NATIONAL TRADE ESTIMATE REPORT ON FOREIGN TRADE BARRIERS: VIETNAM 702, *available at* http://www.ustr.gov/assets/Document_Library/Reports_Publications/2006/2006_NTE_Report/asset_upload_file679_9218.pdf.

208. Tran Van Minh, *Microsoft CEO Visits Vietnam to Cement Anti-Piracy Deal*, AP ALERT, May 22, 2007.

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division of tasks among administrative agencies.[209] For example, determining ownership is a more difficult legal issue in Vietnam, where private ownership is a newer concept than in countries with clear Bayh-Dole-type legislation.[210] Thus although the new legislation clearly states that "the state" has ownership rights over an invention developed in a public institution, and that an individual may claim ownership when the state does not claim its right, it can be difficult to determine what entity or person represents "the state" in a given situation.[211] This makes it difficult for an individual to figure out how to claim ownership of an invention that has not otherwise been claimed.

D. IP AWARENESS AND MANAGEMENT CAPABILITY IN VIETNAM'S PUBLIC RESEARCH INSTITUTIONS

Before Vietnam's transition to a market economy, Vietnamese laws prohibited researchers from registering for intellectual property protection as individuals.[212] Article No. 789 of the Civil Code reverses this prohibition.[213] But the level of IP awareness among researchers and institutions remains low. No interview subjects reported having signed an employment contract containing IP terms. Almost all of those interviewed were aware of IP as an important buzzword, but many seemed unfamiliar with basic concepts about IP systems and what factors should be considered in determining whether or not to pursue protection for an invention. Dr. Ngoc Hai Duong of VAST noted that the staff of the department responsible for technological application, transfer and development at his institution has poor knowledge of intellectual property because the concept of IP is so new to Vietnam.[214]

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209. Interview with Nguyen Vu Quan, *supra* note 140.

210. Interview with Nguyen Nguyet Dzung, *supra* note 204. *See generally* Bayh-Dole Act, Pub. L. No. 96-517, 94 Stat. 3015 (1980) (providing research institutions with an ownership interest in the fruits of their government-funded research).

211. *Id.*

212. Interview with Nguyen Vu Quan, *supra* note 140.

213. Letter from Nguyen Vu Quan, *supra* note 143.

214. Interview with Ngoc Hai Duong, Dir. of the Dep't. of Application and Dev. of Tech., Vietnamese Acad. of Sci. and Tech., in Hanoi, Vietnam (July 10,

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Very few public research institutions in Vietnam have registered patents or copyrights. Of the fourteen institutions visited by the author in July 2006, two have registered patents (Hanoi Agricultural University's Faculty of Agronomy and Institute of Biotechnology, and VAST's Institute of Biotechnology) and two other institutions named specific projects they plan to apply to protect, although they reported being unsure of how to go about the process (National Maize Research Institute, and Vietnam National University in Ho Chi Minh City). The law firm WINCO also reports that individual researchers have approached them for assistance in registering patents (but not for trademarks or plant variety protection).[215] Dr. Dinh The Vu of the New Plant Variety Protection Office at the Ministry of Agriculture and Rural Development reports that although most of the eighteen currently pending applications for plant variety protection are from international companies, some are from research institutions, including Hanoi Agricultural University, the Plant Protection Institute, the Potato Institute in Da Nang, and the Rice Hybrid Center (under the Institute of Food Crops).[216]

None of the research institutions contacted by the author have yet established an office dedicated to IP management. This observation is not meant to suggest that institutions should prioritize establishment of such offices so early in the capacity-building process. But the uniform absence of IP management offices does underscore the lack of awareness and coordination on IP issues in Vietnam's public research institutions. At most institutions, scientists still handle IP issues and related negotiations independently rather than through institutional channels.[217] Even VAST, a premiere research institution with over twenty registered patents, still handles IP issues on an individual basis since there are no official policies in this area.[218] Hanoi Agricultural University more formally channels IP issues through its science management office, but takes an individualized approach as

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215. Interview with Nguyen Vu Quan, *supra* note 140.

216. Interview with Dinh The Vu, Plant Variety Prot. Expert, Ministry of Agric. and Rural Dev., in Hanoi, Vietnam (July 14, 2006).

217. Interview with Nguyen Vu Quan, *supra* note 140.

218. Interview with Le Thi Thu Hien, Inst. of Biotech., Vietnamese Acad. of Sci. and Tech., in Hanoi, Vietnam (July 12, 2006).

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well.[219]

V. HOW DOES IP FIT INTO THE MISSION OF PUBLIC AGRICULTURAL RESEARCH INSTITUTIONS?

A. U.S. PUBLIC LAND GRANT INSTITUTIONS

The concept of the land grant university began with the Morrill Act of 1862, which gave individual states federal land on the condition that they provide higher education to the children of farmers and manufacturing workers.[220] Subsequent legislation expanded this mission to include an applied research mandate and a public outreach function.[221] This innovative program was managed through an equally innovative structure that called for administrative cooperation between federal, state, and governmental units, with funding spread across the three levels.[222] The land grant system has made many significant contributions in the public interest, and some scholars argue that the best land-grant universities are on a par with the most well-endowed private universities.[223]

G. Edward Schuh has argued that the notion that a public university has an institutional mission to serve society has eroded over time.[224] He contends that as universities expanded, they did not extend the public good mission to the wider university setting beyond the programs with which it was initially associated.[225] He also notes that "the growing emphasis on science and technology internalized the identity of the scientists and technologists to within their professional disciplines and organizations and helped to shift the emphasis of the universities away from serving the public."[226] On the research side, the shift of funding decisions to federal sources and away from local research administrators has meant that

219. Interview with Pham Van Cuong, Dep't of Food Crops, Hanoi Agric. Univ., in Hanoi, Vietnam (July 12, 2006).

220. G. Edward Schuh, *Intellectual Property Rights and the Land Grant Mission*, 6 MINN. J.L. SCI. & TECH. 359, 360 (2004).

221. *Id.* at 361–62.

222. *Id.* at 362.

223. *Id.* at 363.

224. *Id.*

225. *Id.*

226. *Id.*

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public priorities are determined at federal rather than local levels.[227]

Thus, even before IP enters the picture, it is clear that public research universities face a variety of tensions that challenge their ability to meet their original mandates. Schuh makes a provocative argument that intellectual property may inherently be at odds with the goal of providing a public good, because "the knowledge produced by a private-incentive driven system will inevitably be different from [that produced by] a publicly funded and driven system."[228] Once a university begins considering the profits or prestige it can gain from a patentable invention when deciding what to research and how to allocate research funds, the public good no longer serves as the fundamental criterion in making these decisions. Further, universities tend to allocate royalties from a successful patent into the system that produced the invention in order to generate more revenues, rather than toward production of the University's public goods.[229]

Whether or not IP is inherently against the mission of public research universities, IP considerations suggest a tension between the goals of serving society and strengthening the institutional capacities of the university. The rise of partnerships between universities and private companies exacerbates this tension, since such cooperation results in publicly-funded research being licensed exclusively to private companies.[230] Faculty decisions regarding research topics and technical approaches may be "vulnerable to manipulation" by industry or university administration.[231] When corporations fund research or entire departments in public research institutions in exchange for proprietary rights in resulting innovations, the partnership agreements sometimes require faculty to submit research results for corporate review prior to publication.[232] This may lead to suppression of results that

227. *Id.* at 365.

228. *Id.* at 370.

229. *Id.*

230. Michael R. Taylor and Jerry Cayford, *American Patent Policy, Biotechnology, and African Agriculture: The case for policy change*, 17 HARV. J.L. & TECH. 321, 333 (2004).

231. Thomas J. Siepmann, *The Global Exportation of the U.S. Bayh-Dole Act*, 30 U. DAYTON L. REV. 209, 237 (2004).

232. Risa L. Lieberwitz, *The Corporatization of Academic Research: Whose Interests Are Served?*, 38 AKRON L. REV. 759, 767 (2005).

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runs contrary to the corporate sponsor's interests.[233] Unsurprisingly, commercial partnerships may diminish public confidence in the legitimacy of university research.[234] Some authors have argued that the trend towards commercialization of publicly funded research products has direct adverse effects on research institutions themselves and also undermines the traditional innovation process by reducing the amount of technology available in the public domain for new technical achievements.[235]

B. PUBLIC AGRICULTURAL RESEARCH INSTITUTIONS IN VIETNAM

Public research institutions in both developed and developing countries share the same mandate of serving the public good. In the context of developing country agriculture, this mandate manifests as a focus on research that directly addresses concerns such as food security, sustainability of agricultural systems, economic development, and the competitiveness of small-scale farmers in domestic and global markets.[236]

Will the introduction of intellectual property rights subject public research universities in Vietnam to the same mission erosion that may have occurred in public land grant universities in the United States? Vietnamese universities may confront the same inherent conflict of IP with a public mission described by Schuh, but public research institutions in Vietnam operate in a different societal context than their developed country peers. Thus, the factors that may be encouraging or eroding Vietnamese institutions' adherence to their missions are somewhat different.

There are several factors that bode well for Vietnam's public research institutions. First, in contrast to developed countries, 71% of the population in Vietnam is engaged in agriculture.[237] Researchers and administrators in Vietnam are

233. *Id.*

234. *Id.* at 764.

235. Maskus & Riechman, *supra* note 29, at 297–98.

236. MAREDIA, *supra* note 20, at 11.

237. *Women in Agriculture, Environment and Rural Production*, FACTSHEET VIETNAM (Food and Agric. Org. of the United Nations, Reg'l Office for Asia and the Pacific, Bangkok, Thail.), at 2, *available at* ftp://ftp.fao.org/sd/sdw/sdww/vie.pdf.

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thus much more likely to have personal connections to the agricultural community than their counterparts in the United States. These ties may give the public good a higher priority when research decisions are made. Small farmers, rather than large farming operations, perform the majority of agricultural work in Vietnam.[238] This makes for a different dynamic between researchers and farmers, and leads to a focus on different kinds of projects than does developed country agricultural research. Many of the universities the author visited in July 2006 offer regular on-site outreach programs in farming communities, tailored for farmers' busy working schedules.[239] Several researchers identified protecting the interests of small farmers as a primary issue. A small group of public research institutions in Vietnam have joined forces in a network specifically to address these sorts of rural development concerns.[240]

Additionally, government-run research institutes in Vietnam are in the midst of a transition occurring in the opposite direction from the United States: the Vietnamese government plans to reduce central funding of these institutes by 20% in 2010 and 50% before 2015.[241] The government is encouraging research institutes to instead seek funding from a greater variety of sources, from local governments to international organizations.[242] This shift should encourage a focus on locally-determined and subsistence needs, rather than federally-determined priorities. Nonetheless, public research institutions need to recognize that funding variability could cause an over-emphasis on short-term projects and discourage specialization in research areas with high pay-off potentials but

238. Interview with Le Huy Ham, Vice-Dir., Inst. of Agric. Genetics, Ministry of Agric. and Rural Dev., in Hanoi, Vietnam (July 14, 2006).

239. Interview with Hung The Nguyen, Vice-Dir., Dept. of Sci. and Int'l. Relations, Thai Nguyen Univ. of Agric. and Forestry, in Thai Nguyen, Vietnam (July 15, 2006); Interview with Le Van An, Dir. of the Ctr. for Agric.-Forestry Research and Dev., Hue University of Agric. and Forestry, in Hue, Vietnam (July 17, 2006).

240. Interview with Le Quang Tri, Deputy Dean of the Coll. of Agric., Can Tho Univ., in Can Tho, Vietnam (July 18, 2006); Interview with Nguyen The Hung, Vice-Dean of the Faculty of Agronomy, Hanoi Agric. Univ., in Hanoi, Vietnam (July 6, 2006); Interview with Le Van An, *supra* note 233.

241. Interview with Hoang Van Phu, Dir. of Int'l Relations, Thai Nguyen Univ. of Agric. and Forestry, in Thai Nguyen, Vietnam (July 15, 2006).

242. *Id.*

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uncertain ability to attract sustained funding.[243]

There is also a very real risk that the rapid acceleration of technology transfer deals and commercial partnerships will cause Vietnam's public research institutions to make significant decisions related to IP matters before formulating an IP policy consistent with their public mission. Lack of resources and expertise may likewise make Vietnam's public research institutions vulnerable to mission distortion in ways that their land grant peers are not.

C. IP MANAGEMENT CAPACITY: SELF-PERCEIVED NEEDS OF PUBLIC RESEARCHERS IN VIETNAM

Despite lingering concerns about the reliability of enforcements of IPRs, such uncertainty is not the primary obstacle preventing public research institutions in Vietnam from developing IP management capacity. The IP system as it stands is sufficiently reliable to enable public research institutions to benefit from registering their innovations.[244] What, then, are the major challenges related to public research institutions that need to be addressed to foster IP management capacity and protection strategies that best advance the public good?

As discussed above, public research institutions in Vietnam face similar challenges in regards to lack of expertise and resources as their peers in other developing countries. To assess researchers' own perceptions of their needs, surveys on IP awareness and management were distributed to the fourteen institutions visited by the author in July 2006. Twenty-four surveys from three institutions were returned. The turnout was small in part due to the author's limited time for collection in-country. The three institutions were all government research institutes rather than universities, thus the results should not be taken as a representative sampling of public research institutions generally. Nonetheless, the results are instructive and in line with other published surveys of researchers from developing country institutions.

The top-rated need among survey respondents was "raising institutional IP awareness and promoting IP

243. Pardey, *supra* note 52.

244. Interview with Nguyen Vu Quan, *supra* note 140.

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management."[245] The next most popular survey options were "exploiting/commercializing IP rights," developing "an IP management policy and strategy" and "identifying and evaluating potential IP."[246] Survey takers were further asked to rate which problems their institution had experienced most when trying to gain access to technology or research materials owned by another institution.[247] Here again, lack of sufficient patenting awareness among research staff was cited as the top concern (with seven stating that it was often problematic, five sometimes, three never, five did not know).[248] The next most cited problem was high royalty costs (four saying often problematic, eight sometimes, two never, six did not know).[249] A slight majority found language or cultural barriers to be a significant problem (two stating that these were often problematic, seven sometimes, five never, five did not know).[250] Most respondents were unsure about problems with patents blocking access to technologies (one reporting that this was often problematic, four sometimes, three never, eleven did not know), and about breakdown of licensing negotiations (none rated it as often problematic, five sometimes, one never, thirteen did not know).[251]

These results concur with the interview response of Dr. Le Thi Thu Hien of the Institute of Biotechnology at the Vietnamese Academy of Science and Technology, a leading researcher on IP management in public research institutions in Vietnam.[252] Dr. Hien has traveled extensively outside Vietnam to learn about IP systems in developed nations, and initiated a mandatory course on IP issues for biology graduate students at her institution, the first program of its kind in Vietnam.[253] Dr. Hien considers the top IP-related needs for research institutions

245. Nineteen respondents reported being "very interested" in improving this area, four were "moderately interested", and only one was "not interested." PIPRA Survey of IP Awareness in Vietnamese Agricultural Research (July 2006) (unpublished results compilation, on file with author) [hereinafter *Survey*].

246. *Id.*

247. *Id.*

248. *Id.*

249. *Id.*

250. *Id.*

251. *Id.*

252. Interview with Le Thi Thu Hien, *supra* note 218.

253. *Id.*

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in Vietnam to be education and training, enhancing capabilities in IP management, setting up IP management and technology transfer offices, developing institutional IP policies, and drafting/negotiating agreements.[254] She also emphasizs the interplay of these concerns with other resource issues, such as access to international scientific journals.[255]

The survey findings also echo the 2001 WIPO survey results involving twenty seven developing country agricultural researchers, in which training researchers on IPR related issues and improving negotiation skills were cited as needs more frequently than financial resources to cover IP protection.[256] One of the most important "need areas" identified by respondents in that survey was research and marketing tools to value PVP and patents.[257] The author comments that "[t]his is often a neglected area in training workshops aimed at educating researchers and managers on IPR issues."[258]

Although the topic was not addressed by the survey questions, during interviews researchers emphasized their work with farmers and expressed concern about finding a way for farmers to be compensated for their innovations in crop varieties. The Faculty of Agronomy at the Hanoi Agricultural University cited this as their top goal, even above addressing issues related to their own inventions.[259] The Agronomy Faculty is interested in learning practical information about conserving plant genetic resources, and in learning how to transfer technology to farmers.[260] They would also like to be able to educate farmers about IP.[261] Dr. Le Van An, coordinator of the Vietnam Upland Forum, a network of institutions engaged in research related to sustainable development of upland areas in Vietnam, likewise cited addressing farmers' issues as a top goal.[262]

254. *Id.*
255. *Id.*
256. MAREDIA, *supra* note 20, at 8–9.
257. *Id.*
258. *Id.*
259. Interview with Nguyen The Hung, *supra* note 240.
260. *Id*
261. *Id.*
262. Interview with Le Van An, *supra* note 233.

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VI. PATHS TO ADDRESSING THE IP MANAGEMENT CHALLENGES OF VIETNAM'S PUBLIC RESEARCH INSTITUTIONS

A. WORKSHOPS BY NON-GOVERNMENTAL ORGANIZATIONS AND INTERGOVERNMENTAL ACTORS

Putting together workshops on IP for researchers in developing countries is a relatively new art. For a long time, such workshops were organized solely by governmental and intergovernmental bodies. These early efforts received criticism for being too focused on abstract theories, and for using examples from developed countries with very different levels of expertise and resources at their disposal.[263]

Such criticism has not gone unheeded. To better adapt its workshops and recommendations to the needs of developing countries, WIPO launched a "Research Network and IP Hub" project in several developing countries that ran from 2004 to 2006.[264] In this project, WIPO worked with the Geneva International Academic Network and several other organizations to put together two health research networks, one in Africa and one in South America, each serviced by an "IP hub" to provide "common legal and marketing services."[265] This project provided IP education in the context of larger research network challenges, and serves as a model for strengthening research networks that will enable further refinement of strategies to meet the needs of developing countries.[266] Although the project was targeted to health research, the knowledge and experience gained from the project should offer significant insight into how to strengthen research networks and commercialization related to agricultural technologies.

Non-governmental organizations (NGOs) have also started to target the IP-related needs of public research institutions in developing countries. The Centre for the Management of Intellectual Property in Health Research and Development

263. MAREDIA, *supra* note 20, at 9.

264. WORLD INTELLECTUAL PROP, ORG., RESEARCH NETWORKS AND INTELLECTUAL PROPERTY, WIPO PUBLICATION NO. 921E (2004), *available at* http://www.wipo.int/ip-outreach/en/publications.html.

265. *Id.*

266. Press Release, WIPO, Project to Use Intellectual Property to Support Health Research Institutions in Developing Countries Gathers Pace (Sept. 28, 2005), http://www.wipo.int/edocs/prdocs/en/2005/wipo_pr_2005_419.html.

(MIHR) launched a project in 2006 to pair North American universities with counterparts in developing countries to build partnerships in technology transfer.[267] The program incorporated training on IP management and opportunities for professional exchanges.[268] As well, in May 2007 MIHR conducted a four-day intensive graduate workshop on IPR and technology transfer in India.[269]

The Public Intellectual Property Resource for Agriculture (PIPRA) is another NGO that has started putting together workshops for researchers in developing countries.[270] PIPRA is dedicated to improving access to agricultural technologies and enhancing the distribution of subsistence crops for humanitarian purposes in developing countries, as well as enhancing distribution of specialty crops in developed countries.[271] Over forty research institutions participate in PIPRA, and all agree to share their patent information and licensing terms in a database of over 6600 patents and patent applications.[272] Through its database and pro bono IP attorney network, PIPRA has considerable experience identifying and addressing the impact IP issues can have on research decisions, as well as performing freedom-to-operate analyses to help scientists take IP into account when choosing research topics, materials, and methods.[273] PIPRA has held workshops in Latin America, and plans to expand these efforts to Southeast Asia.[274] One strategy that has shown promise for making workshops more responsive to the particular needs of developing countries is to have participants bring information about current problems they are wrestling with to use as case studies.[275]

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267. MIHR, Highlights of MIHR Contributions, http://www.mihr.org/ (last visited, Mar. 25, 2008).

268. *Id.*

269. *Id.*

270. PIPRA, About Us, http://www.pipra.org/en/about.en.html (last visited July 20, 2007).

271. *Id.*

272. PIPRA, Home, http://www.pipra.org/index.en.html (last visited July 20, 2007); PIPRA, Resources, http://www.pipra.org/en/resources.en.html#databases (last visited July 20, 2007).

273. Interview with Sara Boettiger, Dir. of Strategic Planning and Dev., PIPRA (June 28, 2006).

274. *Id.*

275. Interview with Cecilia Chi-Ham, Dir. of Biotech. Res., PIPRA (Nov. 20,

KILGOUR L. BUILDING INTELLECTUAL PROPERTY MANAGEMENT CAPACITY IN PUBLIC RESEARCH INSTITUTIONS IN VIETNAM: CURRENT NEEDS AND FUTURE DIRECTIONS. MINN. J.L. SCI. & TECH. 2008;9(1):317-368.

PIPRA and MIHR have co-produced *The Handbook of Best Practices* (*Handbook*) on IP management that provides advice to research institutions in both developed and developing countries on how to establish technology transfer offices, and how to create policies that prioritize the public good.[276] Specific recommendations from select chapters of the *Handbook* will be reviewed later in this article. The *Handbook* was published in spring 2007, and an online version launched in fall 2007 to facilitate access for developing country institutions that might not otherwise be able to find or afford the publication.[277]

From reviewing these initiatives, it seems evident that the new programs are making headway toward addressing the concerns and criticisms of developing country participants regarding IP training workshops. Project coordinators are learning to address IP in the broader context of research and policy challenges, and projects are now based on more informed and realistic notions of how developing country research institutions operate. Often, such institutions may have different goals regarding the nature and distribution of their research outputs than their developed country peers. Despite the considerable progress, there is undoubtedly room to experiment with methods and strategies that will better incorporate input from local researchers and administrators. For example, project coordinators might follow the lead of the World Bank in employing an "Open Space" meeting structure that enables local participants to efficiently take part in shaping the workshop agenda.[278] One advantage of this strategy is that it provides a mechanism for identifying issues that might not otherwise

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2006).

276. INTELLECTUAL PROPERTY MANAGEMENT IN HEALTH AND AGRICULTURAL INNOVATION: A HANDBOOK OF BEST PRACTICES (Anatole Krattiger et al. eds., 2007) [hereinafter HANDBOOK], *available at* http://www.iphandbook.org/handbook/resources_and_tools/Publications/.

277. *Id.*

278. *See, e.g.* The World Bank, *Young People Set the Agenda in Port Moresby*, Sept. 2006, http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/EXTEAPREGTOPSOCDEV/0,,contentMDK:21043021~pagePK:34004173~piPK:34003707~theSitePK:502940,00.html (discussing an "open space" event held for at risk youth in Port Moresby to share their social concerns and possible solutions); *see also* About Open Space, http://www.openspaceworld. org/cgi /wiki.cgi?AboutOpenSpace (last viewed July 20, 2007). *See generally* HARRIS OWEN, OPEN SPACE TECHNOLOGY: A USER'S GUIDE (1992) (exploring methods for facilitating "open space" meetings).

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surface in agendas constructed by a "top-down" format.[279] Likewise, workshop coordinators might consider bringing in speakers from developing country institutions that have recently grappled with the process of establishing a technology transfer office and IP management policy. Such speakers may be in a better position than developed country experts to illuminate topics such as winning government investment in resources or personnel or building an institutional culture that recognizes IP that may be of more practical and immediate use to developing country institutions just embarking on such projects.

B. TRAINING AND CERTIFICATION COURSES

Though workshops are useful means of increasing IP awareness and introducing IP management skills, in the long run developing country institutions need trained professionals to build and maintain IP management infrastructure. Access to comprehensive training or certification courses is important because managing IP and technology transfer requires different skills from research or other kinds of administration.[280] Institutions that offer training courses on IP law or management include WIPO, the Association of University Technology Transfer Managers, the United States National Institutes of Health and the Public Interest Intellectual Property Advisors, Inc.[281] Some of these, such as WIPO's World

279. In this context, where workshop leaders need to impart certain predetermined basic technical concepts, Open Space is best used as a supplement or follow-up to a traditional workshop structure. Interview with Michael Herman, Open Space Facilitator, http://www.michaelherman.com (Oct. 5, 2006). Open Space should not be used as an introductory event, for the reason that the process is quite dynamic and typically raises energy levels of participants to a point that is incompatible with sitting and passively listening to presentations for long periods of time. *Id.* Using an Open Space format after formal presentations enables participants to reflect on and apply their new knowledge in relation to their existing research issues, and serves as an informal but structured means of allowing participants to discuss issues at greater length with experts, and each other. *Id.* By facilitating greater interaction, Open Space also facilitates networking more effectively than traditional workshops. *Id.*

280. Lita Nelson, *Ten "Things" a University Head Should Know about Setting Up a Technology Transfer Office*, *in* HANDBOOK, *supra* note 276, at 537, 542.

281. Sibongile Pefile & Anatole Krattiger, *Training Staff in IP*

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Academy, offer online distance learning courses.[282]

C. IP MANAGEMENT STRATEGIES AND NON-IP ALTERNATIVES

The new generation of IP workshops covers more than just basic information about IP. These workshops also educate researchers and administrators about ways that different IP management strategies can be used to balance protection and accessibility so as to best promote the public good.[283] In some cases, choosing to seek IP protection can be a beneficial means of promoting access.[284] IP rights can provide economic incentives that are essential for R&D efforts, and often attract private sector partnerships for projects.[285] IP rights can be used as leverage to open access to other technologies.[286] In other cases, seeking IP rights can be detrimental to access, and may limit the progress in innovation they are meant to promote.[287]

In March 2007, eleven top U.S. research institutions and the Association of American Medical Colleges issued a set of guidelines for universities to ensure that their out-licensing practices promote the public interest.[288] The white paper offers nine recommendations.[289] The points most relevant and accessible to developing country institutions in the early stages of setting up technology transfer capacity are that universities should 1) reserve rights for themselves and other non-profit and governmental organizations to practice licensed inventions, 2) structure exclusive licenses so as to encourage technology development and use, 3) avoid granting licensees guaranteed access to future improvements (or at least limit the scope of the

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Management, *in* HANDBOOK, *supra* note 276, at 597, 601.

282. WIPO, WIPO Worldwide Academy, http://www.wipo.int/academy/en/index.html (last visited July 20, 2007).

283. Interview with Cecilia Chi-Ham, *supra* note 275.

284. Sara Boettiger & Cecilia Chi-Ham, *Defensive Publishing and the Public Domain*, *in* HANDBOOK, *supra* note 276, at 879, 886.

285. *Id.*

286. *Id.*

287. *Id.*

288. *Guidelines Offered for Responsible Technology Licensing*, STAN. REP. , March 7, 2007, http://news-service.stanford.edu/news/2007/march7/tech-030707.html.

289. *In the Public Interest: Nine Points to Consider in Licensing University Technology*, March 6, 2007, http://news-service.stanford.edu/news/2007/march7/gifs/whitepaper.pdf.

grant and impose field restrictions), 4) develop policies and administrative channels for managing technology transfer related conflicts of interest, 5) ensure broad access to research tools, and 6) negotiate contract provisions that address unmet needs, such as those of particular geographic areas.[290] The white paper provides examples of suitable licensing language in its appendix.[291]

Public research institutions have a variety of IP and non-IP approaches to choose from to achieve their access goals, such as exclusive licensing, non-exclusive licensing, Material Transfer Agreements (MTAs), and defensive publishing. This section reviews licensing options and non-IP approaches to intellectual property management.

1. Exclusive Licenses

Exclusive licenses are by far the dominant form of licensing in the United States, with one survey by the Association of University Technology Managers (AUTM) finding that 90% of licenses executed in 2000 in the United States were exclusive.[292] Because exclusive licenses restrict use of an invention to a specified licensee, they can significantly hinder public access to technologies. But exclusive licenses can also be crafted in ways that promote access, such as by using terms to segment a particular part of the market (by geographical region, field of use, or type of customer); which provide exclusivity in one part of the market, while allowing non-exclusive use of the technology in other parts of the market.[293] Thus, in some situations, income generation and promotion of access can be pursued as compatible goals.[294] Example language for such "humanitarian licensing" can be found in the *Handbook*.[295] Exclusive licenses can also be written to include conditions that

290. *Id.* at 2–9.

291. *Id.* at 10–17.

292. ASS'N OF UNIV. TECH. MANAGERS, AUTM LICENSING SURVEY: FY 2000: A SURVEY SUMMARY OF TECHNOLOGY LICENSING 1 (Lori Pressman ed., 10th Anniv. ed., 2002), *available at* http://www.uni-lj.si/files/ULJ/userfiles/ulj/razis_razv_projekti/intelektualna_lastnina/AUTMFY2000Survey.pdf.

293. Boettiger and Ham, *supra* note 284, at 886–87.

294. *Id.*

295. Alan B. Bennett, *Reservation of Rights for Humanitarian Uses*, in HANDBOOK, *supra* note 276, at 41, 44–45.

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require licensees to achieve certain milestones or undertake specific actions, such as marketing a product in developing countries at a reduced price, which will benefit disadvantaged populations.[296] Other beneficial terms to employ in licenses include reach-through clauses, to ensure that a licensee will treat further improvements on a technology as being subject to the same obligations as in the original lease, and grant-back clauses, to require a licensee to grant back non-exclusive rights to any further improvements it makes.[297]

2. Non-Exclusive Licenses

Institutions may choose to use non-exclusive licenses in isolation or in combination with an exclusive license. Non-exclusive licensing gives the licensor freedom to license a technology to multiple parties.[298] For either exclusive or non-exclusive licensing, institutions may choose to license technology to others "at zero or minimal costs."[299] This option allows licensors to retain control over who can use a technology, while not compromising access by prioritizing income generation. Similarly, institutions may choose to limit the length of their licenses to a particular licensee, or transfer ownership of IP the institution no longer wishes to maintain to public-private partnerships (PPPs) that could make good use of the technology.[300]

3. Licensing of Research Tools

Policies related to research tools will become increasingly important as developing country institutions build their research programs. Protection of research tools may have significant impact on a researcher's ability to access, or to alter, technology covered by "downstream" patents.[301] Some studies

296. Amanda L. Brewster et al., *Facilitating Humanitarian Access to Pharmaceutical and Agricultural Innovation*, 1 INNOVATION STRATEGY TODAY 203, 211 (2005).

297. *Id.* at 213.

298. *Id.* at 209.

299. MAREDIA, *supra* note 20, at 47.

300. Brewster, *supra* note 296, at 209.

301. *See* Arti K. Rai & Rebecca S. Eisenberg, *The Public Domain: Bayh-Dole Reform and the Progress of Biomedicine*, 66 L. & CONTEMP. PROBS. 289, 295 (2003) ("Patents on upstream discoveries hinder subsequent research by permitting owners to charge a premium for the use of discoveries that might otherwise be more cheaply available in a competitive market or in the public

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have found that patenting of research tools or other "upstream" technology has a negative impact on subsequent research in biotechnology generally.[302] The negative impact of patenting is reported to be more serious for biotechnology in the area of agriculture than in health research.[303] This is particularly true for developing country institutions. Because such institutions often face serious challenges in basic research capacity, access to proprietary tools may be "more critical in the long run" than access to protected products.[304] Thus, institutions should consider adopting policies to seek lower protection for upstream technologies, or at least to make such technology available on more favorable licensing terms.[305]

4. Non-Suit Agreements

A non-suit agreement (also known as a non-assert or bare license) bars an IP holder from enforcing their rights under a certain set of conditions.[306] This alternative may be an advantage over other forms of licensing when a licensee needs protection from infringement liability but desires to avoid paying large up-front contract payments.[307] Warren Kaplan suggests that non-suit agreements may be a useful option for public-private partnerships in the healthcare field that prefer to wait until the Phase III stage of drug development to negotiate a commercial license.[308] Agricultural technology tends not to be subject to as lengthy a regulatory process, but developing country institutions may find it worthwhile to consider non-suit agreements in situations where their products are far from

domain.").

302. Wright & Pardey, *supra* note 34, at 102–03.

303. *Id.*

304. Ronald P. Cantrell et al., *The Impact of Intellectual Property on Nonprofit Research Institutions and the Developing Countries They Serve*, 6 MINN. J. L. SCI. & TECH. 253, 267 (2004) (quoting personal communication with Cary Fowler, Ctr. for Int'l Env't and Dev. Studies, Univ. of Nor. (2004)).

305. Charles Clift, *Patenting and Licensing Research Tools, in* HANDBOOK, *supra* note 276, at 79, 84.

306. WARREN KAPLAN, WORLD HEALTH ORG., USING IP AGREEMENTS TO PROMOTE THE OBJECTIVES OF PUBLIC PRIVATE PARTNERSHIPS IN DEVELOPING AFFORDABLE PRODUCTS FOR DEVELOPING COUNTRIES 3 (2005), *available at* http://www.who.int/intellectualproperty/studies/W.Kaplan2.pdf.

307. *Id.* at 22.

308. *Id.*

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commercialization and they cannot afford large up-front contract payments to use needed IP.

5. Material Transfer Agreements

MTAs establish terms for transferring biological resources for research or commercialization purposes in exchange for benefits such as up-front payments or future royalties.[309] MTAs often grant a recipient the right to apply for patent rights over a material.[310] But they can also be used as a substitute for patents or plant variety protection that enable an IP owner to retain control of innovations while also enabling distribution in the public interest.[311] The Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture recently adopted a Standard MTA so that its 104 signatory countries can more effectively facilitate access to plant genetic resources.[312]

6. Defensive Publishing

Defensive publishing is another viable non-IP option for promoting access to important technologies, primarily under conditions where development of a technology does not depend on the private sector, or the leverage that IP ownership could provide is not important.[313] The aim of defensive publishing is to preclude future patenting in an area by preventing potential patentees from satisfying one or more statutory patentability requirement.[314] This strategy has the advantage of being less costly than registering for and maintaining IP protection.[315] It also works well when applied to incremental modifications on a patented core technology.[316] However, care needs to be taken

309. *Id.* at 8.

310. *Id.*

311. Cantrell et al., *supra* note 260, at 267.

312. Press Release, Bioversity International, Historic Agreement Promotes Food Security (June 16, 2006), http://news.bioversityinternational.org/index.php?itemid=1422.

313. Anatole Krattiger et al., *Editor's Summary, Implications and Best Practices: Defensive Publishing and the Public Domain*, *in* SAMPLE CHAPTERS OF INTELLECTUAL PROPERTY MANAGEMENT IN HEALTH AND AGRICULTURAL INNOVATION 23 (MIHR AND PIPRA, 2006) [hereinafter SAMPLE CHAPTERS], *available at* http://www.iphandbook.org/sampleChapters.pdf.

314. Boettiger & Ham, *supra* note 284, at 890.

315. *Id.* at 888.

316. *Id.*

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that the format and content of a defensive publication are sufficient to satisfy a patent examiner that they show what the publication purports to show.[317] If published descriptions are not sufficiently broad, others may be able to invent "around" the publication and effectively fence in the original innovation with their own patents.[318] Failure to preclude IP protection would defeat the purpose of promoting access.

D. NAVIGATING THE EXPERIMENTAL USE EXCEPTION.

Many major industrial nations, such as the United Kingdom, Germany, Japan, and Korea, explicitly provide an experimental use exception in their intellectual property legislation.[319] Vietnam, likewise, provides a research exemption for patented inventions and plant varieties in IP Law 50/2005.[320] Researchers in Vietnam are immune from liability for infringement when conducting research with inventions patented in Vietnam or in countries with statutory experimental use exemptions. Further, IP Law 50/2005 lists research separately from "non-commercial use" as an exempt activity. This suggests that use of patented materials in institutional research may be exempt even if a product yielded becomes commercialized, including through partnerships with corporate entities.[321]

The United States, by contrast, does not have a statutory provision exempting researchers from the reach of patent rights. Until 2002, the existence of an experimental use exception was recognized in various forms by U.S. federal trial and appellate courts.[322] Such decisions took a broad view of *Whittemore v. Cutter*, an infringement case from 1813 which stated that using a patented invention for "philosophical experiments, or for the purpose of ascertaining the sufficiency of the machine to produce its described effects" did not constitute

317. *Id.* at 891.

318. WORLD BANK REPORT, *supra* note 6 at 42.

319. John F. Duffy, *Harmony and Diversity in Global Patent Law*, 17 BERKELEY TECH. L.J. 685, 718 (2002).

320. INTELLECTUAL PROPERTY LAW, *supra* note 121, at 43, 65.

321. *Id.*

322. Janice M. Mueller, *No "Dilettante Affair": Rethinking the Experimental Use Exception to Patent Infringement for Biomedical Research Tools*, 76 WASH. L. REV. 1, 21 (2001).

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infringement.[323] In 2002, however, the Federal Circuit issued an opinion, *Madey v. Duke University*, which rejected the narrow interpretation of the experimental use exception invoked by lower courts after *Whittemore*.[324]

The *Madey* decision has implications for foreign researchers using prior art patented in the United States, or partnering with other research institutions using such tools, to make products that will be commercialized in the United States. They must now make a calculated decision about whether to go ahead using patented inventions and risk facing liability for infringement, to sacrifice part of their research budget by purchasing a license from the patent holder, to utilize an inferior alternative, or to invest resources to devise a workaround. In practice, the chance of facing legal repercussions for unlicensed use remains minimal for many researchers. The high costs of litigation and uncertain recovery of damages often discourages patent holders from pursuing legal action.[325] By this logic, Vietnamese researchers may have more leeway than their developed country peers, since even inventions that are relatively successful on the Vietnamese market may not generate enough income for patent owners to view legal action as worthwhile. Further, the U.S. statute of limitations lasts only six years from the date of infringement, again reducing the chance that researchers will face legal action.[326] Nonetheless, researchers are in a more precarious position than they were pre-*Madey*, and it is important to recognize that the costs of miscalculating the probability of an infringement suit could be devastating to a research program or university.

E. EXISTING INITIATIVES AND FUTURE DIRECTIONS FOR PUBLIC RESEARCH INSTITUTIONS IN VIETNAM

Given the challenges outlined in earlier sections, what can research administrators do to build IP management capacity in Vietnamese public research institutions? First, they might

323. Whittemore v. Cutter, 29 F. Cas. 1120, 1121 (C.C.D. Mass. 1813) (No. 17,600).

324. Madey v. Duke Univ., 307 F.3d 1351, 1361–63 (Fed. Cir. 2002).

325. Elizabeth A. Rowe, *The Experimental Use Exception to Patent Infringement: Do Universities Deserve Special Treatment?*, 57 HASTINGS L.J. 921, 943 (2006).

326. *Id.* (citing 35 U.S.C.A. § 286 (2006)).

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concentrate on identifying and fostering initiatives that have already been started within Vietnam. For example, the Hanoi-based law firm WINCO has reached out to senior administrators at some research institutions and arranged meetings or workshops to educate researchers about IP.[327] These workshops covered basic concepts of intellectual property, benefits of registration, procedures for registration and filing, and enforcement options.[328] WINCO reports that the workshops have been effective in raising awareness among administrators and by encouraging more researchers to file patent applications.[329] Public research institutions would do well to seek out contacts with domestic law firms. The institutions could benefit from educational presentations, contract evaluation, and by keeping researchers up-to-date on the evolving IP registration and enforcement system in Vietnam.

Some public research institutions have started to pursue IP education on their own initiative as well. The University of Technology of Hanoi has held training workshops in cooperation with the National Office of Intellectual Property and has also launched a project with the Swiss government to ramp up IP training.[330] Meanwhile, Dr. Le Thi Thu Hien of the Institute of Biotechnology at the Vietnamese Academy of Science and Technology has put together the nation's first required course on intellectual property issues for science graduate students.[331] More institutions should adopt such forward-thinking strategies. One option institutions or individual administrators can pursue is to apply for support from the Vietnam Education Foundation (VEF) to put on seminars or workshops. The VEF is an independent federal agency created by the U.S. Congress to enhance relations with Vietnam through educational

327. Interview with Nguyen Vu Quan, *supra* note 140.

328. Letter from Nguyen Vu Quan, *supra* note 143.

329. Interview with Nguyen Vu Quan, *supra* note 140.

330. PHAN QUOC NGUYEN, EC-ASEAN INTELLECTUAL PROP. RIGHTS CO-OPERATION PROGRAMME, THE ROLE OF UNIVERSITIES AND INSTITUTIONS IN SUPPORTING SMALL AND MEDIUM-SIZED ENTERPRISES WITH REGARD TO THE INTELLECTUAL PROPERTY [sic] 7 (2006), *available at* http://www.ecap-project.org/fileadmin/ecapII/pdf/en/activities/national/Vietnam/sme_march_2006/role_of_academia.pdf.

331. Interview with Le Thi Thu Hien, *supra* note 218.

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exchanges in science and technology.[332] The organization can help with aspects of workshop planning, such as funding speaker travel or printing course curricula without charge.[333]

Institutions would also do well to build on pre-existing networks and collaborative connections with their peers. The Vietnam Upland Forum, mentioned above, is one such network that facilitates connections between researchers in different institutions.[334] Some institutions engage in projects with a wide geographical scope in partnership with their peers. For example, the Faculty of Agronomy at Hanoi Agricultural University has studied minor crops from sixty different regions in Vietnam in cooperation with a variety of international and domestic partners, as well as local farmers.[335] Such connections can be harnessed to share information and experiences in adapting to the new IP systems.

Beyond providing basic IP education, universities need to develop administrative capacity for handling IP matters. The *Handbook* emphasizes the role of senior administrators in providing leadership for a culture change and offering "visible and sustained support" for initiatives to build IP literacy and capacity at their institutions.[336] Administrators can start by convening discussions on how the institution's treatment of IP issues can meet the institution's mission, and by drafting terms for an IP policy reflecting these goals.[337] Another simple but important step in creating a culture where technology transfer can thrive is to institute a practice of keeping detailed, up-to-date lab notebooks.[338] This practice is not only good science but a means of establishing ownership claims and a way of keeping

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332. About VEF, http://home.vef.gov/about_home.php (last visited July 21, 2007).

333. Interview with Kyle Jensen, Dir. of Info. & Analysis, PIPRA (July 20, 2007).

334. Vietnam Upland Forum, http://www.vuf.org.vn/?newlang=eng (last visited July 21, 2007).

335. Interview with Nguyen The Hung, *supra* note 240.

336. Anatole Krattiger et al., *Editor's Summary, Implications and Best Practices: Ten "Things" a University Head Should Know About Setting Up a Technology Transfer Office*, *in* SAMPLE CHAPTERS, *supra* note 313, at 11, 12.

337. Stanley P. Kowalski, *Making the Most of Intellectual Property: Developing an Institutional Policy, in* HANDBOOK, *supra* note 276, at 485, 486.

338. Anatole Krattiger et al., *Editor's Summary, Implications and Best Practices: A Model for the Collaborative Development of Agricultural Biotechnology Products in Chile*, *in* SAMPLE CHAPTERS, *supra* note 304, at 93, 95.

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track of material and method choices in light of intellectual property considerations.

Developing incentive structures that are in line with the priorities articulated in the IP policy is another important step. Administrators can safeguard against researchers applying for patents with low economic value for status reasons by finding ways to factor a researcher's use of non-patent strategies into their performance and tenure review processes, if such use is appropriate to the situation and in accordance with the institution's mission.[339]

A long-term goal for institutions with sufficient research activity may be to set up or adapt technology transfer offices as a centralized means of handling an institution's innovative output. The quantity (and quality) of research activity needed to make investment in a technology transfer office worthwhile should not be underestimated. One survey by the Association of University Technology Managers found that on average a U.S. university will see one patent filed for every $5 million in research expenditures, or one technology transfer or licensing agreement per $8.5 million in research expenditures.[340] It cannot yet be projected whether the research expenditures necessary to make such investment worthwhile in Vietnam would be proportionate to U.S. figures (after taking into account differences in costs of labor, materials, patent fees, etc.), but these benchmarks should be taken into consideration. Some research institutions might find that contracting with an external organization to handle these matters, or forming a consortium with several similarly situated institutions might be a better option.[341]

Administrators should also be aware that building an IP portfolio and developing technology transfer skills takes time; it may take eight to ten years for a new technology transfer program to become solvent.[342] Up to two decades may pass

339. Anatole Krattiger et al., *Defensive Publishing, in* SAMPLE CHAPTERS, *supra* note 304, at 23, 26.

340. Terry A. Young, *Establishing a Technology Transfer Office*, *in* HANDBOOK, *supra* note 267, at 545, 546.

341. *Id.*

342. Lita Nelson, *Ten "Things" a University Head Should Know about Setting Up a Technology Transfer Office*, *in* HANDBOOK, *supra* note 276, at, at 538.

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before a technology transfer program substantially affects the local economy.[343] Indeed, public research institutions may never make significant profits through their technology transfer offices.[344] One analysis found that after eight to ten years of activity, the average income of technology transfer offices is often no more than two percent of annual research expenditure.[345] Instead, administrators should expect the benefits from their efforts to take nonmonetary forms such as: better interactions with industry, perhaps increased support from industry, improved research quality, student exposure to industry opportunities, greater willingness of governments to support research for economic development reasons, and perhaps financial support from alumni or entrepreneurs who have profited from spin-off companies.[346]

CONCLUSION

Vietnam's public research institutions have arrived at a pivotal juncture. The intellectual property system in which they will soon find themselves immersed was not crafted in response to the needs of these institutions or the particular needs of the country they serve at its current stage of development. Vietnam's economic boom and the increased foreign interest and investment anticipated as a result of Vietnam's WTO accession will provide many welcome opportunities for its public research institutions to form new and valuable partnerships and to increase the quality and quantity of their research. The government's ambitious R&D initiatives will further enhance the output of Vietnam's public research institutions. But these successes will also shorten the time-frame institutions, just learning how to navigate IP management, have to become proficient at handling complex IP issues with significant long-term implications for public access to important technologies. Research institutions, whose government funding is being phased out, may face the additional challenge of acquiring funding for IP management either from outside sources or from internal budgets. Legislators should consider amending phase-out policies to

343. *Id.*

344. *Id.* at 540.

345. Anthony D. Heher, *Benchmarking of Technology Transfer Offices and What It Means for Developing Countries*, *in* HANDBOOK, *supra* note 267, at 207.

346. Nelson, *supra* note 271, at 539.

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provide investment in this area.

Vietnam's public research institutions have important lessons to learn from their peers in the United States and other developed countries where the tensions between ownership benefits and public good missions have been more thoroughly explored. The existence of an IP system may inevitably generate tension with a public good mission; but given the reality that IP is a tool that is here to stay, it is fortunate that other voices have developed a variety of strategies to manage such tensions towards a positive outcome. Thanks to experiences from developed country contexts, Vietnam's public research institutions can be advised that the most powerful step towards wise IP management may be the initial step of articulating how IP decisions should relate to an institution's mission and setting clear policies that embody that articulation. Thanks to the experiences of a variety of organizations that have grappled with issues of IP training and capacity building in developing countries, there is now more specific guidance available for institutions in Vietnam and elsewhere.

Though few institutions in Vietnam have even a basic familiarity with IP, some have made impressive progress considering how recently these institutions were first allowed to commercialize and seek intellectual property protection for their inventions. There have also been several promising home-grown initiatives to establish IP capacity. Now is the time for the Vietnamese government, and international funding organizations, to provide the resources to expand the initiatives that have already shown promise in Vietnam and replicate initiatives that have worked in other developing countries. The experiences gained in building the IP management capacity of Vietnam's public research institutions will be important guides for helping other institutions in the region adapt as well.