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EVALUATION REPORT OF THE PROJECT ON INTELLECTUAL PROPERTY AND BRAIN DRAIN

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1. The Annex to this document contains an external independent Evaluation Report on the Project on IP and Brain Drain, undertaken by Professor Tom P. M. Ogada, T&P Innovation and Technology Management Services, Nairobi, Kenya.

2. *The CDIP is invited to take note of
the information contained in the Annex to this
document.*

[Annex follows]

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LIST OF ACRONYMS USED

| | |
|--------|---|
| CDIP | Committee on Development and Intellectual Property |
| DA | Development Agenda |
| DACD | Development Agenda Coordination Division |
| OECD | Organization for Economic Cooperation and Development |
| IP | Intellectual Property |
| IPOs | Intellectual Property Offices (national) |
| IOM | International Organization for Migration |
| ILO | International Labour Organization |
| ITC | International Trade Center |
| LDCs | Least Developed Countries |
| FAO | Food and Agriculture Organization |
| FDI | Foreign Direct Investment |
| PCT | Patent Cooperation Treaty |
| R&D | Research and Development |
| SLA | Service Level Agreements |
| UNCTAD | United Nations Conference for Trade and Development |
| UNEP | United Nations Environmental Program |
| UNIDO | United Nations Industrial Development Organization |
| WHO | World Health Organization |
| WIPI | World Intellectual Property Indicators |
| WIPO | World Intellectual Property Organization |
| WTO | World Trade Organization |

EXECUTIVE SUMMARY

BACKGROUND OF THE PROJECT

1. This is an evaluation report on the project – *Intellectual Property and Brain Drain*, which was implemented from January 2012 to June 2013, a period of 18 months. This was a Development Agenda (DA) Project aimed at addressing Development Agenda Recommendations 39 and 40. It was approved during the seventh session of the Committee on Development and Intellectual Property (CDIP), held in Geneva in May 2011. It was implemented by the Economics and Statistics Division, supported by the Development Agenda Coordination Division (DACD).
2. The project consisted of two activities which were tightly focused on the linkages between IP and the migration of knowledge workers,
 - a. First, there was a research project that sought to exploit information on inventors' nationality and residence in patent applications to map the migration of scientists. This mapping exercise was to establish a partial geography of migration flows and innovation; insofar the phenomenon could be traced through patent documents.
 - b. The second project activity was the convening of an expert workshop bringing together academia, relevant international organizations, and policymakers with a view to developing a research agenda on IP, migration, and associated knowledge flows. This workshop was organized in cooperation with other international organizations with expertise in the topic (notably, the International Organization for Migration, the International Labour Organization, UNCTAD, and the World Bank). Experts included migration specialists from various fields (economics, education, law, science and technology) and IP experts to explore what studies could realistically be conducted, especially in light of the available data.
3. The project had two objectives, which emanate directly from DA Recommendation 39:
 - a. To contribute to greater awareness and enhanced understanding of the IP and brain drain linkages among policymakers.
 - b. To develop an informed research agenda on IP, migration, and associated knowledge flows, providing the basis for future studies on this topic.

OBJECTIVES, FOCUS AND METHODOLOGY OF THE EVALUATION

4. The main objectives of this evaluation were two fold. First was to learn from experiences gained during project implementation (what worked well and what did not) for the benefit of continuing activities in this field. This includes assessing the project design framework, project management, including monitoring and reporting tools, as well as measuring and reporting on the results achieved to date and assessing the likelihood of sustainability of results achieved. Secondly the evaluation was to provide evidence-based evaluative information to support the CDIP's decision making process.
 5. The evaluation assessed the extent to which the project was effective in: contributing to greater awareness and enhanced understanding of the IP and brain drain linkages among policymakers; and in developing an informed research agenda on IP, migration, and associated knowledge flows, providing the basis for future studies on this topic. The evaluation was guided by the following four evaluation criteria - Project Design and Management; Effectiveness; Sustainability; and Implementation of Development Agenda 39 and 40.
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6. The evaluation consultant used both desk study and interview to collect data. The consultant strived to get as much information as possible by reviewing the documents made available by WIPO. These included the project documents, the progress reports, the research report, the workshop report as well as other publications prepared by the project team and those authored by other researchers on the subject. To complement the desk review, a teleconference interview was undertaken with the project team and the lead researcher.

KEY FINDINGS

Project design and management

7. **Finding 1: The project document (PD) was found to be sufficient as a guide for implementation and assessment of the results achieved.** The project document envisaged two key activities. The first activity was the mapping of scientist migration flows, which was implemented in-house, drawing on available patent databases. The second activity was the organization of an expert workshop. These two activities were successfully implemented.

8. **Finding 2: The tools for project's monitoring, self-evaluation and reporting were adequate and useful for providing information on the progress of implementation of the project.** The project document provided for a mid-term progress report which was to be prepared nine (9) months after the launch of the project; a final project review report which was to be prepared after the completion of the project; as well as a report on mapping of scientist migration flows and another one on the workshop. Except for the final report, all the three reports were prepared in time.

9. **Finding 3: The contribution of the other entities within the Secretariat was minimum.** The evaluation noted that there was little role for other Divisions of WIPO since the compilation of the database and the analysis of migration flows arguably required skills only available in the Economics and Statistics Division.

10. **Finding 4: The two risks that were envisaged in the project document did not occur.** The project document envisaged the following two key risks: The first risk was that the research project was based on information on inventors' nationality and residence available on PCT applications. There was the risk that mapping based on this approach would be incomplete and/or biased. The other risk was the fact that the success of the workshop depended on the active participation of the other International organizations and migration experts. The evaluation established that the nationality and residence information was available for 80.6 % of the inventors in the PCT applications. Secondly, the participation in the workshop by the international organizations and migration experts was overwhelming. There were eight (8) international organizations and 13 universities and research institutions which were represented in the workshop (see Annex 3). Therefore these risks did not occur.

11. **Finding 5: The project took into consideration emerging trends, technologies and other external forces, given that the project itself was on research and information exchange on inventor migration flows.** Through the project, new methodology for undertaking research on IP and Brain Drain was developed and validated. The result of the research was published online on the WIPO website¹.

¹ Document CDIP/12/INF/4 available at: http://www.wipo.int/meetings/en/doc_details.jsp?doc_id=252189

Effectiveness

12. **Finding 6: The project was very useful in contributing to greater awareness and enhanced understanding of the linkages between IP and Brain Drain among policy makers.** This was achieved through:

- a. Generation of new knowledge on the subject matter,
- b. Discussions and information sharing during the expert workshop,
- c. Publication of the findings of the research project, and
- d. Presentations of the research findings in seminars and conferences.

13. **Finding 7: The project was fairly effective in developing an informed research agenda on IP, migration and associated knowledge flows, providing the basis for future studies on this topic.** The project provided general suggestions and recommendations on possible research topics, which will require further refinement during implementation.

Sustainability

14. **Finding 8: The project has high chances of sustainability since there are strong indications of continued work by WIPO and others on the subject.** This was supported by the following evidences:

- a. The interest of the research community for continued work on the subject.
- b. The reactions of the online research community in the web media following the publication of the research project.
- c. WIPO's potential for making use of the data generated on IP and Brain.

15. **Finding 9: The project has made contribution to DA Recommendations 39 and 40.** The research project on IP and Brain Drain contributed to the realization of Recommendation 39, whereas the active participation of the UN Agencies in the Expert Workshop contributed to the realization of Recommendations 40.

CONCLUSIONS

A: Project design and management

16. Based on findings 1-5, the evaluation made the following four conclusions

- a. **Conclusion 1:** The project was successfully implemented as per the project document.
 - b. **Conclusion 2:** The project document was sufficient to guide and monitor the implementation of the project and to assess the achieved results
 - c. **Conclusion 3:** Based on the project's design, the participation of other WIPO departments were limited since the project required specialized expertise and skills to implement, which was only available in the Economics and Statistics Division.
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- d. **Conclusion 4:** The main strength of this project's methodology is the use of PCT data on inventors' residence and nationality. The change in US patent regulation which has done away with the requirement for inventor residence and nationality is a major blow to the continued application of the methodology in future for US related research and studies.

B: Project Effectiveness

17. Based on findings 6 and 7, the evaluation made the following two conclusions

18. **Conclusion 5:** The project has contributed towards creating awareness and understanding on the linkage between IP and Brain Drain through: generation of new knowledge on the subject matter; discussions and information sharing during the expert workshop; publication of the findings of the research project, and presentations of the research findings in seminars and conferences. However, the number of policy makers reached was small and more will need to be done by WIPO to expand the outreach.

19. **Conclusion 6:** The research agenda formulated by the workshop participants were general in nature. However, it is possible to crystallize the following research themes:

- a. Causes and consequences of skilled migration.
- b. Use of names and surnames in order to characterize the inventors and their migratory background.
- c. Inventors' surveys.
- d. Surveys on high skilled return migration.

C: Sustainability

20. Based on finding 8, the evaluation made the following conclusion below.

21. **Conclusion 7:** There is enough interest to continue research in the area of IP and Brain Drain, both by WIPO and the research community. However, to enhance sustainability, WIPO will need to do the following.

- a. Support continued research activity on the subject matter
 - b. Support capacity building of researchers from developing countries through joint projects
 - c. Put more resources to provide services to meet the increasing number of requests for data bases prepared from the research project
 - d. Organize more workshops and seminars to disseminate the results of the research project.
 - e. Support preparation of more publications
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D: Implementation of Development Agenda Recommendations 39 and 40

22. Based on finding 9, the evaluation made the following conclusion:

23. **Conclusion 8:** Whereas the project has contributed towards the realization of DA 39, more studies will still be required for DA 39 to be adequately realized. Consideration should be given to the following two recommendations given by the workshop's participants:

- a. The implementation of policies to enable emigrants, including inventors, to return home.
- b. To collect data to improve on the knowledge by many African countries about their diasporas.

RECOMMENDATIONS

24. Based on conclusions 1-9, the evaluation made the following four recommendations:

25. **Recommendation 1:** CDIP to support continued research on IP and Brain Drain, particularly in the following themes:

- a. Causes and consequences of skilled migration
- b. Use of names and surnames in order to characterize the inventors and their migratory background
- c. Inventors surveys
- d. Surveys on high skilled return migration

26. **Recommendation 2:** WIPO Secretariat to support African Countries to undertake research that can lead to:

- a. The implementation of policies to enable emigrants, including inventors, to return home.
- b. Better understanding and knowledge by many African countries about their diasporas.

27. **Recommendation 3:** To enhance sustainability of research on IP and Brain Drain, the secretariat should:

- a. Support continued research activity on the subject matter
 - b. Support capacity building of researchers from developing countries through joint projects
 - c. Support capacity building to meet the increasing number of requests for data bases prepared from the research project.
 - d. Support more workshops to disseminate the results of the research project.
 - e. Support the preparation of more publications.
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I. INTRODUCTION

Background

28. The project – Intellectual Property and Brain Drain, was implemented from January 2012 to June 2013, a period of 18 months. This was a Development Agenda Project aimed at addressing Development Agenda (DA) Recommendations 39 and 40. It was approved during the seventh session of the Committee on Development and Intellectual Property (CDIP), held in Geneva in May 2011. It was implemented by the Economics and Statistics Division, supported by the Development Agenda Coordination Division (DACD).

29. The international mobility of skilled workers (Brain Drain and Brain Gain) and its economic implications have emerged as important development topics. Outward migration of skilled workers and the associated brain drain phenomenon are today development challenges. The exit of skilled workers directly reduces an economy's human capital endowment. It also reduces the prospects for human and economic development. Whereas there is the possibility of return migration (and the associated "brain gain") and the economic contributions of overseas diasporas, which may offset initial brain drain loss, such outcomes are not guaranteed, especially for the poorest countries that cannot offer internationally competitive employment opportunities for skilled workers.

30. These challenges are well recognized and have been subject to a considerable number of studies in many parts of the world. In addition, governments have instituted various policies to curtail economically harmful brain drain (or, at least, minimize associated losses) and to encourage "brain gain" outcomes.

31. Of interest to WIPO is whether or not there is a relationship between IP and the brain drain phenomenon. IP protection may affect the decisions of scientists, engineers, information technology specialists and related professionals about where to exercise their profession, with consequences for a country's innovative capacity and the availability of knowledge. Vice-versa, outward migration of skilled workers can impact on the effectiveness of the IP system in reaching its goals of promoting innovation and technology transfer. The precise linkages between IP and brain drain and whether such linkages are significant at all, are poorly understood. No empirical research was available at WIPO and only few academic studies exist on the topic, reflecting in part the poor availability of data on migration flows, especially in low income countries.

Project Delivery Strategy

32. The project sought to make a first step towards closing this knowledge gap. It consisted of two activities which were tightly focused on the linkages between IP and the migration of knowledge workers:

a. First, there was a research project that sought to exploit information on inventors' nationality and residence in patent applications to map the migration of scientists. This mapping exercise was to establish a partial geography of migration flows and innovation; insofar the phenomenon could be traced through patent documents.

b. The second project activity was the convening of an expert workshop bringing together academia, relevant international organizations, and policymakers with a view to developing a research agenda on IP, migration, and associated knowledge flows. This workshop was organized in cooperation with other international organizations with expertise in the topic (notably, the International Organization for Migration, the

International Labour Organization, UNCTAD, and the World Bank). Experts included migration specialists from various fields (economics, education, law, science and technology) and IP experts to explore what studies could realistically be conducted, especially in light of the available data.

Project Objectives

33. The project had two objectives, which emanate directly from DA Recommendation 39:
- a. To contribute to greater awareness and enhanced understanding of the IP and brain drain linkages among policymakers.
 - b. To develop an informed research agenda on IP, migration, and associated knowledge flows, providing the basis for future studies on this topic.

II. OBJECTIVES, SCOPE AND FOCUS OF THE EVALUATION

Objectives of the evaluation

34. The main objectives of this evaluation were to:
- a. Learn from experiences gained during project implementation (what worked well and what did not) for the benefit of continuing activities in this field. This includes assessing the project design framework, project management, including monitoring and reporting tools, as well as measuring and reporting on the results achieved to date and assessing the likelihood of sustainability of results achieved; and
 - b. Provide evidence-based evaluative information to support the CDIP's decision-making process.

Scope of the evaluation

35. The project time frame considered for this evaluation was 18 months (January 2012 – June 2013). The focus was not on assessing individual activities but rather to evaluate the project as a whole. The evaluation therefore limited itself on the project's performance, design, management, coordination, and implementation as well as the results achieved.

Focus of the evaluation

36. The evaluation assessed the extent to which the project has been instrumental in:
- a. Contributing to greater awareness and enhanced understanding of the IP and brain drain linkages among policymakers; and
 - b. Developing an informed research agenda on IP, migration, and associated knowledge flows, providing the basis for future studies on this topic.
37. The evaluation was guided by the following four evaluation criteria (see APPENDIX 1: Evaluation Matrix² for details):
- a. Project Design and Management,
 - b. Effectiveness,

² An Evaluation Matrix has been prepared which provides details of the proposed indicators, data collection tools and possible sources of information. This information is vital for addressing the evaluation questions.

- c. Sustainability, and
- d. Implementation of Development Agenda 39 and 40.

III: EVALUATION METHODOLOGY

38. The evaluation consultant used the following methodology for this exercise:

- a. **Desk Review:** The consultant strived to get as much information as possible by reviewing the documents made available by WIPO Project Manager (Carsten Fink) and the Research Economist (Ernest Miguelez). These included the project documents, the progress reports, the research report, the workshop report as well as other publications prepared by the project team and those authored by other researchers on the subject. APPENDICES 2 and 3 give the list of the documents reviewed and the details of the people interviewed.
- b. **Data Collection through Interviews and administration of questionnaires:** To complement the desk review, a teleconference interview was undertaken with the project team and the lead researcher. An interview guide, developed from the general data collection tool, was used. APPENDIX 4 shows the general data collection questionnaire.

KEY FINDINGS

39. This section provides the key evaluation findings, organized on the basis of the four evaluation areas (the project design and management; project effectiveness, project sustainability; and implementation of the Development Agenda Recommendations).

A. Project design and management

A1: Appropriateness of the initial project document as a guide for implementation and assessment of achieved results.

40. **Finding 1: The project document (PD) was found to be sufficient as a guide for implementation and assessment of the results achieved.**

41. The project document envisaged two key activities. The first activity was the mapping of scientist migration flows, which was implemented in-house, drawing on available patent databases. The second activity was the organization of an expert workshop.

42. **Achievements:** The evaluation observed that the two mentioned activities were undertaken as per the project document:

- a. Mapping of Scientists Migration Flow was successfully undertaken by analyzing information of inventors nationality and residence in Patent Cooperation Treaty (PCT) applications and thereby establishing a partial geography of high-skilled migration. The analysis covered mobility patterns of inventors over the period 1991-2010. Through an informal competitive selection process, a researcher (Mr. Ernest Miguelez) was recruited to undertake the research and prepare a report. The report was peer reviewed to improve on the quality. A final report was thereafter prepared and submitted to CDIP.
 - b. Expert Workshop was organized on “ Intellectual Property, International Mobility of knowledge workers and the Brain Drain”. The workshop took place at WIPO premises in April 29-30, 2013. The workshop brought together 26 experts on the topic of skilled migration and IP, both from the academia as well as from the international organizations. The Evaluation made the following observations:
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- To identify the appropriate participants, the project team extensively searched the academic literature for scholars with expertise in this field and then reviewed them, with a view to (i) invite the most qualified expert and (ii) promote regional/gender balance.
- To select the international organizations, the project team identified the ones with interest/expertise in the topic and then contacted relevant departments about their interest in participating.
- The choice of the conference topics, were based on the CDIP mandate and the available academic research. The availability of researchers influenced the final shape of the program (there were a few researchers who were invited as presenters/commentators, but who unfortunately weren't available).
- A final report on the workshop was prepared and submitted to the CDIP

A2: Adequateness and usefulness of the project monitoring, self-evaluation and reporting tools in providing relevant information for decision-making purposes of the project team and key stakeholders.

43. **Finding 2: The tools for project's monitoring, self-evaluation and reporting were fairly adequate and useful for providing information on the progress of implementation of the project.**

44. The project document provided the following monitoring tools:

- a. Reports: A mid-term progress report was to be prepared nine (9) months after the launch of the project. A final project review report was to be prepared after the completion of the project. Both reports were to be submitted to the CDIP for consideration.
- b. Project Self Evaluation: There were also two key self evaluation indicators, namely a report on mapping of scientist migration flows and another one on the workshop. Both were supposed to be prepared and published in WIPO website.

45. **Achievements**: The evaluation established that:

- a. The project started on 16th January, 2013 and was expected to run for 18 months. Mid-term progress report was therefore expected in October, 2013. This was prepared and submitted to the CDIP meeting of November, 2013. The mid-term report provided progress made in both research and workshop activities and showed that the implementation of the project was in accordance with the project implementation timelines.
 - b. The research and workshop reports were prepared and presented to CDIP in November 2013. The reports showed that the research project was successfully implemented and that the workshop was organized in April, 2013 as was planned. Both reports were published in the WIPO website, as required by the project document.
 - c. However, the consultant observed that the final report was not prepared. The project team was of the view that the two progress reports and the two substantive reports provided Member States with all the relevant information.
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A3: The extent to which other entities within the Secretariat have contributed and enabled an effective and efficient project implementation.

46. **Finding 3: The contribution of the other entities within the Secretariat was minimum.**

47. The project document did not clearly mention which entities in WIPO could participate in the project. The evaluation consultant was of the view that the PCT and the Patent Information Divisions could have been ideal collaborators in this project. In fact, the project team informally consulted PCT colleagues on the project, especially regarding the rules for completing the residence/nationality fields in PCT applications. As for the implementation of the project itself, the project team was of the view that there was little role for those other Divisions since the compilation of the database and the analysis of migration flows arguably required skills only available in the Economics and Statistics Division.

A4: The extent to which the risks identified in the initial project document have materialized or been mitigated.

48. **Finding 4: The two risks that were envisaged in the project document did not occur.**

49. The project document envisaged the following two key risks:

- a. Insufficient data: The research project on “mapping the migration flow of scientists” was based on information on inventors’ nationality and residence available on PCT applications³. There was the risk that mapping based on this approach would be incomplete and/or biased.
- b. Lack of collaboration in preparation of the workshop. The other risk was the fact that the success of the workshop depended on the active participation of the other International organizations and migration experts.

50. **Achievements**: The evaluation established that:

- a. Whereas the PCT data did not offer complete information⁴, the project team reported that there was sufficient data available for meaningful analysis. Furthermore, the workshop participants found the methodology more superior than the use of the census data to study IP and Brain Drain. The data risk was therefore mitigated. However, going forward, this methodology will need to be reviewed, given the changes in US patent regulations – i.e. the availability of inventor residence/nationality information essentially stopped as of Sept. 2012.
- b. The participation on the workshop by the international organizations and migration experts was overwhelming. There were eight (8) international organizations and 13 universities and research institutions which were represented in the workshop (see APPENDIX 5). Therefore this risk did not occur.

³ PCT applications have unique characteristics that, in the majority of cases, they record both residence and nationality of the applicants. This has to do with the requirement that only nationals or residents of a PCT contracting state can file PCT application. To verify that this criteria is met, the PCT application ask for both nationally and residence.

⁴ Nationality and residence information was available for 80.6 % of the inventors in the PCT applications.

A5: The project's ability to respond to emerging trends, technologies and other external forces.

51. **Finding 5: The project took into consideration emerging trends, technologies and other external forces, given that the project itself was on research and information exchange on inventor migration flows.**

52. **Achievements:** Through the project, new methodology for undertaking research on IP and Brain Drain was developed and validated. The result of the research was published online in WIPO website⁵.

B: Effectiveness

53. **Evaluation of Effectiveness:** Determination of the effectiveness of the project was the key focus of this evaluation exercise. For this, the consultant considered the following two aspects:

- a. The usefulness of the project in contributing to greater awareness and enhanced understanding of the IP and brain drain linkages among policy makers.
- b. The effectiveness of the project in developing an informed research agenda on IP, migration and associated knowledge flows, providing the basis for future studies on this topic.

B1: The usefulness of the project in contributing to greater awareness and enhanced understanding of the IP and brain linkages among policy makers

54. **Finding 6: The project was very useful in contributing to greater awareness and enhanced understanding of the linkages between IP and Brain Drain among policy makers.**

55. **Achievements:** The evaluation observed that the project made contributions to enhancing awareness and understanding of the linkages between IP and Brain Drain, through:

- a. Generation of new knowledge on the subject matter,
- b. Discussions and information sharing during the expert workshop,
- c. Publication of the findings of the research project, and
- d. Presentations of the research findings in seminars and conferences.

Generation of new knowledge on IP and Brain Drain

The project showed that the linkages between IP and Brain Drain can successfully be studied based on PCT applications. The project also contributed new knowledge, some of which are likely to generate a lot of public discussion and consequently enhance awareness and understanding of the public: A few examples are hereby given:

- a. Migration rate for inventors is higher than those for tertiary educated.
- b. The United States (US) hosts more than 50 % of the immigrant inventors.

⁵ Document CDIP/12/INF/4 available at : http://www.wipo.int/meetings/en/doc_details.jsp?doc_id=252189

- c. China and India stand out as the main origins of inventor immigrants in US.
- d. Universities and public research institutions attract more inventor immigrants than the corporate sector in the same receiving countries.
- e. Immigrant inventors contribute significantly to technological progress in their host countries.
- f. Immigrant inventors are more productive than their non-immigrant co-nationals.
- g. African and the Caribbean countries are the most affected by the brain drain of inventors.

Discussion and Information Sharing during Expert Workshop

The Workshop activity provided a forum for dissemination of the findings from the mapping research and a conducive platform for deeper discussion on the subject and hence enhancing awareness and understanding of the participants on the link between IP and Brain Drain. The evaluation consultant noted that the workshop also covered other topics, which were not addressed by the research report. These included:

- a. Diaspora networks and international knowledge diffusion
- b. International migration, innovation and entrepreneurship

Observation and recommendations made by the Workshop participants

As evidence of their enhanced awareness and understanding of the subject matter, arising from the workshop, the participants made the following observations and recommendations:

- a. That for many years, one of the main problems associated with the study of international migration and the brain drain in particular, was the severe lack of data on migration flows. The PCT application approach provided a possibility. The participants found this approach more superior than census approach, which typically has limitation of occurring only every ten years and only giving data of those with tertiary education. Furthermore data collection through use of PCT applications was found to be less costly than analysis of census data.
- b. That research had shown that more than half of inventions in high income countries are not patented. This needs to be taken into account when mapping international mobility flows of inventors.
- c. That several participants encouraged WIPO to undertake further research on migration, IP and innovation using PCT applications data set as well as share as much data as possible with the research community.
- d. Participants pointed out that PCT inventor immigration data are likely to underestimate migration flows, to the extent that they do not include those foreign-born inventors that have become naturalized in their host countries. They also do not include second and third generation migrants.

Publications of the research work

The results of the research project have been widely published. This has contributed to greater awareness and enhanced understanding of the IP and brain drain linkages among policymakers. For example:

- a. A short article by Carsten Fink, Ernest Miguelez and Julio Raffo on “the global race for inventors” was published on 17 July, 2013, and made available in Voxeu.org⁶ which is a policy portal set up by the Centre for Economic Policy Research, and aims to promote research-based policy analysis and commentary by leading scholars. The intended audiences are economists in governments, international organizations, academia and the private sector as well as journalists specializing in economics, finance and business.
- b. The research project was published in the 2013 World Intellectual Property Indicators (WIPI) Special Section⁷. It was also WIPO’s contribution to a recent IOM publication on how the United Nations System and the different Agencies look at the topic of Migration and Development⁸.
- c. As an essential part of the project, several databases have been made available on inventor migration, both at the country level and at the inventor-patent level. A summary of these databases, as well as parts of the project’s results, were presented in a research paper published in WIPO’s website, which can be accessed and cited by the research community⁹.

Presentations of the research findings in seminars and conferences

- d. Presentations of the results of the projects have been made in the following scientific conferences and seminars during 2012 and 2013:
 - 6th MEIDE Conference, Cape Town
 - Migration: Global Development, New Frontiers, London
 - XVI Encuentro de Economía Aplicada, Granada
 - 5th Workshop “The Outputs of R&D activities: Harnessing the Power of Patents Data”, IPTS-JRC Seville
 - 7th MEIDE Conference, Santiago de Chile
 - Patent Statistics for Decision Makers, Rio de Janeiro
 - Seminar at GRETHA, University of Bordeaux IV, Bordeaux, France

56. Finding 7: The project was fairly effective in developing an informed research agenda on IP, migration and associated knowledge flows, providing the basis for future studies on this topic

57. The development of an informed research agenda by the workshop participants, was the second main activity of the project.

58. **Observations:** The participants made the following observations:

- a. It was difficult to establish a direct relationship between IP regimes of countries and their migration flows. Studying the relationship is conceptually challenging since IP and brain drain operate at different levels, that is, institutional for IP and individual for brain drain.
- b. IP may have an indirect role in determining migration outcomes. One potential link could be through FDI. IP policies may influence FDI inflows and consequently reduce outward migration.

⁶ The article is available at <http://www.voxeu.org/article/global-race-inventors>

⁷ Found at http://www.wipo.int/export/sites/www/ipstats/en/wipi/2013/pdf/wipo_pub_941_2013_special.pdf

⁸ <http://www.unfpa.org/webdav/site/global/shared/documents/publications/2013/CEB%20Pub.%20International%20Migration%20and%20Development.pdf>

⁹ http://www.wipo.int/export/sites/www/econ_stat/en/economics/pdf/wp8.pdf

59. **Recommendations:** The workshop participants made the following recommendations on the possible areas of future research attention:

- a. Given the high mobility of inventors, WIPO may be well placed to continue researching on the causes and consequences of skilled migration.
- b. While creation of PCT Inventor Database was already a valuable contribution to the research community, more effort in this direction is required.
- c. A large number of research questions on the topic of high skilled migration and innovation remains to be answered.
- d. WIPO engages in research to promote use of names and surnames in order to characterize the inventors and their migratory background.
- e. WIPO to conduct surveys on inventors to characterize inventors and their patenting practices, provide evidence on the reasons why inventors migrate and how inventors migration affects home and host country innovation outcomes. Surveying could also help understand whether there is any relationship between IP protection and the international migration of inventors.
- f. Migration analysis needs to pay closer attention to the behavior of firms.
- g. There is need to better understand the phenomenon of high skilled return migration, which remains severely under-investigated, but may ultimately be one of the most important vehicles for spurring economic development in sending countries.

60. **Shortcomings:** The consultant noted the following shortcomings:

- a. Whereas the research report provided useful findings on the mapping of inventors migration using PCT applications, the report did not make any recommendations on the potential areas for future investigations, which is a normal practice for research project. The consultant is of the view that the researchers were in a better position to suggest some possible areas of future research given the experience acquired during the research activities.
- b. Whereas, the project document envisaged that the formulation of future areas and topics of research was to be done during the expert workshop, the workshop participants only came up with general statements indicating the direction research could take. According to the project team, the workshop discussion was pessimistic on the use of the PCT data to study IP and Brain Drain, arising from the changes in USA laws highlighted above. From this view, it was difficult to be more precise on the exact research themes. Although it should be mentioned that with the historical data, there is still a lot of scope for analysis that one should not miss.

C: Sustainability

61. **Finding 8: The project has high chances of sustainability since there are strong indications of continued work by WIPO and others on the subject.**

62. **Evidences:** The evaluation consultant considered the following as evidences of sustainability of the project:

- The interest of the research community for continued work on the subject.
-

- The reactions of the online research community in the web media following the publication of the research project.
- WIPO's future research plans on IP and Brain.

Planned post project publications

63. WIPO is preparing a book compilation on the topic of "Brain Drain, Innovation and IP"; The book will be co-edited by WIPO and an academic editor, and will include all the papers that were presented during the Brain Drain & IP Workshop organized in Geneva, April 2013. This book will provide a useful reference for continued work on the subject of "IP and Brain Drain". According to the project team, additional working papers are expected to be posted on the WIPO's website and it is hoped that many direct/indirect outputs of this project will result in many peer-reviewed journal publications.

Interest created on the subject "IP and Brain Drain".

64. At the conference "Migration: Global Development, New Frontiers, London", April 2013, the organizing committee asked WIPO team to prepare a summary of WIPO's project on IP and Brain Drain to be used as press release¹⁰. The press release created great interest from specialized web media which responded with release of some short articles. These include the following short articles:

- a. Global Invention and Innovation, published by Intellectual Venture, July 12, 2013¹¹.
- b. Inventors Make U.S. Top Destination, published by Simon Kennedy¹² Apr 11, 2013. Published by the Global Talent Strategy.
- c. UK lags behind in global race to recruit innovative workers, Tom Newcombe¹³, 11 Apr 2013. Published by Bloomberg.
- d. To remain tops in innovation, the US needs immigration reforms, by Charles Kenny, July 22, 2013. Published by Bloomberg Businessweek.
- e. New report underlines US's continuing attraction for the world's inventors¹⁴. Published by Intellectual Asset Management.
- f. Want to Fix the Economy? Pass Immigration Reform REUTERS/Larry Downing¹⁵. Published by New America Foundation.
- g. WIPO Economics Working Paper On Mobility Of Inventors¹⁶ Published on 21 June 2013 @ 5:19 pm by Intellectual Property Watch By Brittany NGO for Intellectual Property Watch. Published by IP watch.

65. The Evaluation Consultant observed that some of these articles brought out new issues that were not captured by the main research report. This provides motivation for further research in the subject matter and therefore sustainability. The following few examples provide illustrations for the above:

¹⁰ <http://www.norface-migration.org/sites/sitefiles/Miguellez.pdf>.

¹¹ From Intellectual Ventures: <http://www.intellectualventures.com/insights/archives/global-invention-and-innovation>

¹² From Global Talent Strategy: <http://globaltalentstrategy.com/en/article/migrating-inventors-prefer-us-376>

¹³ From HR Magazine: <http://www.hrmagazine.co.uk/hro/news/1076884/uk-lags-global-race-recruit-innovative-workers>

¹⁴ Bloomberg Businessweek: <http://www.businessweek.com/articles/2013-07-22/to-remain-tops-in-innovation-the-u-dot-s-dot-needs-immigration-reform>

¹⁵ New America Foundation: <http://inthe-tank.newamerica.net/blog/2013/07/want-fix-economy-pass-immigration-reform>

¹⁶ IP Watch: <http://www.ip-watch.org/2013/06/21/wipo-economics-working-paper-on-mobility-of-inventors/>

- a. Simon Kennedy (migrating inventors make US top destination) while reporting the research findings that the US is the leading migration inventor destinations, points out that *the findings help dilute concerns expressed by such economists as Robert Gordon of Northwestern University that the U.S. is approaching a period of weak economic growth that requires immigration of high-skilled workers to be avoided*. Some researchers will, in future, want to establish, for example, how inventor mobility affects technological progress and economic productivity?
- b. From the title ***UK lags behind in global race to recruit innovative workers***, Tom Newcombe is definitely reminding UK readers, that there is something the US is doing which the UK is not. Some researchers will want to establish why the US are much more successful at attracting high skilled workers, or more generally: what determines the attractiveness of destination countries? The article further emphasizes the fact that *“The research is the first piece of work to analyze internationally comparable data on the global mobility of innovative workers and look at why these highly skilled employees move from one country to another”*, clearly inviting researchers to look at this report in their future research activities in this field.
- c. The article by Charles Kenny “To remain tops in innovation, the US needs immigration reforms” bring new dimensions and information to the subject matter.
- That in 2012, China earned \$1 billion in foreign royalty and license payments; against \$18 billion paid in royalty and license payments to foreign firms, leading to deficit of \$17 billion. This compares poorly with the U.S., which ran a \$82 billion surplus. Some researchers and policy makers may want to establish a linkage of this with high number of inventors immigrant in USA.
 - Another example is the statement that *Duke University’s Vivek Wadhwa [reports](#) that the proportion of high-tech startups founded by Chinese and Indian immigrants in Silicon Valley dropped from 52 percent in 2005 to 44 percent in 2011, in part because more and more Indian and Chinese graduates of U.S. universities are returning home rather than dealing with the hassle of American immigration procedures*. Some researchers may want to find out if this is true.

Interest created by WIPO Brazil Office

66. During the mission undertaken in Rio de Janeiro by the WIPO, the WIPO Brazil Office kindly offered to organize a seminar at the INPI Academy of IP and Innovation, where the research team presented the IP and Brain Drain project. It was reported that the audience reacted quite positively to WIPO’s initiative to undertake this kind of research and encouraged WIPO to follow-up conducting research on inventor migration and diaspora networks. It was learned INPI has already tried to identify Brazilian Inventors Network in the diaspora abroad in order to know more about it. Thus, the recently released data on inventor mobility will be of great help to undertake these types of studies. Currently the Economics & Statistics Division – as part of another CDIP project (CDIP/5/7) – has worked with INPI Brazil to create a unit record IP database that has the potential to unleash a large range of new research studies, including on inventor mobility. However, the direction of any future research work, on the basis of these data, depends on the interests of the Brazilian government.
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D. Implementation of Development Agenda (DA) Recommendations

The extent to which the DA Recommendations 39 and 40 have been implemented through this project.

67. Finding 9: The project has made contribution to DA Recommendations 39 and 40.

68. DA Recommendation 39: To request WIPO, within its core competence and mission, to assist developing countries, especially African countries, in cooperation with relevant international organization, by undertaking studies on brain drain and make recommendations accordingly. This recommendation has been realized.

- a. The Research Report on “Mapping of Inventors Migration Flows using PCT application” dedicated sections and presented findings on developing countries, especially African Countries. The Report described the inventor migration situation and recommended which areas of future studies African countries should focus on.
 - The implementation of policies to enable emigrants, including inventors, to return home.
 - Better understanding and knowledge by many African countries about their diasporas.
- b. The expert workshop organized on IP and Brain Drain, also had a special session on Africa. Participants reviewed the IP and Brain Drain situation in Africa and made observations and recommendations.

69. DA Recommendations 40: To request WIPO to intensify its cooperation on IP issues with United Nations Agencies, according to Member States Oriented, in particularly UNCTAD, UNEP, WHO, UNIDO, UNESCO, WTO, to strengthen the coordination efficiency in undertaking development programs. This recommendation has been realized in this project.

- a. According to the project team, ILO, WTO, OECD, DESA, UNCTAD and World Bank made greater contribution to the realization of the project.
 - b. Amongst the Speakers and Commentators in the Expert Workshop, were the following representation of the UN and International Bodies:
 - Mr. Caglar Oezden, Representative from the World Bank
 - Mrs. Theodora Xenogiani, Representative from OECD
 - Mrs. Christiane Kuptsch, Representative from ILO
 - Mr. Igor Paunovic, Representative from UNCTAD
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CONCLUSIONS

A: Project design and management

70. Based on findings 1-5, the evaluation made the following four conclusions

- a. **Conclusion 1:** The project was successfully implemented as per the project document.
- b. **Conclusion 2:** The project document was sufficient to guide and monitor the implementation of the project and to assess the achieved results
- c. **Conclusion 3:** Based on the project's design, the participation of other WIPO departments were limited since the project required specialized expertise and skills to implement, which was only available in the Economics and Statistics Division.
- d. **Conclusion 4:** The main strength of this project's methodology is the use of PCT data on inventors' residence and nationality. The change in US patent regulation which has done way with the requirement for inventor residence and nationality is a major blow to the continued application of the methodology in future for US related research and studies.

B: Project Effectiveness

71. Based on findings 6 and 7, the evaluation made the following two conclusions

72. **Conclusion 5:** The project has contributed towards creating awareness and understanding on the linkage between IP and Brain Drain through: generation of new knowledge on the subject matter; discussions and information sharing during the expert workshop; publication of the findings of the research project, and presentations of the research findings in seminars and conferences. However, the number of policy makers reached was small and more will need to be done by WIPO to expand the outreach.

73. **Conclusion 6:** The research agenda formulated by the workshop participants were general in nature. However, it is possible to crystallize the following research themes:

- a. Causes and consequences of skilled migration.
- b. Use of names and surnames in order to characterize the inventors and their migratory background.
- c. Inventors' surveys.
- d. Surveys on high skilled return migration.

C: Sustainability

74. Based on finding 8, the evaluation made the following conclusion below.

75. **Conclusion 7:** There is enough interest to continue research in the area of IP and Brain Drain, both by WIPO and the research community. However, to enhance sustainability, WIPO will need to do the following.

- a. Support continued research activity on the subject matter
-

- b. Support capacity building of researchers from developing countries through joint projects
- c. Put more resources to provide services to meet the increasing number of requests for data bases prepared from the research project
- d. Organize more workshops and seminars to disseminate the results of the research project.
- e. Support preparation of more publications

D: Implementation of Development Agenda Recommendations 39 and 40

76. Based on finding 9, the evaluation made the following conclusion:

77. **Conclusion 8:** Whereas the project has contributed towards the realization of DA 39 more studies will still be required for DA 39 to be adequately realized. Consideration should be given to the following two recommendations given by the workshop's participants:

- a. The implementation of policies to enable emigrants, including inventors, to return home.
- b. To collect data to improve on the knowledge by many African countries about their diasporas.

RECOMMENDATIONS

78. Based on conclusions 1-9, the evaluation made the following four recommendations:

79. **Recommendation 1:** CDIP to support continued research on IP and Brain Drain, particularly in the following themes:

- a. Causes and consequences of skilled migration
- b. Use of names and surnames in order to characterize the inventors and their migratory background
- c. Inventors surveys
- d. Surveys on high skilled return migration

80. **Recommendation 2:** WIPO Secretariat to support African Countries to undertake research that can lead to:

- a. The implementation of policies to enable emigrants, including inventors, to return home.
- b. Better understanding and knowledge by many African countries about their diasporas.

81. **Recommendation 3:** To enhance sustainability of research on IP and Brain Drain, the secretariat should:

- a. Support continued research activity on the subject matter
- b. Support capacity building of researchers from developing countries through joint projects
- c. Support capacity building to meet the increasing number of requests for data bases prepared from the research project.
- d. Support more workshops to disseminate the results of the research project.
- e. Support the preparation of more publications

[Appendix I follows]

APPENDIX 1: EVALUATION FRAMEWORK

| | Sub-Foci | Indicators | Means of verification |
|---|---|---|---|
| <i>PROJECT DESIGN AND MANAGEMENT</i> | | | |
| 1a | The appropriateness of the initial project document as a guide for project implementation and assessment of results achieved | Whether or not the project document was used without revision to successfully implemented the project and attain the desired results | Document review and interview with project team. |
| 1b | Adequateness and usefulness of the project monitoring, self-evaluation and reporting tools in providing relevant information for decision-making purposes of the project team and key stakeholders. | Whether or not the project monitoring, self-evaluation and reporting tools were used without revision. | Document review and interview with project team. |
| 1c | The extent to which other entities within the Secretariat have contributed and enabled an effective and efficient project implementation. | The contribution of the other entities within the Secretariat to enable effective and efficient project implementation | Document review and interview with project team and the related departments. |
| 1d | The extent to which the risks identified in the initial project document have materialized or been mitigated. | Whether or not the risks identified in the initial project document have materialized or how they have been mitigated. | Document review and interview with project team. |
| 1e | The project's ability to respond to emerging trends, technologies and other external forces. | The extent to which the project responded to emerging trends, technologies and other external forces. | Document review and interview with project team. |
| <i>EFFECTIVENESS</i> | | | |
| 2a | Undertaking Research on IP and Brain Drain | Whether or not research on Ip and Brain Drain was undertaken as was planned | Document review and interview with project team and Collaborators |
| 2b | Organizing Workshop on IP and Brain Drain | Whether or not Workshop on IP and Brain Drain was organized as was planned | Document review and interview with project team and Collaborators |
| 2c | The usefulness of the project in contributing to greater awareness and enhanced understanding of the IP and Brain Drain linkages among policymakers | Enhanced awareness and understanding of the links between IP and Brain Drain | Document review and interview with project team and Collaborators |
| 2d | The effectiveness of the project in developing an informed Research Agenda on IP, migration and associated knowledge flows, providing the basis for future studies on this topic | <ul style="list-style-type: none"> • Lists of Research Agenda Identified • Quality and relevance of these research agenda | Through document review and interview with project team, and participants of the Workshop |

| SUSTAINABILITY | | | |
|--|---|---|--|
| 3a | The likelihood for continued work on IP and Brain Drain by WIPO and the Member States | Measures in place to ensure that the project can continue. | Document review and interview with project team and other stakeholders |
| IMPLEMENTATION OF DEVELOPMENT AGENDA (DA) RECOMMENDATIONS | | | |
| 4a | The extent to which the DA recommendations 39 and 40 have been implemented through this project | <ul style="list-style-type: none"> • Studies on Brain Drain undertaken • Recommendations made available to developing countries on IP and Brain Drain • Coordination on IP issues with UN Agencies intensified | Document review and interview with project team and selected UN Agencies |

[Appendix II follows]

APPENDIX 2: LIST OF DOCUMENTS TO BE REVIEWED

1. Discussion Paper on Intellectual Property (IP) and Brain Drain, Presented to the CDIP, Sixth Session, November 22-26, 2010 (CDIP/6/8)
2. Project Document on Intellectual Property and Brain Drain, Presented to the CDIP Seventh Session, May 2-6, 2011 (CDIP/7/4)
3. Report on Study on Intellectual Property and Brain Drain – a Mapping Exercise, presented to CDIP Twelve Session, November 18-21, 2013 (CDIP/12/INF/4)
4. Report on Summary of the Workshop on Intellectual Property, the International Mobility of Knowledge Workers and the Brain Drain – presented to CDIP Twelve Session, November 18-21, 2013 (CDIP/12/INF/5)
5. Annexes to the Workshop on Intellectual Property, the International Mobility of Knowledge Workers and the Brain Drain – presented to CDIP Twelve Session, November 18-21, 2013 (CDIP/12/INF/5)
6. The Global Race for Inventors by Carsten Fin, Ernest Miguez and Julio Raffo, 17 July, 2013
7. 2013 World Intellectual Property Indicators special section
8. OIM publication on how UN System and different Agencies look at the topic of Migration and Development
9. Articles and short notes arising from press release from the Conference on “Migration: Global Development, Ne Frontiers, London 2013” such as:
 - a. Global Invention and Innovation, July 12, 2013
 - b. Migrating Inventors Make U.S. Top Destination, By Simon Kennedy, April 11, 2013
 - c. UK lags behind in Global Race to recruit innovative workers, by Tom Newcombe, April 11, 2013
 - d. To remain Top in Innovation, the U.S. needs Immigration Reforms, By Charles Kenny, July 22, 2013
 - e. New Report underlines the US’s continuing attraction for the worlds inventors
 - f. Want to fix the economy? Pass Immigration Reform, by Larry Downing, Reuters.

[Appendix III follows]

APPENDIX 3: LIST OF PERSONS TO BE INTERVIEWED

| SN | NAME | TITLE | DEPARTMENT | CONTACT |
|-----------|-----------------|------------------------------------|--|--|
| 1 | Carsten FINK | Project Manager Chief Economist | Economics and Statistics Division, WIPO | Carsten.Fink@wipo.int |
| 2 | Julio RAFFO | Researcher | Economics and Statistics Division, WIPO | Julio.Raffo@wipo.int |
| 3 | Ernest MIGUELEZ | Researcher | Economics and Statistics Division, WIPO | ernestmiguelez@gmail.com |

[Appendix IV follows]

APPENDIX 4 : GENERAL DATA COLLECTION QUESTIONNAIRE

1. Brief information on the Respondent

- a. Name:
- b. Department:

2. Project Design and Management

2.1. *The Project Framework*

- a. Was the project document appropriate for used as a guide for continuing project implementation and assessment of results? Were there any changes made?

2.2. *The Project Monitoring and Controlling Tools*

- a. In your view, were the monitoring, self-evaluation and reporting tools adequate to provide the project team and key stakeholders with relevant information for decision making purposes?

2.3. *The Project Synergy*

- a. Which departments, divisions or any other units within WIPO participated or contributed to the project?
- b. What was the contribution of each of them?
- c. Are there others which could have contributed but did not? If so which and what could they have done?

2.4. *Risks/Context*

- a. There were risks that were identified in the initial project document. To what extent have they materialized or been mitigated and how has the project been able to respond to changes in the context?
- b. What other challenges did you encounter in the project design and implementation?

2.5. *Lessons learned and Best practices*

- a. What key lessons and best practices would you draw from the project design and administration? What worked well and what did not?

3. Project Effectiveness

3.1. *Research on IP and Brain Drain:*

- a. In your view, was the Research on IP and Brain Drain done the way it was planned. Are there changes you may want to recommend?
-

3.2. *Workshop on IP and Brain Drain:*

- b. In your view, was the Workshop on IP and Brain Drain organized the way it was planned. Are there changes you may want to recommend?

3.3. *To what extent was the project able:*

- c. To contribute to greater awareness and enhanced understanding of the IP and Brain Drain linkages among policymakers
- d. To develop an informed Research Agenda on IP, migration and associated knowledge flows, providing the basis for future studies on this topic

4. Project Sustainability

- a. In your view, what programs and activities are in place in WIPO to ensure the sustainability of this project?
- b. What recommendations given by the researchers on IP and Brain Drain that may ensure sustainability of the project?
- c. What recommendations given by the participants of the workshop that may ensure sustainability of the project?
- d. What are the commitments of the UN partners that can ensure the continuation of work in this topic?
- e. Are there indications or interests for the workshop participants to continue with research on this topic?
- f. Is the project addressing the specific needs of the organizations/ countries?
- g. What commitments are there to show that the activities of the project will continue after the support of WIPO?

5. Implementation of development agenda recommendations

The extent to which the DA recommendation 39 and 40 has been implemented through the project in terms of:

- a. Studies on Brain Drain undertaken
- b. Recommendations made available to developing countries on Ip and Brain Drain
- c. Coordination on IP issues with UN Agencies intensified

[Appendix V follows]

APPENDIX 5: Stakeholders who collaborated in the workshop

Table 1: Some of the international organizations that participated included:

- a. International Labor Organization, ILO
- b. Organization for Economic Cooperation and Development, OECD
- c. United Nations Conference on Trade and Development
- d. United Nations Industrial Development Organization
- e. World Bank
- f. World Trade Organization, WTO

Table 2: Researchers from the following universities also participated:

- a. Bar Ilan University, ISRAEL
- b. Bocconi University, FRANCE
- c. Harvard Business School, USA
- d. Korea University, SOUTH KOREA
- e. University of California, USA
- f. University of Georgetown, USA
- g. University of Montesquieu, FRANCE
- h. University of Stellenbosch, USA
- i. Oxford University, UK
- j. Polytechnic University Milan, ITALY
- k. University of Bologna, ITALY
- l. University of Luxembourg, LUXEMBOURG
- m. University of Toronto, CANADA

[End of Appendix V and of document]
