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WORKING PAPER

Strategy for green energy technologies innovation in Egypt

How patents and trade secrets should be used to enhance cleaner energy technologies innovation in Egypt?

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About the authors

Dr. Bassem Awad, a specialist in intellectual property, is a Chief Judge at the Egyptian Ministry of Justice, and a Counsellor at the Judicial Department of Abu Dhabi, United Arab Emirates. Dr. Awad is affiliated with the Access to Knowledge for Development Center (A2K4D) at the American University in Cairo (AUC) and works as a Lecturer of IP Law at the Regional Centre of Intellectual Property at Helwan University, the postgraduate programmes of Alexandria University Law School and the WIPO Academy. Awad holds PhD and LLM degrees in Intellectual Property from the University of Montpellier in France, and an LLM in International Business Law from the University of Paris I (Panthéon-Sorbonne). He was a member of the Egypt Country Team for the African Copyright and Access to Knowledge (ACA2K) project from 2007 to 2010, and co-author of the ACA2K Egypt *Country Report.*

I. Research Problem & Context

Within the past few years, the depletion of oil reserves as well as the endangerment of water resources forced the Egyptian government to realize that traditional energy resources are inadequate to meet future needs Thus, the search for renewable energy resources was triggered to enable the country to face its constantly increasing demands.

Understanding the significant central role that science and technology can play in the economic growth of the country, the Egyptian government started to imply the use of appropriate scientific methods and technologies, in order to help the national economy to be globally competitive and to ensure the national security.

In 2007, the national renewable energy strategy has been revised to make use of natural resources in a sustainable manner to produce clean and renewable energy. Biofuels produced from rice straw, sugar cane, jatropha, jojoba or algae have been proposed as one of the main pillars of the current national renewable energy strategy.

Internationally, the legal framework of innovation (policies, rules and regulations) has been advanced the last few years as one of the barriers of the clean energy technologies innovation. Following the United Nations Framework Convention on Climate Change (UNFCCC) Bali meeting, the relation between Intellectual property mechanisms in general and green technology has been raised in several occasions. Patent rules and regulations are considered as a possible barrier to the development of green technology innovation and its commercialization.

Our case study is classified under the second research theme of the Open AIR project. We aimed to analysis the legal framework of innovation in Egypt to investigate how intellectual property regimes could properly be used to enhance innovation and creativity of African scholars and sharing knowledge in the field of clean energy technologies innovation. The findings of our research should reveal a number of essential elements for green laws and regulations.

II. Research Objectives & Questions

Legal studies in the field of innovation for cleaner energy technologies usually focus on the technology transfer from developed countries to developing countries. The aim of our study is to examine the interrelations between the green energy technologies innovation in Egypt (with a special focus on biofuels) and the patent and trade secrets systems in order to make knowledge more accessible in Egypt and benefits shared more widely in Africa.

The main question in our research is ***how patent and trade secrets systems could be used to improve the development of green technologies innovation in Egypt?***

The study seeks to answer the following questions:

- How national patent and trade secrets system in developing countries should work to facilitate access to green technologies information's and to promote the development of local capacity and competence.
- What the main barriers and possible solutions are for Egyptian innovators to have access to green energy technologies. [establishing a patent database; facilitate administrative procedures; patent commons; patent pools]
- How can priority given to environment-friendly technologies help Egyptian and African innovators find a fast track to the marketplace.
- What researchers in developing countries need to make use of their natural resources and to catch up with green technology?

The study has

- Analyzed the legal framework and determine legal challenges facing innovation in the field of green energy technologies.

- Examined the existing administrative procedures to protect green energy innovation to identify current barriers and provide a number of mechanisms that could facilitate access to this type of clean technology.
- Provided a best practice guide for green patents laws and regulations.
- Proposed a number of non IP-solutions to enhance green energy technologies innovation.

III. Methodology & Design

The case study activity was initially scheduled to begin in August 2011; however, due to political situation after the revolution in Egypt and delay of funding approval, work started in late November, 2011. The work had been conducted under the auspice of the A2K4D center of the American university in Cairo (AUC) and the college of Engineering and Technology at Arab Academy for science, technology and maritime transport (AASTMT).

The methodology of our research has incorporated desk analysis of existing materials such as previous studies and relevant legal and policy instruments governing patents, trade secrets and clean energy. The doctrinal analysis was followed by a qualitative analysis and fieldwork interviews with stakeholders and policy makers in the public and private sectors.

The first phase of the research has been conducted by the principal investigator: **Dr. Bassem Awad**. Dr. Awad has prepared a literature review of biofuels rules and regulations in Egypt. Deep analysis of national laws, regulations and policies have been conducted and a number of legislative recommendations have been proposed to facilitate access to green energy technologies innovation. The administrative procedures of the Egyptian patent office has been revised and several mechanisms have been suggested.

The second phase of our research aimed to understand the green energy environment on the ground and the actual situation in Egypt. The qualitative analysis was divided to several axes:

- We have started by distributing in December 2011 a formal survey to possible stakeholders: academics, economists, scientists, technologists in industry to obtain concrete data for mapping. Internet surveys were the most used form, a questionnaire to complete was sent as an attachment. Surveys have been analyzed by the researcher of

Arab Academy for Science and Technology and Maritime Transport (**AASTMT**) in collaboration with the **principal investigator**.

- The researchers of **AASTMT** (directed by **Professor Yasser el-dossouky**, Vice dean of college of Engineering) have examined during January 2012 the databases of the Egyptian patent office to find out what kind of clean energy technologies innovation already existed in Egypt and what type of registered patent in that field.
- Recently, in February 2012 we started to make fieldwork interviews with public/private stakeholders and policy makers. Interviews are conducted by **Dr. Perihan Abou Zeid** in coordination with the principal investigator.

NB: The qualitative analysis has not yet been completed by the research team due to the political situation in Egypt. During the last 12 months, the ministry and public entities in charge of renewable energy have been changed 3 times. Scheduling interviews to discuss the government vision was always a difficult task. The research team has scheduled several fieldwork interviews with different stakeholders in the public sector within the next two weeks. The qualitative analysis should be finalized before the interim workshop at **the end of March 2012**.

IV. Findings

The Egyptian government has been focusing for a long time on the solar and wind technologies, yet lignocellulosic and algal biofuels have recently gained a lot of attention as a biofuels feedstock. Concerns over food security and food prices have lead the government to encourage the biofuels second generation models. The national renewable energy strategy aimed to make use of "biofuels from waste water and waste land".

The specific kinds of green energy technologies currently used in Egypt are biofuels from rice straw, Jatropha plant, Jaboba plant and algae. However, the production is still on small scale due to the absence of advanced technology and the lack of investment.

Biofuel activities are usually based on local technologies innovation adopted by Egyptian scholars. Most of these local technology innovations in the field of green energy are coming from the public entities. Public and industrial investment in biofuels began to accelerate in the last two years. The private sector is still hesitant to invest in the field of clean energy innovations except for few attempts from Egyptian investors.

After the revolution, biofuels have driven special attention as one of a number of possible alternatives to fossil fuels that might help to meet the energy needs in an environmentally sustainable way. Political parties believe that the development of a strategy of renewable energy for the next few years is necessary for the technological development and economic growth of the country. The limited availability of fuel, the high demand on energy in the country and the geopolitical tensions in the region have made from biofuels a suitable alternative of energy security. From economic development perspective, the use of natural resources to develop clean energy technologies could help the new government to reduce poverty and unemployment.

Key findings:

- Absence of a clear definition and interpretation of the condition of patentability. The loose definition of the inventive step and industrial application has raised concerns on the patent scope. Patent claims in the field of green energy are too broad and may limit access to local inventors.
- Plant varieties provisions are rarely used due to the lack of awareness. In addition, a new modification to the plant varieties book of the IP law imposed by the Association Agreement (AAs) signed with the European Union have limited the disclosure of the content of plant varieties.
- The Egyptian IP Law has adopted the highest level of disclosure as it obliges the patent applicant to disclose the best possible way of executing the invention and the origin of genetic resources. It also requests a prior informed consent of the use of traditional knowledge in patent applications.
- Parallel importation is allowed under the Egyptian IP law but has never been used to obtain green energy technology.

- The administrative procedures of the patent office is so long (46 months), several mechanisms have been discussed to enhance the clean energy technologies innovation in Egypt such as establishing an advanced patent databases; **a fast track procedure to facilitate the examination process of green energy innovation; a green common patent and using open source mechanisms to incentivize innovation and promote the transfer of clean energy technologies.**
- The need to create a "technology acquisition fund" to fund the research on clean energy technologies.
- Absence of public-private partnerships in the field of clean energy technologies.

V. Unexpected Research Elements

Description of the three, or more, most unexpected elements (aspects, dynamics, findings, outcomes) of the research.

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VI. Insights

Interesting quotes and/or observations uncovered by the research that might be useful to other stakeholders directly engaged by the research.

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VII. Policy Implications

- The principal investigator has been invited to participate in the discussion of the future of renewable energy innovation in Egypt. What type of clean energy industry that Egypt would like to develop in the next few years.

- The principle investigator has been asked by the scientific research committee of the new People's Assembly (Parliament) to prepare a proposal on the role that the intellectual property system could play to foster clean energy innovation.
- The research team has been invited to the 2nd international renewable energy workshop organized by the AASTMT in May 2012 on the development of sustainable technologies and renewable energy for green cities in Egypt,

VIII. Training & Capacity-Building Needs

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- Green economy in the context of sustainable development and poverty eradication principals, opportunities and challenges in the Arab region, Arab regional preparatory meeting for the United Nations conference on sustainable development, Cairo, October 2011.

Government bodies:

- Ministry of State for Environmental Affairs, Egyptian Environmental Affairs Agency http://www.eeaa.gov.eg/english/main/env_ozone_ecc.asp

- The Egyptian patent office http://www.egypo.gov.eg

- Industrial Engineering Department, College of Engineering and Technology, Arab Academy for Science & Technology.

- Delta Sugar Company (DSC) http://www.deltasugar.com/

Private Sector:

- New Nile Company (working on Jatropha plant) http://www.newnileco.com/

- Egyptian Natural Oil Company, NATOIL (working on Jojoba seeds) http://www.natoileg.com/english.htm

The Open A.I.R. Project

The Open African Innovation Research and Training (Open A.I.R.) project is a pan-African network of experts investigating, and providing training on, how intellectual property (IP) systems can be harnessed in open, participatory ways that maximise knowledge access and collaborative innovation and ensure wide sharing of IP's benefits in pursuit of equitable development.

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