



A new EPO classification scheme for climate change mitigation technologies

V. Veefkind*, J. Hurtado-Albir, S. Angelucci, K. Karachalios, N. Thumm

European Patent Office, P.O. Box 5818, 2280 HV, Rijswijk, The Netherlands

ABSTRACT

Keywords:

Clean energy
Patent classification
Climate change
EPO examiners
Y02
Tagging
Patent trends
CCMT

Climate Change Mitigation Technologies (CCMTs) are becoming increasingly more important, both politically and economically. Having recognized this, the EPO cooperated with the United Nations Environmental Program (UNEP) and the International Centre on Trade and Sustainable Development (ICTSD) and produced a study on Patents and Clean Energy. To consolidate the efforts invested in this study, the Y02 patent classification was created. This is a tagging scheme developed by experienced examiners working in the relevant fields, in cooperation with external experts, for patent documents related to CCMTs, which provides additional classification next to the regular ECLA and IPC classification of such documents. Patent documents were tagged by means of search strategies by experienced expert examiners, which were formalized into algorithms that can be re-run periodically to update the classes. Currently there are 2 subclasses: Y02C (for Greenhouse gas capture and storage) and Y02E (CCMTs relating to energy generation, transmission or distribution). At the time of writing, over 650,000 documents have been tagged with Y02 codes. A comparison between published patent documents with Y02 tags and published patent documents in general confirms that over the last 15 years the annual amount of patents related to “clean energy” has grown more than twice as fast as the average of all patents. The Y02 codes are available and searchable through Espacenet or PATSTAT.

© 2011 Elsevier Ltd. All rights reserved.

1. Introduction

Technology transfer and intellectual property rights are increasingly recognized as important issues in climate talks at the United Nations Framework Convention on Climate Change (UNFCCC) [1].

A number of reports have been issued [2,3,4,5] with the aim to develop a patent landscape for climate change mitigation technologies (CCMTs), especially with a focus on “clean energy”.

The UNFCCC defines Climate Change Mitigation Technologies as technologies [6] which can be related to a human intervention directed to reduce the sources or enhance the sinks of greenhouse gases.

Making such reports is not easy, since CCMTs are found in very many technical areas, from chemistry to electronics, and from engine technologies to semiconductor industry, which makes it difficult to compile encompassing data. The mentioned reports have sought to do this and have provided valuable contributions by adding data to a debate sometimes lacking empirical input.

The European Patent Office (EPO) employs highly qualified examiners, who normally have an (advanced) degree in the

technical field in which they work. They are also experts in retrieving pertinent patent information in their field, necessary to perform prior art searches, using patent classification schemes such as ECLA and IPC. Thus, they have both technical expertise and are experts in patent classification and search, qualities which are essential to find the best set of data in scope as well as coverage.

Having recognized this potential, a project was started up between the EPO, the United Nations Environmental Program (UNEP) and the International Centre on Trade and Sustainable Development (ICTSD), to consolidate their respective expertise on the issue in April 2009 to create a public information platform that would enable in-depth empirical studies to be undertaken on the role of IPRs in the transfer of CCMTs. To facilitate this effort, selected experienced examiners have identified the relevant patents in the CCMT arena, with an emphasis on greenhouse gas capture and storage and the energy providing and transporting sector. The EPO-UNEP-ICTSD report [7] is very extensive and goes beyond merely providing a patent landscape, by also including a licensing study for example. It must be mentioned, however, that reports and landscapes are only reporting on the patent situation existing up to that point, which may change again afterwards.

To make it easier to retrieve the information they contain, patent documents are classified using the International Patent Classification (IPC) and, for example, the European Patent Classification

* Corresponding author.

E-mail address: vveefkind@epo.org (V. Veefkind).

(ECLA). It should be noted that the IPC Committee of experts under auspices of WIPO has developed a catchword index for “Environmentally Sound Technologies”, called the “Green inventory” [8] to facilitate access to patent documents relating to those technologies through use of the IPC. However, the way that publicly available patent documentation is currently organised means that users often need considerable expertise, time and money to be able to retrieve the information they want in politically and technically critical sectors such as climate technologies, essential drugs, key ICT standards, and so on.

This is also the case for the Green Inventory, which indicates which IPC classes would be useful for retrieving certain environmentally sound technologies. The general places in the IPC indicated are not always very specific, so that injudicious use would lead to many false hits (Type I errors, i.e. inclusion of patent documents which are not related to CCMTs).

Because patents relating to climate change mitigation technologies can be found in so many areas of technology, they do not fall under one single dedicated classification section, but tend to be spread over several different sections. A further complicating factor is that these newly emerging technologies are developing very quickly. This often leads to a certain new technology being classified and searched independently in several classical technical areas. It is easy to overlook one of these potential areas, leading to incomplete results (Type II errors). Therefore, using the existing IPC or ECLA classifications will generally lead to an incomplete set of results with too much “noise”, even when knowing more or less where to look. It was felt, therefore, that a catchword index would not be sufficient, as well as redundant in view of international efforts in that direction already being underway [8].

Over the last years, spurred by economic incentives (such as CO₂ quota and governmental or regional investment programs), legal initiatives and even commercial or marketing aspects, research and investments into CCMTs has grown tremendously. For example, total investment in renewable energy capacity (excluding large hydro) was about \$150 billion in 2009, while “green stimulus” efforts since late-2008 by many of the world’s major economies even totaled close to \$200 billion [9].

As was already noted for nanotechnology [10], such large investments in research in certain technical areas are often reflected in an increase in patent applications, which has an impact on the workload and work-distribution of patent offices.

Given the above-mentioned drivers, it should come as no surprise that there was a strong desire to perform a structured retrieval and identification (“tagging”) of patent documents related to CCMTs, while reducing the Type I and Type II errors as much as possible, so that trends could also be followed over time and interested parties (including the EPO itself) could extract their own data, tailored to their needs. This incited the EPO to initiate a project aiming to capture these documents by means of the development of a classification scheme of CCMTs and subsequent allocation of the codes to pertinent patent documents. The methodology and some results are reported in this paper.

2. Delimitation of technologies

The new Y02 classification scheme is meant to collect in one convenient location selected technologies, which control, reduce or prevent greenhouse gases (GHG) emissions of anthropogenic origin, as set forth by the Kyoto Protocol. These mitigation technologies can be presently found all over IPC (ECLA) sections A–H, hampering an easy and structured access to these technologies.

The EPO already developed a classification scheme (Y01N) whose task was to collect patent publications related to nanotechnology [10], which also were to be found all over the existing

IPC. The new Y02 scheme uses a methodology similar to the one established to cover nanotechnology. This involves a new tagging scheme, following an ECLA-like structure, to identify documents dealing with climate change mitigation technologies (CCMT). It is being deployed on a step-by-step basis.

The first step for the implementation of this tagging has been the definition of a taxonomy or classification, i.e., creating the “tags” to be “attached” to the patent documents. This taxonomy is, in fact, a parallel classification scheme, structured according to the hierarchical criteria in patent classification. As this classification system was conceived as a parallel taxonomy avoiding the replacement of any existing code, the EPO decided to implement it as a tagging code under the Y02 class, corresponding to “technologies or applications for mitigation or adaptation against climate change”.

The inclusion of technologies in the respective sectors is done according to their potential for reducing greenhouse gas emissions. Even if this effect is contested for some sectors (e.g. biofuels, with an associated ethical and technical debate) they may be still included, if they are on the UNFCCC negotiation table and there is a need to inform the public about their relevance as CCMT and their ownership. Further, the inclusion does not mean that all technologies included in the Y02 scheme are ecologically sound or ‘green’ etc., as they may have other detrimental aspects, which are not part of our considerations (e.g. nuclear energy) or may be considered CCMTs under given circumstances only (e.g. oxy-fuel combustion, where the nitrogen is removed from air to yield substantially pure oxygen for combustion of fuel. On its own this would require extra energy, but it enables direct geo-sequestration of the CO₂ produced without the need for an additional separation step [11]). The categories are normally defined according to purely technical features in an objective way, consistent with the neutral nature of the European Patent Office.

The European Patent Office has around 4000 patent examiners who have a wealth of highly specialised expert knowledge in technical disciplines, patent classification and information retrieval. It must be pointed out again that there is a very wide spectrum of technical fields associated to the CCMTs. An expert group of these examiners was set up to develop the new classification scheme, with, both, experience in search and classification, and technical knowledge in the relevant area. This team of experts was coordinated by a committee combining professional experience in CCMTs outside the EPO (UNFCCC, European Commission) and expertise in similar projects (nanotechnology tagging). After first tentative definition, a first draft developed internally to the EPO was prepared. The scheme was developed considering the CCMTs inventories of UNFCCC, relevant policy documents of the European Commission and technology reports of IPCC.

During the implementation of the taxonomy the list of potential technologies was adapted to the particularities imposed by the nature of patented developments. In some cases a technology which is technically or economically relevant, has a moderate or even small impact in terms of patents (e.g. Maximum Power Point Tracking, MPPT, in wind power generation technology), which would advise against a dedicated code for such technology. In other cases the technology is a matter of policy rather than of tangible technical contributions (for example reforestation). Finally, in some situations the criteria defining the technology are difficult to identify in the text of a patent specification; for instance it is not always possible to identify the scale at which a described technology is going to be applied, as the applicants tend to avoid as much as possible to restrict the protection they are asking for. A typical example in this case would be “small scale hydro energy”, which may be very useful to distinguish from “large scale hydro energy” from an economic point of view, but in patents is usually not distinguishable from larger scale hydro energy.

Download English Version:

<https://daneshyari.com/en/article/38094>

Download Persian Version:

<https://daneshyari.com/article/38094>

[Daneshyari.com](https://daneshyari.com)