

Technology and IP: problems and solutions

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In the third part of a series about intellectual property rights and low-carbon technologies, Ian Harvey investigates potential problems that may arise.

[Last week's article](#) argued that strong intellectual property rights (IPRs) will be an essential catalyst in order to develop new, low-carbon technologies. This article addresses potential IPR issues and solutions.

Patent thickets

There are many sectors where a large number of patents (known as patent thickets) and complexities create potential problems. These include computers, mobile phones, audio and video compression, digital and high definition televisions. Although companies often complain vocally about the complexities and costs of doing so, in practice they usually solve these quite effectively by cross-licensing, by creating standards-setting bodies and by developing patent pools (where these do not breach [anti-trust laws](#)).

Where standards are created, patent pools are usually formed. Examples are the [MPEG](#) family of audio and video standards and the [MPEG-LA](#) patent pools. In these cases IPRs are well-defined and the cost of access is uniform and open. Well-defined IPRs enable global and compatible standards to be established and made available on Fair and Reasonable Non-Discriminatory ([FRAND](#)) terms. These agreements are legally enforceable and provide a well-defined structure for business to make its investment decisions. The rapid diffusion of mobile telephones in Europe compared with that in the United States was arguably due largely to the standards agreed by the industry and the EU competition authorities.

Creating patent pools runs the risk of breaching anti-trust laws. It may be necessary to create "safe harbours" for low-carbon technologies whose owners wish to create patent pools for certainty of access and of price, for them and any others. Europe, Japan and the US have conflicting anti-trust approaches to competition and IP issues. For example, patent licensing in the US is generally seen to be pro-competitive. In the EU, under the Treaty of Rome, such licensing is defined as anti-competitive unless proven otherwise. Historically, the US has thought more coherently and logically about the IPR/competition interface. These issues will need to be reconciled so that "safe harbour" behavior that is legal in one jurisdiction is not illegal in another.

Reducing the cost of licensing low-carbon technology, particularly in the developing world, could be helped by increasing liquidity through global energy technology patent pools which are then

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"Access to low-carbon technologies in the developing world does not mean doing away with IPRs."

[securitised](#) to improve their tradeability and define a market clearing price.

IPRs in the developing world

Access to low-carbon technologies in the developing world does not mean doing away with IPRs. This has been the most emotive and appears the thorniest of issues. It should not be. The concerns of the developing world are principally about whether they will have access technologies at fair or affordable prices (these are not the same thing), which are being pressed on them by the developed countries. The perceived issue may be hypothetical in many situations. Having no IPRs, or easy compulsory licensing – with the consequent risk of free-riding – is not the solution.

For most technologies, patents are not filed in the Least Developed Countries ([LDCs](#)), because the small potential markets do not justify the cost of obtaining patents there. In such cases domestic companies are free to use the invention in that country, but not for export to a country where there is patent protection. Therefore, IPRs are unlikely to be inhibiting within these LDCs. If LDC manufacturers are permitted – through compulsory licensing – to manufacture for sale in a country where there is patent protection (for commercial reasons), then it will damage the incentive structure that IPRs create and should not easily be permitted.

Companies generally sell at differentially low prices in the LDCs provided that there is no leakage of these products back into their main markets, where they will sell at higher prices. The World Trade Organisation's 2001 [Doha Declaration](#) provided for this in the case of pharmaceuticals. Some countries, such as Japan, would need to change their laws and regulations to prevent such trade.

If there *are* relevant IPRs which do inhibit otherwise legitimate take-up in the developing countries, there are several solutions:

- * If the IPRs are publicly held, local LDC companies could receive a geographically limited license, at preferential or zero cost. This would not significantly damage the broader objective of promoting investment by the private sector in low-carbon technologies and products for use in countries where they will have a bigger carbon-reduction impact on reducing global carbon emissions.
- * If the IPRs are privately held, there are several solutions: their use can be paid for or subsidised by governments; they can be paid for or subsidised by charities (as in the case of the Gates Foundation and the Global Fund in the area of pharmaceuticals).

Guaranteed off-takes at specified prices to provide incentives for developing low cost solutions in these countries (as the World Bank and the above charities have done in the case of health). Compulsory licensing is also possible as a last resort, but with substantial downsides. Companies might well grant limited geographic licenses at preferentially low or cost, provided that there is no leakage of these products back into their major markets.

Compulsory licensing is permitted in most countries (except the US) as an exceptional measure in cases of abuse of monopoly or a national emergency, to limit the ability of an IPR owner to stop others from using the IPRs. Its use is constrained by WTO agreement and is intended to be used as a policy of last resort. A reasonable royalty must be paid to the IPR owner. So compulsory licensing is not a low- or zero-cost option. Compulsory licensing is permitted in Europe but there are no recorded examples of its use. It is generally regarded as a “nuclear option” by both governments and business, which will come to an agreement without its use being invoked.

The IPR landscape in low-carbon technologies is likely to be significantly different from that of “effect chemicals” such as pharmaceuticals, where a single patent for the active pharmaceutical agent can effectively dominate use in several disease areas. Low-carbon technologies, and particularly low-carbon products, are likely to be more complex. Many developments and technical components will be necessary for the end beneficial effect and no one patent is likely to dominate. In these cases, the industry participants are usually perfectly capable of negotiating cross-licences with each other. In this industrial structure, competition is likely to be intense, as it is in the computer or mobile-phone industries. With competition driving down prices, there will be little rationale for compulsory licensing. If the issue for the LDC is the “ability to pay” for *any* technology

(as it was in the case of [antiretroviral drugs](#) for the treatment of HIV/AIDS in South Africa), then either a Doha-type agreement or financial subsidy or grant will ultimately be necessary.

If compulsory licensing were to be considered, the practicalities are substantial. It is difficult to be precise about where boundaries should lie. A technology that was valuable for a low-carbon product might also be used in quite different products where there was no rationale for compulsory licensing. The dilemma then is whether to have a blanket compulsory license, which would expropriate returns from other uses, or to try and define where the boundary should lie – which is usually virtually impossible.

In the case of antiretrovirals, the underlying concern was that drugs already being sold at low prices in South Africa were finding their way to higher priced, developed-country markets. This was not only damaging these markets for the manufacturers, but also creating health problems in both markets because the products were being used improperly. This so-called “parallel trade” was largely rendered illegal by the Doha Declaration. This agreement allows a country experiencing a public health emergency to manufacture affordable medicines through compulsory licensing, in a third country if necessary, but prohibits the selling of such low prices drugs in developed countries where there is patent protection. Successful criminal prosecutions in Europe show that the declaration has some teeth. Others argue that it has not been effective at minimising such trade or preventing outright counterfeiting.

If limited compulsory licensing along the lines of the Doha Declaration were to be considered for low-carbon technologies, an independent assessment of its effectiveness and impact should be carried out immediately. Based on experience in comparable industries, the necessarily crude estimate of the market costs of licensing low-carbon technologies would be in the range of 2% to 20% of the plant or product cost.

Patent sharing at pre-defined royalties could be encouraged by creating specified “safe harbour” patent-pooling areas, acceptable to the anti-trust authorities. Provided that there was clarity and certainty about the future constraints, it is likely that companies would be prepared to invest. There would naturally be a correlation between their propensity to invest and the attractiveness of the set licensing terms.

This article is the third part of a series about intellectual property. Read the other parts here:

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[IPR and low-carbon technologies](#)

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