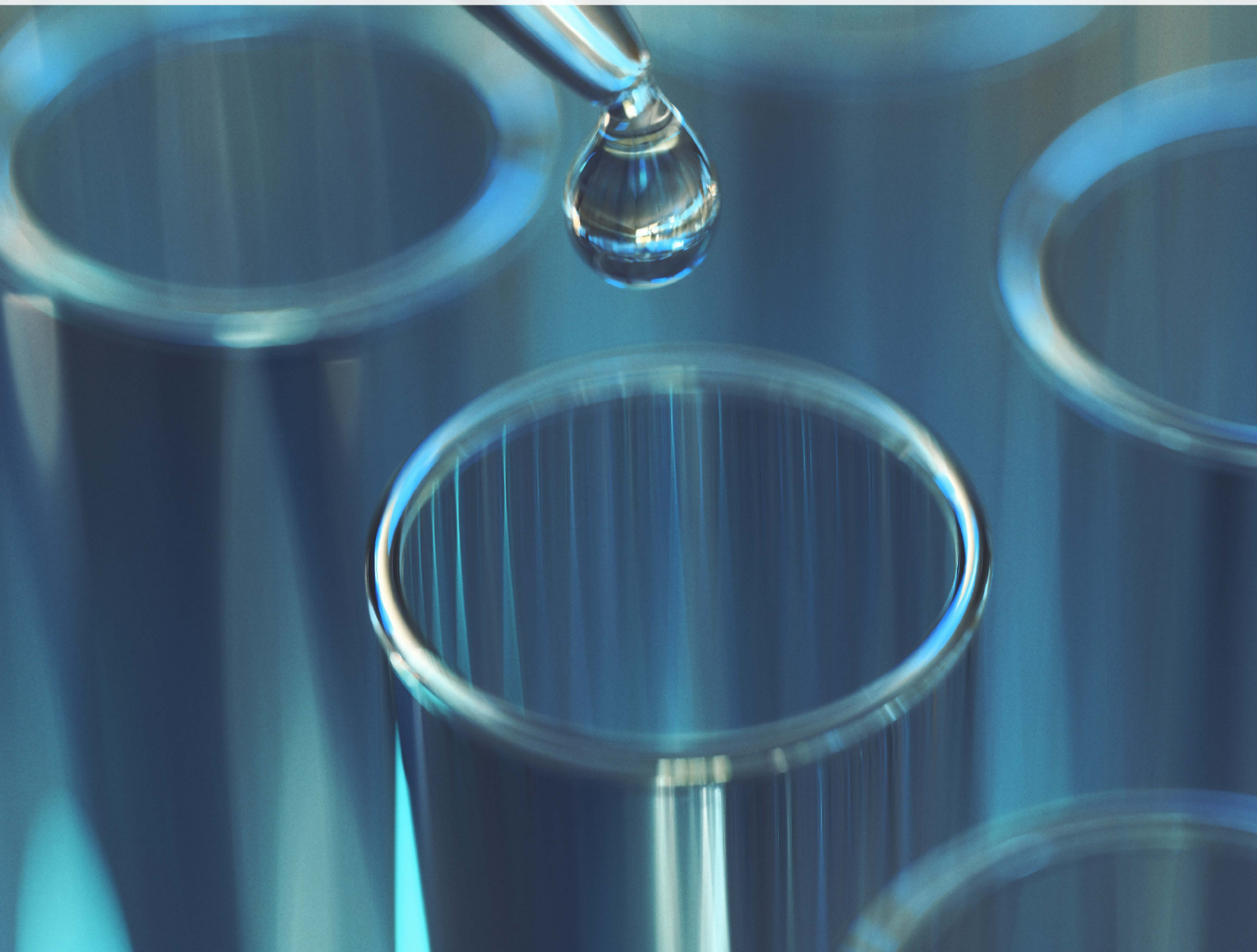




Europe's Chemicals Industry: The Benefits and Risks Posed by the Unified Patent Court





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Europe's chemicals industry is one of the cornerstones of the global economy, with production spread across the entire continent. The scope of the chemicals industry is broad, including the production of high-value substances such as: pharmaceutical synthesis; large-scale production of key chemicals such as fertilizers; and the processing of raw hydrocarbons into essential materials such as plastics. With many international companies at play in a continent-wide industry, the recent introduction of the **Unified Patent Court (UPC)** could present an opportunity for companies to easily protect their IP across the territories that they need. The **Unitary Patent (UP)** is based on the **European Patent (EP)** granted by the European Patent Office under the rules of the European Patent Convention, it adopts the same pre-grant phase and the same standards for examination as a regular EP. After an EP is granted, the patent proprietor can request unitary effect, thereby obtaining the new EP with unitary effect, making it a UP. The UPC is an international court common to the EU member states in which the **Agreement on a Unified Patent Court (UPCA)** has been ratified.

As of September 2023, there are seventeen countries that have ratified the UPCA and another seven that have signed but not yet ratified. This means that an in-force UP will be active in these seventeen countries, which includes economic powerhouses like Germany, France, and Italy. The only EU countries that have not signed are Spain, Poland, and Croatia. This means that for a large company producing chemicals across multiple countries in these territories, the UPC could be a valuable path to protecting their IP. However, there are also potential risks to these multinational companies introduced with the UPC. It could empower **Non-Practicing Entities (NPEs)** to become more active in these territories, as the market currently covered by the UPC is of a comparable size to that of the USA, with GDPs of US\$13.0 Trillion and US\$26.2 Trillion respectively (IMF World Economic Outlook Database, 2023). Previously, an NPE would have to win court battles in multiple countries across Europe to have access to a market this size. Therefore, not only are the potential monetary losses greater for companies operating in Europe, but any loss in the proceedings could affect their ability to operate across the majority of the EU.

Cipher's **Universal Technology Taxonomy (UTT)** is a powerful ML-based tool that can classify patents into one of over 120 technology classes. Each of these classes sits within one of ten superclasses, the most recent addition to which was chemicals. This superclass covers five technology classes across the broad scope of the chemicals industry: Coatings; Industrial Chemistry; Polymers; Separation & Purification; and Synthesis & Processes. The global chemicals andscape was generated using these classes, followed by data transfer into PatentSight for further analysis. There are a number of benefits to using the PatentSight platform, but a key advantage is that it gives access to their quality metrics such as **Competitive Impact** and **Patent Asset Index**, which can give insight into not only the size of the patent landscapes, but also the quality and relevance of the patents. These indicators consider the sizes of markets covered by the patent family, as well as the number of forward citations normalized for age and citation practices within both the territories filed in and the technology area. This is designed such that an average patent family will have a Competitive Impact of 1, and Patent Asset Index is the sum of Competitive Impact across all patent families within a portfolio. This provides a straightforward and quantifiable metric that can be used to compare the portfolios of different companies and UPC territories that will give a deeper understanding of the situation.

KEY POINTS:

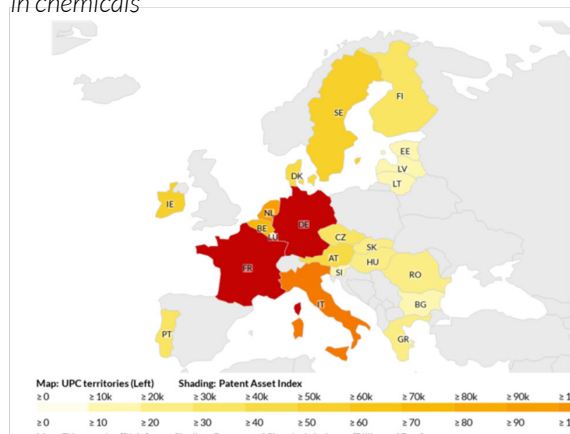
- The UPC covers approximately 80% of the revenue generated by the EU’s chemical industry, meaning that it could be a great opportunity for companies to cover their revenue across the continent, although the exclusion of key chemicals manufacturers Spain and Poland could limit its usefulness.
- The top owners of chemicals patents in Unified Patent Court (UPC) territories are a mix of domestic and foreign multinational organizations, of which the domestic owners have more existing filings in UPC territories and are more likely to see benefit from the unitary effect.
- NPEs, universities, and research organizations hold almost 10% of the patent landscape in UPC territories and could utilize Unitary Patents (UP) to greatly increase the market coverage of their portfolio, which could help them in licensing agreements as well as patent assertions.

UPC territories cover over 80% of revenue in the EU’s chemical industry

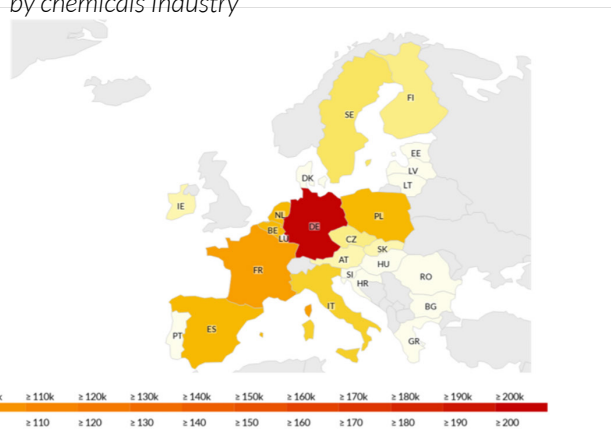
To understand the potential impacts of UPC on the chemical Industry’s patent landscape in the relevant territories, it is first important to break down the existing patent landscape across the UPC territories. Mapping Patent Asset Index of active patent families in each UPC territory shows that the two largest territories are Germany and France, with Patent Asset Indexes of approximately 270,000 and 210,000 respectively. Other countries with strong portfolios are Italy, The Netherlands, and Belgium, each of which have Patent Asset Index over 70,000. Outside of these territories, the landscape is quite uniform with 14 countries with Patent Asset Index between 10,000 and 50,000. When the number of filings is considered, all these countries have very high mean Competitive Impact, and the three territories with the lowest mean Competitive Impact are Germany, France, and Italy. To help understand this data better, country-specific revenue data for the chemicals Industry can be compared to the Patent Asset Index per country (*Cefic, Landscape of the European Chemical Industry*).

The annual revenue for each EU country can also be mapped, which shows that UPC territories have a combined revenue of €695.2 Billion, which accounts for 82.9% of the chemical Industry of the entire EU. Three quarters of the revenue in UPC territories is concentrated in just five countries: Germany, France, Italy, The Netherlands, and Belgium. Given these are the same countries that have the highest Patent Asset Index, this could be a clear justification for the adoption of UPC, as a UP is cheaper than maintaining an EP validated patent in four or more countries (EPO, Unitary Patent Cost). While UPC does provide good coverage of these territories, a major limitation is that it does not offer protection in Spain and Poland, who are the third and fourth largest EU countries by chemical industry revenue. These are two of the three EU countries who are not signatories of the UPCA, meaning that any UPC patent is not valid in these countries, and companies will need to go through traditional means to protect their IP.

Top UPC territories: Patent Asset Index in chemicals



Top EU countries: Total Revenue generated by chemicals Industry

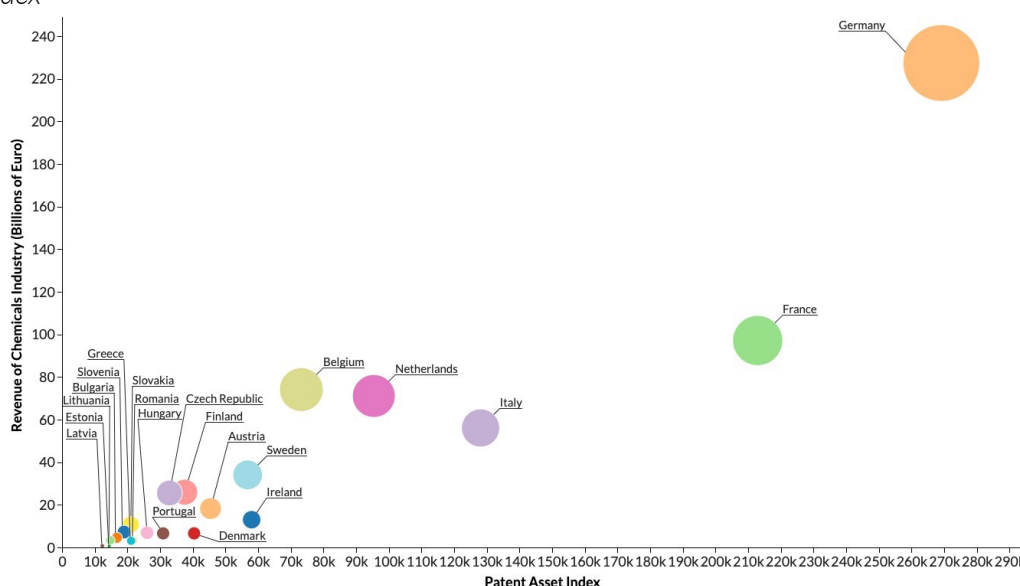


Source: Cipher UTT, Chemicals Superclass, Active in at least one UPC territory, September 2023

Source: Cefic, Landscape of the European Chemicals Industry

Examining the trend between Patent Asset Index and revenue in each UPC territory, indicating that countries with high revenue have a high Patent Asset Index to support that. However, if UPC grows as a key route for patents in the chemicals industry, this could change rapidly. Since all UP will be in-force across all UPC member states, this will lead to a situation where countries with low revenue from chemicals will have very high Patent Asset Index. It is difficult to predict what effect this will have on the industry, because on the one hand it could give companies that file through the UP route greater flexibility to operate in countries with lower revenue, eventually causing revenue from those countries to increase. On the other hand, for a company that chooses not to file through the UP route, it could make it very difficult to begin or even maintain operations in that country, which could have the opposite effect on that country's revenue from chemical industries.

Revenue vs Patent Asset Index: *Revenue of a country's chemicals industry has a linear trend with its Patent Asset Index*

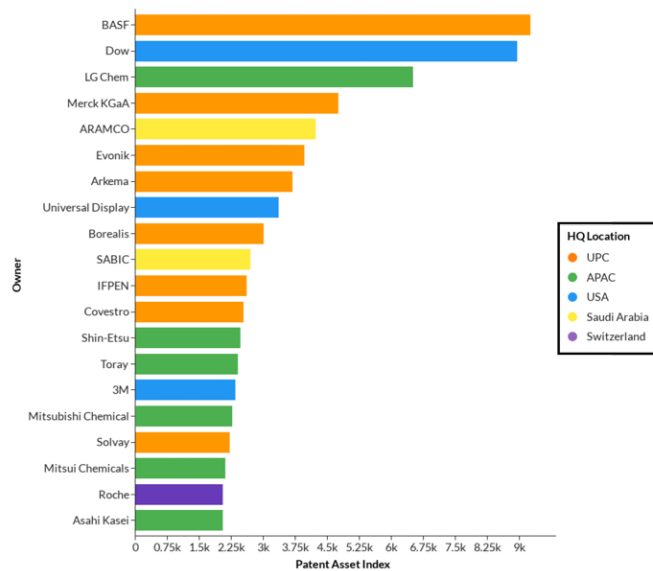


Source: Ciper UTT, Chemicals Superclass, Active in at least one UPC territory, September 2023. Compared with Cefic revenue data

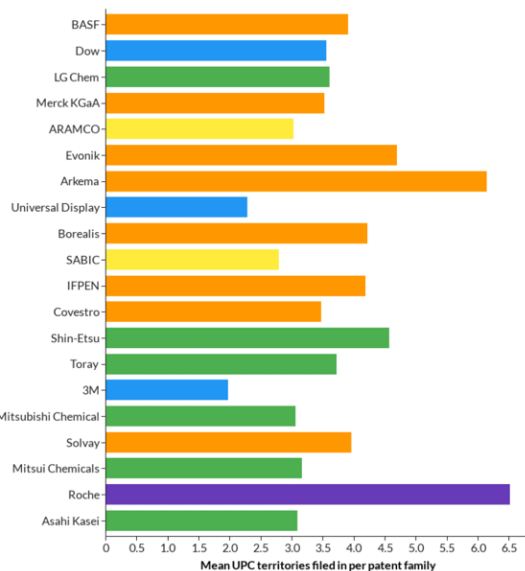
The top chemicals companies in UPC territories are a mix of domestic and foreign multi-national corporations

Using Patent Asset Index, the top owners of chemicals patents in UPC territories are BASF, Dow, and LG Chem, a broad mix of nationalities. In fact, looking across the top 20 companies in the UPC landscape, eight of them are headquartered in UPC territories, with a ninth (Roche) that is based in Switzerland (outside of UPC territories). When including Roche, the European organizations own about half of the patents held by the top 20 organizations. The other half is owned by the 11 foreign organizations, which are primarily based in the Asia-Pacific region, but also some large American and Saudi Arabian companies. As companies with headquarters within UPC, they are likely to see benefits from being able to easily file patents in many relevant territories quickly. The average number of filings of a patent family in UPC territories is 4.4 for European organizations, whilst the average for foreign organizations is 3.3. Given that the value cut-off for Unitary Patents to be cheaper to maintain than traditional EP patents is having filings in 4 countries (EPO, Unitary Patent Cost), this suggests that European organizations could see direct cost savings across their portfolios through UPC, while foreign organizations would not. However, a UP may reduce the flexibility an organization has to optimize their renewal strategy. A traditional EP filing gives the chance to abandon filings in certain countries if it becomes unnecessary, but this is not possible if it is a UP.

Top 20 Companies: Chemicals patents active in UPC territories by Patent Asset Index



Top 20 Companies: Average number of UPC countries filed in



Source: Cipher UTT, Chemicals Superclass, Active in at least one UPC territory, September 2023.

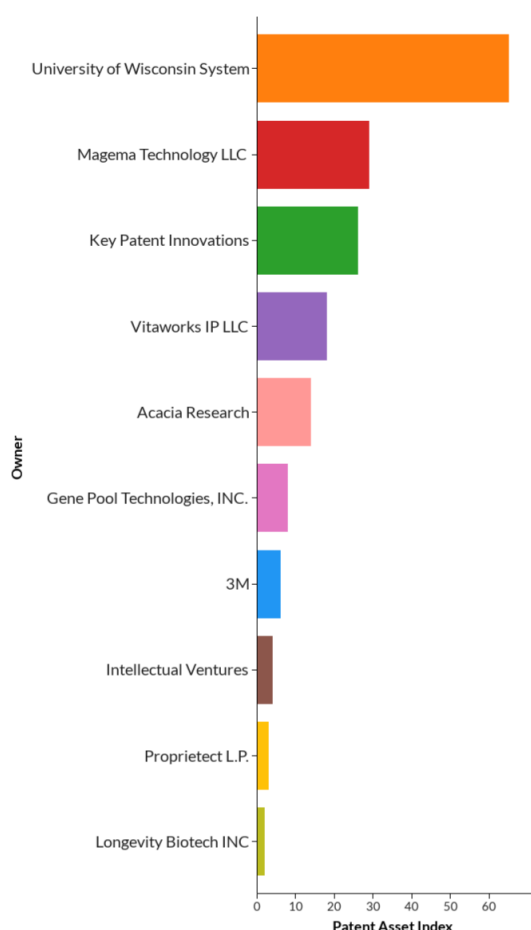
While this suggests that European companies could see some cost benefit to filing UPs, it also suggests that they are most at risk of litigation through UPC. In the traditional EP system, patent litigations would take place on a national level, and a loss would only affect the country in which it occurred. With the new UPC system, if a company is asserted against and they lose, it will affect their entire business across all 17 territories. As the data shows that European organizations have patents filed across more European countries, this implies that the potential losses are also much greater if they were to lose a lawsuit compared to a foreign company, who hold those patent rights in fewer UPC countries.

Combining this data with the revenue data above, major European chemical organizations could see direct savings by embracing the UP. If they do choose to develop portfolios of UPs, this will mean that the risk landscape across Europe could change in the medium term.

Currently, as shown above, countries with low revenue also have small total portfolios, but in this scenario, countries with low revenue will have large portfolios. In this case, the risk of operating in a low-revenue country will become a lot less than the risk of operating in a high-revenue country. This will primarily be true for the UPC transitional period, where some companies choose to opt in, while others choose to opt out. In the long term, if the UPC is a success and most organizations choose to use it, the landscape will become homogenous between these countries. This will effectively mean that there will be no difference in risk between countries, as it will make sense to consider the industry’s revenue across the entire UPC as well.

NPEs, Universities and Research Institutions could have greater licensing opportunities through UPC

Top 10 NPEs: Chemical patents in UPC territories by Patent Asset Index



Source: Cipher UTT, Chemicals Superclass, Active in at least one UPC territory, September 2023. NPE data from PatentSight.

However, UPC could provide a clearer route to litigation for these companies, as one filing can cover so many territories, meaning that a single patent can have much more flexibility and potential value. The benefits of a successful litigation also become much greater for a PAE through UPC, as one positive outcome effects all territories, rather than having to go through various European territories one by one, risking different results in different countries. On the same note, the potential payout can increase significantly. These factors may encourage PAEs to become more active in UPC, although whether they start showing more interest in the chemicals industry specifically is hard to predict.

Universities and Research Institutes own almost 9,000 active patent families out of the total UPC chemicals landscape of approximately 96,000, which is a much greater proportion than is owned by PAEs. These are key patent families that could be registered as UPs, as the increased geographical coverage will likely be directly beneficial to the organizations that own them. Universities and research organizations based outside of the key chemicals territories could see UPC as a way to access the key territories more easily.

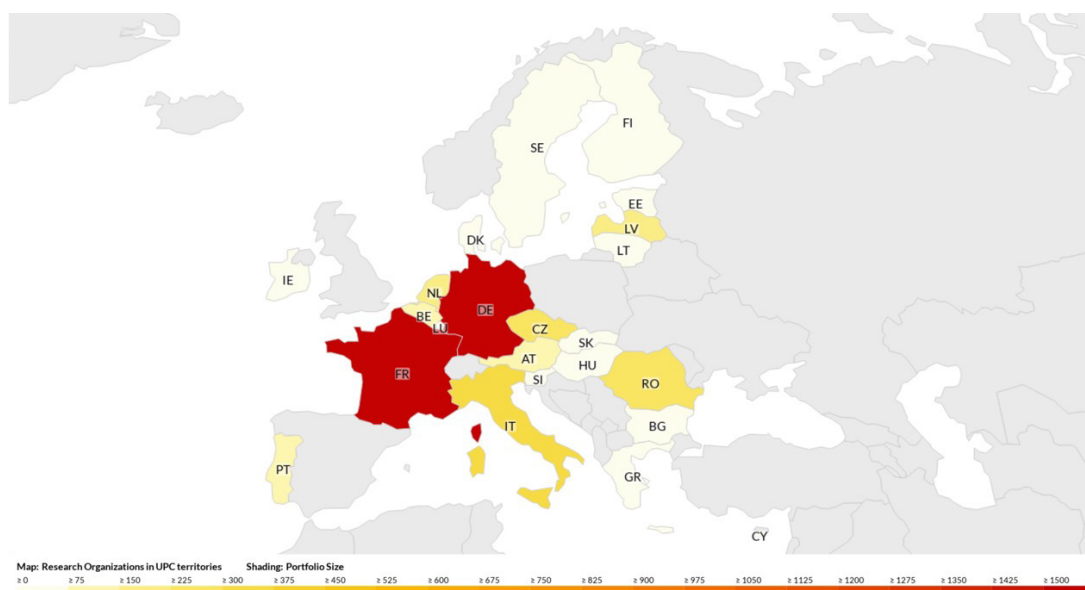
The introduction of UPC could directly benefit NPE's, universities and research institutions, as their patents are not filed for the purpose of protecting a product or manufacturing process directly. Instead, they are filed with the specific intention of licensing their IP to larger companies. For example, a research group at a university may file a patent for an invention they have made, but do not have resources to monetize. They can then license this patent to a larger company that does have the resources and earn royalties. It also means that a **Patent Asserting Entity (PAE)** can purchase patents in the technology area with no intention of utilizing the patent themselves and can instead force companies to license the patent or even make an assertion against them. Since the value of patents for these organizations is not tied to the countries that they manufacture or sell the products in, but rather the countries that other companies operate in, a UPC filing is clear benefit as they will cover more markets.

PAEs are not very active in the global chemicals landscape, with only 126 active patents owned between them. This is reduced even further when considering only UPC territories, where only 51 active patents are owned by PAEs. This means that in the short term, the risk of litigation from PAEs against chemical companies is low.

Fig. 3B shows the number of patents owned by research organizations in each UPC territory, based on the location of the research organization. Almost 1,500 patent families are from research organizations outside of the top five chemicals countries, and UPC may be a path to help them monetize their patents. For example, Romanian research organizations have filed over 300 patent families, the majority of which are only filed in Romania and have no EP filing. These patents are clearly struggling, as the total Patent Asset Index for this portfolio is 20, meaning that on the whole they lack both market coverage and technology relevance. If Romania ratifies the UPCA, then filing these patents through EP for unitary status may become very attractive, as it could increase the value of the patents greatly.

Looking at the global landscape, there are over 80,000 patent families (25,000 excluding China-only families) owned by universities and research institutes that have not been filed in a single UPC territory. Now that the UPC is available and covers a market similar in size to the USA, it may become more attractive to foreign research institutes to attempt to monetize their patents in Europe by filing an EP to gain unitary status. This could give chemical companies an opportunity to develop new processes and products using the licenses but could also result in companies having to pay royalty fees on existing products.

Research Organizations in UPC: *Chemicals patents filed by universities and research organizations in UPC territories, shaded by portfolio size*



Source: CIPHER UTT, Chemicals Superclass, filed by universities or research organizations based in UPC territory, September 2023. Research Organization data from PatentSight.

Scope: Chemical Industry in UPC territories

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