



CleanTech **PATENTEDGE**SM

2014 ANNUAL REPORT



CleanTech PATENTEDGESM

All data in this report was provided by IP Checkups' CleanTech PatentEdgeTM unless otherwise noted. CleanTech PatentEdge is the only patent-focused solution developed specifically to serve renewable energy, green materials, water treatment, and other clean technology industries.

CleanTech PatentEdge is an online database focused on patents and technology that have an effect on minimizing waste and pollution while reducing our environmental footprint.

The number of patent documents available in the CleanTech PatentEdge now exceeds 2,000,000. These patents are sorted into over 150 market and technology categories, such as renewable energy generation (biofuels, wind, solar, etc.), energy storage, electric vehicles, water filtration, and desalination.

CleanTech PatentEdge includes data relevant to the following areas:

-  Agriculture & Bioproducts
-  Energy Efficiency
-  Energy Storage
-  Solar Energy
-  Transportation
-  Water & Waste Management
-  Wind
-  Geothermal
-  Other Renewables

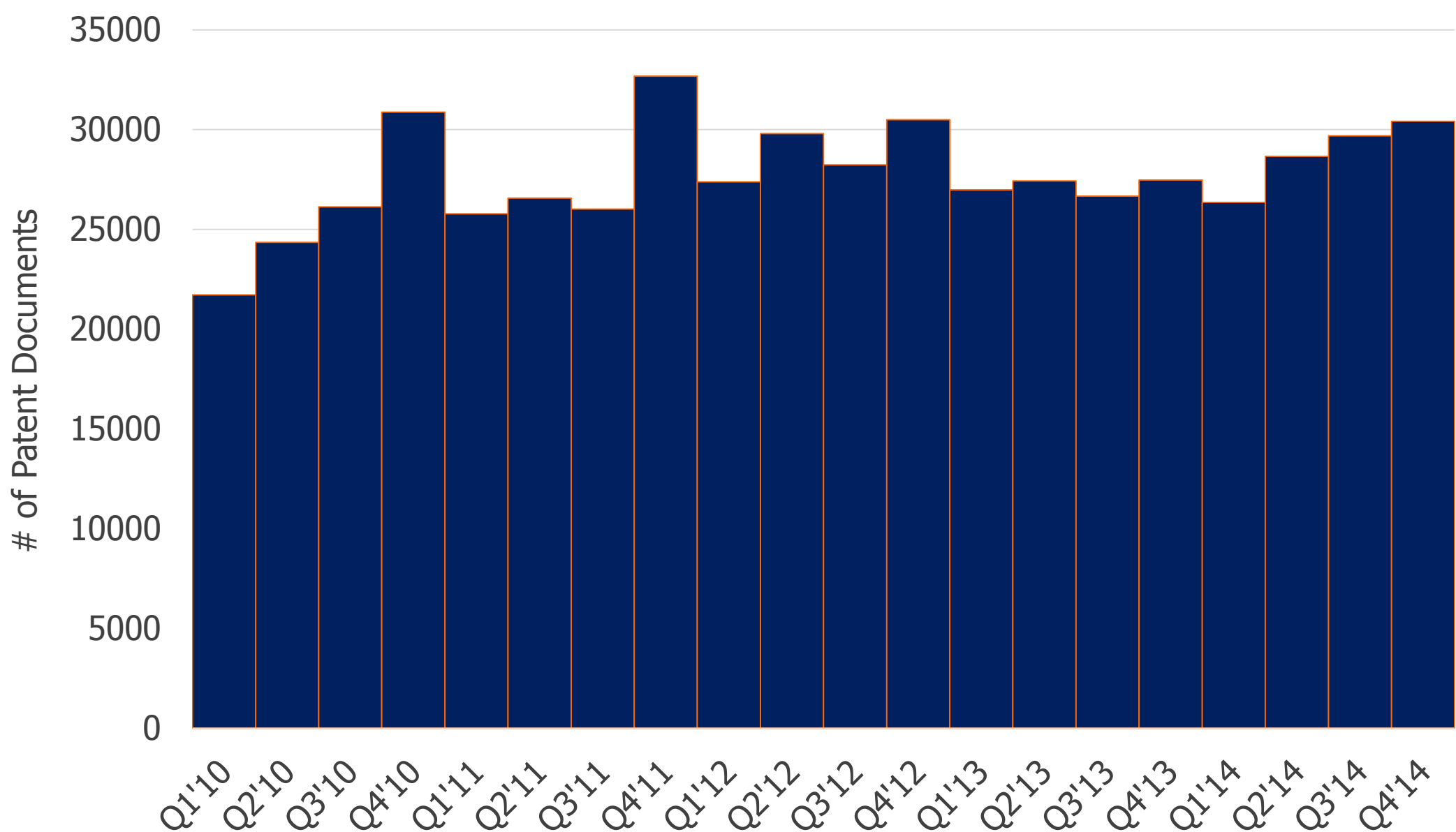
Cleantech Patenting Snapshot



- In the past decade, the number of granted cleantech patents has grown steadily. This trend has also been observed in most other industries.
- Both the number of published U.S. cleantech patent applications AND the dollar value of cleantech venture capital funding increased steadily in 2014.
- The number of published U.S. patent applications grew by 8% from 2013 to 2014.
- Renewable energy generation and green materials continue to be the most popular areas for innovation.
- Cleantech VC funding increased by more than 25% YOY, from 2013 to 2014.

Worldwide Cleantech Patent Activity

Worldwide Quarterly Patent Activity 2010 - 2014



- Worldwide* cleantech patent activity rose consistently over each quarter in 2014.
- For the past five years, Q4 has had the strongest patent activity**.
- Total clean technology patents in 2014 advanced towards 2012 levels.

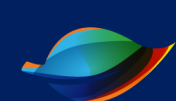
View all 115,000+ U.S., EP, and WO patents that published in 2014 with a subscription to [CleanTech PatentEdge](#).



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*DATASET INCLUDES U.S. PUBLISHED APPLICATIONS, U.S. GRANTED PATENTS, EUROPEAN (EP) PUBLISHED APPLICATIONS, EUROPEAN (EP) GRANTED PATENTS, WORLD INTELLECTUAL PROPERTY ORGANIZATION (WO) PUBLISHED APPLICATIONS

**PATENT APPLICATIONS TYPICALLY PUBLISH 18 MONTHS AFTER THEY ARE FILED.

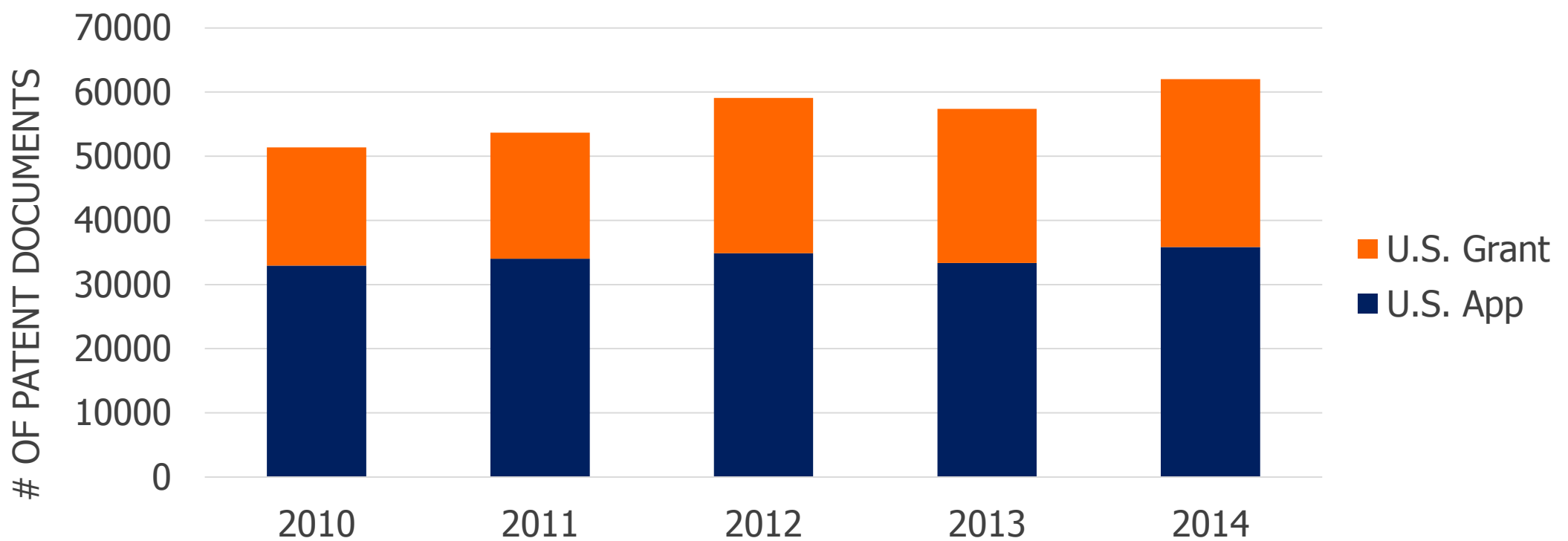


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U.S. Cleantech Patent Activity

- In 2014, the number of published U.S. applications and grants reached a five year high.
- U.S. patent grants have been steadily on the rise since 2011.

**U.S. Applications vs U.S. Grants
Annual Patent Activity 2010 - 2014**

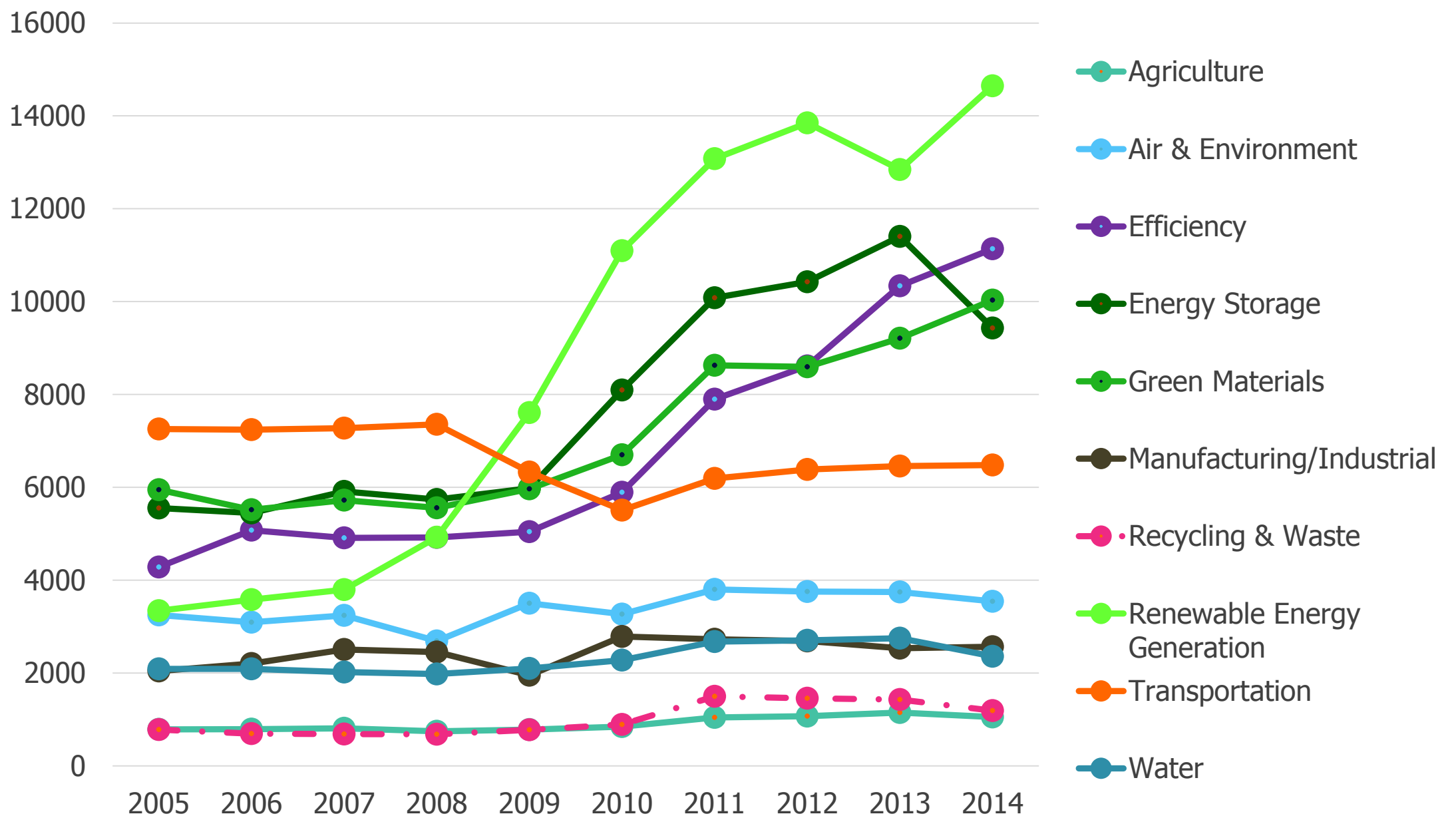


Year	U.S. Published Applications (% of Total Worldwide Cleantech Patent Activity)	U.S. Grants (% of Total Worldwide Cleantech Patent Activity)
2010	33%	19%
2011	32%	19%
2012	30%	21%
2013	31%	22%
2014	32%	23%

U.S. Cleantech Patent Activity by Industry Sector

- U.S. patent activity in all clean technology sectors in 2014 increased by 13% on average.
- Innovation in clean technology was by far the most prominent in the Renewable Energy Generation category in 2014. The overall evolution in Renewable Energy Generation patenting can be attributed to growth in the solar and biofuels industries.
- Patent activity in the Efficiency and Green Materials sectors continued to rise.

U.S. Cleantech Patent Activity: 2005 - 2014



View patents in more than 150 categories by subscribing to the [CleanTech PatentEdge](#) database.



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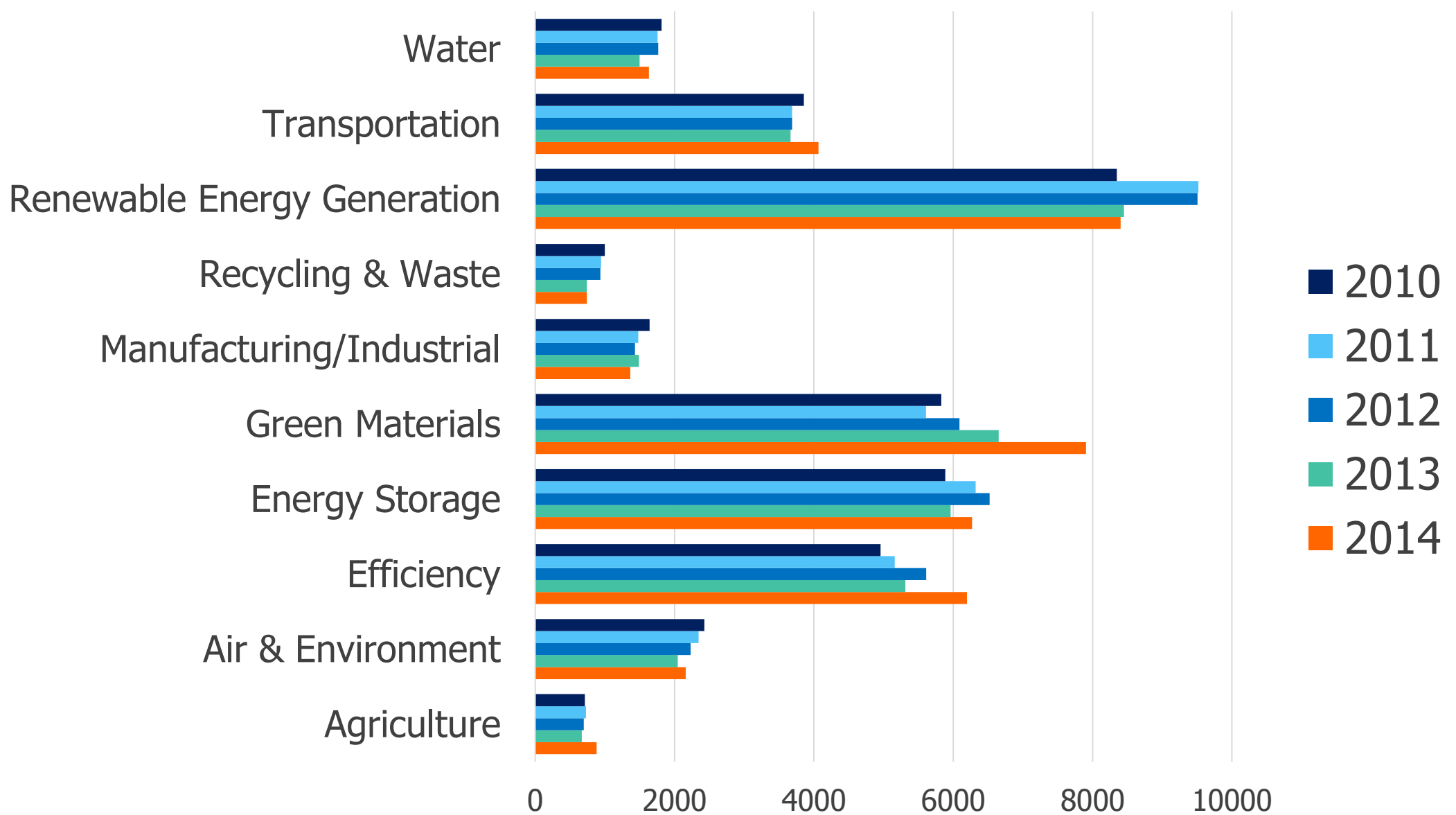
Innovation in Cleantech

LEADING SECTORS

U.S. Cleantech Published Patent Application Activity by Sector

- During the past 5 years, patent activity has increased in CleanTech PatentEdge's Agriculture, Efficiency, and Green Materials categories.
- Renewable Energy Generation continues to be a trending area for innovation based on the number of published patent applications in 2014, however the Green Materials category is a close second.
- Largest YOY growth: Agriculture (+25%), Green Materials (+16%), and Efficiency (+12%)

2010-2014 U.S. Patent Applications



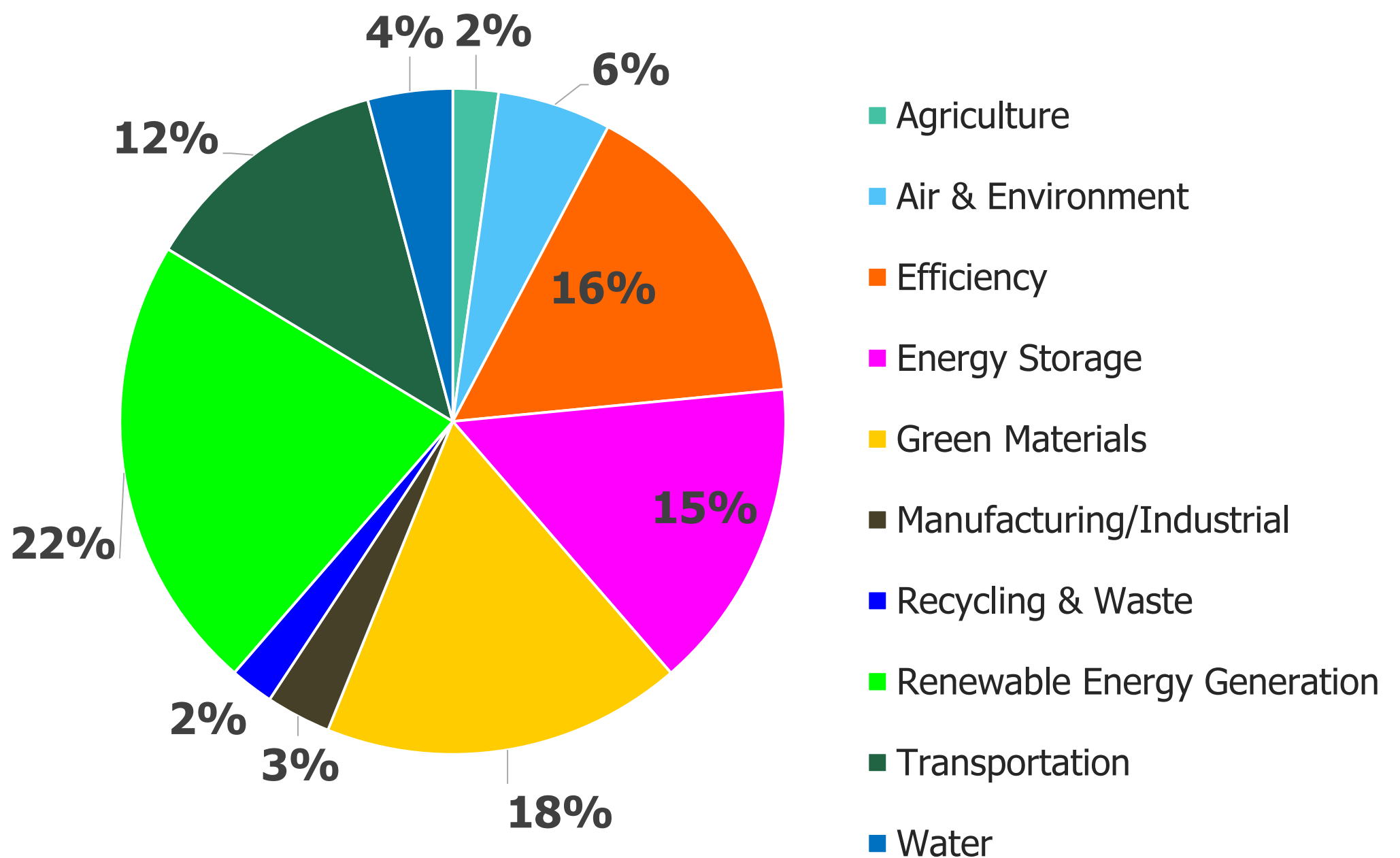
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2014 | Worldwide Cleantech Patent Activity

2014 Worldwide Patent Documents by Sector



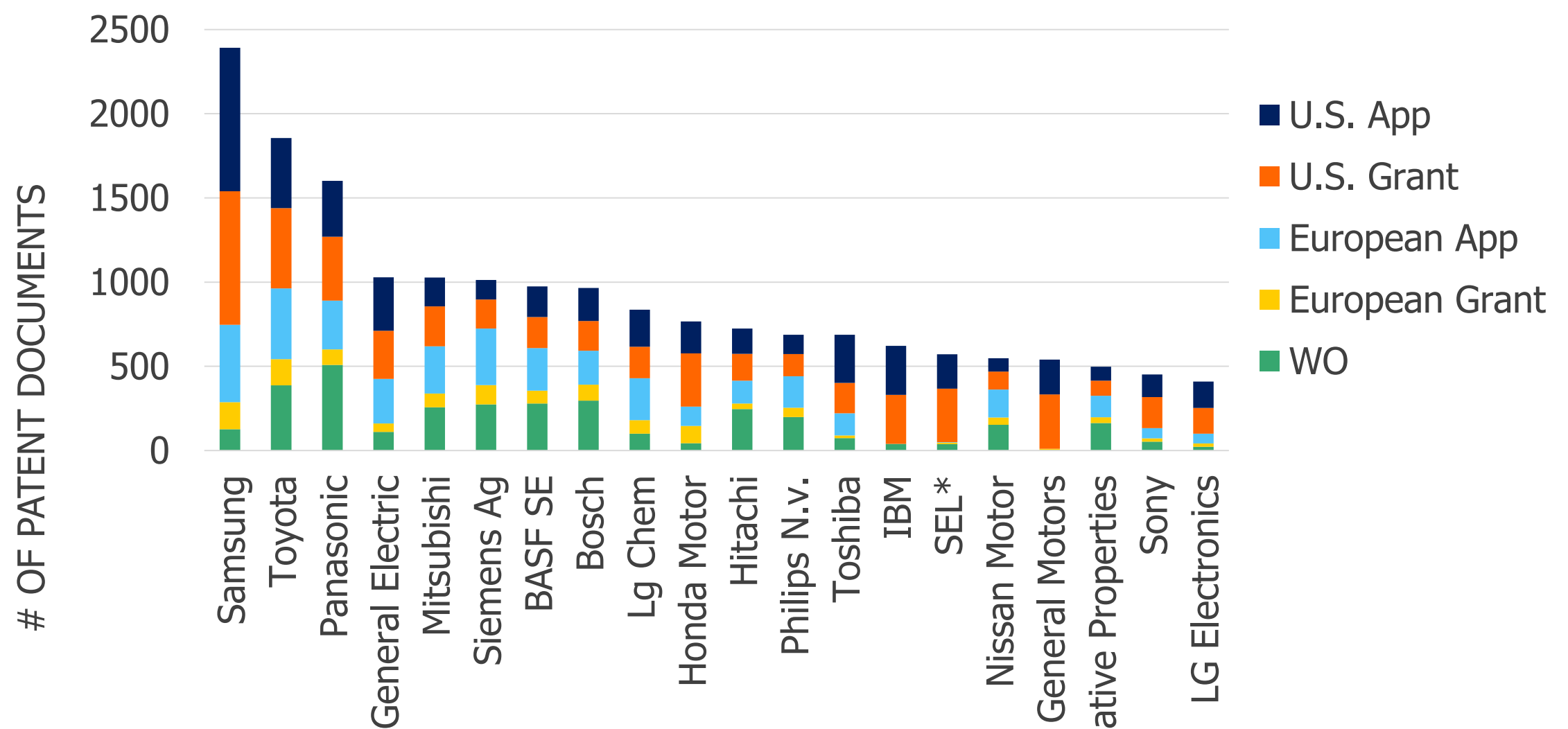
HOW ARE PATENTS CATEGORIZED IN CLEANTECH PATENTEDGE?

The patent searches for CleanTech PatentEdge were developed by subject matter experts and patent search experts. We continuously monitor the database and refine our results by getting rid of extraneous patents.

The patent searches use keywords, IPC codes, assignee data, and Boolean operators to gather the most relevant data. For any given category, we might have up to twenty different patent searches running in tandem to retrieve results.

2014 | Top 20 Worldwide Cleantech Assignees

- 🌱 Samsung usurped first place from Panasonic for the most patent documents published in 2014.
- 🌱 In 2014, two of LG's business units, LG Chem and LG Electronics, were among the top 20 innovators in clean tech.
- 🌱 Most of the top 20 clean technology innovators in 2014 are widely known for their consumer electronics products.
- 🌱 Only 20% of the top 20 cleantech innovators are headquartered in the United States.



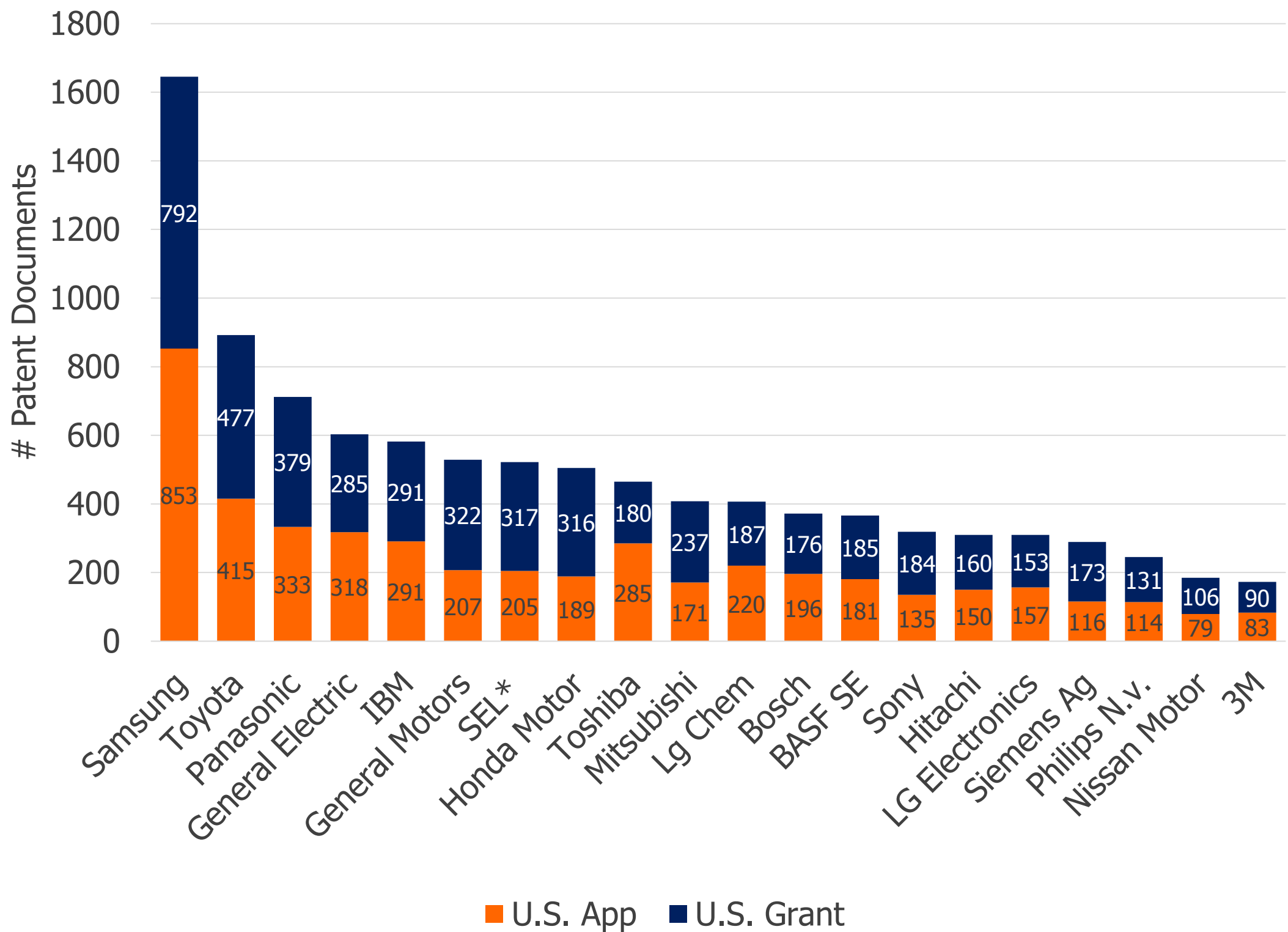
Want to be notified when a specific cleantech innovator publishes a patent?

Patent Alerts make it easy to keep track of new innovations. Customize patent alerts by industry sector, assignee, or inventor.



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2014 | Top 20 U.S. Cleantech Assignees



Need to know when an inventor from one of these top companies files a patent?

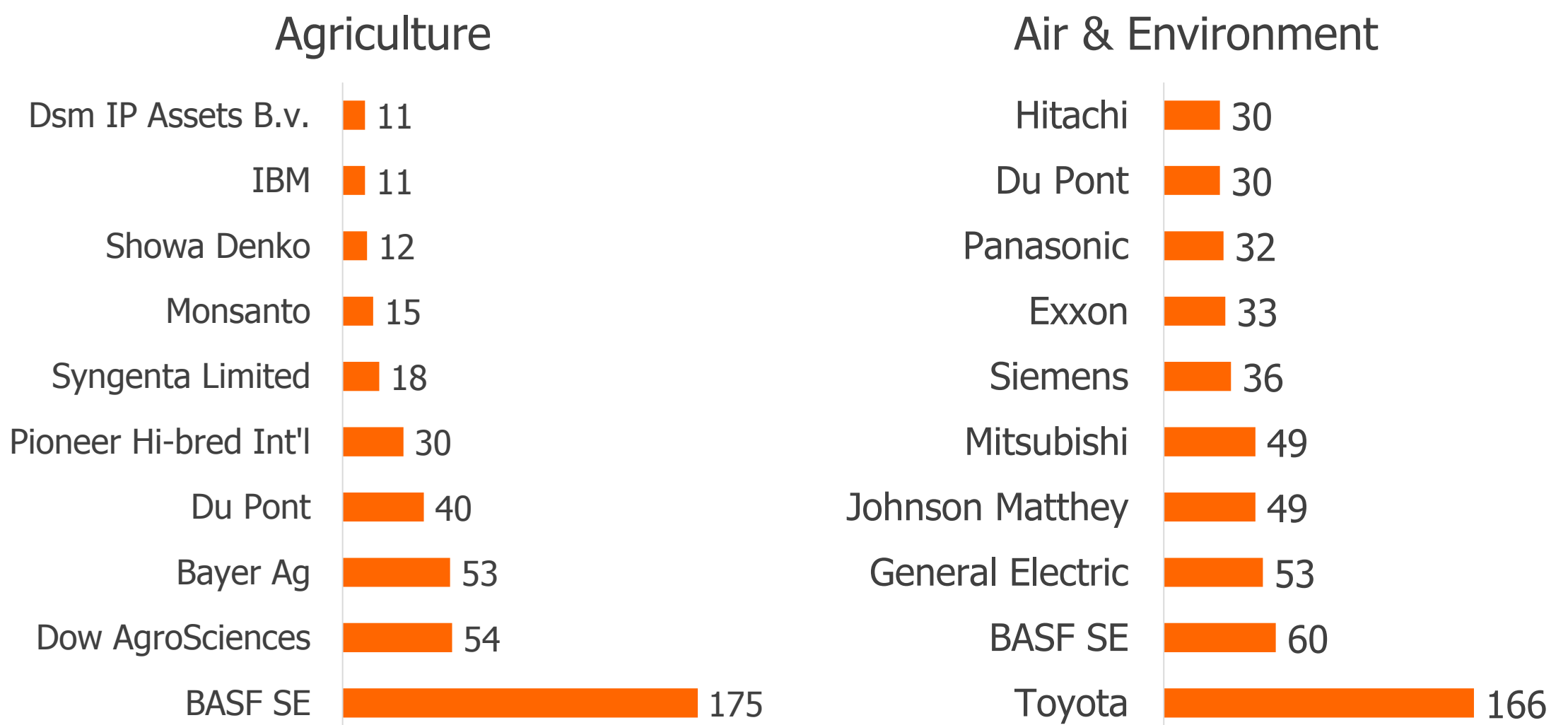
Custom patent alerts make it easy to keep track of patent activity by assignee.



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2014 | Top Worldwide Assignees in Select Industry Sectors

Number of Patent Applications (U.S., EP, WO)



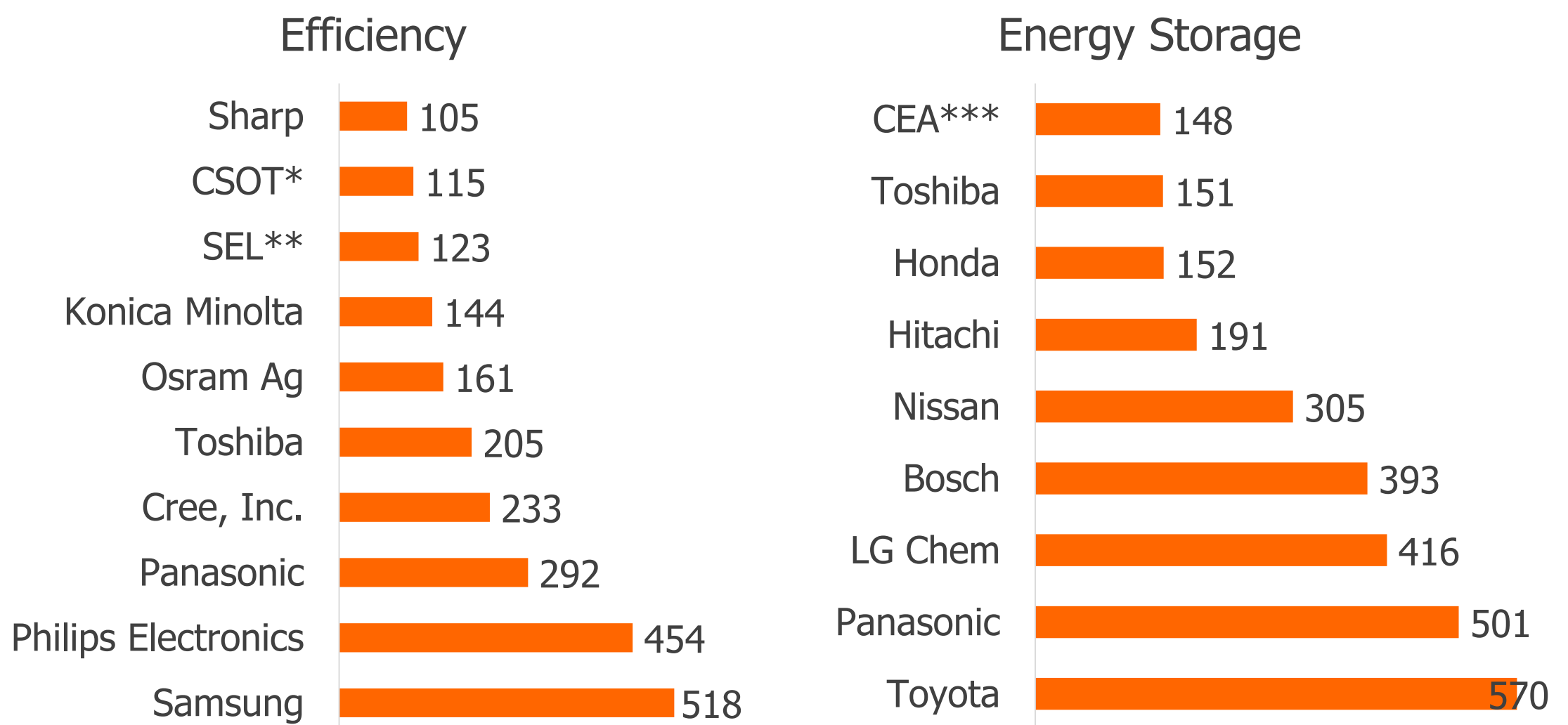
WHICH PATENT APPLICATIONS ARE TRACKED?

IP Checkups' CleanTech PatentEdge tracks published patent applications from the United States Patent & Trademark Office, the European Patent Office, and the World Intellectual Property Organization.

We also track related international patent family data (INPADOC) from more than 40 countries.

2014 | Top Worldwide Assignees in Select Industry Sectors

Number of Patent Applications (U.S., EP, WO)



WHEN DO U.S. PATENT APPLICATIONS PUBLISH?

Patents filed in the U.S. typically publish after eighteen months from the earliest filing date for which a benefit is sought under title 35, United States Code, unless:

1. The application is recognized by the Office as no longer pending;
2. The application is national security classified (see § 5.2), subject to a secrecy order under 35 U.S.C. 181, or under national security review;
3. The application has issued as a patent in sufficient time to be removed from the publication process; or
4. The application was filed with a non-publication request in compliance with § 1.213(a).

CSOT* = SHENZHEN CHINASTAR OPTOELECTRONICS TECHNOLOGY

SEL** = SEMICONDUCTOR ENERGY LAB

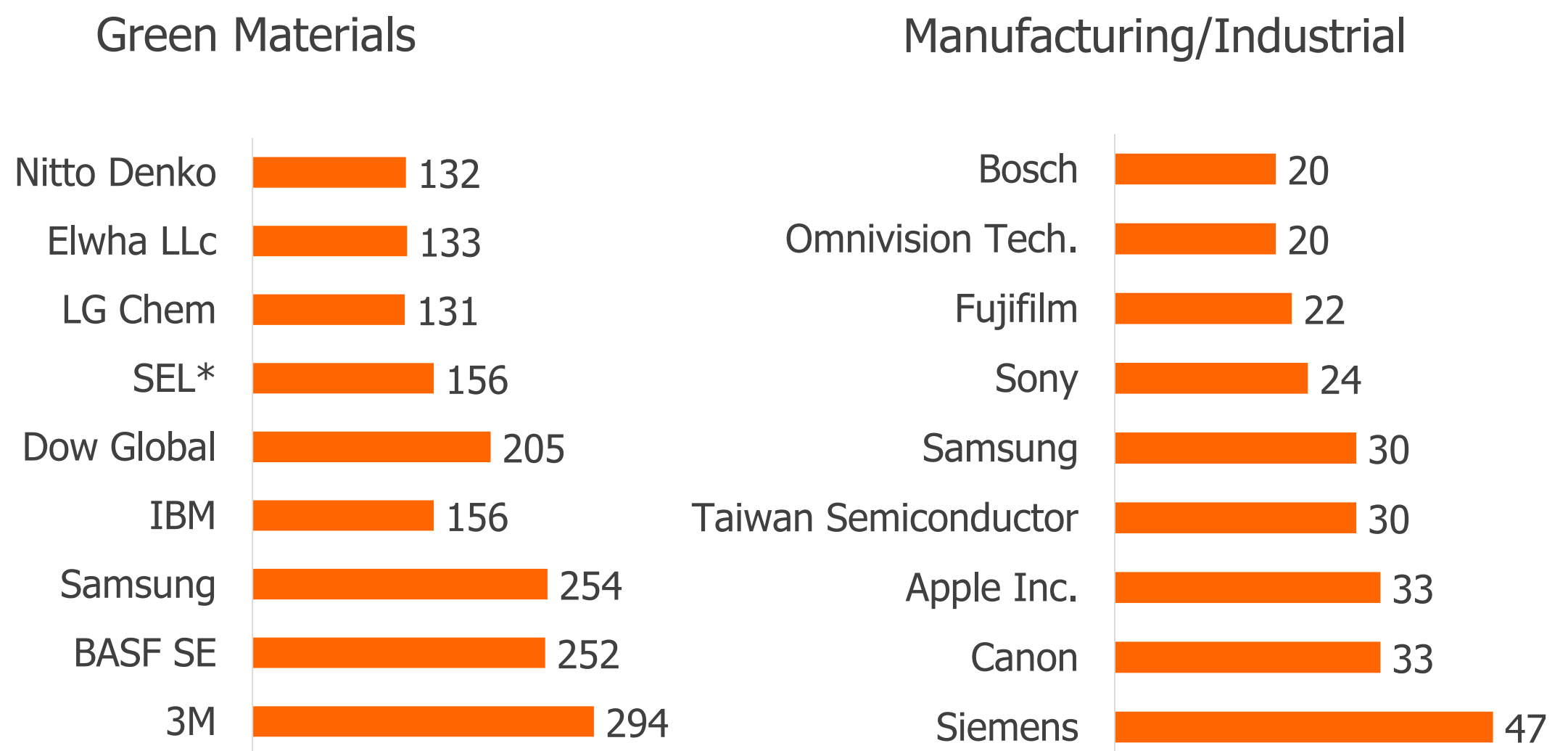
CEA*** = COMMISSARIAT A L'ENERGIE ATOMIQUE

PATENT DATA DERIVED FROM CLEANTECH PATENTEDGE DATABASE.

PATENT APPLICATION PUBLISH INFORMATION FROM THE USPTO: [HTTP://WWW.USPTO.GOV/WEB/OFFICES/PAC/MPEP/S1120.HTML](http://www.uspto.gov/web/offices/pac/mpep/s1120.html)

2014 | Top Worldwide Assignees in Select Industry Sectors

Number of Patent Applications (U.S., EP, WO)



Want to be notified anytime these leading companies publish a cleantech patent?

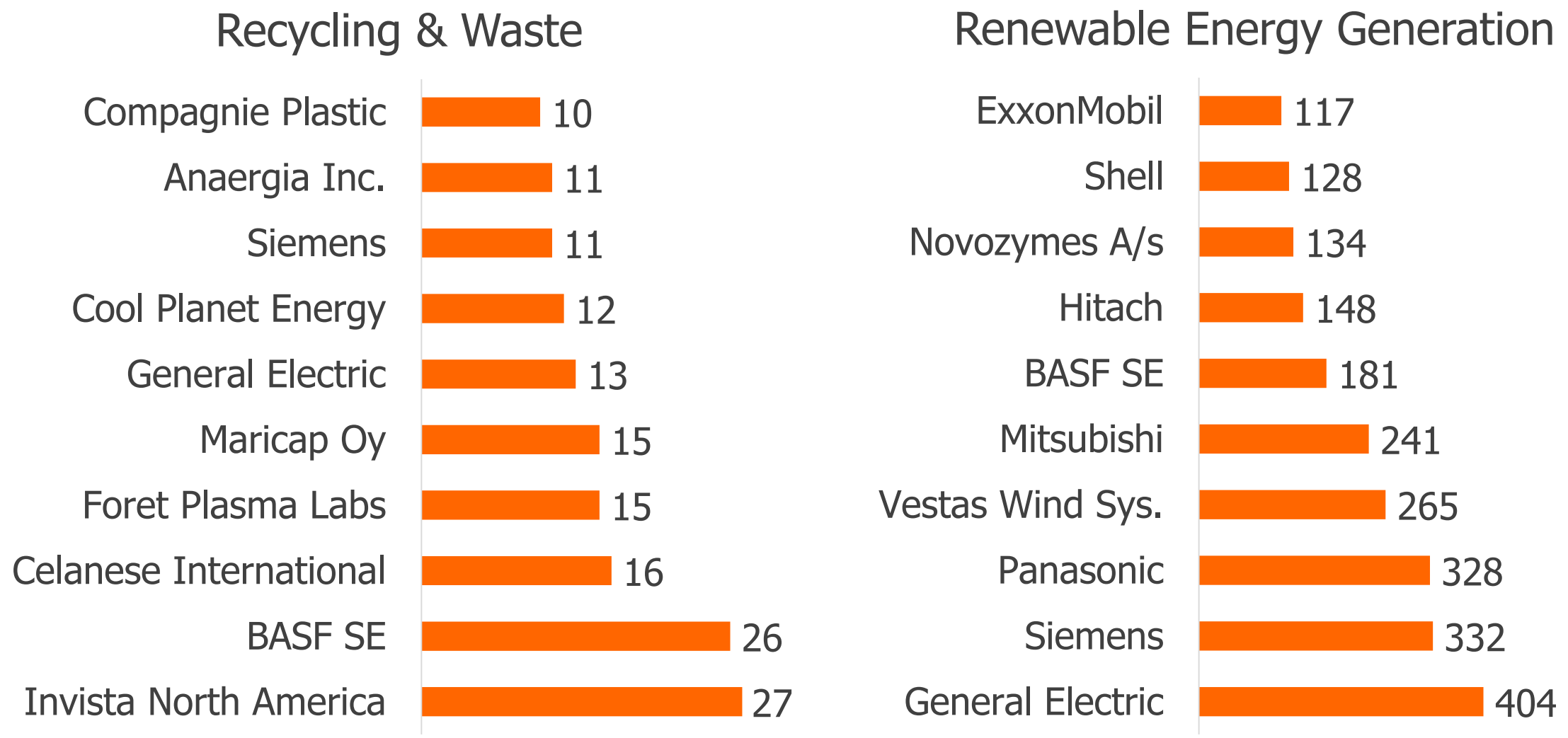
Patent Alerts make it easy to keep track of patent activity. Customize patent alerts by industry sector, assignee, or inventor.



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2014 | Top Worldwide Assignees in Select Industry Sectors

Number of Patent Applications (US, EP, WO)

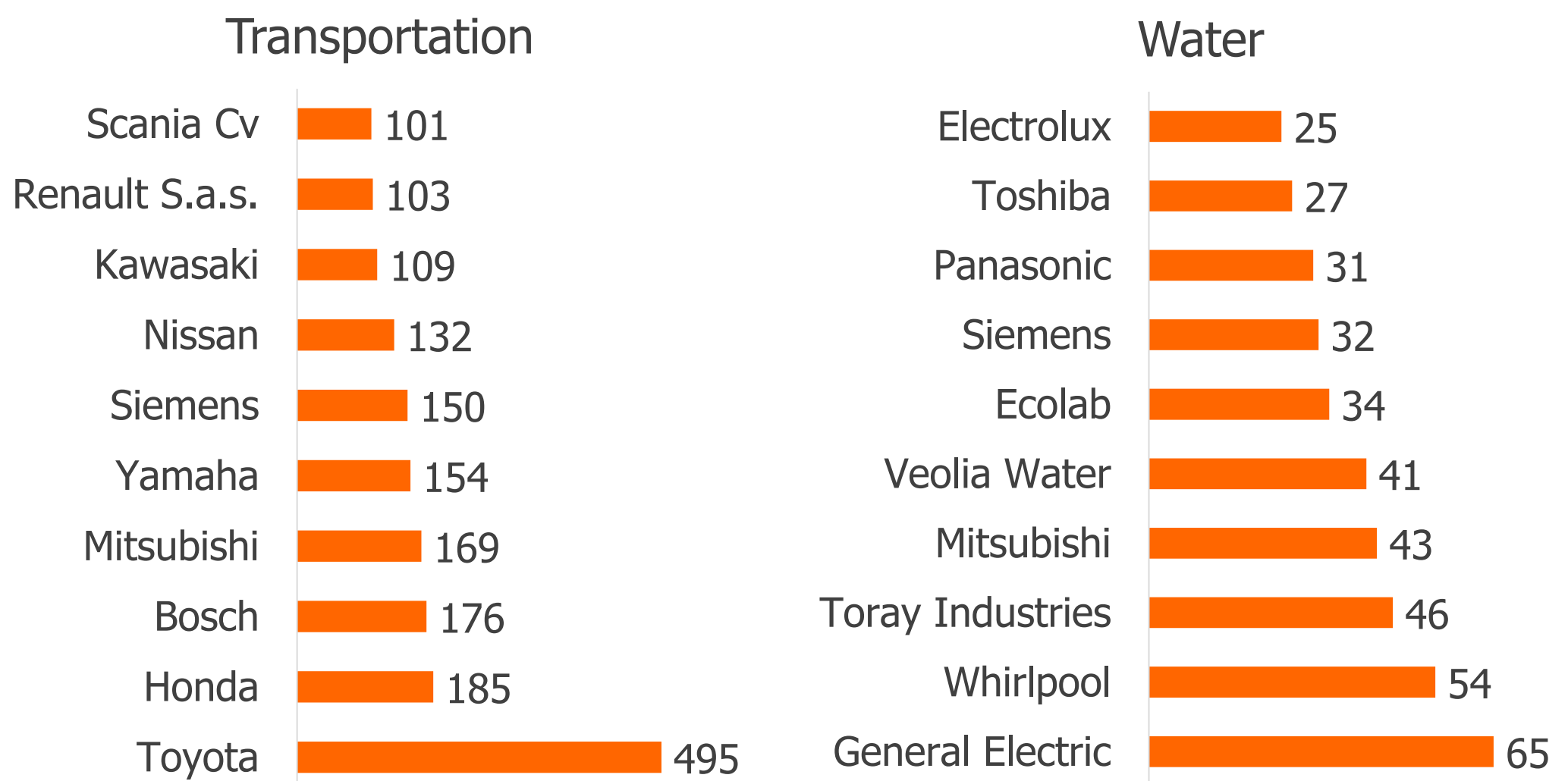


HOW CAN I USE CLEANTECH PATENTEDGE TO MY ADVANTAGE?

The online database allows you to search, sort, and make sense of patent data. In addition, you can use the analytics portal to create custom charts of multiple patent variables, including, but not limited to, top assignees, inventors, and publication date.

2014 | Top Worldwide Assignees in Select Industry Sectors

Number of Patent Applications (US, EP, WO)



General Electric , Samsung, and Panasonic were active in a variety of clean technology categories.

Want to view all patents from these assignees and more? Access hundreds of thousands of cleantech patents in the [CleanTech PatentEdge](#) database.



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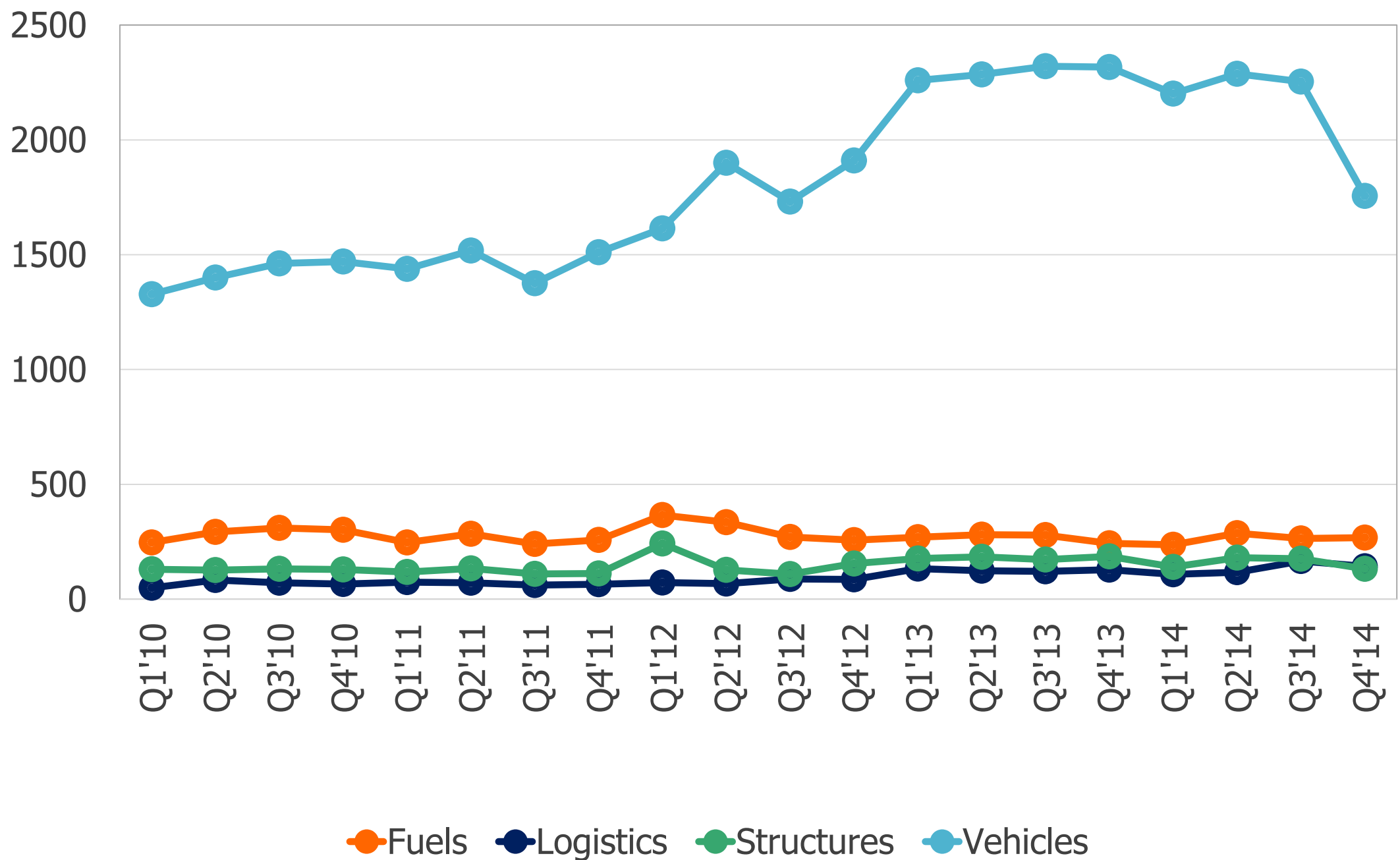
Transportation

THE SECTOR ON THE MOVE

A Closer Look: Transportation

- During 2014, vehicle-related patent applications decreased, while patent applications in fuels, logistics, and structures remained stable.
- The transportation category, specifically alternative energy vehicles, made news headlines frequently in 2014 with announcements of patent 'open sourcing' from Tesla and Toyota.
- It will be interesting to see whether Tesla's and Toyota's decisions to "open source" their patents accelerates or decelerates innovation in the vehicles category going forward.

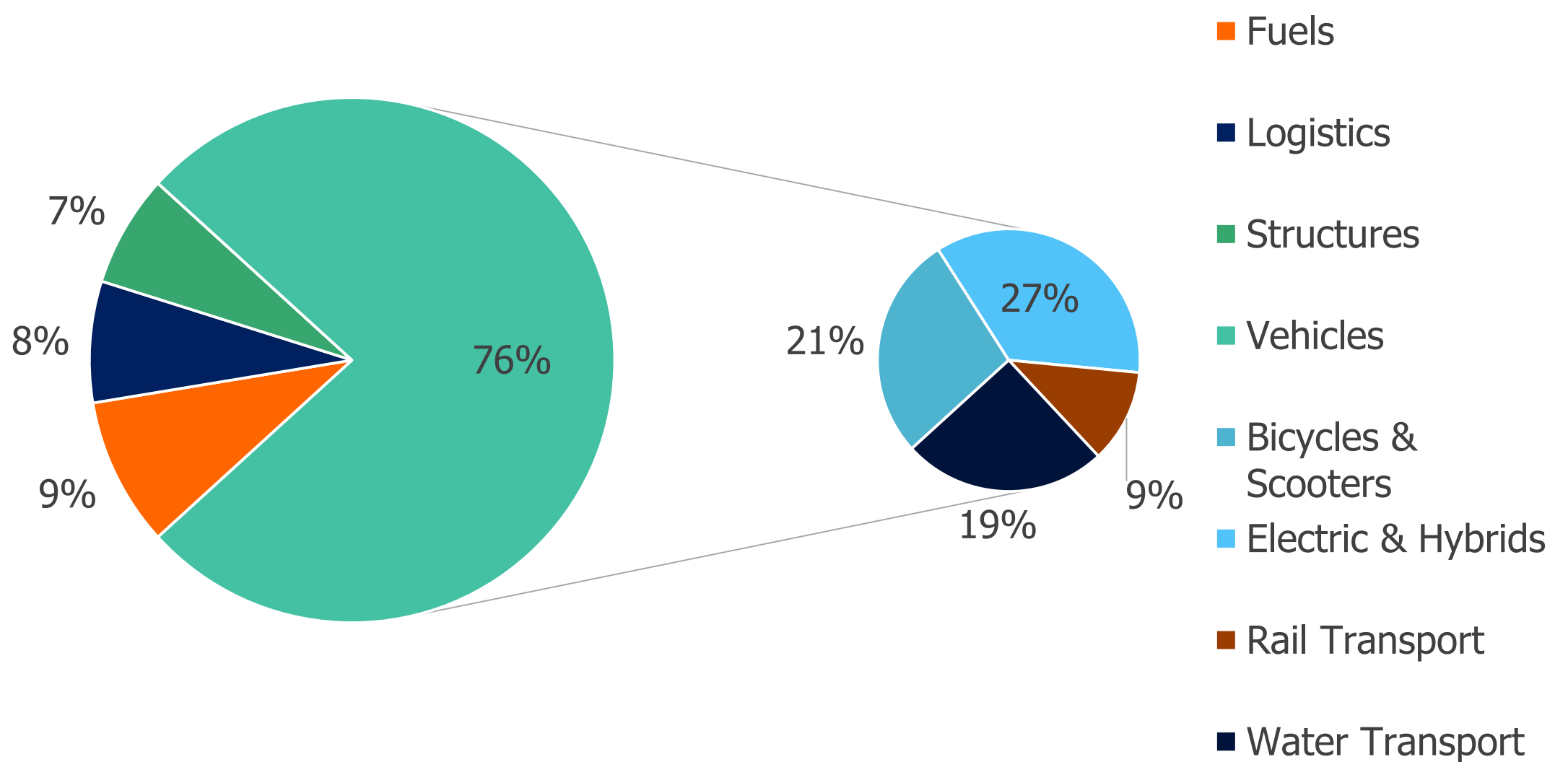
**Worldwide Published Patent Applications
2010-2014**



2014 | U.S. Transportation Patent Activity

Patent activity in 2014 was comparable to previous years. The transportation category was unsurprisingly dominated by electric and hybrid vehicle technology innovation.

2014 U.S. Published Patent Applications



Want to know when new transportation patents publish?

Patent Alerts make it easy to keep track of patent activity in specific categories.



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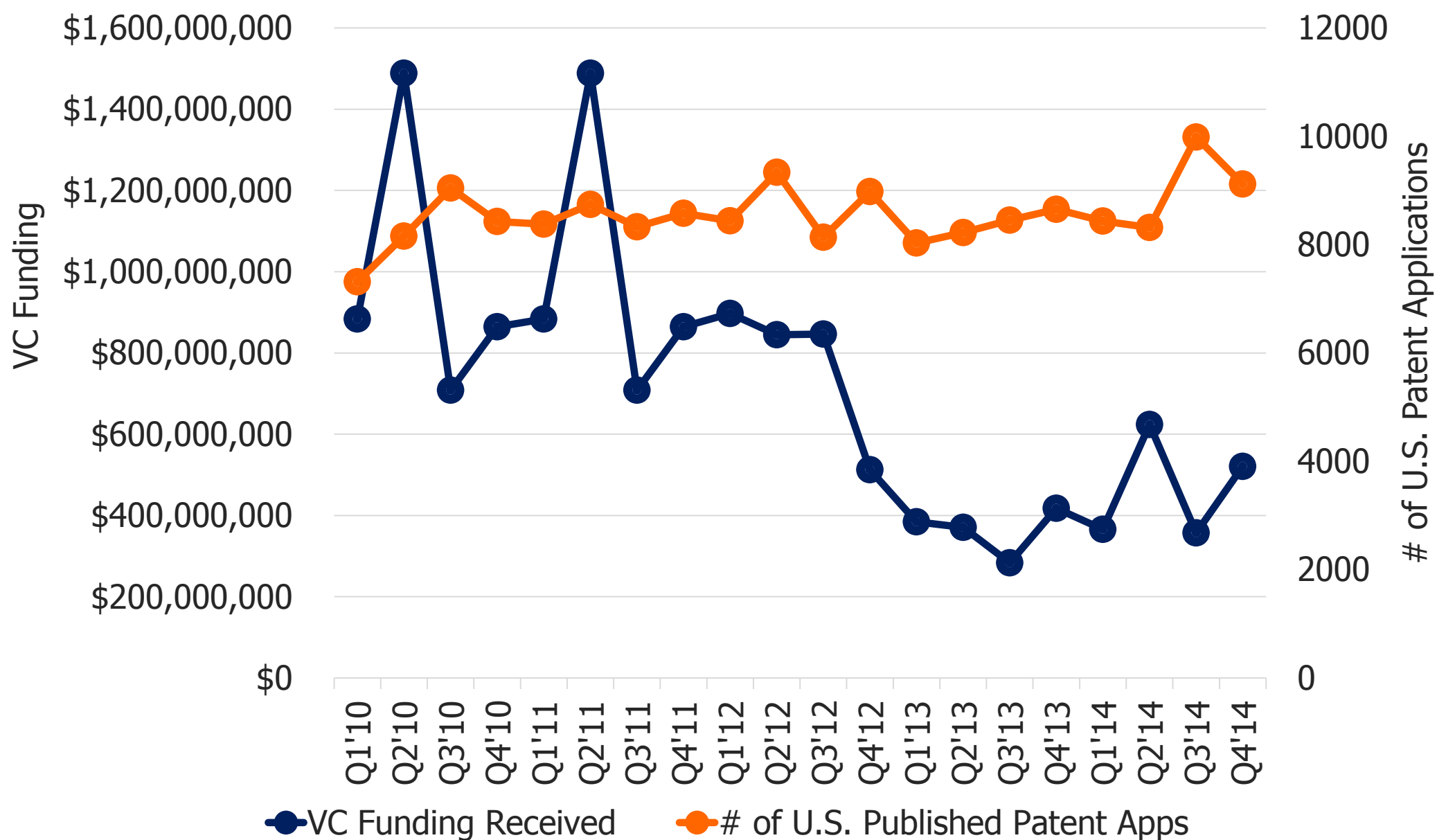
Cleantech Funding

BOOST FROM VENTURE INVESTMENTS IN 2014

Cleantech Venture Capital Funding Trends

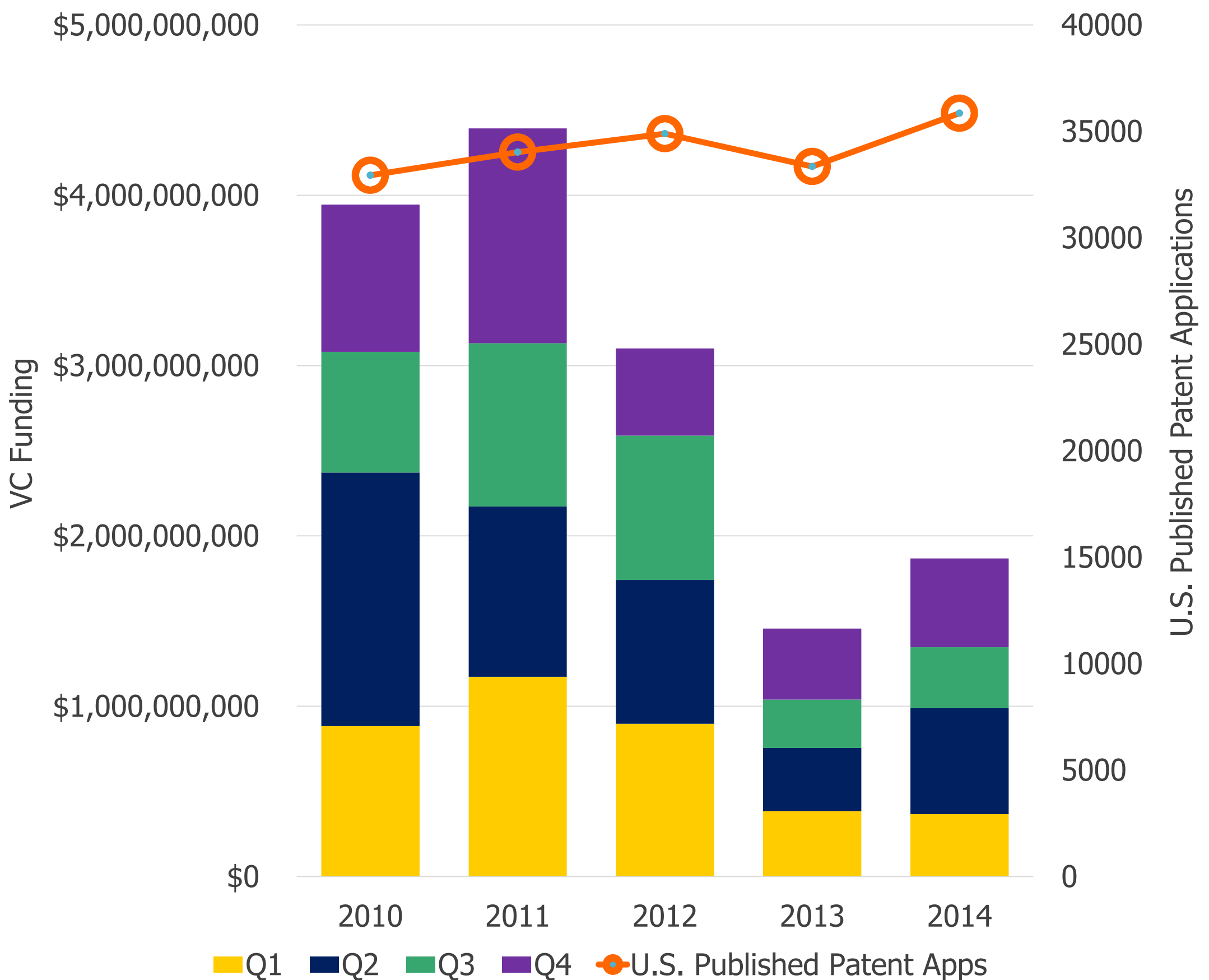
- VC funding in cleantech is generally volatile, but represented 3.9% of the total \$48.3 billion VC investments industry-wide in 2014.
- PWC reported that, in 2014, VC investments in cleantech were primarily focused on companies in the solar and agriculture industries.
- In 2014 U.S. published patent applications increased slightly year over year.
- Correlation Coefficient: -.01 (neutral)

**VC Funding + U.S. Published Patent Applications
2010 - 2014**



Cleantech VC Funding & Published U.S. Patent Applications

- Although there were 16.5% fewer clean tech deals with VCs in 2014, the amount invested in cleantech by VCs rose significantly.
- After a decline in 2013, VC funding for clean technology increased in 2014 by \$411,829,500 (+28%) as patent applications in the U.S. were on the rise.





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Data for this report was provided by IP Checkups' CleanTech PatentEdge, an online compendium of Cleantech patent data presorted into over 150 green industry categories.

The database captures patent data from markets as diverse as advanced batteries, solar or wind energy, and water treatment processes.

WANT MORE CLEANTECH PATENT DATA?

Visit our [website](#) for additional information or contact IP Checkups via [email](#).



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