LexisNexis®

Sustainable Innovation: Which Companies are Leading our World Toward a Sustainable Future?

Housekeeping

- This webinar is being recorded, you will receive a link to access it, in a follow-up e-mail.
- If you have questions during the presentation, please send us via the Q&A Tab. We will try to answer as many as possible.
- You will receive the slides of this presentation after the webinar

Sustainable Innovation:
Which Companies are Leading our World Toward a Sustainable Future?

Today's agenda

- Introduction of the 'Global Leaders in Sustainability: the Top 100' report and methodology
  "Exploring the Global Sustainable Innovation Landscape: The Top 100 Companies and Beyond"
- Deeper look at the Automotive Sector
- How the report can help you
  Promoting your own sustainable IP, use cases
- Conclusion
  Are we on track to hit the 2030 goals?
- Q&A and final thoughts

Sustainable Innovation:
Which Companies are Leading our World Toward a Sustainable Future?

William Mansfield
Head of Customer Success

Co-author of the report *"Exploring the Global Sustainable Innovation Landscape: The Top 100 Companies and Beyond"*

Ninja Laufmann
Senior Product Marketing Manager

Irene Yntema
Marketing Manager

Exploring the Global Sustainable Innovation Landscape:
The Top 100 Companies and Beyond

Which companies are the world's leading patent owners with the potential to drive transformative innovation toward the United Nations Sustainable Development Goals (UN SDGs)?

Our patent experts have mapped 13 of the 17 SDGs to the LexisNexis® PatentSight® database from more than 95 patent authorities worldwide, analyzing over 147 million global patent documents behind 14 million patent families.

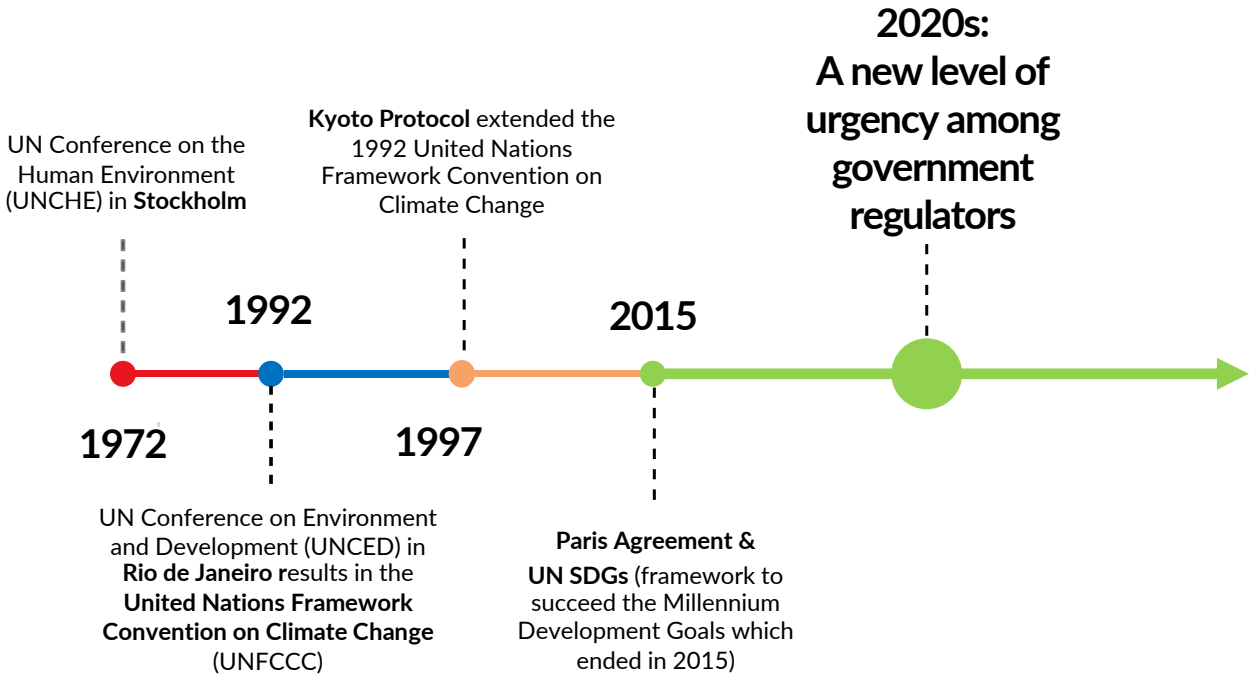
In the report, you will find:

- The state of the sustainable innovation landscape—are we on target to reach the 2030 SDG deadline?
- Trends from the Top 100 sustainable innovators
- A closer look at SDG 3: Good Health and Well-being and SDG 7: Affordable and Clean Energy
- The industries and regions leading in sustainable innovation
- Patterns in sustainable technology development—including, is blockchain sustainable or not?
- A closer look at sustainable innovation in two industries: Automotive and Chemicals and Materials

https://www.lexisnexisip.com/sustainable-innovation-report

The report and Methodology

The Development of “Sustainability”



THE WHITE HOUSE

Biden admin committed to cutting greenhouse gas emissions by 50% by 2030

JPX
JAPAN EXCHANGE GROUP

Revised Japan’s Corporate Governance Code: emphasis on sustainability and ESG) issues

European Commission

European Green Deal &
EU Taxonomy for Sustainable Activities

The 17 Sustainable Development Goals defined by the United Nations

The SDG Technologies

SDG 01 NO POVERTY

- T13 Blockchain
- T23 Demographic Data Analytics
- T27 Disaster Management

SDG 02 ZERO HUNGER

- T3 Advanced Materials
- T7 Aquaculture
- T10 Biodiversity Conservation
- T12 Biotech in Agriculture
- T13 Blockchain
- T17 Child Obesity
- T18 Child Wasting
- T34 Food Processing
- T35 Food Production and Security
- T36 Food Waste Management
- T72 Sustainable Agriculture Techniques
- T76 Sustainable Livestock or Poultry Management

SDG 03 GOOD HEALTH AND WELL-BEING

- T4 AIDS
- T5 Air Pollution Prevention
- T13 Blockchain
- T14 Cancer
- T15 Cardiovascular Disease
- T16 CBRNe
- T19 Chronic Respiratory Diseases
- T24 Diabetes
- T25 Digital Health
- T27 Disaster Management
- T29 Emergency Diagnostics and Operation
- T41 Hepatitis B
- T44 Internet of Things
- T47 Maternal Health
- T48 Mental Health
- T50 Neglected Tropical Diseases, TB and Malaria
- T51 Neonatal Health
- T52 New Surgical and Diagnostics Methods for Non-Communicable Diseases
- T57 Plastic Recycling
- T58 Preventive Healthcare
- T60 Regenerative Medicine and Drug Discovery
- T64 Sexual and Reproductive Health
- T69 Soil Pollution Prevention
- T71 Substance Abuse
- T85 Tobacco Control
- T87 Traffic Management
- T92 Water Pollution Prevention
- T96 Water-Borne Diseases
- T98 Anaemia in Pregnancy
- T99 Antimicrobial Resistance

SDG 04 QUALITY EDUCATION

- T22 Cybersecurity
- T26 Digital Learning
- T49 Natural Language Processing
- T100 Education for the Disabled

SDG 05 GENDER EQUALITY

- T20 Clean Cooking Technologies
- T38 Gender-Based Violence Prevention
- T63 Sex Disaggregated Data Management

SDG 06 CLEAN WATER AND SANITATION

- T32 Fertilizers from Wastewater
- T33 Flood Control
- T37 Freshwater Ecosystem
- T79 Sustainable Packaging
- T86 Toilet Sanitation
- T90 Water Harvesting and Extraction
- T93 Water Recycling and Wastewater Treatment
- T94 Water Storage, Distribution and Management
- T95 Water Use Efficiency

SDG 07 AFFORDABLE AND CLEAN ENERGY

- T6 Alternative Energy Source for Transportation Apart from Electricity
- T11 Biomass Energy and Bio Fuel
- T13 Blockchain
- T20 Clean Cooking Technologies
- T28 Electric Vehicles
- T30 Energy Efficiency
- T31 Energy from Waste
- T39 Geothermal Energy
- T42 Hybrid Vehicle
- T43 Improvement in Fossil Fuel Technology
- T44 Internet of Things
- T53 Nuclear Energy
- T54 Ocean Energy
- T68 Smart Grid
- T70 Solar Energy
- T97 Wind Energy

SDG 09 INDUSTRY INNOVATION AND INFRASTRUCTURE

- T1 Advanced Manufacturing
- T2 Advanced Materials
- T13 Blockchain
- T22 Cybersecurity
- T40 GHG Emission Reduction
- T44 Internet of Things
- T59 Quantum Computing
- T62 Resource Efficiency
- T67 Smart Factory
- T73 Sustainable Air Transport
- T75 Sustainable Industry
- T77 Sustainable Low Cost Internet
- T78 Sustainable Maritime and Waterways Transport
- T81 Sustainable Rail Transport
- T82 Sustainable Road Transport

SDG 11 SUSTAINABLE CITIES AND COMMUNITIES

- T8 Assistive Technology and Medical Prosthetics
- T9 Assistive Technology in Transportation
- T16 CBRNe
- T27 Disaster Management
- T44 Internet of Things
- T53 Nuclear Energy
- T56 Paper Recycling
- T61 Resilient Building
- T66 Smart City
- T83 Sustainable Vehicle Innovation and Design
- T88 Waste Management and Recovery and Reuse

SDG 12 CONSUMPTION AND PRODUCTION

- T13 Blockchain
- T31 Energy From Waste
- T36 Food Waste Management
- T44 Internet of Things
- T56 Paper Recycling
- T57 Plastic Recycling
- T74 Sustainable Fashion and Textiles
- T79 Sustainable Packaging
- T80 Sustainable Products and Method of Production
- T83 Sustainable Vehicle Innovation and Design
- T84 Textile Recycling
- T88 Waste Management and Recovery and Reuse
- T89 Waste Recycling
- T93 Water Recycling and Wastewater Treatment

SDG 13 CLIMATE ACTION

- T27 Disaster Management
- T40 GHG Emission Reduction
- T53 Nuclear Energy
- T54 Ocean Energy

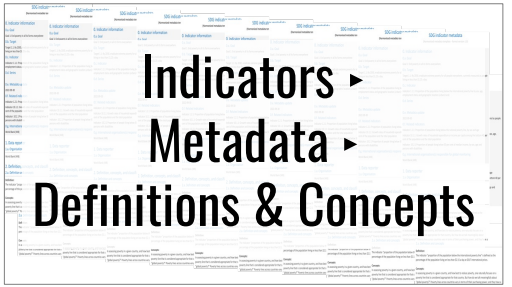
SDG 14 LIFE BELOW WATER

- T7 Aquaculture
- T21 Coastal Protection
- T46 Marine Ecosystem Preservation
- T55 Oil Spill Cleanup
- T57 Plastic Recycling
- T79 Sustainable Packaging
- T91 Water Pollution - Plastic Treatment

SDG 15 LIFE ON LAND

- T10 Biodiversity Conservation
- T33 Flood Control
- T45 Land Ecosystem Conservation
- T65 Silviculture

Mapping the United Nations Sustainable Development Goal



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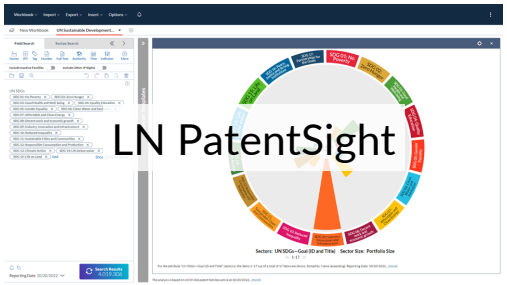
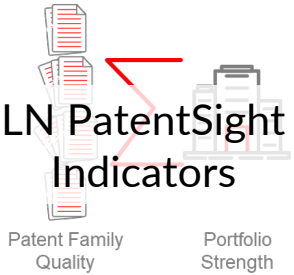
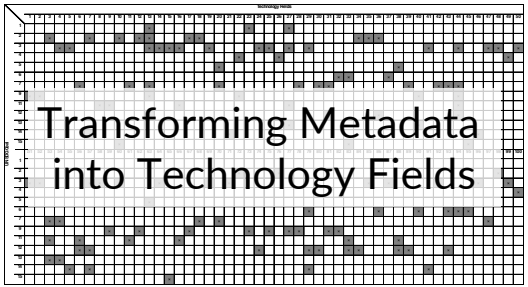
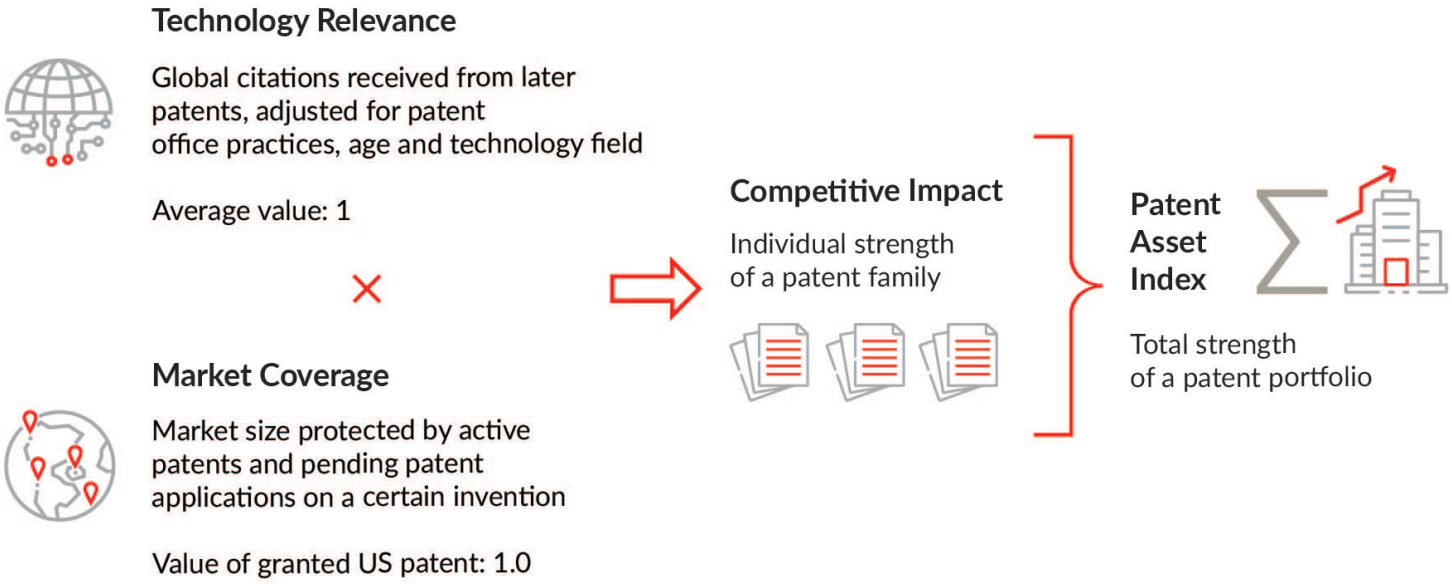






https://unstats.un.org/sdgs/metadata/

The Methodology: Based on the Patent Asset Index



Ernst, H., Omland, N. (2011): The Patent Asset Index - A New Approach to Benchmark Patent Portfolios. World Patent Information 33, pp. 34–41.

The Top 100 Global Leaders in Sustainable Innovation

The Top 100 by the strength of active SDG-related patent portfolio by Patent Asset Index as of the end of 2022, including absolute value and percentage share of the entire portfolio. For the full list of 300, click here.

Rank	Company Name	Absolute Strength of SDG-Relevant Patents	Share of SDG-Relevant Strength of Entire Portfolio	HQ	Industry	Focus SDGs
1	Samsung	77,206	30%	KR	Electronics	
2	Johnson & Johnson	70,398	61%	US	Pharmaceuticals	
3	Toyota Motor	49,149	64%	JP	Automotive	
4	Qualcomm	37,074	31%	US	Semiconductors	
5	LG Chem	35,605	70%	KR	Chemicals and Materials	
6	Huawei	30,137	19%	CN	Information Technologies	
7	General Electric	29,260	64%	US	Conglomerates	
8	State Grid	28,400	38%	CN	Engineering	
9	Roche	27,936	77%	CH	Pharmaceuticals	
10	Medtronic	25,594	51%	IE	Medical Technologies	
11	Panasonic	25,470	33%	JP	Conglomerates	
12	Ford	23,868	60%	US	Automotive	
13	LG Electronics	22,824	25%	KR	Electronics	
14	Bosch	21,231	40%	DE	Automotive	
15	Hyundai Motor	20,266	60%	KR	Automotive	
16	Sony	19,930	26%	JP	Electronics	
17	Apple	19,556	26%	US	Electronics	
18	Microsoft	19,493	29%	US	Information Technologies	
19	Honda Motor	19,355	51%	JP	Automotive	
20	Alphabet	19,353	33%	US	Information Technologies	

KR: South Korea, US: United States, JP: Japan, CN: China, CH: Switzerland, IE: Ireland, DE: Germany

SDG 3: Good Health and Well-being, SDG 4: Quality Education, SDG 7: Affordable and Clean Energy, SDG 9: Industry, Innovation and Infrastructure, SDG 12: Responsible Consumption and Production, SDG 13: Climate Action

Absolute Strength of SDG-Relevant Patents

The Patent Asset Index (Absolute Portfolio Strength) of all the SDG relevant patents in the portfolio

Share of SDG-Relevant Strength of Entire Portfolio

The percentage share of the portfolio of the owner which is SDG relevant, measured by Patent Asset Index (Absolute Portfolio Strength)

Focus SDGs

SDGs which account for 25% or more of the owners SDG-relevant portfolio

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SDG 3: Good Health and Well-being SDG 4: Quality Education SDG 7: Affordable and Clean Energy SDG 9: Industry, Innovation and Infrastructure SDG 12: Responsible Consumption and Production SDG 13: Climate Action

Rank	Company Name	Absolute Strength of SDG-Relevant Patents	Share of SDG-Relevant Strength of Entire Portfolio	HQ	Industry	Focus SDGs
21	BASF	18,626	56%	DE	Chemicals and Materials	
22	Philips	18,543	51%	NL	Medical Technologies	
23	General Motors	18,532	55%	US	Automotive	
24	VW Group	16,589	55%	DE	Automotive	
25	Bristol-Myers Squibb	16,371	89%	US	Pharmaceuticals	
26	Bayer	16,362	84%	DE	Pharmaceuticals	
27	Siemens	16,089	52%	DE	Engineering	
28	Hitachi	15,840	29%	JP	Conglomerates	
29	Boeing	15,469	52%	US	Engineering	
30	BOE	15,286	22%	CN	Electronics	
31	Merck KGaA	15,254	64%	DE	Chemicals and Materials	
32	Denso	14,858	35%	JP	Automotive	
33	Samsung SDI	14,510	81%	KR	Chemicals and Materials	
34	Tencent	14,207	26%	CN	Information Technologies	
35	Novartis	13,434	90%	CH	Pharmaceuticals	
36	IBM	13,381	31%	US	Information Technologies	
37	Raytheon Technologies	13,376	37%	US	Engineering	
38	Canon	13,228	18%	JP	Electronics	
39	TSMC	12,923	33%	TW	Semiconductors	
40	China Petrochemical Corporation	12,665	44%	CN	Chemicals and Materials	

DE: Germany, NL: Netherlands, US: United States, JP: Japan, CN: China, KR: South Korea, TW: Taiwan

SDG 2: Zero Hunger SDG 3: Good Health and Well-being SDG 4: Quality Education SDG 7: Affordable and Clean Energy SDG 9: Industry, Innovation and Infrastructure SDG 12: Responsible Consumption and Production SDG 13: Climate Action

Rank	Company Name	Absolute Strength of SDG-Relevant Patents	Share of SDG-Relevant Strength of Entire Portfolio	HQ	Industry	Focus SDGs
41	Fujifilm	12,569	25%	JP	Conglomerates	
42	Intel	12,508	28%	US	Semiconductors	
43	Mitsubishi Electric	12,485	22%	JP	Engineering	
44	Nissan Motor	12,207	60%	JP	Automotive	
45	Kia	12,154	61%	KR	Automotive	
46	Baidu	11,855	36%	CN	Conglomerates	
47	3M	11,649	44%	US	Chemicals and Materials	
48	Merck & Co	10,986	84%	US	Pharmaceuticals	
49	ARAMCO	10,733	54%	SA	Chemicals and Materials	
50	Ant Group	10,615	56%	CN	Information Technologies	
51	Procter & Gamble	10,558	43%	US	Consumer Goods	
52	TCL	10,300	23%	CN	Electronics	
53	Honeywell	10,210	36%	US	Conglomerates	
54	Edwards Lifesciences	9,982	94%	US	Medical Technologies	
55	LG Display	9,940	26%	KR	Electronics	
56	Hon Hai Precision Industry	9,552	21%	TW	Electronics	
57	Toshiba	9,488	29%	JP	Conglomerates	
58	Mitsubishi Heavy Industries	9,341	46%	JP	Conglomerates	
59	Dow	9,312	46%	US	Chemicals and Materials	
60	Sinochem Holdings	9,279	65%	CN	Chemicals and Materials	

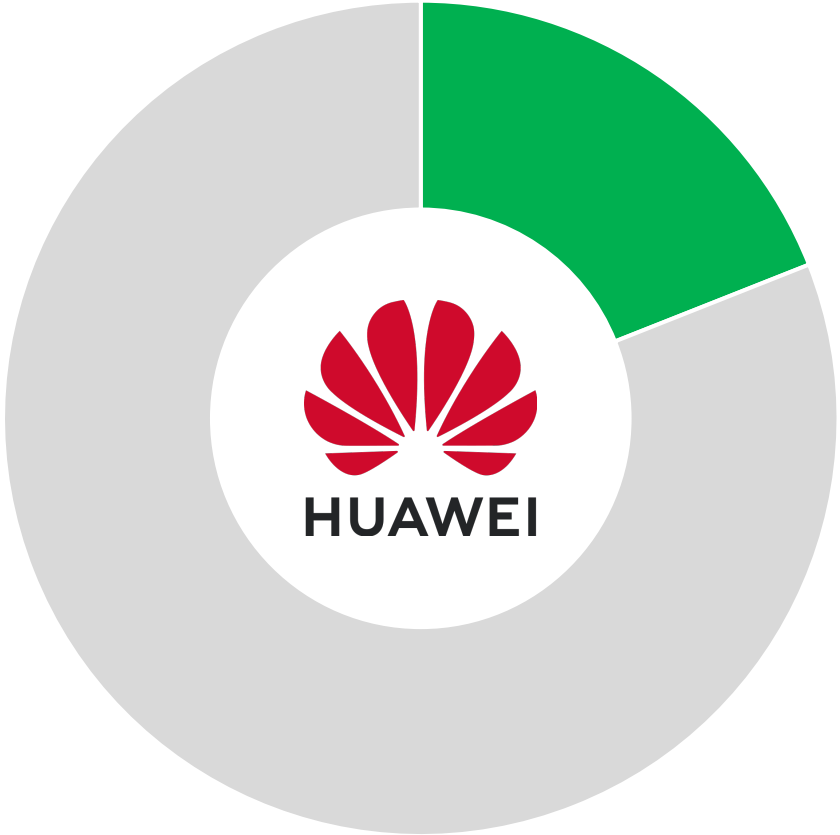
JP: Japan, US: United States, KR: South Korea, CN: China, SA: South Africa, TW: Taiwan

SDG 2: Zero Hunger SDG 3: Good Health and Well-being SDG 7: Affordable and Clean Energy SDG 9: Industry, Innovation and Infrastructure SDG 11: Sustainable Cities and Communities SDG 12: Responsible Consumption and Production SDG 13: Climate Action

Share vs. Absolute Contribution to Sustainable Innovation

Both the share of the patent portfolio of a company, but also their absolute size are important factors to consider when assessing contributions made to sustainable innovation

SIEMENS energy



A deeper look at the automotive industry

Industries at the Forefront of Sustainability

In order to compare the different industries of the Top 100 companies, the chart in Figure 8 shows the number of companies versus the total Patent Asset Index for the industries. As the chart reveals, most patent owners are found in the ***Chemicals and Materials*** *industry, followed closely by* ***Pharmaceuticals****, and then* ***Automotive****,* ***Information Technologies****, and* ***Electronics****.*

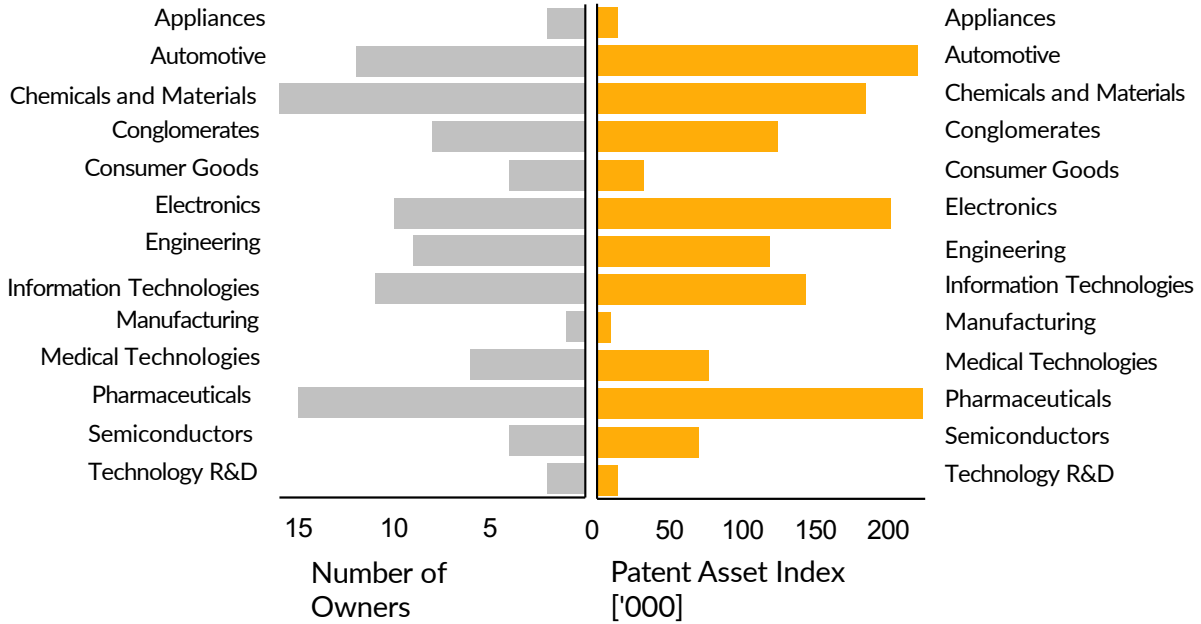
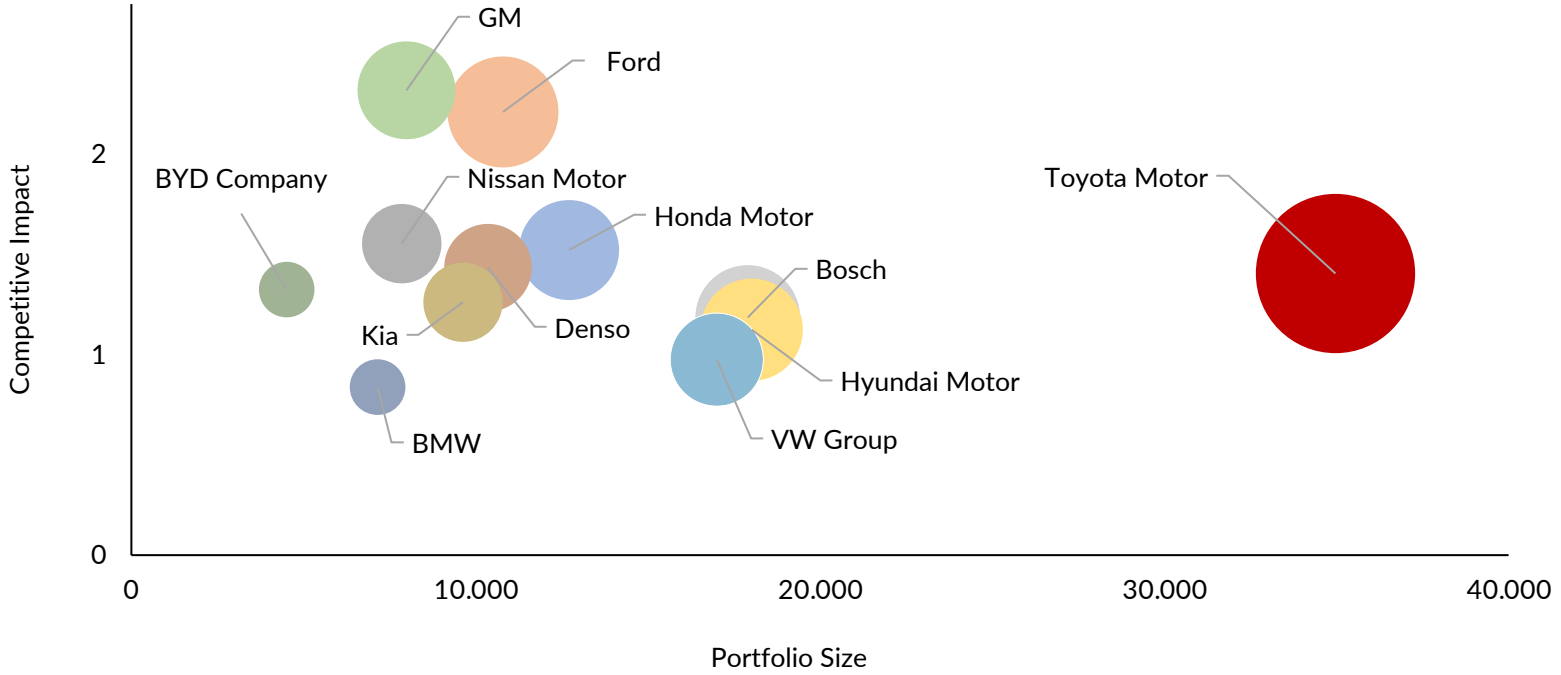


Figure 8: The number of patent owners vs SDG-related patent portfolio strength of the Top 100 by industry

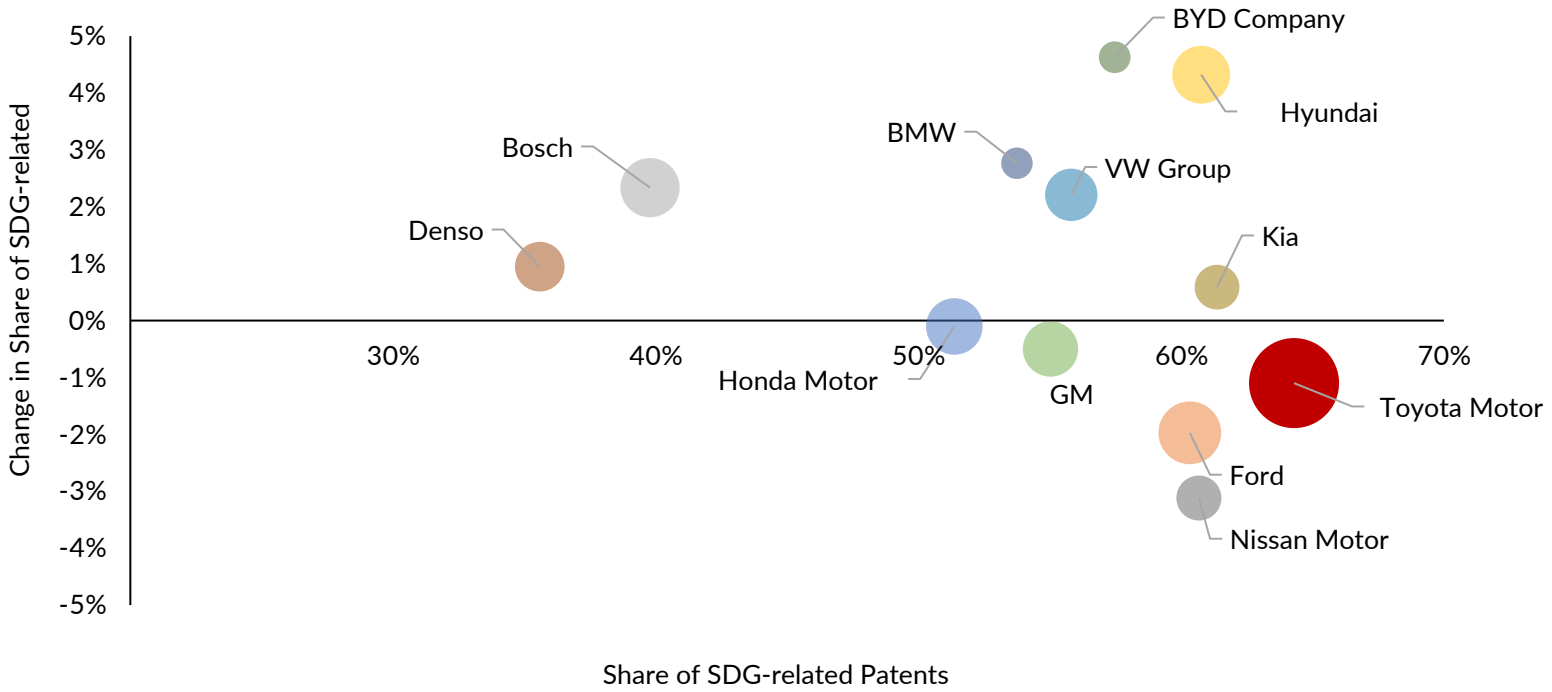
Industry Deep Dive: Automotive

Average patent family quality (Competitive Impact) versus portfolio size of patent owners in the Automotive industry sector by their SDG-related patent portfolios. The bubble size of the patent owners represents the portfolio strength (Patent Asset Index).



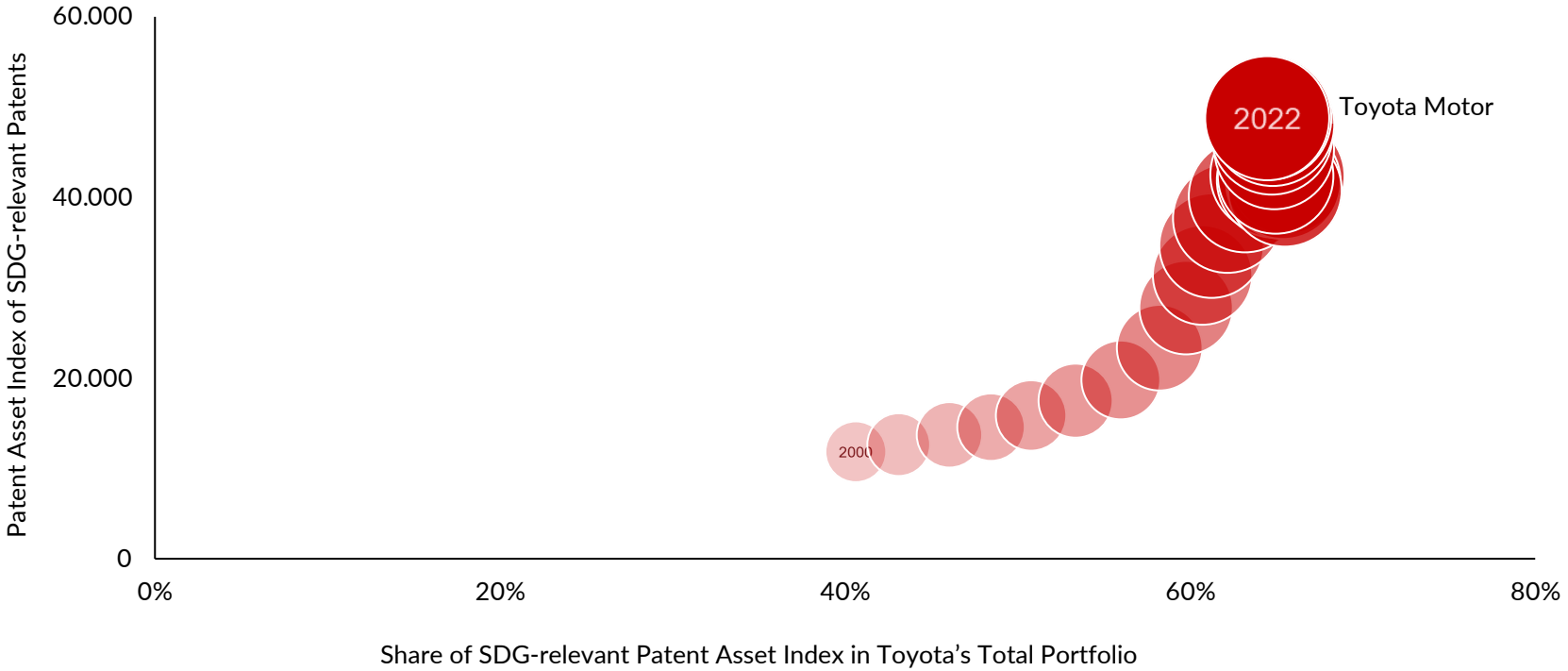
Industry Deep Dive: Automotive

The share of SDG-related patents of Automotive companies and its change (or dynamics) between 2017 and 2022.



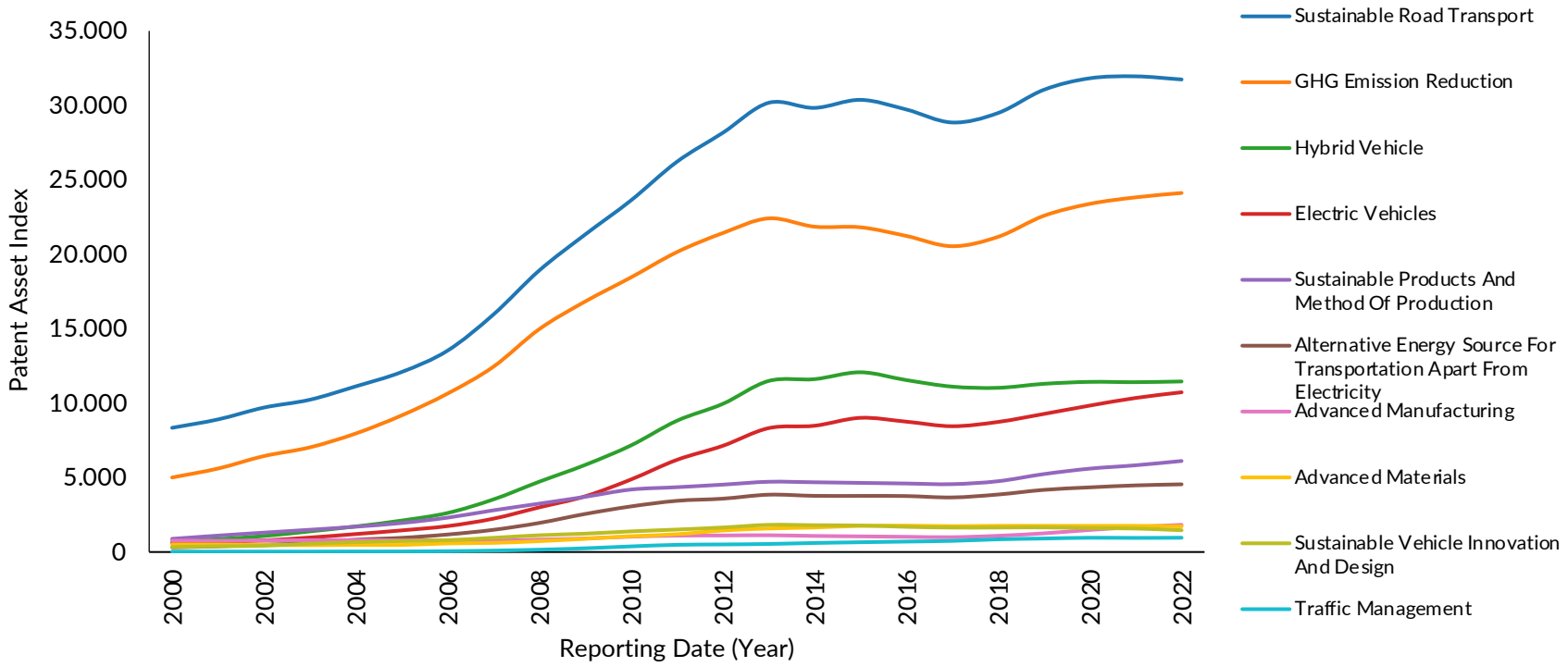
Company Deep Dive: Toyota Motor

Development in the Share and Absolute Patent Asset Index for Toyota Motor



Company Deep Dive: Toyota Motor

Development in the Patent Asset Index for SDG-relevant Sub-Technologies of Toyota Motor



How the report can help you

IP Can Play A Vital Role In Driving Sustainable Business

Harnessing Knowledge of Sustainable Technologies Across Business Ecosystem

Within the organization

C-Suite

R&D

Sustainability/ CSR/ESG

Innovation, Strategy

Investor Relations

Marketing, PR

Outside the organization

Shareholders, Investors

Consumers

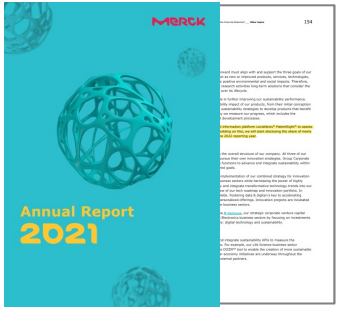
Governments

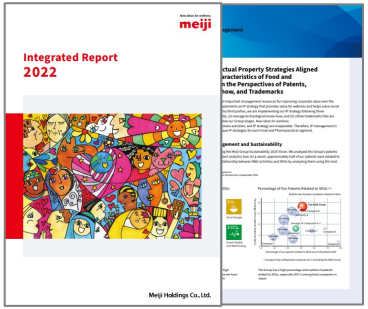
Suppliers, Partners

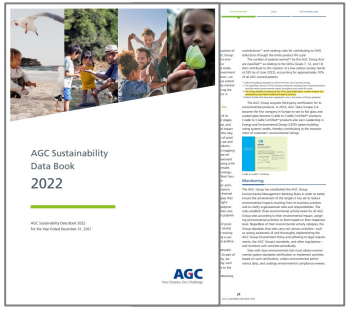
Press

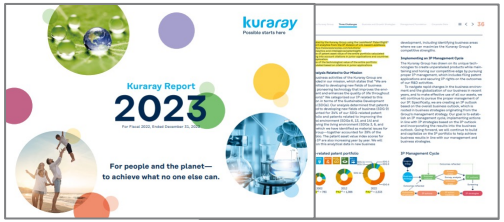
Tracking Progress Towards Sustainable Innovation

Public reporting in annual, investor relations, and sustainability reports









Use Cases From Patent Data Analysis Inform IP And The Business

How To Leverage Sustainable Innovation Insights

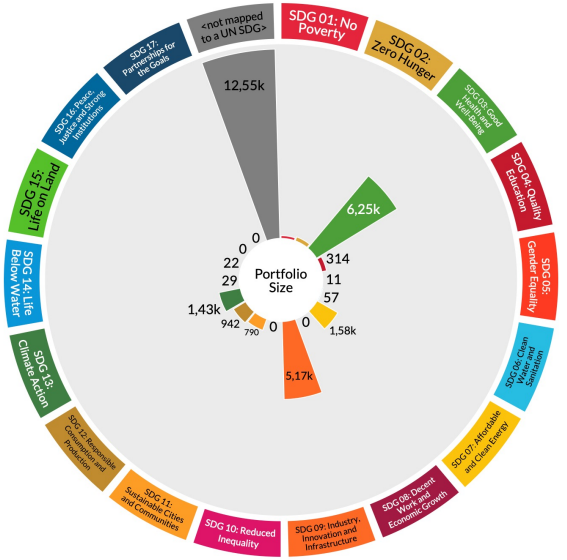
- Understand own IP and identify gaps in sustainable technology development
- Objectively measure and evaluate progress toward SDGs
- Develop a strategy for sustainable technology investment
- Communicate progress and roadmaps to reach SDGs

What Is Your Company's Position On Sustainable IP?

How To Leverage Sustainable Innovation Insights

Understand own IP and identify gaps in sustainable technology development

- Share and value of sustainable technologies in patent portfolios
- Growth opportunities in sustainable technology areas
- Validation of sustainable corporate alignment



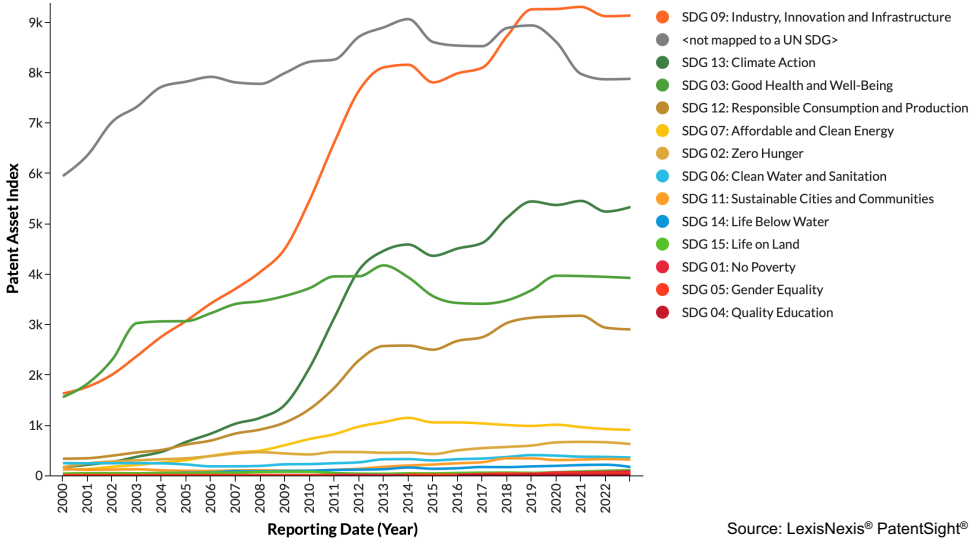
Source: LexisNexis® PatentSight®

How Is Sustainable IP Developing?

How To Leverage Sustainable Innovation Insights

Objectively measure and evaluate progress toward SDGs

- Performance measurement of investments in sustainable technologies
- Progress of sustainable R&D and technology over time
- Which investments have an impact



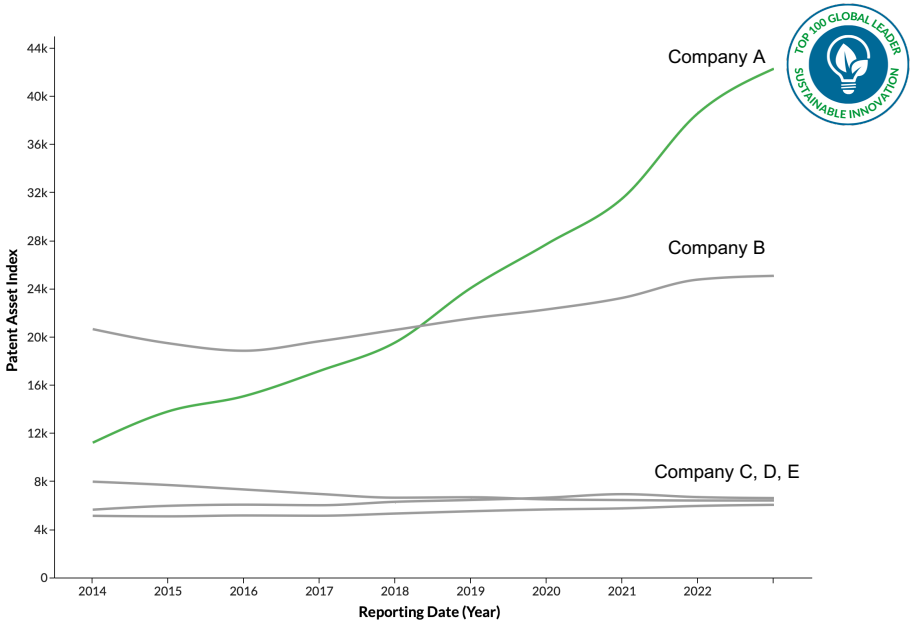
Source: LexisNexis® PatentSight®

Where To Invest?

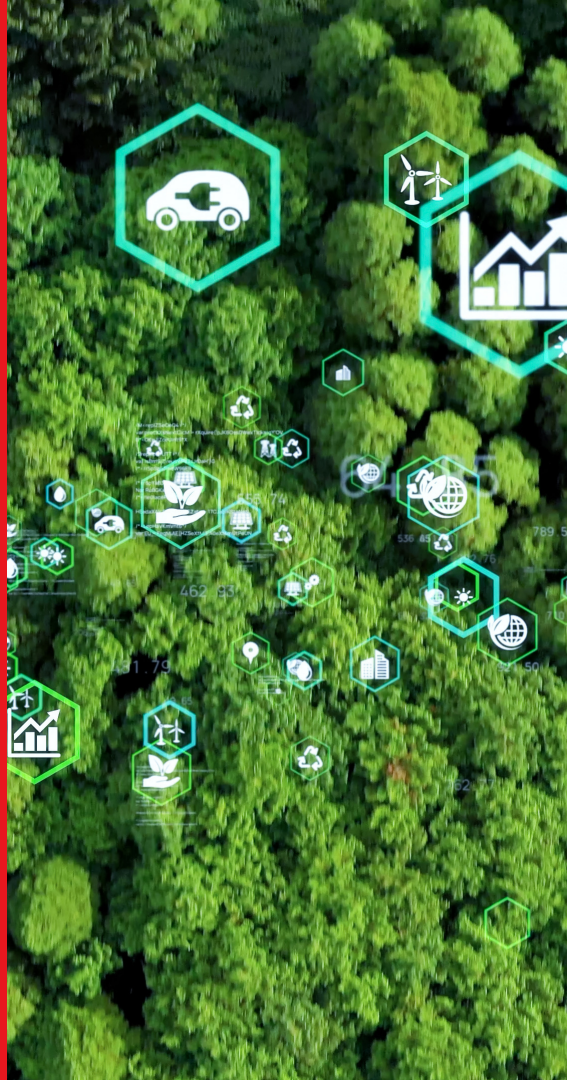
How To Leverage Sustainable Innovation Insights

Develop a strategy for sustainable technology investment

- Competitive landscape in sustainable technology fields
- Trends, gaps and whitespaces in the sustainable technology landscape.
- Partnerships and licensing opportunities



Source: LexisNexis® PatentSight®



Drive Positive Change by Linking Innovation to the SDGs

IP departments

- Tab into an objective and transparent source concerning sustainability
- Convey information on sustainable technology developments in an easy-to-understand way
- Be a strategic partner and advisor on sustainability to the business

Businesses

- Keep an attractive financial profile
- Be a brand, product, or partner of choice for consumers, purchasers, and licensees
- Stay at the forefront of market trends and developments

A sustainable world

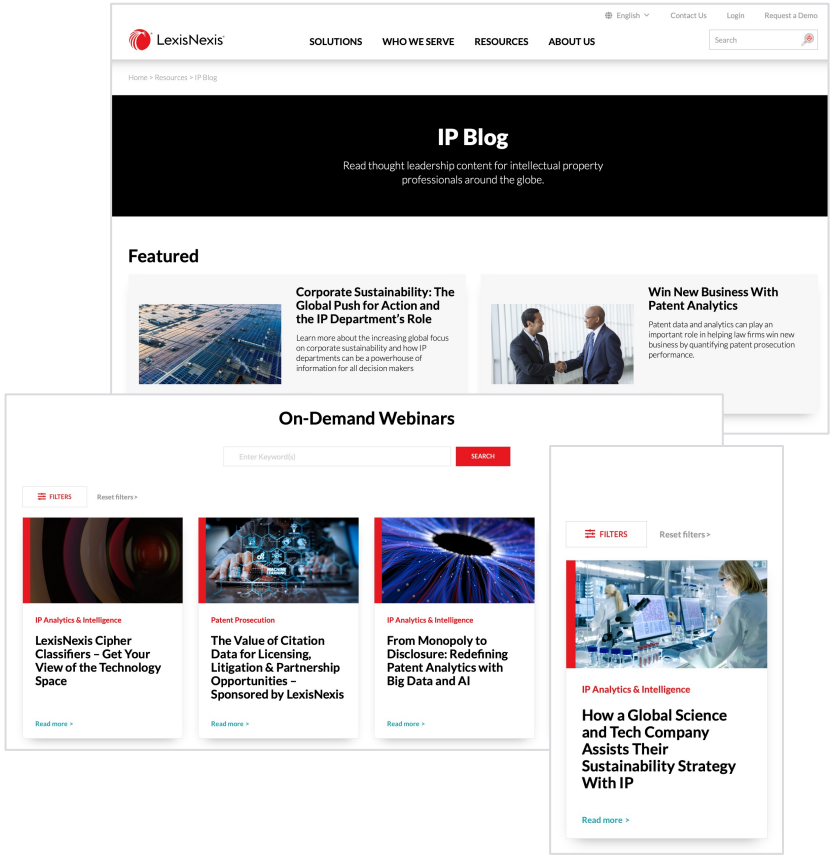
- Leaders in sustainability are catalysts for positive change
- Acceleration of sustainable technological development
- Make a lasting impact on the achievement of the UN SDGs

Q&A

LexisNexis

Additional resources

- You will receive the slides in a follow-up email, together with a link to download the report
- You can download the report and find the Top 300 online: https://www.lexisnexisip.com/sustainable-innovation-report/
- You can find more (SDG related) resources on our website: www.lexisnexisip.com



Thank you for joining us!

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