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?

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Head of Customer Success

Ninja Laufmann
Senior Product Marketing Manager

Irene Yntema
Marketing Manager

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

Exploring the Global Sustainable Innovation Landscape: The Top 100 Companies and Beyond
The Development of “Sustainability”

- 1972: UN Conference on Environment and Development (UNCHE) in Stockholm
- 2015: Paris Agreement & UN SDGs (framework to succeed the Millennium Development Goals which ended in 2015)
- 2020s: A new level of urgency among government regulators

- European Green Deal & EU Taxonomy for Sustainable Activities
- Biden admin committed to cutting greenhouse gas emissions by 50% by 2030
- Revised Japan’s Corporate Governance Code: emphasis on sustainability and ESG issues
- European Commission
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
- T28 Blockchain
- T17 Child Obesity
- T32 Child Wasting
- T34 Food Processing
- T53 Food Production and Security
- T36 Food Waste Management
- T37 Sustainable Agriculture Techniques
- T47 Sustainable Livestock or Poultry Management

SDG 03: Good Health and Well-Being
- T4 AIDS
- T5 Aids of Pollution Prevention
- T3 Blockchain
- T44 Cancer
- T30 Cardiovascular Disease
- T35 CBRNet
- T39 Chronic Respiratory Diseases
- T42 Diabetics
- T43 Digital Health
- T27 Disaster Management
- T29 Emergency Diagnostics and Operations
- T46 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 Diagnostic Methods for Non-Communicable Diseases
- T73 Obesity and Malnutrition
- T48 Sexual and Reproductive Health
- T59 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
- T45 Natural Language Processing
- T100 Education for the Diabetic

SDG 05: Gender Equality
- T20 Clean Cooking Technologies
- T38 Gender-Based Violence Prevention
- T46 Disaggregated Data Management

SDG 06: Clean Water and Sanitation
- T32 Fieldbars from Wastewater
- T33 Flood Control
- T37 Freshwater Ecosystem
- T53 Sustainable Packaging
- T66 Toilet Sanitation
- T90 Water Harvesting and Extraction
- T92 Water Recycling and Wastewater Treatment
- T94 Water Storage, Distribution and Management
- T95 Water 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
- T26 Electric Vehicles
- T29 Energy Efficiency
- T31 Energy from Waste
- T44 Geothermal Energy
- T46 Hybrid Vehicle
- T52 Improvements in Fossil Fuel Technology
- T54 Internet of Things
- T55 Nuclear Energy
- T56 Paper Recycling
- T63 Renewable Energy
- T66 Smart City
- T72 Sustainable Vehicle Innovation and Design
- T88 Waste Management and Recovery and Reuse

SDG 09: Industry Innovation and Infrastructure
- T12 Advanced Manufacturing
- T14 Advanced Materials
- T13 Blockchain
- T32 Cybersecurity
- T46 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 10: Reduced Inequalities
- T27 Advanced Materials
- T32 Blockchain
- T46 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
- T10 Biodiversity Conservation
- T10 Fuel-Sustainable
- T45 Land Ecosystem Conservation
- T68 SkinHealth

SDG 12: Consumption and Production
- T11 Blockchain
- T32 Energy From Waste
- T53 Food Waste Management
- T44 Internet of Things
- T57 Plastic Recycling
- T57 Sustainable Packaging
- T74 Sustainable Fashion and Textiles
- T79 Sustainable Packaging
- T80 Sustainable Products and Method of Production
- T83 Sustainable Vehicle Innovation and Design
- T84 Tackle Recycling
- T88 Waste Management and Recovery and Reuse
- T89 Waste Recycling
- T93 Water Recycling and Wastewater Treatment

SDG 13: Climate Action
- T17 Aquaculture
- T21 Coastal Protection
- T46 Marine Ecosystem Preservation
- T53 Oil Spill Cleanup
- T57 Plastic Recycling
- T79 Sustainable Packaging
- T91 Water Pollution - Plastic Treatment

SDG 14: Life Below Water
- T18 Aquatic Life
- T24 Coastal and Marine Environments
- T46 Marine Ecosystem Preservation
- T53 Oil Spill Cleanup
- T67 Sustainable Packaging
- T91 Water Pollution - Plastic Treatment

SDG 15: Life on Land
- T10 Biodiversity Conservation
- T10 Fuel-Sustainable
- T45 Land Ecosystem Conservation
- T68 SkinHealth

SDG 16: Peace, Justice and Strong Institutions
- T02 Assuring Technology and Medical Prosthesis
- T09 Assuring Technology in Transportation
- T06 CBRNet
- T07 Disaster Management
- T09 Internet of Things
- T23 Nuclear Energy
- T26 Paper Recycling
- T33 Renewable Energy
- T36 Smart City
- T37 Sustainable Vehicle Innovation and Design
- T88 Waste Management and Recovery and Reuse
Mapping the United Nations Sustainable Development Goal

UN SDG Targets

Indicators ➔ Metadata ➔ Definitions & Concepts

Transforming Metadata into Technology Fields

https://unstats.un.org/sdgs/metadata/
The Methodology: Based on the Patent Asset Index

**Technology Relevance**
Global citations received from later patents, adjusted for patent office practices, age and technology field

Average value: 1

**Market Coverage**
Market size protected by active patents and pending patent applications on a certain invention

Value of granted US patent: 1.0

**Competitive Impact**
Individual strength of a patent family

**Patent Asset Index**
Total strength of a patent portfolio

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.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company Name</th>
<th>Absolute Strength of SDG-Related Patents</th>
<th>Share of SDG-Related Strength of Entire Portfolio</th>
<th>MZ</th>
<th>Industry</th>
<th>Focus SDGs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Samsung</td>
<td>77,026</td>
<td>30%</td>
<td>KR</td>
<td>Electronics</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Johnson &amp; Johnson</td>
<td>70,395</td>
<td>41%</td>
<td>US</td>
<td>Pharmaceuticals</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Toyota</td>
<td>49,149</td>
<td>64%</td>
<td>JP</td>
<td>Automotive</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Qualcomm</td>
<td>37,074</td>
<td>31%</td>
<td>US</td>
<td>Semiconductors</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>LG Chem</td>
<td>38,628</td>
<td>70%</td>
<td>KR</td>
<td>Chemicals and Materials</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Huawei</td>
<td>30,137</td>
<td>38%</td>
<td>CN</td>
<td>Information Technologies</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>General Electric</td>
<td>29,060</td>
<td>64%</td>
<td>US</td>
<td>Conglomerates</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>State Grid</td>
<td>28,400</td>
<td>38%</td>
<td>CN</td>
<td>Engineering</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Roche</td>
<td>27,896</td>
<td>77%</td>
<td>CH</td>
<td>Pharmaceuticals</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Medtronic</td>
<td>25,994</td>
<td>51%</td>
<td>IE</td>
<td>Medical Technologies</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Panasonic</td>
<td>24,470</td>
<td>33%</td>
<td>JP</td>
<td>Conglomerates</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Ford</td>
<td>23,568</td>
<td>60%</td>
<td>US</td>
<td>Automotive</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>LG Electronics</td>
<td>22,824</td>
<td>25%</td>
<td>KR</td>
<td>Electronics</td>
<td></td>
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<tr>
<td>14</td>
<td>Bosch</td>
<td>21,231</td>
<td>40%</td>
<td>DE</td>
<td>Automotive</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Hyundai Motor</td>
<td>20,266</td>
<td>60%</td>
<td>KR</td>
<td>Automotive</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Sony</td>
<td>19,936</td>
<td>26%</td>
<td>JP</td>
<td>Automotive</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Apple</td>
<td>19,756</td>
<td>26%</td>
<td>US</td>
<td>Electronics</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Microsoft</td>
<td>19,493</td>
<td>29%</td>
<td>US</td>
<td>Information Technologies</td>
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<tr>
<td>19</td>
<td>Honda Motor</td>
<td>19,393</td>
<td>31%</td>
<td>JP</td>
<td>Automotive</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Alphabet</td>
<td>19,253</td>
<td>33%</td>
<td>US</td>
<td>Information Technologies</td>
<td></td>
</tr>
</tbody>
</table>

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
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.
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.
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**.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Patent Asset Index [000]</th>
<th>Number of Owners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appliances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automotive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemicals and Materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conglomerates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer Goods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Technologies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Technologies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semiconductors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology R&amp;D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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

Share of SDG-relevant Patent Asset Index in Toyota's Total Portfolio

Patent Asset Index of SDG-relevant Patents

Company: Toyota Motor

Year: 2022

Patent Asset Index

Share

0%
20%
40%
60%
80%

0
10,000
20,000
30,000
40,000
50,000
60,000

2001
2022

Toyota Motor
Company Deep Dive: Toyota Motor

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

![Graph showing the development of patent asset index for SDG-relevant sub-technologies of Toyota Motor over the years.]
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
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
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/](https://www.lexisnexisip.com/sustainable-innovation-report/)

- You can find more (SDG related) resources on our website: [www.lexisnexisip.com](http://www.lexisnexisip.com)
Thank you for joining us!

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Connect on LinkedIn