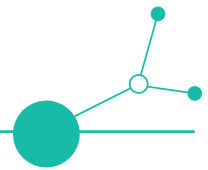


D 1.1.3 TRANSNATIONAL REPORT



Inventory of automotive transformation
capacities (Joint report)

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D 1.1.3 TRANSNATIONAL REPORT

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INTRODUCTION

Objective and Scope

The **Drive2Transform** project unites nine Central European regions in a shared mission to assess and enhance their capacities for transformation in the automotive sector. This report is grounded in the findings of the **Regional Report D 1.1.2**, which provides a comprehensive analysis of all participating regions based on a survey involving **118 companies and business support organizations**. As a second layer of analysis, the **Multiple Correspondence Analysis (MCA) methodology** offers additional detail, evaluating the transformative potential of the sector through a multidimensional framework.

Focusing on the critical domains of **Electrification, Automation, Connectivity, and the Platform Economy**, this report benchmarks regional performance, delves deeper into the readiness of the **companies**, and identifies actionable opportunities for collaboration.

The primary objectives of this report are to:

Assess transformation readiness of regions and companies through complementary analytical frameworks.

Deliver actionable insights for stakeholders to align strategies effectively.

Encourage transnational cooperation by identifying shared opportunities and challenges.

Identify possible synergies and development opportunities across national and regional borders

The findings highlight the decisive role of regional attributes—such as the availability of skilled labor, infrastructure, and access to specialized institutions—in shaping transformation readiness. By integrating the insights from the Transformation Readiness Modell (**TRM) Score** in the Regional Report and the more detailed **MCA analysis**, this report provides a robust foundation for fostering cross-regional collaboration and advancing sustainable transformation.

Methodology and Approach

We used two different approaches to analyse the data: TRM and MCA. Both arrived at the same results.

Transformation Readiness Model (TRM)

The methodology is detailed in Report 1.1.2 and served as the basis for all graphics. It is based on structured surveys, direct interviews, and desk research. Results were benchmarked using the Transformation Readiness Index, which categorizes regions from "Not Ready" (<30) to "Transformation Ready" (>60).

Multiple Correspondence Analysis (MCA)

The analysis relies on Multiple Correspondence Analysis (MCA), a robust statistical method tailored to simplify and visualize multidimensional categorical and ordinal data. MCA helps identify patterns and relationships across variables, enabling meaningful comparisons between companies and regions. The methodological approach includes:

Data Collection:

- Surveys conducted with companies and regional stakeholders
- Questions grouped into thematic domains (e.g., Automation, Connectivity)

MCA Transformation:



- Survey responses normalized to reduce dimensionality
- Grouped into representative dimensions that capture key patterns

Weighting and Validation:

- Weighting applied to variables based on their significance
- Statistical tests (e.g., Spearman's Rank Correlation, Kruskal-Wallis Test) validate results and highlight significant trends

Visualization and Interpretation:

- Results presented in two-dimensional plots, dividing companies into performance quadrants (e.g., "World class", "weak")
- Aggregate scores calculated for each domain to identify regional strengths and weaknesses

Data Analysis and Limitations

Insights are based on responses from 88 businesses and 30 business support organizations (BSOs). Variability in sample size, respondent expertise, and regional focus introduces limitations. As outlined in D 1.1.2, results reflect the NUTS-level classification: larger regions (e.g., Bavaria in Germany) provided data specific to their regions, while smaller countries (e.g., Slovenia) reported information on a national level. The respondent bias noted in the analysis, such as differences in perspectives based on roles (e.g., senior executives versus operational staff), applies not only to the MCA methodology but also to the TRM Score approach. In addition, there is an insufficient amount of data for certain regions; for example, in Slovenia, only 8 respondents participated, which may limit the robustness and generalizability of the findings for some regions.

While both frameworks ensure structured and meaningful insights, they are subject to inherent challenges.

Limitations of the TRM

- **Manual Weighting:** Adjustments to weights, though necessary, may introduce subjectivity.
- Assumptions about ordinal and interval scaling may oversimplify complex relationships.
- Missing data in the Regional Factor questions, which were excluded from the analysis, so that some scores may not be entirely complete or fully representative.
- Combining responses from BSOs and businesses into regional analyses may obscure differences in perspectives and focus areas between these groups.
- Open-ended responses are challenging to standardize and analyze systematically. Insights from such data may depend heavily on the subjective interpretation of analysts.

Limitations of the MCA

- **Manual Weighting:** Adjustments to weights, though necessary, may introduce subjectivity.
- **Median Imputation for Missing Data:** This practical approach smooths data variations but may reduce sensitivity to regional differences.



- Independent Factor Analysis: By evaluating factors independently, the methodologies might overlook potential synergies and interdependencies.

Future Optimization:

It is important to note that further surveys planned during the project will refine and enhance the results. In the November 2024 Consortium Meeting, additional surveys were agreed upon to strengthen the database and improve the reliability of the findings over the course of the project.

These limitations highlight the need for cautious interpretation of current findings while acknowledging the steps already underway to ensure continuous improvement.

CROSS-REGIONAL ANALYSIS

Transnational Comparison Deliverable 1.1.2 / TRM Score Overview

The TRM scores highlight varying readiness levels across regions:

Region	TRM Score	Readiness Level	Key Insights
Germany-Bavaria	55	Moderate Ready	<p>Advanced in electrification and automation, with emerging connectivity efforts.</p> <p>Bavaria's automotive sector is robust but faces challenges due to skilled labor shortages, high material costs, high energy costs, high bureaucracy and a need for transformation.</p> <p>Companies see growth potential in electrification and automation but require stronger local support, particularly in cloud services, e-mobility access, and technology testing infrastructure.</p> <p>Addressing these gaps and mitigating external influences, such as from China, is crucial for sustaining competitiveness and innovation through 2030.</p>
Austria-Upper Austria	48	Limited Ready	<p>The automotive industry has strong roots in Austria and Upper Austria but is currently facing many challenges. In particular, Electrification and Automation are seen as opportunities that are being pursued with various strategic approaches. However, strong local support is absolutely essential.</p> <p>In summary, the challenges in Austria are very similar to the challenges in Central Europe, which is no surprise, as the automotive industry is very closely linked across countries.</p>
Czech Republic-Pilsen Region	52	Moderate Ready	<p>Entities in the Pilsen Region range from small companies to large enterprises. The focus of the companies is as follows: no OEM manufacturer, Tier 1 to 3 suppliers and their interconnected supply chains. The region is represented by a mix of automotive businesses from R&D centers, IT, manufacturing to warehouses and supply chain companies. Electrification will not eliminate the</p>



Region	TRM Score	Readiness Level	Key Insights
			core business of most companies in the region. Nevertheless, there is stagnation, problems with transformation. IT companies supplying exclusively to the automotive sector already have the same problem with stagnation.
Germany-Baden-Württemberg	65	Transformation Ready	<p>The automotive sector in the Northern Black Forest faces significant pressure, grappling with challenges such as skilled labour shortages, high material and energy costs, extensive bureaucracy, and the urgent need for transformation. These obstacles highlight the need for targeted strategies to support businesses in navigating this critical period.</p> <p>Despite these challenges, companies recognize growth potential in automation, connectivity, and the platform economy, identifying these areas as key drivers for future success. However, stronger local support is needed to capitalize on these opportunities, particularly in the development of IT skills and services, e-mobility infrastructure, and technology testing facilities.</p>
Hungary	47	Limited Ready	<p>Developing robust digital and physical infrastructure is essential, eg. an extensive EV charging network, and smart transportation systems to facilitate connected and electric vehicle integration.</p> <p>Equally important is the reskilling of the workforce. Education and training programs must be adapted to equip employees with expertise in emerging technologies such as software development, artificial intelligence, and data analytics, all of which are critical for the future of the automotive industry. Additionally, fostering a vibrant innovation ecosystem is crucial. This involves strengthening collaboration between universities, research institutions, and private companies to drive innovation and support the growth of technology startups in the automotive sector.</p> <p>Policy and regulatory frameworks also play a key role. Hungary should implement policies and incentives that encourage investment in green technologies, automation, and digital platforms. Furthermore, aligning with global sustainability standards and integrating renewable energy sources into the industry will make Hungary a more attractive destination for companies prioritizing eco-friendly practices.</p>
Italy-South Tyrol	51	Limited Ready	<p>Electrification and Sustainability</p> <p>South Tyrol is a prototyping, testing and showcase region for offroad and mountain mobility with international market leaders</p>



Region	TRM Score	Readiness Level	Key Insights
			<p>(like Leitner, Doppelmayr, IDV,) and electrification technology providers (Alpitronic, Intercable, GKN Automotive).</p> <p>Industry Resilience and Challenges The automotive sector (5% of rGDP) shifted towards electromobility and is suffering in the moment a retroshift towards ICE. Challenges are the talents with of specific competences, the high costs of living, lack of space, too low R&D investments.</p> <p>Digital Transformation The industry is focused on electrification and automation, in near future connectivity and IT/AI competences will become crucial to improve the manufacturing process to reduce cost, the product development to reduce time to market and to get phygital products/services innovation in place.</p>
Poland-Silesia	50	Limited Ready	OEM and international Tier-1 suppliers involved in electrification, automation and connectivity, with moderate to low involvement of Polish Tier-1, Tier-2 and Tier-3 suppliers in electrification, automation and connectivity. Slow uptake of platform economy solutions, IT companies working mostly for solutions abroad.
Slovenia	50	Limited Ready	<p>Slovenia's automotive industry faces a mixed outlook in its transformation journey. While the sector benefits from a relatively skilled workforce, a comparatively receptive market for new technologies and good research institutions, it also faces significant challenges in accessing specialised production technologies, securing financial incentives, and developing essential infrastructure.</p> <p>The business support ecosystem, while showing potential for growth, currently lacks specialisation and adequate resources to effectively support companies in all areas of transformation. Particularly concerning are the low ratings for support services related to connectivity, automation, and the platform economy.</p>
Slovakia	46	Limited Ready	To enhance Slovakia's competitiveness in the automotive sector, it is crucial to update educational programs and vocational training to focus on digital technologies, data analytics, and platform economy models. Support R&D and advisory across the full cycle - from business start-up through grants and available challenges to transformation. Create a comprehensive long-term strategy for the automotive sector, with clear goals and actions, to ensure that Slovakia maintains its competitiveness through 2030 and beyond.

**Bavaria (Moderate Ready)**

Strengths: Advanced electrification projects (e.g., EMIL e-bus) and robust automation R&D.

Challenges: Skill shortages, high costs, and underdeveloped platform economy (Bavaria, Q14-Q18).

Key Takeaway: Targeted digital services and expanded cross-regional collaborations could elevate Bavaria to "Transformation Ready."

Upper Austria (Limited Ready)

Strengths: High integration of electrification with cross-industry networks.

Challenges: High regulatory costs and skill gaps in platform economy adoption (Austria, Q14-Q21).

Key Takeaway: Reforms in policy and enhanced BSO initiatives are critical for sustained growth.

Pilsen Region (Moderate Ready)

Strengths: Established automotive legacy; focus on smart mobility.

Challenges: Dependence on traditional markets and moderate innovation pressure (Pilsen, Q10-Q14).

Key Takeaway: Companies in the region are further negatively affected by the lack of transformation strategies and specialized support programs.

Baden-Württemberg (Transformation Ready)

Strengths: Leadership in automation and strong R&D ecosystems.

Challenges: Limited BSO support for SMEs' transformation journeys (Baden-Württemberg, Q26).

Key Takeaway: Strengthening SME-focused programs will bolster overall readiness.

Hungary (Limited Ready)

Strengths: Electrification potential with growing EV infrastructure.

Challenges: Weak innovation hubs and limited R&D funding (Hungary, Q17-Q18).

Key Takeaway: Investments in infrastructure and skills are essential for growth.

South Tyrol (Limited Ready)

Strengths: Initial focus on electrification and connectivity projects.

Challenges: Inadequate resources and ecosystem for transformative growth (South Tyrol, Q19-Q20).

Key Takeaway: Public-private partnerships could drive progress.

Silesia (Poland) (Limited Ready)

Strengths: Manufacturing expertise; gradual interest in electrification.

Challenges: Limited digital infrastructure and connectivity initiatives (Poland, Q21).

Key Takeaway: Accelerated digitalization and policy alignment are necessary.

Slovenia (Limited Ready)

Strengths: Growing awareness of electrification's importance.

Challenges: Policy, digital, and skill gaps limit transformation (Slovenia, Q23-Q25).

Key Takeaway: Strategic investments in workforce and infrastructure are urgent.

Slovakia (Limited Ready)



Strengths: Growth potential in electrification and connectivity.

Challenges: Need for stronger support in education and industry-academia linkage. (Slovakia, Q17).

Key Takeaway: Comprehensive transformation planning is critical.

Comparison Transformation risks, pressure and readiness for business continuity in 2024-2030 (Q10-Q14)

European regions exhibit both commonalities and variations in transformation risks, pressures, and readiness within the automotive sector. Here's a condensed transnational overview:

Common Themes:

1. **Risks:** Employee-related challenges, such as staff shortages, high costs, and skill gaps, are pervasive across all regions. Production technology risks are generally lower, except in regions heavily reliant on outdated systems (e.g., Baden-Württemberg).
2. **Pressure:** Moderate pressure to adapt product portfolios, production technologies, and employee competencies is a shared concern, driven by electrification, Industry 4.0, and global competition. However, the degree varies based on regional market dynamics and readiness.
3. **Readiness:** Most regions feel moderately ready for transformation, with better readiness in production technologies (Hungary, Slovenia) and lower in workforce-related skills (Slovakia, Italy).

Key Variations:

- **Baden-Württemberg and Slovenia** perceive extreme pressures and risks in production technologies, contrasting with Hungary and Bavaria, which are relatively secure in this area due to advanced infrastructures.
- **Poland and Czechia** report strong impacts from rising energy and material costs, linked to their manufacturing intensity, while Bavaria and Austria show relative resilience in production.
- **Slovakia** reports below-average readiness and pressure levels, highlighting a discrepancy between perceived risk and urgency to act.

Notable Patterns:

- **Financial Constraints:** Many regions cite lack of financial resources as a primary barrier to transformation, particularly in Eastern Europe and Italy.
- **Electrification Impact:** Regions specializing in internal combustion engine (ICE) components (e.g., Baden-Württemberg) feel heightened transformation pressures.
- **Workforce Challenges:** Shortages and the need for upskilling are universal concerns, with some regions (e.g., Slovenia, Poland) emphasizing collaborative training programs.

KEY TAKEAWAYS: While risks and pressures are regionally nuanced, there is a widespread need for strategic planning, workforce development, and financial support to navigate the transition. Production technologies remain a critical focus area, especially in regions lagging in readiness for Industry 4.0 advancements. Collaboration and innovation will be vital to ensure continuity and competitiveness across Europe.



Comparison Transformation opportunities and strategic approaches to ensure business continuity in 2024-2030 (Q15-Q17)

European regions show distinct yet interlinked opportunities and strategies in navigating transformation in the automotive sector. Below is an integrated transnational overview:

Opportunities:

1. **Electrification and Automation:** These are the most promising areas, recognized across all regions. Electrification is emphasized in regions like Bavaria, Italy, and Slovenia due to growing EV adoption. Automation also holds strong potential, particularly in Czechia and Slovenia, though some regions like Hungary show more moderate enthusiasm.
2. **Connectivity and Platform Economy:** Opportunities in connectivity are noted, particularly in Bavaria and Slovakia, but rated lower than electrification and automation in other regions. The platform economy is perceived as a longer-term opportunity, with regions like Baden-Württemberg and Slovenia beginning to explore its potential.
3. **Regional Nuances:** Hungary and Poland view opportunities in electrification more optimistically, driven by local EV production. Conversely, regions like Poland and Italy show less enthusiasm for connectivity and platform economies, reflecting gaps in digital infrastructure and strategy.

Strategic Approaches:

1. **Diversification:** Horizontal and vertical diversification are common strategies. Horizontal diversification targets new client segments, while vertical integration enhances value chain control. This approach is central in regions like Bavaria and Italy.
2. **R&D Investment:** Intensified research in electrification, decarbonization, and automation is pivotal. Bavaria and Baden-Württemberg prioritize decarbonization, while Czechia and Hungary focus on connectivity and advanced automation.
3. **Collaboration:** Cross-industry and academia-industry partnerships are emerging trends, particularly in Slovenia and Slovakia, to bridge technology and skills gaps.

Skills and Technology Gaps:

1. **Skills Deficits:** Widespread gaps in technical skills, especially in AI, robotics, and electrification, hinder readiness. Workforce issues like insufficient training programs (Slovakia, Poland) and knowledge retention (Austria) are recurring themes.
2. **Technology Needs:** Outdated production equipment and insufficient digital infrastructures (Slovenia, Hungary) limit regions' ability to leverage automation and connectivity fully.

KEY TAKEAWAYS: Regions across Europe align in recognizing the transformative opportunities in electrification and automation, albeit with varying degrees of readiness. Investment in R&D, diversification, and workforce upskilling emerges as critical pathways. Addressing skills and technology gaps through strategic collaboration and infrastructure development will be crucial to ensuring competitive, sustainable growth.



Comparison Regional Resources and business support ecosystem (Q18-22, 26-27)

The analysis of regional resources and business support ecosystems across nine European regions highlights both shared strengths and unique challenges in ensuring competitiveness and adaptability in the automotive sector transformation. Below is a consolidated overview:

Key Strengths and Opportunities:

1. **Skilled Workforce Development:** Many regions, such as Slovenia and Czechia, demonstrate strong foundations in workforce training and university-level education. Austria and Hungary are also making strides with collaborative educational programs to address skills gaps.
2. **Proximity to OEMs and Suppliers:** Regions like Slovakia and Bavaria benefit from their proximity to OEMs and suppliers, streamlining logistics and fostering collaboration within the automotive supply chain.
3. **Growing R&D and Support Networks:** Across regions, there is increasing emphasis on R&D, particularly in electrification and automation. Hungary and Bavaria, for example, have robust support networks with well-established BSOs aiding large companies.

Challenges and Weaknesses:

1. **Infrastructure Deficiencies:** Many regions, such as Slovenia, Slovakia, and Italy, report insufficient infrastructure tailored for electrification and automation, including industrial zones, charging networks, and IT capabilities.
2. **Regulatory and Financial Barriers:** Bureaucracy and insufficient government incentives are major hindrances across most regions, including Poland, Baden-Württemberg, and Austria. Clearer policies and reduced regulatory burdens are needed to encourage innovation.
3. **Limited Platform Economy Development:** The platform economy remains underdeveloped in nearly all regions, with Slovenia and Slovakia particularly noting gaps in infrastructure and workforce readiness for platform-based business models.

Strategic Recommendations:

1. **Invest in Skills and Education:** Regions must prioritize upskilling and reskilling initiatives, particularly in digital, AI, and electrification technologies. Strengthening industry-academia collaborations will help bridge gaps in workforce readiness.
2. **Expand Infrastructure:** Targeted investments in energy, IT, and industrial infrastructure are essential to support the transformation, particularly for EV production and connected vehicles.
3. **Enhance Financial Support:** Governments should introduce comprehensive financial incentives and subsidies to encourage R&D, facilitate technology adoption, and make transformative technologies accessible to SMEs.
4. **Promote Cross-Industry Collaboration:** Fostering partnerships between OEMs, suppliers, and technology companies can accelerate innovation and streamline supply chain adaptation.

KEY TAKEAWAYS: Despite varying levels of readiness, regions share a commitment to addressing transformation challenges. Focusing on workforce development, infrastructure expansion, and policy support will be critical in ensuring competitiveness in the rapidly evolving automotive industry. Targeted strategies for lagging areas, such as the platform economy and connectivity, will further enhance resilience and sustainability.



Comparison specialisation level and development perspectives (Q23-25)

The analysis of specialisation levels and development perspectives in the European automotive sector highlights regional strengths, challenges, and future opportunities. Below is an integrated summary:

Specialisation Trends:

1. **Electrification:** Most regions, such as Bavaria, Slovenia, and Slovakia, show moderate to strong specialisation in electrification, positioning it as a core growth area. Bavaria and Baden-Württemberg lead in this field, while Poland and Hungary exhibit weaker development.
2. **Automation:** Regions like Hungary and Bavaria see automation as a relatively stronger area, aligning with trends in Industry 4.0. However, Austria and Poland rate their specialisation as fair, reflecting the need for further investment and innovation.
3. **Connectivity and Platform Economy:** These areas remain underdeveloped across most regions. Slovenia, Poland, and Austria report poor to fair specialisation levels, while Baden-Württemberg demonstrates higher engagement in connectivity.

Development Perspectives:

1. **Growth Areas:** Electrification consistently emerges as the key growth driver, with regions like Slovakia and Slovenia projecting above-average growth compared to Central Europe (CE). Automation also holds significant promise, particularly in Bavaria and Hungary.
2. **Stagnation Concerns:** Connectivity and platform economy are seen as stagnant or requiring substantial support. Austria and Poland anticipate limited growth due to weak infrastructure and resource allocation in these areas.
3. **Diversification vs. Stagnation:** Smaller companies across regions are increasingly pursuing diversification to adapt to industry changes. Larger, foreign-owned firms show higher responsiveness and growth potential compared to SMEs.

Regional Nuances:

1. **Baden-Württemberg and Bavaria:** These regions are strong automotive hubs, leveraging their established infrastructure and R&D capabilities to lead in electrification and automation.
2. **Poland and Hungary:** These regions exhibit a cautious outlook, with limited influence over automotive development trajectories, often adapting to decisions made in Western Europe.
3. **Slovenia and Slovakia:** These regions display optimism for growth in electrification but highlight significant gaps in connectivity and the platform economy, emphasizing the need for targeted support.

**KEY TAKEAWAYS:**

- **Investment Needs:** Infrastructure and support ecosystems, particularly in connectivity and platform economy, require targeted investments to unlock potential.
- **Policy Alignment:** Government incentives and regulatory reforms are crucial to facilitating growth and reducing stagnation risks.
- **Skills and Innovation:** Upskilling the workforce and fostering innovation through collaborative initiatives will be pivotal in driving regional competitiveness.

This summary reflects a mix of challenges and opportunities, emphasizing the importance of focused strategies to harness growth in electrification and automation while addressing gaps in connectivity and platform economy.

Transnational Comparison MCA (Multiple Correspondance Analysis)

Comparison of Automation Factors and Connectivity

Key factors influencing both dimensions:

Skilled workforce and specialized training facilities are crucial for technological advancement and market connectivity.

Their absence can hinder automation and connectivity development.

Role of Business Support Services:

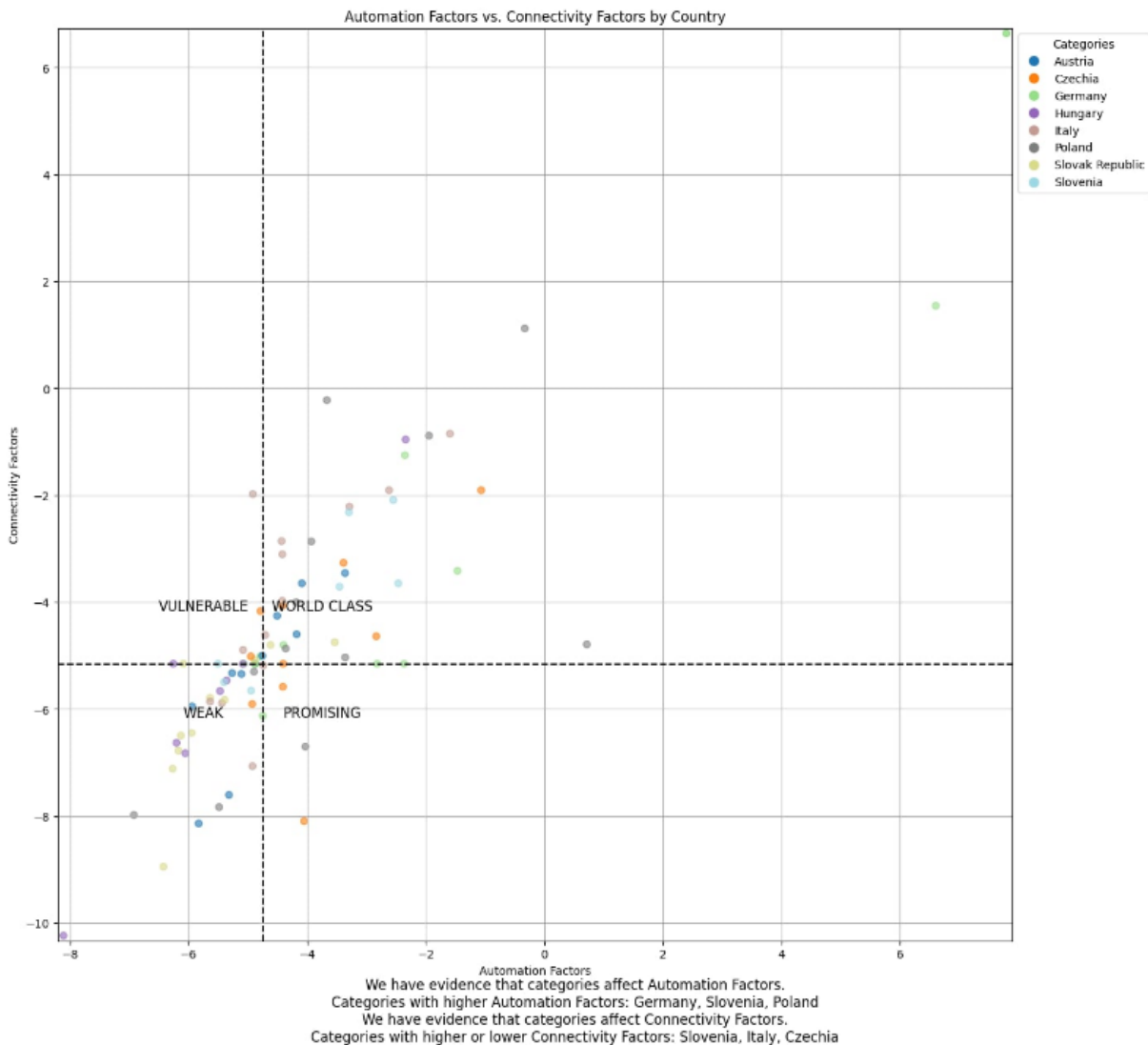
Consulting and market intelligence significantly enhance automation availability.

A strong ecosystem with robust infrastructure is essential for progress.

Regional insights:

Automation availability factors: Higher median scores in Germany, Slovenia, and Poland due to strong infrastructure and workforce resources.

Connectivity factors: Slovenia and Italy stand out for dedicated connectivity resources.



Comparison of Automation Factors and Platform Economy

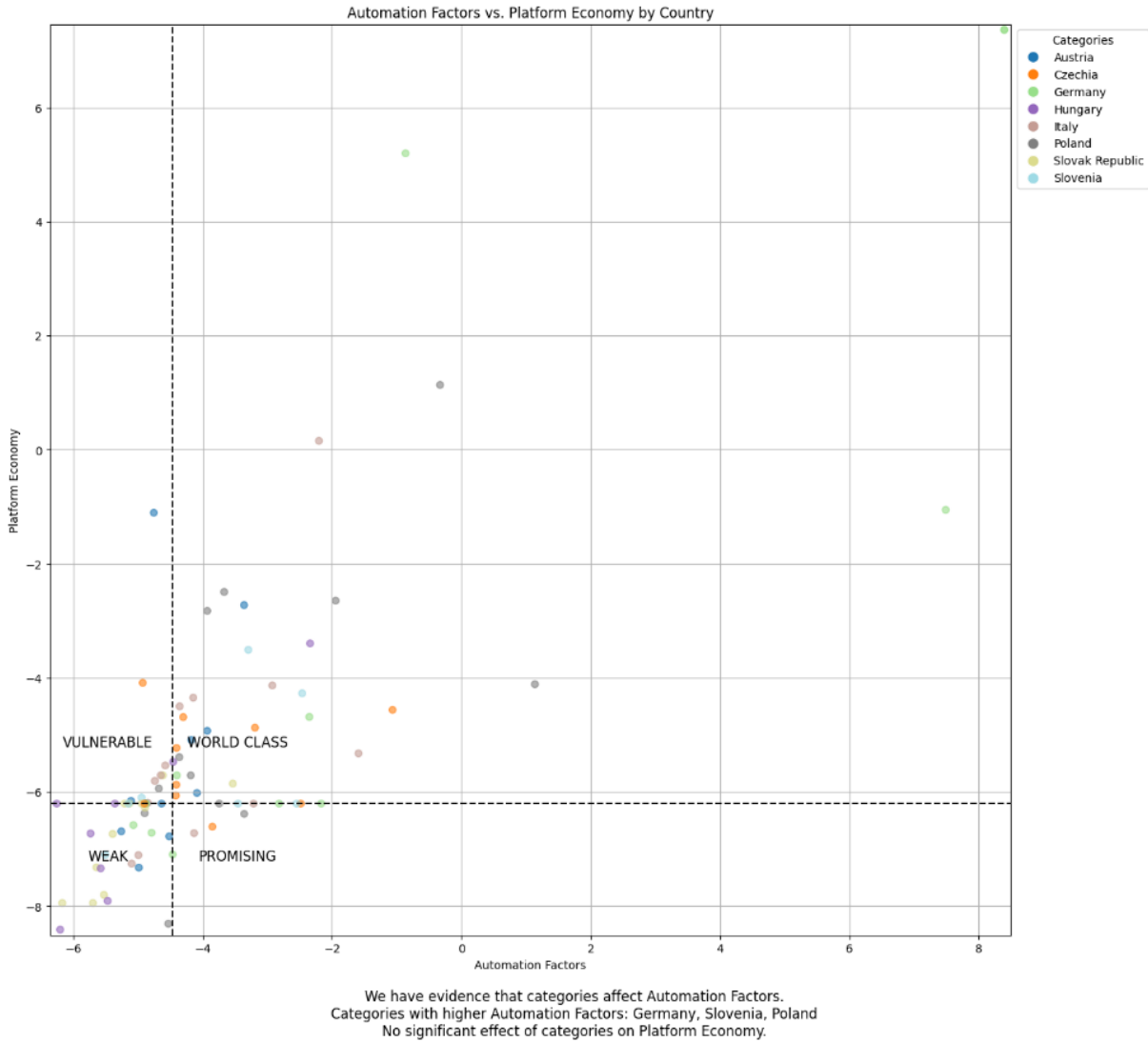
Key insights:

- A strong relationship exists between Automation Factors and the Platform Economy, driven by shared resources like a skilled workforce and specialized education.
- Critical for fostering digital and collaborative skills essential for the platform economy.

Regional insights:

Automation Factors: Germany, Slovenia, and Poland show stronger performance due to robust support infrastructure.

Platform Economy: Regional differences are less significant; success is more dependent on industry-specific resources or policies.



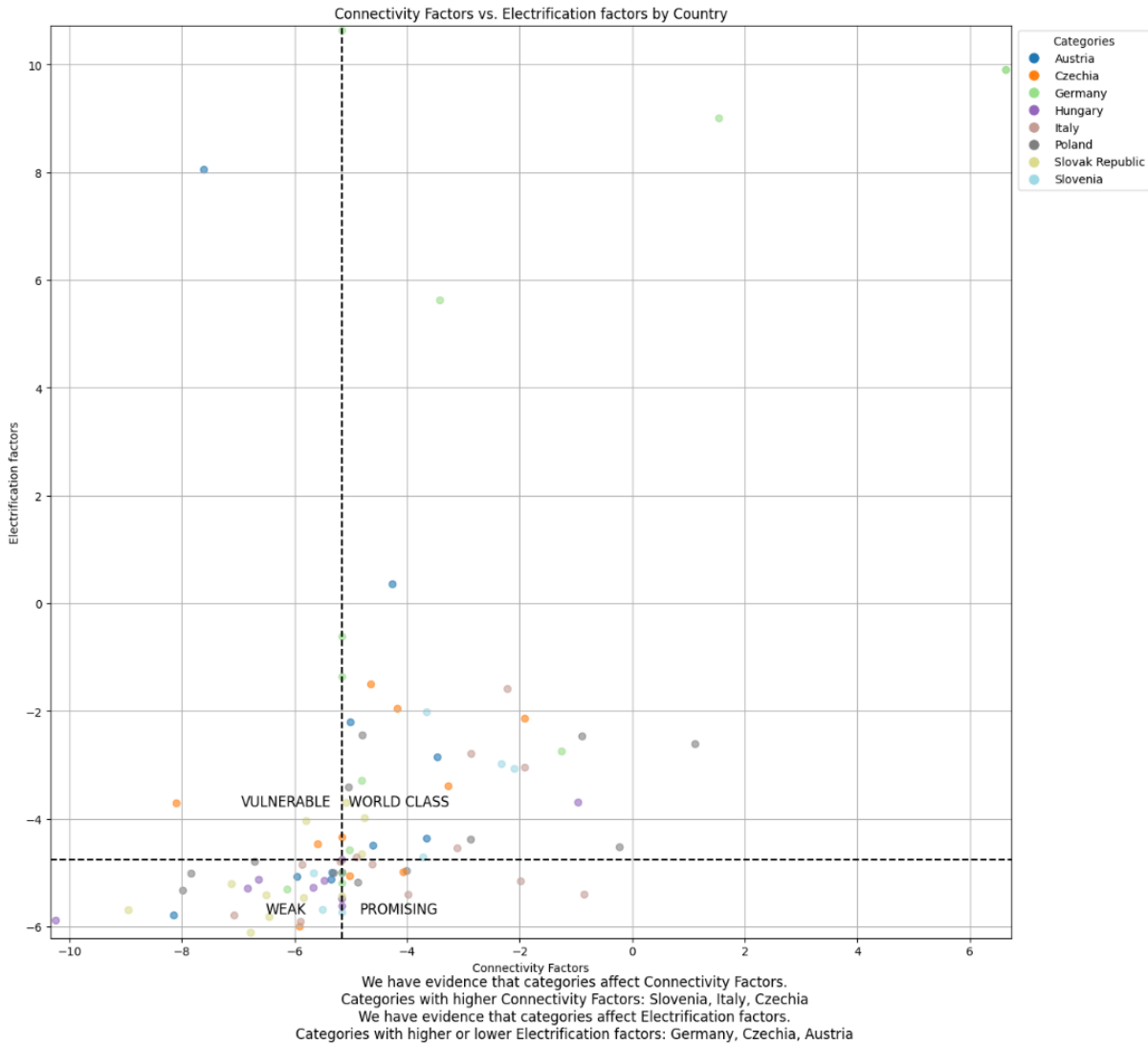
Comparison of Connectivity Factors and Electrification

Key insights:

Skilled workforce, specialized training, and business support services are critical for both connectivity and electrification development.

Regional insights:

- **Electrification Factors:** Strong regions are Germany, Czechia, and Austria, driven by robust educational and support infrastructure.
- **Connectivity Factors:** High scores in Slovenia, Italy, and Czechia, showcasing the importance of region-specific resources.



KEY FINDINGS AND RECOMMENDATIONS FOR TRANSNATIONAL COOPERATION

This section outlines the key findings from the regional and transnational analyses, emphasizing interconnected domains, shared challenges, regional strengths, and strategic opportunities. Additionally, it provides strategic recommendations to foster transnational collaboration and outlines policy implications to support sustainable transformation across Central Europe.

Key Findings

National Influence on Transformation Potential



Germany leads in **automation**, **connectivity**, and the **platform economy**, supported by advanced infrastructure, skilled labor, and a robust education system.

Eastern European countries such as **Czechia**, **Hungary**, and **Poland** exhibit strong scores in specific domains, with notable growth in **electrification** and rapid adaptability.

Interconnected Domains of Transformation

The domains of **automation**, **electrification**, **connectivity**, and the **platform economy** are closely linked. Progress in one often supports advancements in others, underscoring the importance of a **holistic approach**.

Limited Influence of Traditional Business Attributes

Conventional factors like **patent counts**, **workforce size**, and **financial resources** are less critical for transformation.

Instead, the availability of **skilled labor** and ongoing **upskilling and reskilling** programs are the key enablers of success.

Determinants of High Performance Across Domains

- **Automation:** Requires strong **business support services** and a focus on **workforce development**.
- **Electrification:** Depends on **technical education** and expertise in emerging technologies.
- **Connectivity:** Enhanced by **specialized training programs** and a supportive **business ecosystem**.
- **Platform Economy:** Relies on **advanced education** that prepares the workforce for the demands of digital economies.

Infrastructure as Both Foundation and Barrier

Infrastructure assets, including research centers, technology parks, and vocational training facilities, are vital for readiness.

However, infrastructure deficits, particularly in **automation** and the **platform economy**, pose barriers to progress.

Shared Challenges Across Regions

- **Cost Pressures:** Rising costs in energy, materials, and labor hinder competitiveness.
- **Skills Deficits:** Workforce readiness in **digital** and **electrification technologies** remains a challenge.
- **Policy and Infrastructure Gaps:** Inconsistent regulations and limited incentives slow innovation and collaboration.

Strategic Opportunities

- **Electrification Leadership:** Regions such as **Bavaria** and **Upper Austria** set benchmarks for electrification readiness.
- **Automation Innovation:** Strong R&D ecosystems in **Pilsen** and **Baden-Württemberg** drive advancements in automation.



- **Cross-Regional Collaboration:** Opportunities to develop shared infrastructure, such as **hydrogen testing facilities** and **battery research centers**, to accelerate collective transformation.

Strategic Recommendations

- **Promote Workforce Development**
- **Establish cross-regional vocational training programs** tailored to emerging automotive technologies.
- **Facilitate upskilling initiatives** to ensure the workforce meets the demands of automation, electrification, and connectivity.
- **Enhance Infrastructure Investments**
- **Develop shared technology parks and research centers** to support innovation and collaboration.
- **Expand IT infrastructure** to enable digital transformation and connectivity.
- **Align Policies for Collaboration**
- **Harmonize policies** across regions to eliminate barriers to transnational projects.
- **Provide funding incentives** for collaborative initiatives that foster innovation and shared growth.

Policy Implications

Policymakers should prioritize:

- **Infrastructure Investments:** Focus on building technology parks, research centers, and IT infrastructure.
- **Educational Programs:** Develop cross-regional education and training initiatives to address skills gaps.
- **SME Support:** Offer tailored business services to help small and medium enterprises navigate transformation challenges.

Summary of Strengths and Capabilities

Shared Strengths:

Skilled labor and workforce training as universal enablers of transformation readiness.

Strong interconnections between domains like automation, connectivity, and electrification.

Regional Strengths:

Germany excels in infrastructure and workforce development.

Eastern European regions demonstrate significant growth in electrification readiness and adaptability.

By addressing shared challenges, leveraging interconnected strengths, and implementing these strategic recommendations, Central Europe can foster a unified and sustainable transformation in the automotive sector.



CONCLUSION

Summary of Cross-Regional Transformation Capacities

The Drive2Transform analysis reveals a complex and diverse landscape of transformation readiness across Central Europe, with regions demonstrating varying capacities and challenges in their pursuit of sustainable transformation in the automotive sector.

Transformation Readiness and Performance

Electrification and Automation emerge as leading domains of specialization, with regions like Bavaria, Upper Austria, and Baden-Württemberg driving innovation through established industrial clusters, advanced research institutions, and skilled workforces.

Connectivity and Platform Economy remain underdeveloped, presenting both challenges and opportunities. Limited IT infrastructure, market readiness, and financial support are key barriers across these domains.

Regional Strengths and Challenges

Strengths:

Regions such as Bavaria and Upper Austria benefit from advanced infrastructure, strong workforce training systems, and robust business ecosystems that support innovation in electrification and automation.

R&D ecosystems in regions like Pilsen and Baden-Württemberg foster advancements in automation technologies, such as robotics and ADAS.

Challenges:

Skill shortages in critical areas like electrification and digital connectivity are a pervasive issue.

Infrastructure gaps, particularly in IT and testing facilities, hinder progress, especially in Eastern Europe.

Financial constraints and inconsistent government policies slow the adoption of new technologies and cross-regional collaboration.

Opportunities and Strategic Directions

Electrification leads as the most promising domain, with strong growth potential for battery systems, electric motors, and energy systems.

Automation remains a key driver of innovation, with opportunities in software, robotics, and autonomous technologies.

Cross-regional collaboration is essential to address common challenges, such as developing shared infrastructure (e.g., hydrogen and battery testing facilities) and launching transnational vocational training programs to close workforce gaps.

Emerging Areas: **Connectivity** and the **platform economy** require targeted investments in IT infrastructure, market development, and specialized training to unlock their potential.



Strategic Recommendations

- **Policy Harmonization:** Align regulations and incentives across regions to foster cross-regional innovation and reduce transformation barriers.
- **Skill Development:** Launch transnational education and upskilling programs in electrification, automation, and connectivity.
- **Infrastructure Investment:** Develop shared technology hubs, real-world labs, and testing facilities to accelerate innovation.
- **BSO Collaboration:** Strengthen networks among Business Support Organizations to facilitate knowledge-sharing and support for SMEs.
- **Scaling Data-Driven Analyses:** Broaden survey coverage to provide deeper insights and improve decision-making.

Future Outlook

The next phase of the Drive2Transform initiative will focus on Scenario-Building Workshops in 2025. These workshops, leveraging insights from regional (D 1.1.2) and transnational analyses (D 1.1.3), aim to develop actionable strategies for each region and collectively address transformation challenges. Ideas and scenarios will center on supporting the automotive industry's evolution in Electrification, Automation, Connectivity, and the Platform Economy.

With coordinated efforts and targeted investments, Central Europe is well-positioned to enhance its leadership in the global automotive sector. However, success will depend on addressing shared challenges, fostering innovation, and leveraging the collective strengths of its diverse regions.