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**Challenges and Opportunities of Corporate Circular
Economy Implementation**

**The Role of Strategic Management and Systemic Support, with Special
Focus on the Hungarian Food Industry**

Ph.D. Dissertation

THESIS BOOKLET

(Version prepared for workplace discussion)

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Veszprém

2026

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1. Background to the research

The circular economy is a dynamically evolving, interdisciplinary approach that is attracting growing attention in both academic and practitioner circles (Geissdoerfer et al., 2017). The aim of the circular economic model is to enforce the principles of sustainability at a systemic level in such a way that the operability of economic processes is not impaired. Its significance lies in offering a holistic development pathway that prioritises collaboration among market actors, the resource efficiency of production systems, and the mobilisation of innovative approaches.

According to a study by the Ellen MacArthur Foundation and the McKinsey Center for Business and Environment (2015), a transition to a circular economy at EU level could generate up to EUR 1.8 trillion in economic benefits by 2030 and deliver a 3% improvement in resource efficiency. Hestin et al. (2016) estimate that the circular economy could reduce greenhouse gas emissions in the European Union by 33%, considering only the emissions associated with the production of goods consumed within the EU. A further advantage of the model is that it can simultaneously serve the three dimensions of sustainability: environmental, social and economic (Korhonen et al., 2018).

Nevertheless, the question legitimately arises as to why, despite these promising forecasts, practical application has not become more widespread. It is likely that organisational, institutional and market factors are hindering the adoption of circular business models—factors whose exploration and interpretation have so far received limited attention in the literature.

In international scholarly discourse, macro-level, systems-oriented approaches continue to dominate (Homrich et al., 2018; Korhonen et al., 2018; Nußholz, 2017), while firm-level empirical investigations remain scarce in comparison (Mezőfi et al., 2022). This is particularly problematic given that actors in the business sphere are key to the transition to a circular economy.

Leading scholars on sustainable business models - such as Hahn and Scheermesser (2006), Klewitz and Hansen (2013), and Shields and Shelleman (2015) - emphasise the importance of developing tools and processes that help firms translate the rhetoric of sustainability into practical sustainability, beginning with the realignment of values, mission and primary objectives.

My doctoral research seeks to complement these works, with particular regard to the specificities of the Hungarian business environment.

The research is built on three empirical pillars: a systemic mapping of the support infrastructure, expert interviews, and a targeted quantitative survey. Together, these aim to uncover the institutional conditions for the circular transition, as well as the key dimensions and constraints of corporate adaptation.

Given the research aims and the complexity of the practical application of the circular economy, it was justified to narrow the investigation to a specific economic sector. This allowed for deeper, system-level analysis and a nuanced exploration of individual corporate practices and challenges. Through the firm-level study, my goal was twofold: first, to provide a comprehensive status report on the sustainability efforts and circular maturity of Hungarian food industry companies; and second—since a strategic “system change” is needed—to examine the extent to which the conditions for a strategic-level model shift are present among firms in Hungary’s food industry.

Several factors motivated the choice of the food industry: its role in the national economy on the one hand, and, on the other, its significant material and energy flow systems, which make it an excellent field for the practical application of circular principles. The research also took into account the EU’s circular economy ambitions, which Hungary, as a Member State, aligns with—meaning that national-level corporate practices must also adapt to these.

2. Research aim and questions

With reference to the global challenges outlined and the systemic changes required in response, my doctoral thesis set out to examine the strategic conditions necessary for firms to transition to a circular economy and to develop a competence model that supports the organisational transformation required for the model shift and the integration of sustainability goals into corporate operations.

The translation of these conceptual objectives into practical lines of inquiry is served by the following research aims and questions, which define the focus and methodological framework of the empirical analysis.

1. In my research I placed major emphasis on mapping the knowledge level of Hungarian food industry firms involved in the study and affected by the circular economy model transition.

A firm's knowledge level regarding the circular economy fundamentally determines the extent to which it can recognise the necessity of the transition and identify the opportunities it presents. Knowledge gaps are among the most significant barriers to a shift in mindset; therefore, assessing preparedness is essential to underpin targeted interventions.

2. I also considered it important to map the support infrastructure in Hungary, to gain a comprehensive understanding of the arenas for professional consultation, and to review the scientific and practical (market) trends and challenges that supporting organisations face in their professional activities.

Since a corporate model shift cannot occur in isolation, understanding the role of the support ecosystem is indispensable. Examining the institutional background, professional hubs and knowledge-transfer processes is crucial because these provide the framework for awareness-raising, networking and practical implementation. Uncovering the challenges faced by support actors can help make their operations more effective.

3. An in-depth analysis was required to determine which corporate activity areas, size categories, development potentials and regional “power centres” are suitable to serve as the cornerstones of a system in which closing the loops of material and energy flows becomes a real possibility.

It is unfounded to assume that the circular economy model can be applied uniformly as a template across all firm types. It is therefore necessary to identify structural characteristics—

such as size, sector and region—along which targeted intervention points can be defined. The identified firm types can provide blueprints for possible transition pathways.

4. I then raised the question of which strategic performance factors affect firms' sustainability efforts and the extent to which these are present among the Hungarian food companies included in the study.

The literature supports the view that sustainable operation is not merely an environmental issue but a strategic one as well. Alignment between corporate objectives and long-term operation is ensured only if performance factors—such as vision, innovation capability and willingness to collaborate—are integrated into corporate decision-making. Uncovering these factors can aid the development of management tools that support the circular transition.

5. I asked what challenges Hungarian food industry firms face in the circular economy model shift, and to what extent the identified challenges are unique and how they can be categorised.

The transition to a circular economy involves not only opportunities but also significant organisational, technological and economic challenges. Systematising these challenges helps identify targeted intervention points, thereby supporting effective policy, regulatory and corporate responses.

6. I considered it important to examine what relationship can be identified among the circular-economy-compatible activities of the firms involved in the study, the level of implementation, and their strategic characteristics.

Revealing the extent to which corporate strategy determines the introduction of circular practices is key to assessing circular maturity. Strategic characteristics—such as long-term planning, willingness to innovate and collaborative attitude—can materially influence whether a firm is able to integrate circular principles sustainably. Exploring these relationships can contribute to defining targeted development directions.

7. Based on the synthesis of all these, I sought to answer what strategic reference points can underpin a structural economic and business model shift.

A successful transition to a circular economy cannot be achieved through isolated measures; it requires a comprehensive, system-level strategy. The patterns emerging from the empirical investigation help identify the key competences that enable firms to operate sustainably. Defining strategic reference points can lay the groundwork for practical guidelines,

development programmes and policy tools that meaningfully support the circular transformation of the business sector.

Building on professional consultations, broad quantitative research and case studies, my aim with this doctoral research is to develop a sector-specific strategic guidance and decision-support tool—taking into account Hungary’s economic opportunities and challenges—to support the corporate implementation of the circular economy model shift.

3. Methods applied

The methodological framework of the research was shaped by a dual objective: to ensure both an in-depth exploration of the theoretical background and the pursuit of practical relevance. To this end, I distinguished two interlinked phases.

In the exploratory phase, I sought to understand Hungary's support infrastructure for the circular economy, resulting in a competence map of 25 organisations involved in the circular transition. This was complemented by 20 expert in-depth interviews conducted through purposive sampling with key actors in the circular discourse.

Data collection followed a pre-defined interview protocol covering three main themes:

1. Presentation of each organisation's support activities and self-assessment of effectiveness, primarily in the areas of knowledge sharing, relationship building, network development and direct support to firms.
2. Assessment of the environmental conditions for the model shift and evaluation of the organisation's own operating environment, with particular attention to the regulatory context and the target group's knowledge level and activity.
3. Evaluation of Networking, i.e., assessing the intensity and quality of interactions among other members of the ecosystem.

The interviews were processed using qualitative content analysis and SWOT analysis, which enabled the identification of opportunities and constraints influencing corporate implementation. This phase of the research took place between January and March 2024.

The descriptive–evaluative stage focused on examining the circular maturity of food industry companies in Hungary. Data collection was carried out between May and August 2024 through an online questionnaire targeting Hungarian enterprises operating in the food industry according to NACE code 10. From the population of 5,891 companies, 128 valid responses were received, covering 2.2% of the total. The questionnaire measured corporate practices in relation to the circular transition along six key principles: systems thinking, innovation, commitment, collaboration, value optimization, and transparency. Within each thematic block, a combination of question types was applied: open-ended questions mapped attitudes and general knowledge, Likert-scale items assessed the importance and maturity of different areas, while dichotomous (yes/no) questions examined motivational and barrier factors as well as the use of practical tools.

The second section of the questionnaire measured general knowledge related to sustainability and the circular economy, primarily through open-ended questions, while the third block recorded demographic and operational characteristics of the companies, including size, revenue, ownership structure, and local embeddedness.

For data analysis, I applied descriptive statistics, Kendall's rank correlation, Cramér's V, as well as factor analysis and Ward's cluster analysis using R software. This methodological approach made it possible to explore circular economic maturity and strategic potential, as well as to classify the companies studied according to their distinctive characteristics.

4. Research Hypotheses

Following the literature review and based on its synthesized insights, I formulated hypotheses related to the research questions.

H-1. In Hungary, there exists an active support network for market actors that specifically promotes the transition to a circular economy and constitutes an essential condition for systemic transformation.

H-2. An active, two-way relationship exists between the support network and market actors involved in practical implementation.

H-3. Among the sectors examined from the perspective of the circular economy transition, the Hungarian food industry can be identified as an outstanding sector based on accessibility, development potential, openness, and available knowledge. This sector can serve as a foundation for developing a strategic guideline and decision-support tool for the circular economy.

H-4. A clear and positive relationship can be demonstrated between organizational commitment and responsibility, and the presence of environmental conditions in the examined food industry companies.

H-5. A clear relationship can be identified between the demographic characteristics of the companies (number of employees, revenue category, and the managing director's education) and their strategic maturity.

H-6. A clear relationship can be identified between the demographic characteristics of the companies (number of employees, revenue category, and the managing director's education) and their circular maturity.

H-7. Based on the sustainability and strategic conditions of the circular economy transition, the examined food industry companies can be grouped into well-identifiable clusters. These clusters require and enable the development and application of differentiated circular economy strategies.

5. Research results

The primary organizing principle of the literature review was the focus on practical, business-oriented implementation aspects. In terms of practical implementation of the circular economy, the literature identifies the enforcement of the waste hierarchy, increasing resource efficiency, integrating business and social value, strengthening industrial symbiosis, and achieving closed-loop material flows as dominant directions (Németh et al., 2020; Cecchin et al., 2020; Belaud et al., 2019; Maranesi & De Giovanni, 2020). From this mosaic, a framework emerges that interprets the circular economy simultaneously as a business model, a management practice, and a value-creation logic: by closing, narrowing, slowing, and dematerializing material and resource loops, environmental, social, and economic objectives can be integrated (Geissdoerfer et al., 2018; Ünal et al., 2019).

In addition to the conceptual framework, I also mapped the significant changes in the regulatory environment. From the EU's 2015 package, through the Green Deal and the new CEAP, to the “right to repair” and recent initiatives focusing on critical raw materials and clean industry, the regulatory trajectory assigns increasingly measurable targets and a broader toolkit to the circular transition (European Commission, 2015, 2019, 2020a, 2020b, 2022, 2023a, 2023b, 2025). Hungarian-specific literature – especially the OECD's 2023 guidelines – emphasizes both the strategic importance of the biomass–food industry and reveals horizontal, systemic regulatory gaps (OECD, 2023). This dual recognition – ambitious EU frameworks combined with domestic implementation challenges – underpins the relevance of focusing the empirical study on the food industry.

Moving from global trends and EU regulatory frameworks toward the level of corporate implementation, I pursued a comprehensive view from two directions: first, by identifying the business potential inherent in the circular economy and presenting the diversity of innovative business models (waste-based, eco-design- and digitalization-driven models; leasing, take-back, sharing, performance-based contracts) (Accenture, 2024; EEA, 2016a, 2016b; EMF, 2013; Rejeb et al., 2022); second, by presenting the strategic and management toolkit that secures implementation: the ReSOLVE framework, the 9R logic, the Circular Business Model Canvas, and the SBSC are widely adaptable methods that align strategic objectives and operational decisions with circular principles (EMF – McKinsey Center for Business and Environment, 2015; EMF, 2013; Manninen et al., 2018; Figge et al., 2001).

Measurability is a precondition for intervention and development; therefore, it was justified to present measurement frameworks and instruments suitable for assessing circular maturity. The literature in this area does not offer a single “gold standard,” but rather points to complementary solutions (Prieto-Sandoval et al., 2018). Standards families (e.g., ISO 14031; BS 8001; French AFNOR frameworks) serve as organizational compasses, while the GRI establishes a transparency baseline in ESG reporting (ISO, 1998; BSI, 2017; Muradin – Foltynowicz, 2019; Wojnarowska – Salerno-Kochan, 2022; GRI, 2002). Actual environmental impacts are captured most robustly by life cycle assessment (LCA), which provides a quantitative basis for identifying intervention points and validating decision-makers; at the corporate level, material flow analysis (MFA) complements this by mapping physical input–output relations (EMF, 2022; Peña et al., 2021; Mondello et al., 2017; Eurostat, 2001; Kósi-Torma, 2005; Bringezu, 2003).

Overall, the trajectory of the literature review leads from conceptual pluralism and normative aims to the coordinated, company-level application of management tools and measurement methods. Based on the literature, the keys to success are: (1) redefining the circular value proposition and revenue logic; (2) redesigning partnerships and supply chains at a system level; and (3) integrating strategy–operations–measurement (Osterwalder et al., 2005; Geissdoerfer et al., 2020; Witjes – Lozano, 2016).

5.1. Summary of the Qualitative Research Results

The qualitative research clearly confirms the presence in Hungary of a multi-actor, structured support network that, with knowledge, tools, and organizational capacities, can contribute to laying the foundations of the circular economy transition. The activities of support organizations cover key areas such as legislation, knowledge sharing, advocacy, collaboration facilitation, awareness-raising, and R&D; however, effectiveness is significantly constrained by the lack of measurement systems and by weak linkages with direct users—primarily the corporate sector.

The expert interviews also revealed that support activities are one-sided: the activity of organizations is often not matched by comparable openness on the part of the target group, although some experiences point to positive change.

In assessing the operating environment, numerous systemic and attitudinal barriers surfaced; at the same time, interviewees highlighted the role of regulatory pressure, the opportunities inherent in generational change, and the responsible action of strong brands as potential drivers

of transformation. The consolidated SWOT analysis of the interviews supports the conclusion that theoretical endowments and ad hoc good practices are not sufficient for successful transformation: a systemic, targeted, and cooperative approach is needed, requiring active, deliberate engagement by government, market, and civil society alike.

When evaluating the qualitative research results, the sectoral distribution of interviewees must be considered. While governmental decision-makers (7 persons), academic actors (6), and representatives of civil organizations (6) appeared in roughly equal proportions in the sample, only one interview was conducted with corporate consultancy organizations. This latter point limits the depth with which viewpoints from this segment could be explored; nonetheless, comparison with other sectors still yields valuable insights.

5.2. Summary of the Quantitative Research Results

The quantitative study conducted among Hungarian food industry companies provides a comprehensive picture of the sector's readiness for a circular economy transition. The evaluation assessed companies along six principles: systems thinking, innovation, commitment, collaboration, value optimization, and transparency. Based on the assessment, the decision is overall validated that the food industry is a Hungarian sector capable of acting as a driver of system-level transformation. Among the sampled companies, the transition has begun, and in certain areas integration has already reached an advanced stage.

By uncovering relationships between variables and through factor analysis and clustering, a complex yet interpretable picture emerged of firms' strategic and environmental maturity.

Two latent dimensions were identified behind strategic awareness: outward-facing, market-oriented strategic awareness and inward-facing, operational strategic awareness. These factors aptly capture the deliberateness of company operations in both partner relations and internal process control.

The factors describing environmental maturity also formed two groups: value-level commitment to circular principles and the dimension of practical implementation. This duality shows that corporate environmental awareness often does not yet translate into actual operational realization.

Cluster analysis identified five company types—thus confirming my seventh hypothesis—that display different maturity levels and development needs, thereby justifying the formulation of distinct development strategies.

The association analyses further indicated that company size and resources are significantly related to certain factors characterizing strategic maturity: in organizations with larger headcounts and higher revenues, process management, efficiency measurement, innovation efforts, and risk management appear more deliberately, and strategic planning is more formalized. The managing director's education, in turn, plays a more decisive role in the management of business relationships, in shaping strategic vision, and in the strength of circular innovation intentions and individual commitment. In the field of circular economic maturity, the strongest associations appear in planned innovations (technological, organizational, and marketing), environmental strategies (waste, energy, and water strategies), and reporting on environmental impacts, particularly among larger and more advanced companies.

Another important finding is that corporate environmental commitment primarily appears on a value-based and declarative, communicative level, and only partially pairs with actual financial expenditures. This confirms that supporting the transition requires not only investments but also awareness-raising, the development of strategic thinking, and the creation of trust-building collaborative spaces.

6. Independent, Novel Scientific Contributions

1. Thesis Point:

A structured, multi-actor support network has emerged in Hungary to promote the circular economy transition, capable of stimulating, coordinating, and professionally supporting system- and knowledge-based transformation.

→ This network could function as a coordination hub for planning and implementing nationwide programs supporting the circular transition.

2. Thesis Point:

Functional cooperation between the domestic support ecosystem and corporate actors involved in practical implementation is not yet integrated; information flows and the synergies of activities require structural development.

→ To support the transition, conscious development of relationships between support organizations and companies is needed—for example via platforms, joint programs, and integrated knowledge sharing.

3. Thesis Point:

The food industry can be identified as a sectoral powerhouse of strategic significance for Hungary's circular economy transition. It possesses relevant knowledge, accessibility, practical experience, and openness sufficient to underpin a sector-specific prototype of a strategic planning tool.

→ This sector can serve as a targeted intervention area for pilot programs, development of good practices, benchmarking initiatives, and their adaptation to other sectors.

4. Thesis Point:

Among the examined Hungarian food industry companies, environmental commitment and responsibility are positively associated with conditions related to circular operations—particularly environmental communication, environmental-strategy documents, and the use of secondary raw materials.

→ Environmental attitudes in food industry firms may foreshadow willingness to take practical action; thus, value-based awareness-raising can be a sound long-term investment in supporting corporate implementation.

5. Thesis Point:

For the domestic food industry companies examined, corporate demographic characteristics (company size, revenue, and the managing director's education) are significantly associated with factors characterizing strategic maturity, such as process management, conscious risk handling, innovation, and relationship management.

The association analyses confirmed that company size (headcount, revenue) and the managing director's education have medium-strength relationships with several strategic factors among the companies studied (e.g., process management, efficiency measurement, innovation efforts, relationship management).

→ Corporate demographics (revenue, headcount, managing director's education) play a decisive role in developing strategic awareness and maturity; therefore, segmented approaches are warranted when designing development programs.

6. Thesis Point:

For the examined food industry firms, significant relationships can be demonstrated between corporate demographics and certain dimensions of circular economic maturity (waste strategy, energy strategy, environmental reporting, related information management, circular innovations).

Analyses indicate that larger firms with higher revenues more consciously develop circular strategies (e.g., waste, energy, and water management), while higher managerial education is more strongly linked to individual and organizational commitment and to planned innovations. The novelty of the result lies in demonstrating, within the domestic food industry, that corporate background characteristics—such as revenue, headcount, and the managing director's education—meaningfully influence not only strategic awareness but also the practical preparation for and implementation of the circular transition.

→ In practice, this means that policy and support measures must differentially target smaller firms with lower resource levels and those leaders whose further training could contribute to increased circular maturity.

7. Thesis Point:

Along the dimensions of strategic and environmental maturity, the examined Hungarian food industry companies can be grouped into well-identifiable clusters. Owing to their differing development levels and operational logics, these clusters necessitate and enable targeted, differentiated development and support programs and interventions.

→ A cluster-based approach allows support instruments and intervention programs to target different company types more effectively, thereby increasing the efficiency and effectiveness of the circular transition.

7. Conclusions and Recommendations

Based on the results presented in the dissertation, intervention points can be identified at multiple levels to contribute to the deliberate support of the circular economy transition—particularly through establishing development policies and corporate strategies tailored to the sectoral characteristics of the food industry.

Some recommended steps are interpretable at the macro level—policy, development policy, institutional—while others directly target corporate decision-making and operations. The two levels cannot be sharply separated: transforming the economic model presupposes system-level thinking as well as targeted, organizational-level implementation.

One of the most important practical results of the research is the mapping of the support ecosystem and its structuring by competencies, which provides a comprehensive picture of actors facilitating Hungary’s circular economic transformation. Identifying the support network creates an opportunity to establish a knowledge-based, intermediary, and coordinating system capable of serving corporate needs with targeted forms of support. Current shortcomings in network integration—particularly in information flows and functional linkages—indicate a clear direction for organizational and policy interventions.

Macro-level recommendations—such as structuring the support network, a development logic aligned to corporate maturity, or a segment-based intervention strategy—offer practical guidance for coordinating the circular transition, improving cooperation among support organizations, and creating targeted policy incentive systems. These results contribute to the knowledge-based implementation of the circular economy.

Company groupings based on cluster analysis make it possible to treat actors not with a uniform but with a differentiated support logic. The clusters—from “instinctive survivors” to “rational activists”—require varying degrees and modes of development in strategic awareness, environmental sensitivity, or willingness to cooperate. Personalized, cluster-specific interventions can not only yield more efficient resource use but also significantly improve the pace and depth of transformation. Adapting cluster profiles to development policy can also encourage the introduction of targeted communication, educational, or regulatory instruments.

An important practical lesson is that corporate commitment appears most strongly in communication practices and the existence of strategic documents, while the adoption of circular technological solutions is often driven not by value-based commitment but by

economic rationality. This indicates that circular transformation programs should address both rational and emotional motivations, using different narratives.

Another practical value of the research is that it helps identify critical groups in terms of the transition—those who may either lag behind or become key actors.

Drawing on the synthesis of secondary research and empirical results, I developed a methodological toolkit that makes the principles of circular strategic planning interpretable and applicable at an operational level for companies. The toolkit formulates recommendations across three main strategic-planning levels, together with activities, instruments, input sources, and achievable outputs, enabling companies to integrate the circular mindset into their operations in a conscious, system-level manner:

1. Defining the foundational principles of company-specific circular planning.
2. Defining the desired outcomes of strategic planning; establishing target groups and performance measurement.
3. Processes, measures, and tools.

Overall, the dissertation's results aim to contribute to one of the pillars of implementing the circular economy in Hungary: an adaptive, competence-based, and cluster-specific development policy that simultaneously serves economic competitiveness, sustainability, and the dissemination of system-level thinking grounded in cooperation.

8. List of the Author's Publications

Articles in international scientific journals

1. Gabnai, Z. – Németh, K. – Péter, E. – Sertolli, A. – Pestisha, A. – Mezőfi, N. – Bai, A. (2022). Opportunities for wastewater heat recovery in Hungary and its role in the circular economy. *APSTRACT – Applied Studies in Agribusiness and Commerce* 15(3–4), 81–90.
2. Mezőfi, N. – Németh, K. – Péter, E. (2025). Integrating Circular Economy Principles into Business Strategy: Evidence from Hungarian Food Industry Enterprises. *Journal of Innovation & Knowledge. Pursuing sustainability through business innovation, digitalisation and knowledge management.* Under review.
3. Kaszás, N. – Mezőfi, N. – Marton, Zs. (2025). Visitor management tools used in practice for sustainable tourism – systematic literature review of case studies. *World Development Sustainability.* Under review.

Articles in Hungarian scientific journals

1. Mezőfi, N. – Németh, K. (2022). A körforgásos gazdaság esélyei és kihívásai vidéken: jó gyakorlatok elemző értékelése. *Turisztikai és Vidékfejlesztési Tanulmányok* 7(2), 19–34.
2. Németh, K. – Mezőfi, N. – Németh, K. – Péter, E. (2024). Megújuló energiaforrások lakossági megítélése – egy magyarországi felmérés tapasztalatai. *Tér és Társadalom* 38(2), 50–70.

Book chapters

1. Mezőfi, N. – Kaszás, N. (2023). A fogyasztói magatartás átalakulása a körforgásos gazdasági működésben – lehetőségek és korlátok a nagyértékű elektronikai termékek körforgásos vásárlása és fogyasztása tekintetében. In: Kovács, L.; Szőke, V. (eds) *A zöld üzleti gondolkodás és a zöld marketing lehetőségei és kihívásai.* Szombathely: Savaria University Press, pp. 145–166.
2. Kaszás, N. – Mezőfi, N. – Marton, Zs. (2025). A látogatómenedzsment stratégiai eszközei a fenntartható turizmusért. In: Fehérvölgyi, B.; Lőrincz, K.; Michalkó, G. (eds) *Körhinta: a körforgásos gazdaság a turizmuságazat nézőpontjából.* Budapest: Akadémiai Kiadó, Pannon Egyetemi Kiadó, 172 p.

3. Mezőfi, N. – Péter, E. – Németh, K. (2022). A járványhelyzet hatása a körforgásos gazdasági modell fejlődésére. In: Kovács, L.; Szőke, V. (eds) Két év új normalitás: A koronavírus-járvány (Covid-19) gazdasági és társadalmi hatásai. Szombathely: Savaria University Press, pp. 47–67.

Full-length papers in Hungarian conference proceedings (international conferences, Hungarian language)

1. Mezőfi, N. – Németh, K. (2024). Ökotechnológiai innovációk körforgásos elvű értékelésének egy lehetséges módszertana. In: Németh, K.; Jakab, B.; Péter, E. (eds) VIII. Turizmus és Biztonság Nemzetközi Tudományos Konferencia tanulmánykötet. Veszprém: Pannon Egyetemi Kiadó (2024) 55 p., p. 32.
2. Mezőfi, N. (2023). A körkörös gazdasági modellváltás szervezeti feltételeinek vizsgálata a strukturális és a tudás alapú menedzsment elméletek keretrendszerében. In: Németh, K.; Jakab, B.; Péter, E. (eds) VII. Turizmus és Biztonság Nemzetközi Tudományos Konferencia tanulmánykötet. Nagykanizsa: Pannon Egyetem (2023) 407 p., pp. 328–342.
3. Mezőfi, N. (2022). A körforgásos gazdasági modell vállalati aspektusainak megjelenése nemzetközi tudományos folyóiratokban. In: Jakab, B.; Mezőfi, N.; Németh, K.; Péter, E. (eds) VI. Turizmus és biztonság nemzetközi tudományos konferencia: Tanulmánykötet. Nagykanizsa: Pannon Egyetem Körforgásos Gazdaság Egyetemi Központ (2022) 246 p., pp. 164–175.
4. Mezőfi, N. (2022). A körkörös gazdasági modellváltás szervezeti feltételeinek vizsgálata a strukturális és a tudás alapú menedzsment elméletek keretrendszerében. In: Németh, K.; Jakab, B.; Péter, E. (eds) VII. Turizmus és biztonság nemzetközi tudományos konferencia: Tanulmánykötet. Nagykanizsa: Pannon Egyetem Körforgásos Gazdaság Egyetemi Központ (2022) p. 48.
5. Mezőfi, N. – Németh, K. (2021). Az Európai Unió körforgásos gazdaságra vonatkozó cselekvési terveinek vállalati aspektusai. In: Lukács, G.; Szanati, A. (eds) LXII. Georgikon Napok konferenciakötet: A klímaváltozás kihívásai a következő évtizedekben. Keszthely: Szent István Egyetem, Georgikon Campus (2021).
6. Péter, E. – Németh, K. – Mezőfi, N. – Németh, K. (2021). Pandémia hatásai a fogyasztói döntésekre. In: Mezőfi, N.; Németh, K.; Péter, E.; Püspök, K. (eds) V. Turizmus és Biztonság Nemzetközi Tudományos Konferencia tanulmánykötet. Nagykanizsa: Pannon Egyetem Nagykanizsai Campus (2021) 676 p., pp. 265–276.

Full-length papers in international conference proceedings (English)

1. Mezőfi, N. – Németh, K. (2024). A possible methodology of circular principle evaluation of eco-technological innovations. In: Németh, K.; Jakab, B.; Péter, E. (eds) Turizmus és Biztonság Nemzetközi Tudományos Konferencia tanulmánykötet. Veszprém: Pannon Egyetemi Kiadó (2024) 514 p., pp. 498–513.

9. References

1. Accenture. (2024). What is circular economy in waste management? Online elérhető: <https://www.rts.com/resources/guides/circular-economy/> Letöltés ideje: 2025.02.02.
2. Belaud, J-P., Adoue, C., Vialle, C., Chorro, A., Sablayrolles, C. (2019). A circular economy and industrial ecology toolbox for developing an eco-industrial park: perspectives from French policy. *Clean Techn Environ Policy* 21, 967–985 (2019). <https://doi.org/10.1007/s10098-019-01677-1>
3. Bringezu, S. (2003). Industrial ecology and material flow analysis, basic concepts, policy relevance and some case studies, in: *Perspectives on industrial ecology*, Greenleaf Publishing, 2003. pp.: 21-34.
4. British Standards Institution. (2017). BS 8001:2017 – Framework for implementing the principles of the circular economy in organisations – Guide. London: BSI.
5. Cecchin, A., Salomone, R., Deutz, P., Raggi, A., Cutaia, L. (2020). Relating industrial symbiosis and circular economy to the sustainable development debate. In R. Salomone, A. Cecchin, P. Deutz, A. Raggi, L. Cutaia (Eds.), *Industrial symbiosis for the circular economy: Strategies for sustainability* (pp. 3–19). Springer. https://doi.org/10.1007/978-3-030-36660-5_1
6. Ellen MacArthur Foundation (2013). *Towards the Circular Economy: Opportunities for the Consumer Goods Sector*. Ellen MacArthur Foundation, Cowes (2013). <https://doi.org/10.1162/108819806775545321>
7. Ellen MacArthur Foundation (2022a). *Life Cycle Assessment for the circular economy*. Online elérhető: <https://www.ellenmacarthurfoundation.org/life-cycle-assessment-for-the-circular-economy>. Letöltés ideje: 2025.05.
8. European Commission (2015). *Closing the Loop - An EU Action Plan for the Circular Economy*. (COM/2015/0614 final). Brussels: European Commission. Online elérhető: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2015:0614:FIN>. Letöltés ideje: 2024.08.10.
9. European Commission (2020b). *Circular Economy Action Plan: For a cleaner and more competitive Europe*. Online elérhető: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0098>. Letöltés ideje: 2024.11.10.
10. European Commission (2023a). *Proposal for a Directive on common rules promoting the repair of goods* (COM/2023/155 final). Online elérhető: [22](https://eur-</div><div data-bbox=)

- lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52023PC0155 Letöltés ideje: 2024.11.12.
11. European Commission (2023b). Proposal for a Regulation establishing a framework for ensuring secure and sustainable supply of critical raw materials (“Critical Raw Materials Act”) (COM/2023/125 final). Brussels: European Commission. Online elérhető: https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act_en. Letöltés ideje: 2024.06.21.
 12. European Commission (2025). Clean Industrial Deal: A plan for EU competitiveness and decarbonisation. European Commission. Online elérhető: https://commission.europa.eu/topics/eu-competitiveness/clean-industrial-deal_en Letöltés ideje: 2024.11.12.
 13. European Commission. (2019). The European Green Deal. Online elérhető: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en Letöltés ideje: 2024.08.10.
 14. European Commission. (2020a). EU Circular Economy Action Plan: New ambitious measures. Press release IP/20/420. Brussels: European Commission. Online elérhető: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_420
 15. European Commission. (2022). Proposal for a Regulation establishing a framework for setting ecodesign requirements for sustainable products (COM/2022/142 final). Online elérhető: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022PC0142> Letöltés ideje: 2024.11.12.
 16. European Environment Agency (2016a). Climate change impacts and vulnerabilities 2016. elérhető online: <https://www.eea.europa.eu/publications/climate-change-impacts-and-vulnerability-2016>. Letöltés ideje: 2024.04.13.
 17. European Environment Agency. (2016b). Circular economy in Europe: Developing the knowledge base (EEA Report No. 1/2016). Copenhagen: EEA. Online elérhető: <https://www.eea.europa.eu/publications/circular-economy-in-europe> Letöltés ideje: 2025.02.02.
 18. Eurostat (2001). Economy-wide material flow accounts and derived indicators, A methodological guide, European Communities, Luxembourg, 2001, ISBN 92-894-0459-0.
 19. Figge, F.; Hahn, T., Schaltegger, S., Wagner, M. (2001). Sustainability Balanced Scorecard. Wertorientiertes Nachhaltigkeitsmanagement mit der Balanced Scorecard; Leuphana Universität Lüneburg: Lüneburg, Germany, 2001.

20. Geissdoerfer, M., Morioka, S.N., de Carvalho, M.M., Evans, S. (2018). Business models and supply chains for the circular economy. *Journal of Cleaner Production* 2018, 190, 712–721.
21. Geissdoerfer, M., Pieroni, M. P., Pigosso, D. C., Soufani, K. (2020). Circular business models: A review. *Journal of Cleaner Production*, 277, 123741.
22. Geissdoerfer, M., Savaget, P., Bocken, N.M.P., Hultink, E.J. (2017). The circular economy – a new sustainability paradigm? *Journal of Cleaner Production*, 143 (2017), pp. 757-768, 10.1016/j.jclepro.2016.12.048
23. GRI (2002). *Global Reporting Initiative – Sustainability Reporting Guidelines*. Boston.
24. Hahn, T., Scheermesser, M. (2006). Approaches to corporate sustainability among German companies. *Corporate Social Responsibility and Environmental Management*, 13(3), 150–165. <https://doi.org/10.1002/csr.100>
25. Hestin, M., Chanoine, A., Menten, F. (2016). *Deloitte Sustainability. Circular Economy Potential for Climate Change Mitigation*, Paris
26. Homrich, A.S., Galvão, G., Abadia, L.G., Carvalho M.M. (2018). The circular economy umbrella: trends and gaps on integrating pathways. *J. Clean. Prod.*, 175 (2018), pp. 525-543.
27. ISO (1998). *ISO 14031 – Draft international standard, ISO/ DIS*. American National Standards Institute, New York
28. Klewitz, J., Hansen, E. G. (2013). Sustainability-oriented innovation of SMEs: A systematic review. *Journal of Cleaner Production*, 65, 57–75. <https://doi.org/10.1016/j.jclepro.2013.07.017>
29. Korhonen, J., Honkasalo, A., Seppälä, J. (2018). Circular economy: The concept and its limitations. *Ecological Economics*, 143, 37–46. <https://doi.org/10.1016/j.ecolecon.2017.06.041>
30. Kósi, K., Torma, A. (2005). Tracing Material Flows on Industrial Sites, in: *Periodica Polytechnica, Series Social and Management Sciences*, Vol. 13, No. 2., BME-OMIKK, Budapest, HU ISSN 1416-3837, 133-150.
31. Manninen, K., Koskela, S., Antikainen, R., Bocken, N., Dahlbo, H., Aminoff, A. (2018). Do circular economy business models capture intended environmental value propositions? *J. Clean. Prod.*, 171 (2018), pp. 413-422
32. Maranesi, C., De Giovanni, P. (2020). *Modern Circular Economy: Corporate Strategy, Supply Chain, and Industrial Symbiosis*, *Sustainability* 2020, 12(22), 9383.

33. McKinsey Center for Business and Environment – Ellen MacArthur Foundation (2015). Europe's circular-economy opportunity. Online letölthető: <https://www.mckinsey.com/capabilities/sustainability/our-insights/europes-circular-economy-opportunity#/>. Letöltés ideje: 2025.06.17.
34. Mezőfi N. (2022). A körforgásos gazdasági modell vállalati aspektusainak megjelenése nemzetközi tudományos folyóiratokban. VI. Turizmus és biztonság Nemzetközi Tudományos Konferencia Tanulmánykötete, 2022.
35. Mondello, G., Salomone, R., Ioppolo, G., Saija, G., Sparacia, S., Lucchetti, M. C. (2017). Comparative LCA of alternative scenarios for waste treatment: The case of food waste production by the mass-retail sector. *Sustainability*, 9(5), 827. <https://doi.org/10.3390/su9050827>
36. Muradin, M., Foltynowicz, Z. (2019). The Circular Economy in the Standardized Management System. *Amfiteatru Econ.* 2019, 21, 871.
37. Németh, K., Tóth-Kaszás, N., Péter, E., Kiss, A. (2020). A körforgásos gazdaság jó gyakorlatai, In: Bene, Szabolcs (szerk.) XXVI. Ifjúsági Tudományos Fórum, Keszthely, Magyarország: Pannon Egyetem Georgikon Kar (2020), 1-6. p.
38. Nußholz, J.L.K (2017). Circular business models: defining a konkörforgásos gazdaságot and framing an emerging research field. *Sustain. Times*, 9 (2017), pp. 14-17. <https://doi.org/10.3390/su9101810>
39. OECD (2023). Towards a National Circular Economy Strategy for Hungary, OECD Publishing, Paris, <https://doi.org/10.1787/1178c379-en>.
40. Ormazabal, M., Prieto-Sandoval, V., Puga-Leal, R., Jaca, C. (2018). Circular economy in Spanish SMEs: challenges and opportunities. *Journal of cleaner production*, 185, 157-167.
41. Osterwalder, A., Pigneur, Y., Tucci, C.L. (2005). Clarifying Business Models: Origins, Present and Future of the Concept. *Communication of AIS*, Volume 15.
42. Peña, C., Civit, B., Gallego-Schmid, A., Druckman, A., Caldeira-Pires, A., Weidema, B., Mieras, E., Wang, F., Fava, J., Milà i Canals, L., Cordella, M., Arbuckle, P., Valdivia, S., Fallaha, S., Motta, W. (2021). Using life cycle assessment to achieve a circular economy. *The International Journal of Life Cycle Assessment*, 26, 215–220. <https://doi.org/10.1007/s11367-020-01856-z>
43. Rejeb, A., Rejeb, K., Seuring, S., Treiblmaier, H. (2022). The Internet of Things and the circular economy: A systematic literature review and research agenda. *Journal of Cleaner Production*, 350, 131439. <https://doi.org/10.1016/j.jclepro.2022.131439>

44. Shields, J., Shelleman, J. M. (2015). Integrating sustainability into SME strategy. *Journal of Small Business Strategy*, 25(2), 59–78.
45. Ünal, E., Urbinati, A., Chiaroni, D. (2019). Managerial practices for designing circular economy business models: The case of an Italian SME in the office supply industry. *Journal of manufacturing technology management*, 30(3), 561-589.
46. Witjes, S., Lozano, R. (2016). Towards a more circular economy: proposing a framework linking sustainable public procurement and sustainable business models. *Resour. Conserv. Recycl.*, 112 (2016), pp. 37-44.
47. Wojnarowska, M., Salerno-Kochan, R. (2022). The Fourth Industrial Revolution as an Opportunity for the Development of a Circular Economy. In *Industrial Revolution 4.0*; Routledge: London, UK, 2022; pp. 119–142. ISBN 1003264174.