



Editorial letter. Sustainability accounting, accountability and disclosure in a Circular Economy

Guest Editors:

Igor Álvarez Etxeberria^a, Fernando Llana-Macarulla^{b,c}, Pilar Portillo-Tarragona^b

*a) Department of Financial Economics and Accounting, Faculty of Business and Economics, University of Basque Country, Donostia-San Sebastian-SPAIN.
b) Department of Accounting and Finance, Faculty of Economics, University of Zaragoza, Zaragoza-SPAIN.*

^cCorresponding author.

E-mail address: flena@unizar.es

<https://www.doi.org/10.6018/rcsar.586991>

©2023 ASEPUC. Published by EDITUM - Universidad de Murcia. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

There is an urgent need to reduce the climatic and environmental impact of both human production and consumption activities, with the aim of reaching carbon neutrality, decreasing the need for resources and protecting biodiversity, thus advancing towards a fully Circular Economy (CE) (Bocken et al., 2016; Geissdoerfer et al., 2017). The CE is gaining interest as a pathway to sustainable development among scholars, practitioners, and policymakers, fostering CE to achieve sustainable development goals (Pizzi et al., 2020), a clear example being the European Union new Circular Economy Action Plan (COM/2020/98) (European Commission, 2020).

The CE seeks an efficient flow of resources - materials, energy, water, information - that conserves the resources in the productive cycle for as long as possible, creating circular loops in which resources are used repeatedly (Aranda-Usón et al., 2018; Yuan et al., 2006). In this scenario, different perspectives recognise the value of the CE as an alternative model to the linear one and as a path towards a low-carbon emission and zero-waste economy based on the convergence of economic and environmental principles (Ellen MacArthur Foundation, 2015b, 2015a; European Commission, 2015, 2020).

The CE can be considered as a form of environmental management operating on several levels: at the national or regional level (i.e. macro), the goal is to decouple economic growth from consumption; at the eco-industrial park level (meso-level), the goal is to promote regional development and protection of the natural environment (Scarpellini et al., 2019); at the micro-level (or individual firm), the goal is to find cleaner production approaches to achieve more efficient use of raw materials and resources (Ghisellini et al., 2016; Mathews & Tan, 2011; Murray et al., 2015).

At the micro-level, the CE means the improvement of material intensity and energy saving and the introduction of renewables, reducing environmental impacts, and a high-efficiency rate of closing material loops (Jun & Xiang, 2011; Van Berkel, 2010). This model allows for added value and utility of products and materials to be maintained as long as possible, facilitating waste minimisation (Aranda-Usón et al., 2018; Ellen MacArthur Foundation, 2015a; Scarpellini et al., 2019).

In a triple bottom line framework (Elkington, 2001), companies that adopt a circular business model must consider CE's economic, environmental and social dimensions, and the measurement of its impacts at a micro-level is a relevant routine. Thus, by adopting a circular business model or introducing CE principles in businesses, changes are also envisaged in sustainability accounting (Scarpellini et al., 2020; Llana-Macarulla et al., 2023), reporting practices (Marco-Fondevila et al., 2021; Barnabè & Nazir, 2021) and the measurement of CE-related activities introduced by companies (Aranda-Usón et al., 2020). Therefore, there is a need to improve new management and accounting tools to achieve these new requirements (Schaltegger et al., 2022; Yin et al., 2012).

In this framework, some scholars have partially approached the three dimensions of sustainability of CE in businesses (Girard and Nocca, 2019; Hysa et al., 2020; Iacovidou et al., 2017; Kravchenko et al., 2019; Scarpellini et al., 2020). In the micro dimension, the implementation of CE principles impacts companies' environmental management and the linked changes in accounting systems, particularly in aspects related to sustainability accounting (Scarpellini et al., 2020). In addition, society has increased its demand for corporations to mitigate the effects of their activities on the quality of life of local communities, and there is an increasing demand for information and accountability to shape the common good (Pesci et al., 2020). Therefore, CE would imply changes to companies' environmental management and accounting practices regarding natural resources and the introduction of processes and controls to close the material loops. It is necessary to point out the role that accounting plays, through valuation, since "what is valued becomes a resource, while what is not valued is considered waste" (Larrinaga & Garcia-Torea, 2022).

Meanwhile, the influence of circular models on sustainability accounting is still an incipient line of enquiry. Generally, one or two of the three dimensions of sustainable development often prevail, with fewer social considerations (Kirchherr et al., 2017). Notably, the measurement of the CE at the micro-level must be expanded and specialised in sustainability accounting, accountability, and reporting practices (Scarpellini, 2022).

Based on the previous arguments, the integration of the CE from the accounting perspective must lead to sustainability.

This Special Issue of Sustainability accounting, accountability and disclosure in a Circular Economy is in collaboration with the EMAN Europe 2022 Conference (San Sebastian, June 2022). We would like to thank the Editorial Board of the *Revista de Contabilidad-Spanish Accounting Review*, and in particular its Editor-in-Chief, for the opportunity to publish this special issue.

The five academic papers published analyze approaches to implementing sustainability accounting in organisations, focusing on the principles of CE and the implications they may have on an organisation's accounting and reporting practices from different contexts.

The first contribution, 'Circular reporting, strategy and performance in agri-food companies: a natural resource-based theoretical approach' by Rabasedas et al. (2023), examines to what extent Argentinian agri-food organizations use circular reporting to translate circular economy strategy into better performance based on data collected from 238 agri-food Argentinian organizations and analyzed using partial least squares structural equation modelling. The authors conclude that a natural resource-based circular economy strategy positively affects performance and circular reporting has a significant indirect effect on environmental and economic performance.

In the second contribution, Jesse et al. (2023) authored a contribution on 'A circularity accounting network: CO₂ measurement along supply chains using machine learning' uses artificial neural networks to design a circularity accounting network. They present the conceptual design and a preliminary test of the network using real data, helping to advance the underexplored potential of artificial intelligence in the field of circular economy accounting. The network allows viewing the level of (non)circularity of different products through specific diagrams calculated by a CO₂ estimator based on knowledge of the theory of actors-network.

The third article, "Old" financial instruments in "new" circular models: Applied environmental accounting in the banking sector for reporting in a circular economy' by Marco-Fondevila et al. (2023), demonstrates the wider role of financial institutions as a channel of funds to promote the expansion of the circular economy within the framework of environmental accounting and in the framework of the European Union taxonomy for sustainable finance. By studying the details of renting agreements of a financial institution over 18 years as a case study in Spain, this research demonstrates how this type of service can render important benefits in terms of use of resources and reduced carbon emissions. The results obtained from the stakeholders' perspective highlight the pivotal role of existing financial instruments and the need for new metrics for reporting linked to the servitization of the economy as a specific circular issue.

The fourth contribution, 'Bibliometric study of the link between Sustainability and Circular Economy: A contribution for a current business model from the collaboration Enterprise-University' by Gallardo-Vázquez and Sánchez-Domínguez (2023), approaches from an analysis of the existing literature on corporate social responsibility, sustainability and circular economy simultaneously to study the change of a traditional and linear business model (BM) to a new and circular business model (NBM). They affirm that the company-university collaboration supports the strategies of NBMs and facilitates the development of

initiatives and projects, under a Triple Bottom Line model. The authors conclude that linear business models are not enough today, and it is necessary to move towards circular models, which will allow to achieve the satisfaction of all stakeholders and achieve legitimacy, from a good use of their dynamic capabilities. Concerning accountability they highlight the need to consider NBMs carry out an operational and responsible communication process, addressing it with transparency and gaining legitimacy.

Finally, in the fifth contribution, 'Circular Economy and Social Sustainability: A Transdisciplinary Approach to the Basque Country's automotive sector' by Garayar et al. (2023) examines the circular economy, and how the concept is constructed and linked to the sustainability triple-axis. They use a transdisciplinary approach to community-based participatory research, and they approach a focus group method and an in-depth interview method to render more detailed perspectives. The results reflect that there is no single way of understanding the concept, either among the agents studied or in the academic literature, however, they observe a general pattern, in that the environmental and economic axis are at the centre of CE concept, while the social axis of sustainability is cornered.

With these research contributions, this special issue aims to the future direction of sustainability reporting and accountability, along with mandatory financial reporting, to allow organizations to consider their impacts on a wide range of sustainability issues, including CE-related issues, and to be more transparent about related risks and opportunities on key issues of sustainable development, including planetary boundaries and broader sustainability goals such as proposed by the UN SDGs. This is in line with the Circular Economy EU action plans (European Commission, 2015, 2020) as well as recent sustainability reporting proposals (EFRAG, 2023¹; ISSB, 2023²; TNFD recommendations, 2023³); along with GRI proposals and updates that also consider the CE principles relevant in their postulates.

Acknowledgements

This Special Issue was supported by the project LMP159-21 of the Government of Aragón (Spain) as well as by Vice Rectorate of Gipuzkoa UPV/EHU and Provincial Council of Gipuzkoa (Basque Country-Spain) in the framework of the Project 7 of Etorbizuna-Eraikiz 2022-2023 Line 4 (Sustainability).

References

- Aranda-Usón, A., M. Moneva, J., Portillo-Tarragona, P., & Llena-Macarulla, F. (2018). Measurement of the circular economy in businesses: Impact and implications for regional policies. *Economics and Policy of Energy and the Environment*, 2(1), 187–205. <https://doi.org/10.3280/EFE2018-002010>
- Aranda-Usón, A., Portillo-Tarragona, P., Scarpellini, S., & Llena-Macarulla, F. (2020). The progressive adoption of a circular economy by businesses for cleaner production: An approach from a regional study in Spain. *Journal*

¹EFRAG Sustainability Reporting Standards.

²IFRS-ISSB Sustainability Disclosure Standards.

³Taskforce on Nature-related Financial Disclosures (TNFD) has developed a set of disclosure recommendations and guidance.

- of *Cleaner Production*, 247. <https://doi.org/10.1016/j.jclepro.2019.119648>
- Barnabè, F., & Nazir, S. (2021). Investigating the interplays between integrated reporting practices and circular economy disclosure. *International Journal of Productivity and Performance Management*, 70(8), 2001–2031. <https://doi.org/10.1108/IJPPM-03-2020-0128>
- Bocken, N. M. P., de Pauw, I., Bakker, C., & van der Grinten, B. (2016). Product design and business model strategies for a circular economy. *Journal of Industrial and Production Engineering*, 33(5), 308–320. <https://doi.org/10.1080/21681015.2016.1172124>
- Elkington, J. (2001). Enter the Triple Bottom Line. *The Triple Bottom Line: Does It All Add Up?*, 1(1986), 1–16. <https://doi.org/10.1021/nl034968f>
- Ellen MacArthur Foundation. (2015a). Delivering the Circular Economy: A Toolkit for Policymakers. In *Delivering the Circular Economy: A Toolkit for Policymakers*.
- Ellen MacArthur Foundation. (2015b). *Towards a Circular Economy - Economic and Business Rationale for an Accelerated Transition*.
- European Commission. (2015). An EU action plan for the circular economy. *Com*, 614, 21. <https://doi.org/10.1017/CBO9781107415324.004>
- European Commission. (2020). *The New Circular Economy Action Plan. 09–2020*.
- * Gallardo-Vázquez, D., & Sánchez-Domínguez, J.C. (2023). Bibliometric study of the link between Sustainability and Circular Economy: A contribution for current business model from the collaboration Enterprise-University. *Revista de Contabilidad-Spanish Accounting Review*, Special Issue: Sustainability Accounting, Accountability and Disclosure in a Circular Economy.
- * Garayar, A., Aldaz, M., & Díaz de Junguitu, A. (2023). Circular Economy and Social Sustainability: A Transdisciplinary Approach to the Basque Country's automotive sector. *Revista de Contabilidad-Spanish Accounting Review*, Special Issue: Sustainability Accounting, Accountability and Disclosure in a Circular Economy.
- Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, E. J. (2017). The Circular Economy – A new sustainability paradigm? *Journal of Cleaner Production*, 143, 757–768. <https://doi.org/10.1016/j.jclepro.2016.12.048>
- Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: The expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, 114(1), 11–32. <https://doi.org/10.1016/j.jclepro.2015.09.007>
- Girard, L. F., & Nocca, F. (2019). Moving towards the circular economy/city model: Which tools for operationalizing this model? *Sustainability (Switzerland)*, 11(22), 1–48. <https://doi.org/10.3390/su11226253>
- Hysa, E., Kruja, A., Rehman, N. U., & Laurenti, R. (2020). Circular Economy Innovation and Environmental Sustainability Impact on Economic Growth: An Integrated Model for Sustainable Development. *Sustainability*, 12(12), 4831. <https://doi.org/10.3390/su12124831>
- Iacovidou, E., Velis, C. A., Purnell, P., Zwirner, O., Brown, A., Hahladakis, J., Millward-Hopkins, J., & Williams, P. T. (2017). Metrics for optimising the multi-dimensional value of resources recovered from waste in a circular economy: A critical review. In *Journal of Cleaner Production* (Vol. 166, pp. 910–938). <https://doi.org/10.1016/j.jclepro.2017.07.100>
- * Jesse, F., Antonini, C., & Luque-Vílchez, M. (2023). A circularity accounting network: CO2 measurement along supply chains using machine learning. *Revista de Contabilidad-Spanish Accounting Review*, Special Issue: Sustainability Accounting, Accountability and Disclosure in a Circular Economy.
- Jun, H., & Xiang, H. (2011). Development of circular economy is a fundamental way to achieve agriculture sustainable development in China. *Energy Procedia*, 5, 1530–1534. <https://doi.org/10.1016/j.egypro.2011.03.262>
- Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling*, 127(September), 221–232. <https://doi.org/10.1016/j.resconrec.2017.09.005>
- Kravchenko, M., Pigosso, D. C., & McAlloone, T. C. (2019). Towards the ex-ante sustainability screening of circular economy initiatives in manufacturing companies: Consolidation of leading sustainability-related performance indicators. *Journal of Cleaner Production*, 241, 118318. <https://doi.org/10.1016/j.jclepro.2019.118318>
- Larrinaga, C., & Garcia-Torea, N. (2022). An ecological critique of accounting: The circular economy and COVID-19. *Critical Perspectives on Accounting*, 82, 102320. <https://doi.org/10.1016/j.cpa.2021.102320>
- Llana-Macarulla, F., Moneva-Abadía, J. M., Aranda-Usón, A., & Scarpellini, S. (2023). Reporting measurements or measuring for reporting? Internal measurement of the Circular Economy from an environmental accounting approach and its relationship. *Spanish Accounting Review*, 26(2), 200–212. <https://doi.org/https://doi.org/10.6018/rcsar.467751>
- Marco-Fondevila, M., Llana-Macarulla, F., Callao-Gastón, S., & Jarne-Jarne, J. I. (2021). Are circular economy policies actually reaching organizations? Evidence from the largest Spanish companies. *Journal of Cleaner Production*, 285, 124858. <https://doi.org/10.1016/j.jclepro.2020.124858>
- * Marco-Fondevila, M., Scarpellini, S., & Benito, D. (2023). “Old” financial instruments in “new” circular models: Applied environmental accounting in the banking sector for reporting in a circular economy’. *Revista de Contabilidad-Spanish Accounting Review*, Special Issue: Sustainability Accounting, Accountability and Disclosure in a Circular Economy.
- Mathews, J. A., & Tan, H. (2011). Progress Toward a Circular Economy in China. *Journal of Industrial Ecology*, 15(3), 435–457. <https://doi.org/10.1111/j.1530-9290.2011.00332.x>
- Murray, A., Skene, K., & Haynes, K. (2015). The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context. *Journal of Business Ethics*, 140(3), 369–380. <https://doi.org/10.1007/s10551-015-2693-2>
- Pesci, C., Costa, E., & Andreaus, M. (2020). Using accountability to shape the common good. *Critical Perspectives on Accounting*, 67–68(Online), IN PRESS 102079. <https://doi.org/10.1016/j.cpa.2019.03.001>
- Pizzi, S., Caputo, A., Corvino, A., & Venturelli, A. (2020). Management research and the UN sustainable development goals (SDGs): A bibliometric investigation and systematic review. *Journal of Cleaner Production*, 276, 124033. <https://doi.org/10.1016/J.JCLEPRO.2020.124033>

2020.124033

- * Rabasedas, M.L., Moneva, J.M., & Jara-Sarrúa, L. (2023). Circular Reporting, Strategy and Performance: a natural resource-based approach on Argentinian agri-food companies. *Revista de Contabilidad-Spanish Accounting Review*, Special Issue: Sustainability Accounting, Accountability and Disclosure in a Circular Economy.
- Scarpellini, S. (2022). Social impacts of a circular business model: An approach from a sustainability accounting and reporting perspective. *Corporate Social Responsibility and Environmental Management*, 29, 646-656. <https://doi.org/10.1002/csr.2226>
- Scarpellini, S., Marín-Vinuesa, L. M., Aranda-Usón, A., & Portillo-Tarragona, P. (2020). Dynamic capabilities and environmental accounting for the circular economy in businesses. *Sustainability Accounting, Management and Policy Journal*, 11(7), 1129–1158. <https://doi.org/10.1108/SAMPJ-04-2019-0150>
- Scarpellini, S., Portillo-Tarragona, P., Aranda-Usón, A., & Llena-Macarulla, F. (2019). Definition and measurement of the circular economy's regional impact. *Journal of Environmental Planning and Management*, 62(13), 2211–2237. <https://doi.org/10.1080/09640568.2018.1537974>
- Schaltegger, S., Christ, K. L., Wenzig, J., & Burritt, R. L. (2022). Corporate sustainability management accounting and multi-level links for sustainability – A systematic review. *International Journal of Management Reviews*. <https://doi.org/10.1111/ijmr.12288>
- Van Berkel, R. (2010). Quantifying sustainability benefits of industrial symbioses. *Journal of Industrial Ecology*, 14(3), 371–373. <https://doi.org/10.1111/j.1530-9290.2010.00252.x>
- Yin, K., Wang, R., Zhou, C., & Liang, J. (2012). Review of eco-efficiency accounting method and its applications. In *Shengtai Xuebao/ Acta Ecologica Sinica* (Vol. 32, Issue 11, pp. 3595–3605). <https://doi.org/10.5846/stxb201104280564>
- Yuan, Z., Bi, J., & Moriguichi, Y. (2006). The Circular Economy: A New Development Strategy in China. *Journal of Industrial Ecology*, 10(1–2), 4–8. <https://doi.org/10.1162/108819806775545321>