

Consolidated scientific/academic references of Antonio Valero-Capilla

(including peer-reviewed ECOS contributions (2022–2026))

1. Cortés Gracia, Cristóbal; Valero-Capilla, Antonio; Tomás Gutiérrez, Alfredo; Abadía, J.; Arnal, N.; Torres Cuadra, César. A system for slagging control in a coal-fired utility boiler. ANALYSIS AND DESIGN OF ENERGY SYSTEMS: COMPUTER-AIDED ENGINEERING. pp. 77 - 84. The American Society of Mechanical Engineers, 1989.
2. G. Tsatsaronis; Valero-Capilla, A. Combining Thermodynamics and Economics in Energy Systems”, Mechanical Engineering,. MECHANICAL ENGINEERING. 111 - 8, pp. 84 - 88. 1989.
3. Torres Cuadra, César, Valero-Capilla A. on the unification of the thermoeconomic theories. AMERICAN SOCIETY OF MECHANICAL ENGINEERS, HEAT TRANSFER DIVISION, (PUBLICATION) HTD. 124, pp. 63 - 74. 1989.
4. Torres Cuadra, César; Valero-Capilla, Antonio; Cortes Gracia, Cristobal. Application of symbolic exergoeconomics to thermal system simulation. AMERICAN SOCIETY OF MECHANICAL ENGINEERS, HEAT TRANSFER DIVISION, (PUBLICATION) HTD. 124, pp. 75 - 84. 1989.
5. Valero-Capilla, A. La Termoeconomía, un nuevo capítulo de la Física. AZAR, CAOS E INDETERMINISMO. pp. 89 - 120. SIUZ Publicaciones de la Universidad de Zaragoza, 1990.
6. Lozano Serrano, M. A.; Serra de Renobales, L.; Valero-Capilla, A. Análisis termoeconomico de un sistema de cogeneración. INGENIERÍA QUÍMICA (MADRID). 25 - 290, pp. 135 - 140. 1993.
7. Lozano, M. A.; Valero-Capilla, A. Theory of the Exergetic Cost. ENERGY. 18 - 9, pp. 939 - 960. 1993.
8. Valero-Capilla, Antonio. REFLEXIONES SOBRE LOS COSTES ENERGETICOS DE LA SOCIEDAD ACTUAL. ECONOMÍA INDUSTRIAL. 297, pp. 117 - 123. 1994.
9. Valero-Capilla, A.; Lozano, M. A.; Serra, L.; Torres, C. Application of the Exergetic Cost Theory to the CGAM Problem. ENERGY. 19 - 3, pp. 365 - 381. 1994.
10. Valero-Capilla, A.; Lozano, M. A.; Serra, L.; Tsatsaronis, G.; Pisa, J.; Frangopoulos, C.; Vonspakovsky, M. R. CGAM Problem - Definition and Conventional Solution. ENERGY. 19 - 3, pp. 279 - 286. 1994.
11. Valero-Capilla, A.; Lozano, M. A.; Bartolome, J. L. On-line monitoring of power-plant performance, using exergetic cost techniques. APPLIED THERMAL ENGINEERING. 16 - 12, pp. 933 - 948. 1996.

12. Pisa, J.; Serra, L.; Moreno, A.; Valero-Capilla, A. Evaluación de alternativas en un diseño de planta GICC con gasificador PRENFLO. ANALES DE INGENIERÍA MECÁNICA. 11 - 2, pp. 269 - 278. 1997.
13. Royo, J.; Valero-Capilla, A.; Zaleta, A. The dissipation temperature: A tool for the analysis of malfunctions in thermomechanical systems. ENERGY CONVERSION AND MANAGEMENT. 38 - 15-17, pp. 1557 - 1566. 1997.
14. Valero-Capilla, Antonio; Lozano Serrano, Miguel Angel. An Introduction to Thermoeconomics. DEVELOPMENTS IN THE DESIGN OF THERMAL SYSTEMS. pp. 203 - 231. Cambridge University Press, 1997.
15. Royo, Javier; Valero-Capilla, Antonio; Zaleta, Alejandro. An Analytical Procedure for the assessment of Malfunctions in Thermomechanical Systems. INTERNATIONAL JOURNAL OF THERMODYNAMICS. 1 - 1-4, pp. 31 - 43. 1998.
16. Zaleta-Aguilar, A.; Ranz, L.; Valero-Capilla, A. Towards a unified measure of renewable resources availability: The exergy method applied to the water of a river. ENERGY CONVERSION AND MANAGEMENT. 39 - 16-18, pp. 1911 - 1917. 1998.
17. Erlach, B.; Serra, L.; Valero-Capilla, A. Structural theory as standard for thermoeconomics. ENERGY CONVERSION AND MANAGEMENT. 40 - 15-16, pp. 1627 - 1649. 1999.
18. Valero-Capilla, Antonio; Correas Usón, Luis Carlos; Serra Renobales, Luis. On-line Thermoeconomic Diagnosis of Thermal Power Plants. THERMODYNAMIC OPTIMIZATION OF COMPLEX ENERGY SYSTEMS. pp. 117 - 136. NATO Science Series, 1999.
19. Antonio Valero-Capilla. Energía y desarrollo social. ENERGÍA Y SOCIEDAD EN EL SIGLO XXI. pp. P. 211 - 245. Consejo de Seguridad Nuclear, 2000.
20. Diez, Luis Ignacio; Cortes, Cristobal; Arauzo, Inmaculada; Valero-Capilla, Antonio. Combustion and heat transfer monitoring in large utility boilers. INTERNATIONAL JOURNAL OF THERMAL SCIENCES. 40, pp. 489 - 496. 2001.
21. Uche, Javier; Serra, Luis; Valero-Capilla, Antonio. Hybrid desalting systems for avoiding water shortage in Spain*1. DESALINATION. 138, pp. 329 - 334. 2001.
22. Uche, Javier; Serra, Luis; Valero-Capilla, Antonio. Thermoeconomic optimization of a dual-purpose power and desalination plant*1. DESALINATION. 136, pp. 147 - 158. 2001.
23. Zaleta, Alejandro; Royo, Javier; Valero-Capilla, Antonio. Thermodynamic Model of the Loss Factor Applied to Steam Turbines. INTERNATIONAL JOURNAL OF THERMODYNAMICS. 4 - 3, pp. 127 - 133. 2001.
24. Torres, Cesar; Valero-Capilla, Antonio; Serra, Luis; Royo, Javier. Structural theory and thermoeconomic diagnosis: Part I. On malfunction and dysfunction analysis. ENERGY CONVERSION AND MANAGEMENT. 43 - 9-12, pp. 1503 - 1518. 2002.

25. Valero-Capilla A.; Botero E. Exergetic Evaluation of Natural Mineral Capital (2): Application of the Methodology to Current World Reserves. PROCEEDINGS OF ECOS 2002., pp. 62 - 68. TU-Berlin, 2002.
26. Valero-Capilla, Antonio; Lerch, Felix; Serra, Luis; Royo, Javier. Structural theory and thermoeconomic diagnosis: Part II: Application to an actual power plant. ENERGY CONVERSION AND MANAGEMENT. 43 - 9-12, pp. 1519 - 1535. 2002. DOI: 10.1016/S0196-8904(02)00033-X
27. Valero-Capilla,A.; Correas L.; Zaleta A.; Lazzaretto A.; Verda V.; Reini M.; Rangel V.ON THE THERMOECONOMIC APPROACH TO THE DIAGNOSIS OF ENERGY SYSTEM MALFUNCTIONS:Part-1 The TADEUS Problem. PROCEEDINGS OF ECOS 2002., pp. 215 - 224. TU-Berlin, 2002.
28. Valero-Capilla,A.; Correas L.; Zaleta A.; Lazzaretto A.; Verda V.; Reini M.; Rangel V.ON THE THERMOECONOMIC APPROACH TO THE DIAGNOSIS OF ENERGY SYSTEM MALFUNCTIONS:Part-2 Malfunctions Definitions and Assessment. PROCEEDINGS OF ECOS 2002., pp. 224 - 234. TU-Berlin, 2002.
29. Verda, Vittorio; Serra, Luis M.; Valero-Capilla, Antonio. Effects of the Productive Structure on the Results of the Thermoeconomic Diagnosis of Energy Systems. INTERNATIONAL JOURNAL OF THERMODYNAMICS. 5 - 3, pp. 127 - 137. 2002.
30. Verda, Vittorio; Serra, Luis M.; Valero-Capilla, Antonio. Zooming Procedure for the Thermoeconomic Diagnosis of Highly Complex Energy Systems. INTERNATIONAL JOURNAL OF THERMODYNAMICS. 5 - 2, pp. 75 - 83. 2002.
31. Albiac, J.; Uche, J.; Valero-Capilla, A.; Serra, L.; Meyer, A.; Tapia, J. The Economic Unsustainability of the Spanish National Hydrological Plan. INTERNATIONAL JOURNAL OF WATER RESOURCES DEVELOPMENT. 19, pp. 437 - 458. 2003.
32. Antonio Valero-Capilla ... [et al.]. Cultivos energéticos. USO Y GESTIÓN DEL AGUA EN ARAGÓN. pp. P. [247] - 274. Consejo Economico y Social de Aragón, 2003.
33. J. Royo; A. Zaleta; J. Uche; Valero-Capilla, A.A typical Power Plant: Design and Operating Variables and Constraints. INTEGRATED POWER AND DESALINATION PLANTS.pp. 75 - 115. EOLSS Publishers Co. Ltd, 2003.
34. J. Uche; Valero-Capilla, A.; L. Serra. Thermoeconomic Diagnosis of a Dual-Purpose Power and Desalination Plant. INTEGRATED POWER AND DESALINATION PLANTS. pp. 527 - 547. EOLSS Publishers Co. Ltd., 2003.
35. J. Uche; Valero-Capilla, A.; M. A. Lozano, L. Serra. Thermoeconomic Optimization of a Dual-Purpose Power and Desalination Plant. INTEGRATED POWER AND DESALINATION PLANTS. pp. 509 - 526. EOLSS Publishers Co. Ltd., 2003.

36. Royo Herrer, Javier; Zaleta Aguilar, Alejandro; Uche Marcuello, Javier; Valero-Capilla, Antonio. Synthesis and Design. A Typical Power Plant: Design and Operating Variables and Constraints. INTEGRATED POWER AND DESALINATION PLANTS. pp. 75 - 117. EOLSS Publishers Co. Ltd, 2003.
37. Serra Renobales, Luis; Valero-Capilla, Antonio; Torres Cuadra, Cesar; Uche Marcuello, Javier. Thermoeconomic Analysis: Fundamentals. INTEGRATED POWER AND DESALINATION PLANTS. pp. 427 - 459. EOLSS Publishers Co. Ltd, 2003.
38. Uche Marcuello, Javier; Serra Renobales, Luis; Valero-Capilla, Antonio. Desalination Steady State Model. MSF Model Solution: Application of SIMTAW. INTEGRATED POWER AND DESALINATION PLANTS. pp. 225 - 241. EOLSS Publishers Co. Ltd, 2003.
39. Uche Marcuello, Javier; Serra Renobales, Luis; Valero-Capilla, Antonio. Power Plant Model. Modeling and Simulation. INTEGRATED POWER AND DESALINATION PLANTS. pp. 139 - 164. EOLSS Publishers Co. Ltd, 2003.
40. Uche Marcuello, Javier; Serra Renobales, Luis; Valero-Capilla, Antonio. Thermoeconomic Analysis: Cost Analysis of a Dual-purpose and Desalination Plant. INTEGRATED POWER AND DESALINATION PLANTS. pp. 482 - 508. EOLSS Publishers Co. Ltd, 2003.
41. Uche Marcuello, Javier; Serra Renobales, Luis; Valero-Capilla, Antonio. Thermoeconomic model of a Dual-purpose Power and Desalination Plant. INTEGRATED POWER AND DESALINATION PLANTS. pp. 460 - 481. EOLSS Publishers Co. Ltd, 2003.
42. Valero-Capilla, A.; F. Sebastián, J. Royo, J. Pascual. Cultivos energéticos. USO Y GESTIÓN DEL AGUA EN ARAGÓN. pp. 247 - 274. Consejo Económico y Social (CESA), 2003. ISBN Z-405/2003.
43. Valero-Capilla, Antonio; Martínez, Amaya; Botero, Edgar. La sostenibilidad ambiental a escala planetaria. El coste físico de reposición del "capital mineral" de la Tierra. ECONOMÍA INDUSTRIAL. 352, pp. 77 - 93. 2003.
44. Escosa, J. M.; Romeo, L. M.; Valero-Capilla, A. Repowering y transformación a ciclo combinado de centrales térmicas para la reducción de emisiones de CO₂. Acción y efecto inteligente de la generación española frente a Kioto. ENERGÍA. 30 - 179, pp. 58 - 62. 2004.
45. Raluy, R. G.; Serra, L.; Uche, J.; Valero-Capilla, A. Life-Cycle Assessment of Desalination Technologies Integrated With Energy Production Systems. DESALINATION. 167 - 1-3, pp. 445 - 458. 2004.
46. Uson, Sergio; Valero-Capilla, Antonio; Correias, Luis; Martinez, Angel. Co-gasification of coal and biomass in an IGCC power plant: Gasifier modeling. INTERNATIONAL JOURNAL OF THERMODYNAMICS. 7, pp. 165 - 172. 2004.
47. Uson, Sergio; Valero-Capilla, Antonio; Rangel, Victor. Building operations maps: An effective tool for improving gasifier operations in IGCC power plants. INTERNATIONAL JOURNAL OF THERMODYNAMICS. 7, pp. 157 - 164. 2004.

48. Valero-Capilla, A.; Correas L.; Lazzaretto, A.; Rangel, V.; Reini, M.; Taccani, R.; Toffolo, A.; Verda, V.; Zaleta, A. Thermoeconomic Philosophy Applied to the Operating Analysis and Diagnosis of Energy Utility Systems. *INTERNATIONAL JOURNAL OF THERMODYNAMICS*. 7 - 2, pp. 33 - 39. 2004.
49. Valero-Capilla, Antonio; Correas, Luis; Zaleta, Alejandro; Lazzaretto, Andrea; Verda, Vittorio; Reini, Mauro; Rangel, Victor. On the thermoeconomic approach to the diagnosis of energy system malfunctions: Part 2. Malfunction definitions and assessment. *ENERGY*. 19 - 12-15, pp. 1889 - 1907. 2004. DOI: 10.1016/j.energy.2004.03.008
50. Valero-Capilla, Antonio; Correas, Luis; Zaleta, Alejandro; Lazzaretto, Andrea; Verda, Vittorio; Reini, Mauro; Rangel, Victor. On the thermoeconomic approach to the diagnosis of energy system malfunctions Part 1: The TADEUS problem. *ENERGY*. 29, pp. 1875 - 1887. 2004.
51. Verda, V.; Serra, L.; Valero-Capilla, A. The Effects of the Control System on the Thermoeconomic Diagnosis of a Power Plant. *ENERGY*. 29 - 3, pp. 331 - 359. 2004.
52. Zaleta-Aguilar, Alejandro; Gallegos-Muñoz, Armando; Rangel-Hernandez, Victor Hugo; Valero-Capilla, Antonio. A Reconciliation Method Based on a Module Simulator - An Approach to the Diagnosis of Energy System Malfunctions. *INTERNATIONAL JOURNAL OF THERMODYNAMICS*. 7 - 2, pp. 51 - 60. 2004.
53. Aranda, Usón, A.; Zabalza Bribián, I.; Valero-Capilla, A. Analysis of the energy efficiency strategy for Spain by means of the life cycle methodology. *INNOVATION BY LIFE CYCLE MANAGEMENT LCM 2005 INTERNATIONAL CONFERENCE*. pp. 553 - 557. 2005.
54. Raluy, R. G.; Serra, L.; Uche, J.; Valero-Capilla, A. Life Cycle Assessment of Water Production Technologies - Part 2: Reverse Osmosis Desalination Versus the Ebro River Water Transfer. *INTERNATIONAL JOURNAL OF LIFE CYCLE ASSESSMENT*. 10 - 5, pp. 346 - 354. 2005.
55. Verda, V.; Serra, L.; Valero-Capilla, A. Thermoeconomic Diagnosis: Zooming Strategy Applied to Highly Complex Energy Systems. Part 1: Detection and Localization of Anomalies. *JOURNAL OF ENERGY RESOURCES TECHNOLOGY, TRANSACTIONS OF THE ASME*. 127 - 1, pp. 42 - 49. 2005.
56. Verda, Vittorio; Serra, Luis; Valero-Capilla, Antonio. Thermoeconomic Diagnosis: Zooming Strategy Applied to Highly Complex Energy Systems. Part 2: On the Choice of the Productive Structure. *JOURNAL OF ENERGY RESOURCES TECHNOLOGY, TRANSACTIONS OF THE ASME*. 127 - 1, pp. 50 - 58. 2005. DOI: 10.1115/1.1819314
57. Alvarez, T.; Valero-Capilla, A.; Montes, J.M. Thermoeconomic analysis of a fuel cell hybrid power system from the fuel cell experimental data. *ENERGY*. 31 - 10, pp. 1358 - 1370. 2006.
58. Uche Marcuello, J.; Valero-Capilla, A.; Serra, L. The potential for desalination technologies in meeting the water crisis. *WATER CRISIS. MYTH OR REALITY?*. pp. 297 - 322. Taylor & Francis, 2006.

59. Uche, J.; Serra, L.; Valero-Capilla, A. Exergy costs and inefficiency diagnosis of a dual-purpose power and desalination plant. *JOURNAL OF ENERGY RESOURCES TECHNOLOGY, TRANSACTIONS OF THE ASME*. 128 - 3, pp. 186 - 193. 2006.
60. Valero-Capilla, Antonio; Serra de Renobales, Luis; Uche Marcuello, Javier. Fundamentals of Exergy Cost Accounting and Thermoeconomics Part II: Applications. *JOURNAL OF ENERGY RESOURCES TECHNOLOGY, TRANSACTIONS OF THE ASME*. 128 - 1, pp. 9 - 15. 2006. DOI: 10.1115/1.2134731
61. Valero-Capilla, A. Exergy accounting: Capabilities and drawbacks. *ENERGY*. 31 - 1, pp. 164 - 180. 2006.
62. Valero-Capilla, A.; Serra, L.; Uche, J. Fundamentals of exergy cost accounting and thermoeconomics. Part I: Theory. *JOURNAL OF ENERGY RESOURCES TECHNOLOGY, TRANSACTIONS OF THE ASME*. 128 - 1, pp. 1 - 8. 2006.
63. Valero-Capilla, A.; Uson, S. Oxy-co-gasification of coal and biomass in an integrated gasification combined cycle (IGCC) power plant. *ENERGY*. 31 - 10-11, pp. 1643 - 1655. 2006.
64. Torres, C.; Valero-Capilla, A.; Rangel, V.; Zaleta, A. On the Cost Formation Process of the Residues. *ENERGY*. 33 - 2, pp. 144 - 152. 2008.
65. Valero-Capilla, A.; Valero Delgado, A.; Arauzo, I. Evolution of the Decrease in Mineral Exergy Throughout the 20th Century. the Case of Copper in the US. *ENERGY*. 33 - 2, pp. 107 - 115. 2008.
66. Antonio Valero-Capilla; Javier Uche; Alicia Valero; Amaya Martínez; José Manuel Naredo; Joan Escriu. The fundamentals of physical hydronomics: a novel approach for physico-chemical water valuation. *WATER, AGRICULTURE, AND SUSTAINABLE WELL-BEING*. pp. P. [115] - 136. Oxford University Press, 2009.
67. Romeo, L. M.; Calvo, E.; Valero-Capilla, A.; de Vita, A. Electricity Consumption and CO₂ Capture Potential in Spain. *ENERGY*. 34 - 9, pp. 1341 - 1350. 2009.
68. Uson, S.; Valero-Capilla, A.; Correas, L. Quantitative Causality Analysis for the Diagnosis of Energy Systems. *INTERNATIONAL JOURNAL OF THERMODYNAMICS*. 12 - 1, pp. 9 - 16. 2009.
69. Usón Gil, S.; Valero-Capilla, A. Analysis for the Thermoeconomic Diagnosis of Energy Systems. *INTERNATIONAL JOURNAL OF THERMODYNAMICS*. 12 - 2, pp. 69 - 74. 2009.
70. Usón Gil, S.; Valero-Capilla, A. Application of Quantitative Causality Analysis to the Quantification of Intrinsic and Induced effects in the Thermoeconomic Diagnosis of a Coal-fired Power Plant. *INTERNATIONAL JOURNAL OF THERMODYNAMICS*. 12 - 2, pp. 61 - 67. 2009.
71. Valero-Capilla, A. The Thermodynamic Process of Cost Formation. *EXERGY, ENERGY SYSTEM ANALYSIS, AND OPTIMIZATION. ENCYCLOPEDIA OF LIFE SUPPORT SYSTEMS*. II, pp. 36 - 60. Oxford: EOLSS Publishers Co. Ltd., 2009.

72. Valero-Capilla, A.; Botero, E. Valero Delgado, A. Global exergy accounting of natural resources. EXERGY, ENERGY SYSTEM ANALYSIS, AND OPTIMIZATION. ENCYCLOPEDIA OF LIFE SUPPORT SYSTEMS.III, pp. 347 - 370. Oxford: EOLSS Publishers Co. Ltd., 2009.
73. Valero-Capilla, A.; Torres Cuadra, C. Application of Thermoeconomics to Operation Diagnosis of Energy Plants. EXERGY, ENERGY SYSTEM ANALYSIS, AND OPTIMIZATION. ENCYCLOPEDIA OF LIFE SUPPORT SYSTEMS. II, pp. 146 - 161. Oxford: EOLSS Publishers Co. Ltd., 2009.
74. Valero-Capilla, A.; Torres Cuadra, C. Thermoeconomic Analysis. EXERGY, ENERGY SYSTEM ANALYSIS, AND OPTIMIZATION. ENCYCLOPEDIA OF LIFE SUPPORT SYSTEMS. II, pp. 1 - 35. Oxford: EOLSS Publishers Co. Ltd., 2009.
75. Valero-Capilla, A.; Uche,J.; Valero Delgado,A.; Martinez,A. Physical Hydronomics: Application of the Exergy Analysis to the Assessment of Environmental Costs of Water Bodies. the Case of the Inland Basins of Catalonia. ENERGY. 34 - 12, pp. 2101 - 2107. 2009.
76. Valero-Capilla, A.; Valero Delgado, A. Exergoecology: A thermodynamic approach for accounting the Earth's mineral capital. The case of bauxite-aluminium and limestone-lime chains. ENERGY. 35 - 1, pp. 229 - 238. 2009. DOI: 10.1016/j.energy.2009.09.013
77. Aranda Usón, A.; Valero-Capilla, A. Ahorro, Eficiencia Energética y Ecoeficiencia. EL ECOLOGISTA (MADRID). 65, pp. 3. 2010.
78. Martínez Gracia, Amaya; Uche Marcuello, Javier; Valero-Capilla, Antonio; Valero Delgado, Alicia. Environmental costs of a river watershed within the European water framework directive: Results from physical hydronomics. ENERGY. 35, pp. 1008 - 1016. 2010.
79. Pacheco Ibarra, J. J.; Rangel Hernández, V. H.; Zaleta Aguilar, A.; Valero-Capilla, A. Hybrid Fuel Impact Reconciliation Method: An integral tool for thermoeconomic diagnosis. ENERGY. 35 - 5, pp. 2079 - 2087. 2010.
80. Romeo, L. M.; Usón, S.; Valero-Capilla, A.; Escosa, J. M. Exergy analysis as a tool for the integration of very complex energy systems: The case of carbonation/calcination CO2 systems in existing coal power plants. INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL. 4 - 4, pp. 647 - 654. 2010.
81. Usón, S.; Valero-Capilla, A.; Correias, L. Energy efficiency assessment and improvement in energy intensive systems through thermoeconomic diagnosis of the operation. APPLIED ENERGY. 87 - 6, pp. 1989 - 1995. 2010.
82. Valero-Capilla, Antonio; Usón Gil, Sergio; Torres Cuadra, Cesar; Valero Delgado, Alicia. Application of Thermoeconomics to Industrial Ecology. ENTROPY. 12, pp. 591 - 612. 2010.
83. Valero Delgado, Alicia; Valero-Capilla, Antonio. Exergoecology: A thermodynamic approach for accounting the Earth's mineral capital. The case of bauxite–aluminium and limestone–lime chains. ENERGY. 35 - 1, pp. 229 - 238. 2010.

84. Valero Delgado, Alicia; Valero-Capilla, Antonio. Physical geonomics: Combining the exergy and Hubbert peak analysis for predicting mineral resources depletion. *RESOURCES, CONSERVATION AND RECYCLING*. 54 - 12, pp. 1074 - 1083. 2010. DOI: 10.1016/j.resconrec.2010.02.010
85. Valero Delgado, Alicia; Valero-Capilla, Antonio; Martinez Gracia, Amaya. Inventory of the exergy resources on earth including its mineral capital. *ENERGY*. 35, pp. 989-995. 2010.
86. Usón, S.; Valero-Capilla, A. Thermoeconomic diagnosis for improving the operation of energy intensive systems: Comparison of methods. *APPLIED ENERGY*. 88 - 3, pp. 699 - 711. 2011. DOI: 10.1016/j.apenergy.2010.09.010
87. Valero-Capilla, Antonio; Agudelo, Andrés; Valero Delgado, Alicia. The crepuscular planet. A model for the exhausted atmosphere and hydrosphere. *ENERGY*. 36 - 6, pp. 3745 - 3753. 2011. DOI: 10.1016/j.energy.2010.07.017
88. Valero Delgado, Alicia; Valero-Capilla, Antonio. A prediction of the exergy loss of the world's mineral reserves in the 21st century. *ENERGY*. 36 - 4, pp. 1848 - 1854. 2011. DOI: 10.1016/j.energy.2010.02.041
89. Valero Delgado, Alicia; Valero-Capilla, Antonio; Gómez Jiménez, Javier. The crepuscular planet. A model for the exhausted continental crust. *ENERGY*. 36, pp. 694 - 707. 2011. DOI: 10.1016/j.energy.2010.09.034
90. Aranda Usón, A.; Valero-Capilla, A.; Zabalza Bribián, I.; Scarpellini, S.; Llera Sastresa, E. Energy efficiency in transport and mobility from an eco-efficiency viewpoint. *ENERGY*. 36 - 4, pp. 1916 - 1923. 2011.
91. Martínez, A.; Uche, J.; Valero-Capilla, A.; Rubio, C. Assessment of Environmental Water Cost Through Physical Hydronomics. *WATER RESOURCES MANAGEMENT*. 25 - 12, pp. 2931 - 2949. 2011. DOI: 10.1007/s11269-011-9786-1
92. Zabalza Bribián, I.; Valero-Capilla, A.; Aranda Usón, A. Life cycle assessment of building materials: Comparative analysis of energy and environmental impacts and evaluation of the eco-efficiency improvement potential. *BUILDING AND ENVIRONMENT*. 46 - 5, pp. 1133 - 1140. 2011.
93. Valero Delgado, Alicia; Valero-Capilla, Antonio; Vieillard, Philippe. The Thermodynamic Properties Of The Upper Continental Crust: Exergy, Gibbs Free Energy And Enthalpy. *ENERGY*. 41, pp. 121 - 127. 2012. DOI: 10.1016/j.energy.2011.06.012
94. Agudelo, A.; Valero-Capilla, A.; Torres, C. Allocation of waste cost in thermoeconomic analysis. *ENERGY*. 45 - 1, pp. 634 - 643. 2012. DOI: 10.1016/j.energy.2012.07.034
95. Font, de Mora; Torres, C.; Valero-Capilla, A. Assessment of biodiesel energy sustainability using the exergy return on investment concept. *ENERGY*. 45 - 1, pp. 474 - 480. 2012. DOI: 10.1016/j.energy.2012.02.072

96. Uche,J.; Valero-Capilla,A.; Serra,L.; Torres,C. Bblocks software for thermoeconomic analysis of dual-purpose power and desalination plants. INTERNATIONAL JOURNAL OF THERMODYNAMICS. 15 - 4, pp. 215 - 220. 2012. DOI: 10.5541/ijot.421
97. Usón,S.; Valero-Capilla,A.; Agudelo,A. Thermoeconomics and Industrial Symbiosis. Effect of by-product integration in cost assessment. ENERGY. 45 - 1, pp. 43 - 51. 2012. DOI: 10.1016/j.energy.2012.04.016
98. Valero-Capilla, A.; Valero Delgado, A. Exergy of Comminution and the Thanatia Earth's model. ENERGY. 44 - 1, pp. 1085 - 1093. 2012. DOI: 10.1016/j.energy.2012.04.021
99. Valero-Capilla,A.; Uche,J.; Martínez,A. The hidden value of water flows: The chemical exergy of rivers. INTERNATIONAL JOURNAL OF THERMODYNAMICS. 15 - 1, pp. 17 - 25. 2012. DOI: 10.5541/ijot.318
100. Valero-Capilla,A.; Valero Delgado,A. What are the clean reserves of fossil fuels?. RESOURCES, CONSERVATION AND RECYCLING. 68, pp. 126 - 131. 2012. DOI: 10.1016/j.resconrec.2012.08.004
101. Scarpellini, S.; Valero-Capilla, A.; Llera, E.; Aranda, A. Multicriteria analysis for the assessment of energy innovations in the transport sector. ENERGY. 57, pp. 160 - 168. 2013. DOI: 10.1016/j.energy.2012.12.004
102. Valero-Capilla, A.; Valero Delgado, A. From Grave to Cradle. JOURNAL OF INDUSTRIAL ECOLOGY. 17 - 1, pp. 43 - 52. 2013. DOI: 10.1111/j.1530-9290.2012.00529.x
103. Agudelo, A.; Valero-Capilla, A.; Usón, S. The fossil trace of CO2 emissions in multi-fuel energy systems. ENERGY. 58, pp. 236 - 246. 2013. DOI: 10.1016/j.energy.2013.06.036
104. Domínguez, A.; Valero-Capilla, A.; Valero Delgado , A. Exergy accounting applied to metallurgical systems: The case of nickel processing. ENERGY. 62, pp. 37 - 45. 2013. DOI: 10.1016/j.energy.2013.03.089
105. Font Demora, E; Torres, C.; Valero-Capilla, A.; Zambrana, D. Defossilisation assessment of biodiesel life cycle production using the ExROI indicator. INTERNATIONAL JOURNAL OF THERMODYNAMICS. 16 - 2, pp. 81 - 86. 2013. DOI: 10.5541/ijot.452
106. Torres,C.; Valero-Capilla, A.; DelgadoA. Exergoecology as a tool for ecological modelling. The case of the US food production chain. ECOLOGICAL MODELLING. 255, pp. 21 - 28. 2013. DOI: 10.1016/j.ecolmodel.2013.01.021
107. Valero Delgado, Alicia; Valero-Capilla, Antonio; Domínguez, Adriana. Exergy Replacement Cost of Mineral Resources. JOURNAL OF ENVIRONMENTAL ACCOUNTING AND MANAGEMENT. 1 - 2, pp. 147 - 158. 2013. DOI: 10.5890/JEAM.2013.05.004
108. Valero-Capilla, Antonio; Usón, Sergio; Torres, César, Valero Delgado, Alicia; Agudelo, Andrés; Costa, Jorge. Thermoeconomic tools for the analysis of eco-industrial parks. ENERGY. 62, pp. 62 - 72. 2013. DOI: 10.1016/j.energy.2013.07.014

109. Zabalza, I; Valero-Capilla, A; Aranda, A; Llera, E. Methodological aspects and design implications to achieve life cycle low emission buildings. A case study: LCA of a new university building. STROJARSTVO. 55 - 1, pp. 87 - 102. 2013.
110. Domínguez, A.; Czarnowska, L.; Valero-Capilla, A.; Stanek, W.; Valero Delgado, A. Thermo-ecological and exergy replacement costs of nickel processing. ENERGY. 72 -, pp. 103 - 114. 2014. DOI: 10.1016/j.energy.2014.05.013
111. Valero-Capilla, Antonio; Carpintero, Óscar; Valero Delgado, Alicia; Calvo, Guiomar. How to account for mineral depletion. The exergy and economic mineral balance of Spain as a case study. ECOLOGICAL INDICATORS. 46, pp. 548 - 559. 2014. DOI: 10.1016/j.ecolind.2014.07.021
112. Valero Delgado, A.; Valero-Capilla, A.; Calvo, G. Using thermodynamics to improve the resource efficiency indicator GDP/DMC. RESOURCES, CONSERVATION AND RECYCLING. 94 -, pp. 110 - 117. 2015. DOI: 10.1016/j.resconrec.2014.12.001
113. Calvo, Guiomar; Valero Delgado, Alicia; Valero-Capilla, Antonio; Carpintero, Óscar. An exergoecological analysis of the mineral economy in Spain. ENERGY. 88, pp. 2 - 8. 2015. DOI: 10.1016/j.energy.2015.01.083
114. Carmona Aparicio, Luis Gabriel; Whiting, Kai; Valero Delgado, Alicia; Valero-Capilla, Antonio. Colombian mineral resources: An analysis from a Thermodynamic Second Law perspective. RESOURCES POLICY. 45, pp. 23 - 28. 2015. DOI: 10.1016/j.resourpol.2015.03.005
115. Font de Mora, E.; Torres, C.; Valero-Capilla, A. Thermoeconomic analysis of biodiesel production from used cooking oils. SUSTAINABILITY (SWITZERLAND). 7 - 5, pp. 6321 - 6335. 2015. DOI: 10.3390/su7056321
116. Valero Delgado, Alicia; Valero-Capilla, Antonio; Calvo Sevillano, Guiomar. Agotamiento del capital mineral de la Tierra. LOS INCIERTOS PASOS DESDE AQUÍ HASTA ALLÁ. pp. 343 - 362. Editorial Universidad de Granada, 2015.
117. Valero Delgado, A.; Domínguez, A.; Valero-Capilla, A. Exergy cost allocation of by-products in the mining and metallurgical industry. RESOURCES, CONSERVATION AND RECYCLING. 102 -, pp. 128 - 142. 2015. DOI: 10.1016/j.resconrec.2015.04.012
118. Valero-Capilla, A.; Valero Delgado, A. Thermodynamic rarity and the loss of mineral wealth. ENERGIES. 8 - 2, pp. 821 - 836. 2015. DOI: 10.3390/en8020821
119. Calvo, Guiomar; Valero Delgado, Alicia; Valero, Antonio. Material flow analysis for Europe: an exergoecological approach. ECOLOGICAL INDICATORS. 60, pp. 603 - 610. 2016. DOI: 10.1016/j.ecolind.2015.08.005
120. Calvo, Guiomar; Mudd, Gavin; Valero Delgado, Alicia; Valero-Capilla, Antonio. Decreasing Ore Grades in Global Metallic Mining: A Theoretical Issue or a Global Reality?. RESOURCES (BASEL). 5 - 4, pp. 36 [14 pp.]. 2016. DOI: 10.3390/resources5040036

121. Ahmadi, M. H.; Mohammadi, A.; Pourfayaz, F.; Mehrpooya, M.; Bidi, M.; Valero-Capilla, A.; Uson, Sergio. Thermodynamic analysis and optimization of a waste heat recovery system for proton exchange membrane fuel cell using transcritical carbon dioxide cycle and cold energy of liquefied natural gas. JOURNAL OF NATURAL GAS SCIENCE AND ENGINEERING. 34 -, pp. 428 - 438. 2016. DOI: 10.1016/j.jngse.2016.07.014
122. Mohammadi, A.; Ahmadi, M. H.; Bidi, M.; Joda, F.; Valero-Capilla, A.; Uson, S. Exergy analysis of a Combined Cooling, Heating and Power system integrated with wind turbine and compressed air energy storage system. ENERGY CONVERSION AND MANAGEMENT. 131 -, pp. 69 - 78. 2017. DOI: 10.1016/j.enconman.2016.11.003
123. Calvo Sevillano, Guiomar; Valero Delgado, Alicia; Valero-Capilla, Antonio. Thermodynamic approach to evaluate the criticality of raw materials and its application through a material flow analysis in Europe. JOURNAL OF INDUSTRIAL ECOLOGY. 22 - 4, pp. 839 - 852. 2017. DOI: 10.1111/jiec.12624
124. Calvo, G.; Valero Delgado, A.; Valero-Capilla, A. Assessing maximum production peak and resource availability of non-fuel mineral resources: Analyzing the influence of extractable global resources. RESOURCES, CONSERVATION AND RECYCLING. 125, pp. 208 - 217. 2017. DOI: 10.1016/j.resconrec.2017.06.009
125. Valero Delgado, A.; Valero-Capilla, A.; Domínguez, A. The thermodynamic rarity concept for the evaluation of mineral resources. GREEN ENERGY AND TECHNOLOGY. 9783319486482, pp. 203 - 232. 2017. DOI: 10.1007/978-3-319-48649-9_8
126. Stanek, W.; Valero Delgado, A.; Valero-Capilla, A.; Uche, J.; Calvo, G. Thermodynamic methods to evaluate resources. GREEN ENERGY AND TECHNOLOGY. 9783319486482, pp. 131 - 165. 2017. DOI: 10.1007/978-3-319-48649-9_6
127. Stanek, Wojciech; Valero Delgado, Alicia; Valero-Capilla, Antonio; Uche, Javier Uche; Calvo, Guiomar. Thermodynamic Methods to Evaluate Resources. THERMODYNAMICS FOR SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES. pp. 131 - 165. Springer, 2017.
128. Valero-Capilla, A.; Usón, S.; Torres, C.; Stanek, W. Theory of exergy cost and thermo-ecological cost. GREEN ENERGY AND TECHNOLOGY. 9783319486482, pp. 167 - 202. 2017. DOI: 10.1007/978-3-319-48649-9_7
129. Calvo, G.; Valero Delgado, A.; Valero-Capilla, A. How can strategic metals drive the economy? Tungsten and tin production in Spain during periods of war. THE EXTRACTIVE INDUSTRIES AND SOCIETY. 6 - 1, pp. 8 - 14. 2018. DOI: 10.1016/j.exis.2018.07.008
130. Calvo, G.; Valero, A.; Valero-Capilla, A. Sankey and Grassmann diagrams for mineral trade in the EU-28. GREEN ENERGY AND TECHNOLOGY. Part F10, pp. 103 - 113. 2018. DOI: 10.1007/978-3-319-62575-1_7

- 131.** Calvo, Guiomar; Valero Delgado, Alicia; Valero-Capilla, Antonio. Sankey and Grassmann Diagrams for Mineral Trade in the EU-28. EXERGY FOR A BETTER ENVIRONMENT AND IMPROVED SUSTAINABILITY 2. pp. 103 - 113. Springer, 2018.
- 132.** Valero Delgado, Alicia; Valero-Capilla, Antonio; Calvo, Guiomar; Ortego, Abel; Ascaso, Sonia; Palacios, José Luis. Global material requirements for the energy transition. An exergy flow analysis of decarbonisation pathways. ENERGY. 159, pp. 1175 - 1184. 2018. DOI: 10.1016/j.energy.2018.06.149
- 133.** Palacios, José Luis; Calvo, Guiomar; Valero Delgado, Alicia; Valero-Capilla, Antonio. The cost of mineral depletion in Latin America: An exergoecology view. RESOURCES POLICY. 59, pp. 117 - 124. 2018. DOI: 10.1016/j.resourpol.2018.06.007
- 134.** Gonzalez, E.; Ortego, A.; Topham, E.; Valero-Capilla, A. Is the future development of wind energy compromised by the availability of raw materials?. JOURNAL OF PHYSICS: CONFERENCE SERIES. 1102 - 1, pp. 012028 [10 pp]. 2018. DOI: 10.1088/1742-6596/1102/1/012028
- 135.** Ortego Bielsa, Abel; Valero Delgado, Alicia; Valero-Capilla, Antonio; Restrepo, Eliette. Vehicles and critical raw materials. A sustainability assessment using thermodynamic rarity. JOURNAL OF INDUSTRIAL ECOLOGY. 22 - 5, pp. 1005 - 1015. 2018. DOI: 10.1111/jiec.12737
- 136.** Ortego, A.; Valero-Capilla, A.; Valero Delgado, A.; Iglesias, M. Downcycling in automobile recycling process: A thermodynamic assessment. RESOURCES, CONSERVATION AND RECYCLING. 136, pp. 24 - 32. 2018. DOI: 10.1016/j.resconrec.2018.04.006
- 137.** Ortego, A.; Valero Delgado, A.; Valero-Capilla, A.; Iglesias, M. Toward material efficient vehicles: ecodesign recommendations based on metal sustainability assessments. SAE INTERNATIONAL JOURNAL OF MATERIALS AND MANUFACTURING. 11 - 3, pp. 213 - 228. 2018. DOI: 10.4271/05-11-03-0021
- 138.** Palacios, J.L.; Calvo, G.; Valero-Capilla, A.; Valero Delgado, A. Exergoecology assessment of mineral exports from Latin America: Beyond a tonnage perspective. SUSTAINABILITY (SWITZERLAND). 10 - 3, pp. 723 [18 pp]. 2018. DOI: 10.3390/su10030723
- 139.** Valero Delgado, A.; Valero-Capilla, A.; Stanek, W. Assessing the exergy degradation of the natural capital: From Szargut's updated reference environment to the new thermoecological-cost methodology. ENERGY. 163, pp. 1140 - 1149. 2018. DOI: 10.1016/j.energy.2018.08.091
- 140.** Abadías Llamas, A.; Valero Delgado, A.; Valero-Capilla, A.; Torres Cuadra, C.; Hultgren, M.; Peltomäki, M.; Roine, A.; Stelter, M.; Reuter, M.A. Simulation-based exergy, thermo-economic and environmental footprint analysis of primary copper production. MINERALS ENGINEERING. 131, pp. 51 - 65. 2019. DOI: 10.1016/j.mineng.2018.11.007
- 141.** Palacios, J.L.; Fernandes, I.; Abadías, A.; Valero Delgado, A.; Valero-Capilla, A.; Reuter, M.A. Avoided energy cost of producing minerals: The case of iron ore. ENERGY REPORTS. 5, pp. 364 - 374. 2019. DOI: 10.1016/j.egyr.2019.03.004

142. Palacios, J.L.; Fernandes, I.; Abadias, A.; Valero Delgado, A.; Valero-Capilla, A.; Reuter, M.A. The avoided energy cost of producing minerals: The case of iron-ore. PROCEEDINGS OF THE ... INTERNATIONAL CONFERENCE ON EFFICIENCY, COST, OPTIMIZATION, SIMULATION AND ENVIRONMENTAL IMPACT OF ENERGY SYSTEMS. 2019-June, pp. 3811 - 3826. 2019.
143. Palacios, J.L.; Abadias, A.; Valero Delgado, A.; Valero-Capilla, A.; Reuter, M.A. Producing metals from common rocks: The case of gold. PROCEEDINGS OF THE ... INTERNATIONAL CONFERENCE ON EFFICIENCY, COST, OPTIMIZATION, SIMULATION AND ENVIRONMENTAL IMPACT OF ENERGY SYSTEMS. 2019-June, pp. 4545 - 4559. 2019.
144. Palacios, J.L.; Abadias, A.; Valero Delgado, A.; Valero-Capilla, A.; Reuter, M.A. Simulation-based approach to study the effect of the ore-grade decline on the production of gold. PROCEEDINGS OF THE ... INTERNATIONAL CONFERENCE ON EFFICIENCY, COST, OPTIMIZATION, SIMULATION AND ENVIRONMENTAL IMPACT OF ENERGY SYSTEMS. 2019-June, pp. 3799 - 3809. 2019.
145. Palacios, José Luis; Abadias, Alejandro; Valero Delgado, Alicia; Valero-Capilla, Antonio; Reuter, Markus A. Producing metals from common rocks: The case of gold. RESOURCES, CONSERVATION AND RECYCLING. 148, pp. 23 - 35. 2019. DOI: 10.1016/j.resconrec.2019.04.026
146. Valero-Capilla, Antonio; Valero Delgado, Alicia. Pensando más allá del primer ciclo: Economía Espiral. ECONOMÍA CIRCULAR-ESPIRAL: TRANSICIÓN HACIA UN METABOLISMO ECONÓMICO CERRADO. pp. 79 - 108. Ecobook-Editorial de Economía : Asociación para la Sostenibilidad y el Progreso de las Sociedades (, 2019.
147. Valero-Capilla, A.; Ascaso, S.; Valero Delgado, A. Towards a reference environment for topsoil: The fourth dimension of Thanatia. PROCEEDINGS OF THE ... INTERNATIONAL CONFERENCE ON EFFICIENCY, COST, OPTIMIZATION, SIMULATION AND ENVIRONMENTAL IMPACT OF ENERGY SYSTEMS. 2019-June, pp. 3739 - 3952. 2019.
148. Valero-Capilla, Antonio; Valero Delgado, Alicia. Thermodynamic Rarity and Recyclability of Raw Materials in the Energy Transition: The Need for an In-Spiral Economy. ENTROPY. 21 - 9, pp. 873 [14 pp]. 2019. DOI: 10.3390/e21090873
149. Ortego, Abel; Calvo, Guiomar; Valero Delgado, Alicia; Iglesias-Émbil, Marta; Valero-Capilla, Antonio; Villacampa, Mar. Assessment of strategic raw materials in the automobile sector. RESOURCES, CONSERVATION AND RECYCLING. 161, pp. 104968 [11 pp]. 2020. DOI: 10.1016/j.resconrec.2020.104968
150. Valero-Capilla, Antonio; Torres, César. Relative free energy function and structural theory of thermoeconomics. ENERGIES. 13 - 8, pp. 2024 [21 pp.]. 2020. DOI: 10.3390/en13082024
151. Ledari, M.B.; Saboohi, Y.; Valero-Capilla, A.; Azamian, S. Exergy analysis of a bio-system: Soil-plant interaction. ENTROPY. 23 - 1, pp. 3 [28 pp]. 2021. DOI: 10.3390/e23010003

152. Magdalena R.; Valero Delgado A.; Palacios J.L.; Valero-Capilla A. Mining energy consumption as a function of ore grade decline: The case of lead and zinc. *JOURNAL OF SUSTAINABLE MINING*. 20 - 2, pp. 109 - 121. 2021. DOI: 10.46873/2300-3960.1060
153. Russo, S.; Valero Delgado, A.; Valero-Capilla, A.; Iglesias-Émbil, M. Exergy-based assessment of polymers production and recycling: An application to the automotive sector. *ENERGIES*. 14 - 2, pp. 363 [19 pp]. 2021. DOI: 10.3390/en14020363
154. Valero-Capilla, Antonio; Torres Cuadra, Cesar. The Exergy Cost Theory Revisited. *ENERGIES*. 14 - 6, pp. 1594 [42 pp.]. 2021. DOI: 10.3390/en14061594
155. Valero-Capilla, Antonio; Valero Delgado, Alicia; Calvo Sevillano, Guiomar. Resumen y análisis crítico del informe especial de la Agencia Internacional de la Energía: El Rol de los minerales críticos en la transición hacia energías limpias. *REVISTA DE METALURGIA*. 57 - 2, pp. e197 [11 pp.]. 2021. DOI: 10.3989/revmetalm.197
156. Valero-Capilla, Antonio; Torrubia, Jorge; Anía, Miguel Ángel; Torres, Alicia. Assessing urban metabolism through msw carbon footprint and conceptualizing municipal-industrial symbiosis—the case of Zaragoza city, Spain. *SUSTAINABILITY (SWITZERLAND)*. 13 - 22, pp. 12724[34]. 2021. DOI: 10.3390/su132212724
157. Palacino, B., Ascaso, S., Valero-Capilla, A., & Valero-Delgado, A. (2022). Exergy as an indicator to assess soil erosion. *Proceedings of ECOS 2022 - 35th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems*, 1125–1136.
158. Felipe-Andreu, J., Valero-Capilla, A., Valero-Delgado, A., & Torrubia, J. (2022). ECOS 2022: Ecological, spatial and critical material footprints as limiting indicators of sustainability in a bioregion. *Proceedings of ECOS 2022 - 35th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems*, 1635–1647.
159. Torrubia, J., Valero-Delgado, A., & Valero-Capilla, A. (2022). Thermodynamic rarity assessment of mobile phone PCBs: A physical criticality indicator in times of shortage. *Entropy*, 24(1), Article 100. DOI: 10.3390/e24010100
160. Torrubia, J., Valero-Capilla, A., & Valero-Delgado, A. (2022). Beyond metal prices: Geological scarcity as a physical cost allocation criterion. The case of rare earth element mining. *Proceedings of ECOS 2022 - 35th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems*, 397–408.
161. Valero-Capilla, A., Palacino, B., Ascaso, S., & Valero-Delgado, A.. (2022). Exergy assessment of topsoil fertility. *Ecological Modelling*, 464, Article 109802. DOI: 10.1016/j.ecolmodel.2021.109802
162. Felipe-Andreu, J., V Valero-Delgado, A. & Valero-Capilla, A. (2022). Territorial inequalities, ecological and material footprints of the energy transition: Case study of the Cantabrian-Mediterranean bioregion. *Land*, 11(11), Article 1891. DOI: 10.3390/land11111891

163. Valero-Capilla, A., Calvo, G., Valero-Delgado, A., & Torrubia, J. (2023). Moving towards a circular or a spiral economy?: The link between critical raw materials and sustainable societal transitions. In *Critical Materials and Sustainability Transition* (pp. 131–144). DOI: 10.1201/9781003218920-8
164. Torrubia, J., Valero-Delgado, A., Valero-Capilla, A., & Lejuez, A. (2023). Challenges and opportunities for the recovery of critical raw materials from electronic waste: The Spanish perspective. *Sustainability*, 15(2), Article 1393. DOI: 10.3390/su15021393
165. Torrubia, J., Valero-Delgado, A. & Valero-Capilla, A. (2023). Energy cost and carbon footprint of metals: Implications for PV-silicon panels. *Proceedings of the 36th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2023)*, 3047–3058. DOI: 10.52202/069564-0273
166. Valero-Delgado, A. Calvo, G., & Valero-Capilla, A. (2023). Critical materials. In *Elgar Encyclopedia of Ecological Economics* (pp. 95–97). DOI: 10.4337/9781802200416.ch16
167. Valero-Delgado, A. Valero-Capilla, A., & Calvo, G. (2023). Entropy. In *Elgar Encyclopedia of Ecological Economics* (pp. 188–190). DOI: 10.4337/9781802200416.ch31
168. Torrubia, J., Valero-Delgado, A. & Valero-Capilla, A. (2023). Energy and carbon footprint of metals through physical allocation: Implications for energy transition. *Resources, Conservation and Recycling*, 199, Article 107281. DOI: 10.1016/j.resconrec.2023.107281
169. Palacino, B., Ascaso, S., Valero-Capilla, A., & Valero-Delgado, A. (2024). Validation of exergy as a tool for a holistic assessment of the environmental impacts of agricultural processes. *Proceedings of the 37th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2024)*.
170. Torrubia, J., Lima, A., Valero-Delgado, A. & Valero-Capilla, A. (2024). How renewable is green hydrogen? Analysis of the exergy cost of its production. *Proceedings of the 37th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2024)*, 1279–1290. DOI: 10.52202/077185-0110
171. Torrubia, J., Torres, C., Valero-Delgado, A. Valero-Capilla, A., Mahmud Parvez, A., García, F., & van den Boogaart, G. (2024). Thermoeconomic analysis of copper recovery from e-waste: Conventional vs low-carbon resources. *Proceedings of the 37th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2024)*.
172. Torrubia, J., Valero-Delgado, A. & Valero-Capilla, A. (2024). Renewable exergy return on investment (RExROI) in energy systems: The case of silicon photovoltaic panels. *Energy*, 304, Article 131961. DOI: 10.1016/j.energy.2024.131961
173. Torrubia, J., Torres, C., Valero-Capilla, A., Valero-Delgado, A. Mahmud Parvez, A., Sajjad, M., & García Paz, F. (2024). Applying circular thermoeconomics for sustainable metal recovery in PCB recycling. *Energies*, 17(19), Article 4973. DOI: 10.3390/en17194973

174. Palacino, B., Ascaso, S., Valero-Delgado, A., & Valero-Capilla, A. (2024). Regeneration costs of topsoil fertility: An exergy indicator of agricultural impacts. *Journal of Environmental Management*, 369, Article 122297. DOI: 10.1016/j.jenvman.2024.122297
175. Valero-Capilla, A., Valero-Delgado, A. & Torres C. (2024). Expanding the horizons of thermoeconomics: Insights from the School of Zaragoza. *Energy*, 313, Article 134034. DOI: 10.1016/j.energy.2024.134034
176. Torrubia, J., Valero-Delgado, A., & Valero-Capilla, A. (2024). Non-renewable and renewable levelized exergy cost of electricity (LE_{EX}COE) with focus on its infrastructure: 1900–2050. *Energy*, 313, Article 133987. DOI: 10.1016/j.energy.2024.133987
177. Lima, A., Torrubia, J., Valero-Delgado, A. & Valero-Capilla, A. (2025). Non-renewable and renewable exergy costs of water electrolysis in hydrogen production. *Energies*, 18(6), Article 1398. DOI: 10.3390/en18061398
178. Torrubia, J., & Valero-Capilla, A. (2025). The copper circular economy: Challenges of the energy and digital transition. *Mètode*, 15, 83–89. DOI: 10.7203/metode.15.27181
179. Torrubia, J., Torres, C., Lima, A., Valero-Capilla, A., Valero-Delgado, A. (2025). Assessment of the circularity and renewability of materials through thermoeconomics and exergy: The case of metals from printed circuit boards. *Proceedings of the 38th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2025)*. DOI: 10.5281/zenodo.17395585
180. Valero-Capilla, A., & Valero-Delgado, A. (2025). Thermodynamics for sustainability: Twelve prescriptions to the economy. *Proceedings of the 38th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2025)*. DOI: 10.5281/zenodo.17396320
181. Lima, A., Torrubia, J., Ascaso, S., Torres Cuadra, C., Valero-Capilla, A., & Valero-Delgado, A. (2025). How renewable can green ammonia be? Natural resources exergy footprint on a small-scale ammonia production system. *Proceedings of the 38th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2025)*. DOI: 10.5281/zenodo.17396515
182. Torrubia, J., Lima, A., Valero-Capilla, A., & Valero-Delgado, A.. (2025). Renewability index of energy systems: The case of global electricity with focus on its infrastructure between 1900 and 2050. *Proceedings of the 38th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2025)*. DOI: 10.5281/zenodo.17396891
183. Lima, A., Torrubia, J., Torres, C., Valero-Capilla, A., & Valero-Delgado, A. (2026). Dynamic small-scale green ammonia non-renewable and renewable exergy costs up to 2050: Short and long-term projections under IEA energy transition scenarios. *Renewable Energy*, 256, Article 123891. DOI: 10.1016/j.renene.2025.123891

- 184.** Torres, C., Valero-Delgado, A. Valero-Capilla, A., & Naredo, J. M. (2026). Squaring the circle of the circular economy: The need to properly account for scarcity to guide mineral resource management. *Ecological Economics*, 240, Article 108817. DOI: 10.1016/j.ecolecon.2025.108817
- 185.** Torrubia, J., Lima, A., Valero-Delgado, A. & Valero-Capilla, A. (2026). The digital and green transition dilemma: Is there room for everything? Insights from the next decade (2025–2035) in Aragón (Spain). *Energy Policy*, 210, Article 115061. DOI: 10.1016/j.enpol.2025.115061
- 186.** Valero-Capilla, A., Tsatsaronis, G., & Valero-Delgado, A. (2026). Thermoeconomics under the Zaragoza and Berlin schools: A comparative analysis. *Proceedings of the 39th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2026)*.
- 187.** Valero-Delgado, A. & Valero-Capilla, A. (2026). Rules of the spiral economy: Thermodynamic principles for resource use in a finite world. *Proceedings of the 39th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2026)*
- 188.** Valero-Capilla, A., Valero-Delgado, A. & Lima, A. (2026). Beyond Georgescu-Roegen: Conceptual foundations for a thermodynamics of sustainability. *Proceedings of the 39th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2026)*.