Techniques and technologies to board on the feasible Renewable and Sustainable Energy Systems

Benedetto Nastasi [a,*], Natasa Markovska [b], Tomislav Puksec [c], Neven Duić [c], Aoife Foley [d]

[a] *Department of Planning, Design, Technology of Architecture, Sapienza University of Rome, Via Flaminia 72, 00197 Rome, Italy*
Corresponding Author 1 E-mail: benedetto.nastasi@outlook.com

[b] *Research Center for Energy and Sustainable Development, Macedonian Academy of Sciences and Arts, Skopje, North Macedonia*
Corresponding Author 2 Email: natasa@manu.edu.mk

[c] *Department of Energy, Power Engineering and Environment, Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb, Ivana Lučića 5, 10000 Zagreb, Croatia*

[d] *The University of Manchester, School of Engineering, Oxford Rd, Manchester, M13 9PL, United Kingdom*

Abstract

This paper is the editorial for the virtual special issue (VSI) of Renewable and Sustainable Energy Reviews (RSER) dedicated to the 16th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES 2021) held from October 10 to 15, 2021 in Dubrovnik, Croatia. The VSI collected both high quality review papers and original research articles presented at the SDEWES Conference in 2021 belonging to the aims and scope of RSER. After a scrutinizing peer review process, 28 articles were accepted and published. These articles deal with techniques and technologies to board on the feasible Renewable and Sustainable Energy Systems. Many of them are multidisciplinary articles addressing almost all the Sustainable Development Goals (SDGs) and providing feasible solutions to the strongly needed decarbonization pathways.

Keywords: renewable and sustainable energy systems; energy technologies; energy modelling techniques; climate and energy policy; impact analysis.

1. Introduction

This editorial shows the continuation of the role played by RSER as dissemination platform for top-quality researches as done in 2020 [1], 2019 [2], 2018 [3] and 2017 [4] together with other high-ranked Journals such as Energy [5-9], Energy Conversion & Management [10-13] and Renewable Energy [14-16] to be considered with several frontend research published in those Journals outside the SDEWES Conferences as well as other high-ranked sources.

Twentyeight scientific articles published in the SDEWES 2021 Special Issue of Renewable & Sustainable Energy Reviews are described [17-44] dealing with techniques and technologies to board on the feasible Renewable and Sustainable Energy Systems, i.e. the core debate of the Conference on Sustainable Development of Energy, Water and Environment Systems held in Dubrovnik, Croatia (SDEWES 2021). Still with some restrictions derived from the COVID-19 pandemic a strong participation in hybrid mode occurred and a high-quality of scientific outcomes has kept looking at the papers published in this Special Issue and in the other Supporting Journals such as Energies [45], International Journal of Sustainable Energy Planning and Management [46], Optimization and Engineering [47], Sustainability [48] and many others.

This Editorial focusses on the advancements in techniques and technologies supporting the strategies designed to reach a fully sustainable system. The analysis is linked to cross-domains publications listed and commented here below. Section 2 presents the cutting edge techniques available to investigate the sustainable energy transition and Section 3 gives an overview of the cutting edge technologies that will take part to this transition.

2. Renewable and Sustainable energy cutting edge techniques

Energy Infrastructures are continuously mentioned as the ground of the transition [49] together with their impact on the natural environment [50] requiring new techniques to evaluate their actual need and how to harvest the renewable sources.

The first article is authored by Penalba et al. [17] presenting a novel data-driven forecasting technique for including the ocean warming effect and wave power variations within the Marine Renewable field [51]. This study belongs to recent advancements in the field of both machine learning and oceanic engineering concept allowing the efficient harvesting of Marine Renewables [52], conceptualization of advanced systems [53], elaboration of innovative hydro-driven prototypes [54] and the possibility to create datasets for both best site selection [55] and policy making [56].

The second paper by Feijoo et al. [18] presents a new long-term energy planning model accounting for endogenous capacity investment, energy dispatch, Power-to-X, and demand response technologies. It includes optimization methods as recently investigated in literature [57,58] for minimizing the total capacity investment cost, throughout all technologies, and the operational cost faced by the system [59] to meet the energy demand. The inclusion of Power-To-X technologies [60] allows a degree of flexibility [61] together with higher penetration of renewables [62] and solution of balancing issues [63].

In the third paper, Kralik et al. [19] link the biomass potential with the sustainable land use by elaborating a land risk index for distinguish the perennial non-productive crops to the ones able to provide an energy contribution to the National sustainable energy system. Bioenergy is widely investigated for its renewable nature [64] and possibility to shift from fossil fuels dependency [65] but proper limitations must be considered as in [66] to determine the actual contribution to the energy transition without negatively impacting the land use [67].

The fourth paper by Prades-Gil et al. [20] deals with an agile heating and cooling demand model to be included in the energy planning tools to viably foresee the energy demand of residential buildings and districts and the effects of climate change on their energy demand [68]. Built environment energy demand is actually investigated due to the impact on the energy sector [69] and its role in the electrification process of the heating and cooling demand [70] calling for more detailed datasets [71] and data-driven methods [72] to be assessed. This leads to a change in the building load profile [73] that is contemporary weather-dependent and use-dependent keeping the focus of research on the occupant behavior too [74]. Making energy consumption data analysis reliable (based on the consolidated statistical and physical principles) and transparent is also a prerequisite for the emergence of innovative services in the energy sector, such as the concept of energy-as-a-service (EaaS) [75].

In the fifth paper, Pastore et al. [21] combine different learning curves and different roadmaps for the installation of electrolysersto predict the progressive changes in the hydrogen economy under the framework of the Italian national energy plan. The deployment of hydrogen production technologies has become critical [76] for the effective decarbonization of some heavy industrial sectors [77], mobility applications [78], to further foster the installation of new renewable energy plants dedicated to it [79] as well as reducing the curtailment of the existing ones [80] or providing grid balancing [81].

The sixth paper written by Salvia et al. [22] presents the collection, analysis, and comparison of data on climate emergency declarations and local climate plans (LCPs) at urban level, integrated with information on city membership in climate network. Partial responses to the climate issues have been done by local energy efficiency plans [82]. Their effectiveness is strongly linked to community awareness [83] that is subsequently diverse for cultural reasons [84] among the Countries. Indeed, generally lower ambition in terms of greenhouse gas emission reduction targets occurs when citizens are not driving the transition.

Masip et al. [23] authored the seventh paper of this Special Issue analyzing how the domestic hot water production and use in energy communities should be prioritized if the objective of the decision-maker is to reduce CO_2 emissions. Indeed, the huge number of publications in the Renewable Energy Community topic mainly deals with photovoltaics energy communities [85], eventually sharing the benefits to the participants [86], since they reach higher economic savings [87]. However, the combination of both PV and DHW could help reach the Fit for 55 package objectives for 2030 in terms of carbon emissions [88].

The eighth paper by Koltsaklis and Knapek [24] presents a model to co-optimize the energy and reserves markets, considering the penetration and participation of various flexibility providers in both markets. They highlight the higher performances with all the flexibility providers, especially in the ancillary services market, in terms of economic competitiveness, renewable energy curtailment, associated CO_2 emissions, and utilization of costly energy resources. Reserves are currently debated for the positive effects on the Grid in terms of frequency control [89] and for participation even to retailer by demand response tools [90].

The ninth paper is authored by Kilkis [25] dealing with the co-benefits for cities when a new 100% renewable energy scenario combines electrification with sector coupling in terms of decarbonization. Indeed, the most stringent emissions pathways put pressure on urban environments that already experiences higher energy demand due to urban heat island effect [91], changes due to electrification of buildings and mobility [92] as well as growing population and related issues on land use [93].

The tenth paper by Zhang et al. [26] aim at delivering a comprehensive review on crucial energy-saving strategies from greenhouse design to operational stage. An effective energy-saving method for greenhouse design considers greenhouse structures, ventilation and lighting systems to efficiently guarantee performance. Simulating all those parameters requires the considerations of all the energy flows [94] and equipment characteristics for improving their efficiency [95] or identifying anomalies [96].

Piselli et al. [27] in the eleventh paper assessed how impactful are online information sources in engaging people increasing their awareness of associated benefits when taking part of an energy community analyzed through semantic network analysis and text mining. Engaging the stakeholders is impactful in Positive Energy Districts [97], in Urban Regeneration projects [98] up to Islands energy planning [99].

In the twelfth paper, Barone et al. [28] built an innovative physiological thermal comfort model for the human body thermal behaviour evaluation for assessing the dynamic variation of the physiological parameters and for characterizing the occupants' thermal sensation. It is a multi-node model for inclusion in building energy simulation with the aim to have the dynamic control of the building thermo-hygrometric parameters and of the corresponding heating and cooling demands. This balance is crucial for providing comfort services [100] accounting for the eventual barriers of the building features [101].

The thirteenth paper authored by Trafczynski et al. [29] highlights the crucial role played by the optimal scheduling of cleaning actions in a heat exchanger network. The optimization is based on reducing the operating cost and, subsequently, the economic aspects and potential for energy saving and pollution reduction. This is critical in district heating metering applications [102] as well as district cooling ones [103] accounting for changes in climatic conditions [104].

Tariq et al. [30] authored the fourteenth paper dealing with a suitable optimum system and fluid allocation based on hybrid deterministic decision-making technique under smart management accounting for exergy, reliability and environmental performance. It leads to more informed decision applicable to large scale such as Nations [105], Islands [106] or single energy systems [107].

In the fifteenth paper, Majidi Nezhad et al. [31] used the long-term Modern-Era Retrospective analysis for Research and Applications version 2 (MERRA-2) re-analysis dataset to identify possible locations of the Offshore Wind Turbine Generators (OWTGs) installations in the Iranian Islands. These types of datasets and techniques to apply on allow to investigate the climate modifications [108] and, subsequently, the impact on energy consumption of the buildings [109] as well as the derived stresses on the Grid infrastructures [110].

Manfren et al. [32] in the sixteenth paper by decomposition and normalisation of building energy consumption data found that interpretable data-driven methods can help derive relevant insights to supplement the scalability of data-driven techniques and create more sophisticated systems of interconnected models. Interpretability is a key issue [111] especially when Machine Learning techniques are applied to the same problem [112] and for Facility Management purposes [113] since the identification of the main variable where to intervene allows the resolution of the alarm or the detected failure [114].

In the seventeenth paper, Zhang et al. [33] reviewed recent studies employing machine learning methods to predict occupancy behavior and patterns, with a focus on its related applications and benefits to building systems, improving energy efficiency, indoor air quality and thermal comfort. The workflow of a machine learning-based occupancy prediction model, including data collection, prediction, and validation has been discussed. Other techniques aim at directly estimating the occupants' perception [115] since there is still the avoidance of occupants in the design phase [116] but their impact on energy consumption is not negligible in the case of Net Zero or Positive Energy Buildings [117].

The eighteenth paper by Lund et al. [34] presents a strategy for achieving a fully decarbonized Danish energy system in 2045, considering transport and industry, and highlights the impact magnitude on the employment sector deriving from investing in the Danish economy decarbonization. The widely adopted EnergyPLAN tool [118] together with the recent extension like EPLANopt [119] and EPLANoptMAC [120] has been further enriched with the IndustryPLAN [121] for a detailed sector coupling.

3. Renewable and Sustainable energy cutting edge technologies

The advancement of technologies is one of the key topics of the SDEWES Conference Series.

Masera et al. [35] in the nineteenth paper investigated biodiesels produced from waste resources and inedible plant seed oils and their blends considering fuel properties, biodiesels standards, and engine test results. It was found that blends of animal fat biodiesels and vegetable oil biodiesels are likely to improve fuel properties and combustion characteristics. Furthermore, a more

comprehensive approach is taken when considering biomass conversion into valuable chemicals [122] rather than only to bioenergy options together with integrated model to analyze impact on nexus as water-energy [123] and climate-resources [124].
In the twentieth paper, Yung Yap et al. [36] reviewed the solar energy-powered battery electric vehicle charging stations and their future prospects including the diversification of supply by the hybrid integration of other renewable energy such as wind or biogas to mitigate the intermittency of solar energy and other drawbacks. Recently, diversification is investigated both from a supply point of view by integrating other renewables as wind [125] or bioenergy [126] and from a downstream point of view by incorporating other energy vectors like hydrogen [127].

The twenty first paper authored by Gkousis et al. [37] focused on the major environmental hotspots and the cause-effect relationships between the geo-technical parameters and these environmental impacts in deep geothermal energy extraction. It is linked to the general use of underground space and its socio-economic impacts in the cities [128] as well as the potential in terms of energy supply [129] to meet the loads [130].

Pustina et al. [38] in the twenty second paper presents a novel multi-layer control approach for offshore floating wind turbines to alleviate the vibratory loads while keeping the generator power output stable. The wind conditions could get extreme as downburst-like winds [131] and it should be properly addressed to keep in operation strategic infrastructures [132] and to monitor the urban environment as well [133].

In the twenty third paper, Colarullo and Thakur [39] designed design a techno-economic analysis to assess the impact of the usage of Second-life Batteries for increasing the energy self-sufficiency of renewable energy communities. These latter ones have seen a strong increase in investigations in the last years [134] due to the establishment of incentive schemes promoting self-consumption [135] and the growing acceptability of hybrid systems [136] and poly-generation [137] to meet the energy needs.

The twenty fourth paper by Pažėraitė et al. [40] discussed the differences in the conceptual frameworks and quantitative outcomes of district heat markets in selected countries along with the consequences of the different approaches concluding that competition among the generators, i.e. on the supply-side, contributes to the downward trend in heating prices. The hybridization of the waste heat of thermal power plants with renewables [138] and the consideration of district heating in a National Energy system roadmap [139] paved the way to valorize the heat and open its market [140] along with the proper instrumentation and models to measure it [141].

He et al. [41] in the twenty fifth paper found out that the spiral fins introduced into the combustor can be an effective means of improving the low power output of combustion based micro thermophotovoltaic systems from an engineering standpoint. Indeed, in the growing field of microelectromechanical systems micro-thermophotovoltaic system have shown a great potential [142] not having the possibility to rely on usual storage of normal size systems like lithium battery [143].

In the twenty sixth paper, Vidović et al. [42] reviewed the potentials for implementing of floating solar panels on lakes and water reservoirs with the aim to limit the solar insolation on water basins and to mitigate the evaporation of water. This technology scenario creates a kind of link between solar energy harvesting and the hydro reservoir protection [144] highlighting the need for accounting for the water scarcity and the effects on hydro power sector and the impact at National and European level [145]. Moreover, this is the opportunity to offer new surfaces to renewable energy harvesting without land use impact to achieve the decarbonization targets of the energy system [146].

The twenty seventh paper authored by Wang et al. [43] highlight evidence and physiological and psychological measures examining the presence of light's thermal effects during the daytime. The critical analysis of those features will promote the adoption of smart lighting technologies in sustainable and smart buildings. Lighting and its consumption [147] are often neglected in building performance simulation [148] but especially in office building where owners would comply with wellness standards [149], they become crucial to evaluate since they affect productivity of employees [150] as well as the integration of innovative technologies in the transparent surfaces [151].

Herrando et al. [44] in the twenty eighth and last paper of this Special Issue focused on the validation of a transient model of a solar hybrid pilot plant based on photovoltaic-thermal (PV-T) collectors integrated via thermal storage tanks with an air-to-water reversible heat pump (rev-HP). The results show that the integration of the thermal and electrical generation of the PV-T collectors with a high-performance rev-HP allows the solar PV-T system to be self-sufficient to satisfy the building energy demand. It leads to a feasible concept of Solar Buildings [152], where almost all the services are supplied by solar-driven equipment [153] in both newly designed buildings and partially for existing ones renovated according to enhance the self-consumption of local PV production [154]. At the same time, attention to circularity [155] drives the refurbishment towards solutions addressing multiple fields.

4. Conclusions

This editorial gave an overview of the techniques and technologies to board on the feasible Renewable and Sustainable Energy Systems discussed by the scientists actively contributing to the success and prestige of the Conference on Sustainable Development of Energy, Water and Environment Systems 2021 Edition. The wide areas of research dealt by the impactful contributions of the SDEWES attendees as well as the members of the whole scientific community publishing in the high-ranked SDEWES partner Journals such as RSER itself are the added value of this Special Issue. The advances in techniques to model, design and combine different solutions together with the consideration of cutting-edge technologies and their performance in contributing to the decarbonization of the energy systems are the key aspects discussed in this Editorial commenting the 28 articles with the established literature among the other Special Issues of SDEWES Conferences in the Partner Journals as well as top-ranked articles from the international community.

Acknowledgements

The Guest Editors are thankful to the RSER team for the realization of the Virtual Special Issue of Renewable and Sustainable Energy Reviews dedicated to the SDEWES 2021 Conference. The high-quality outcome would not be possible without the precious feedback received by the

attendees of the conferences and the reviewers who helped the authors to reach the standard required by RSER.

References

1. Benedetto Nastasi, Natasa Markovska, Tomislav Puksec, Neven Duić, Aoife Foley, Renewable and sustainable energy challenges to face for the achievement of Sustainable Development Goals, Renewable and Sustainable Energy Reviews, Volume 157, 2022, 112071, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112071
2. Vladimir Z. Gjorgievski, Natasa Markovska, Tomislav Pukšec, Neven Duić, Aoife Foley, Supporting the 2030 agenda for sustainable development: Special issue dedicated to the conference on sustainable development of energy, water and environment systems 2019, Renewable and Sustainable Energy Reviews, Volume 143, 2021, 110920, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2021.110920
3. Tomislav Pukšec, Natasa Markovska, Aoife Foley, Neven Duić, Addressing the transition to sustainable energy systems: Special issue dedicated to the 2018 conferences on Sustainable Development of Energy, Water and Environment Systems (SDEWES), Renewable and Sustainable Energy Reviews, Volume 119, 2020, 109520, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2019.109520
4. Tomislav Pukšec, Aoife Foley, Natasa Markovska, Neven Duić, Life cycle to Pinch Analysis and 100% renewable energy systems in a circular economy at sustainable development of energy, Water and Environment Systems 2017, Renewable and Sustainable Energy Reviews, Volume 108, 2019, Pages 572-577, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2019.03.046
5. Zvonimir Guzović, Neven Duić, Antonio Piacentino, Natasa Markovska, Brian Vad Mathiesen, Henrik Lund, Paving the way for the Paris Agreement: Contributions of SDEWES science, Energy, Volume 263, Part A, 2023, 125617, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2022.125617
6. Antonio Piacentino, Pietro Catrini, Natasa Markovska, Zvonimir Guzović, Brian Vad Mathiesen, Simone Ferrari, Neven Duić, Henrik Lund, Editorial: Sustainable development of energy, Water and Environment Systems, Energy, Volume 190, 2020, 116432, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2019.116432
7. Zvonimir Guzović, Neven Duic, Antonio Piacentino, Natasa Markovska, Brian Vad Mathiesen, Henrik Lund, Recent advances in methods, policies and technologies at sustainable energy systems development, Energy, Volume 245, 2022, 123276, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2022.123276
8. Antonio Piacentino, Neven Duic, Natasa Markovska, Brian Vad Mathiesen, Zvonimir Guzović, Valerie Eveloy, Henrik Lund, Sustainable and cost-efficient energy supply and utilisation through innovative concepts and technologies at regional, urban and single-user scales, Energy, Volume 182, 2019, Pages 254-268, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2019.06.015
9. Natasa Markovska, Neven Duić, Brian Vad Mathiesen, Zvonimir Guzović, Antonio Piacentino, Holger Schlör, Henrik Lund, Sustainable Development of Energy, Water and Environment Systems, Energy, Volume 115, Part 3, 2016, Page 1503, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2016.11.013

10. Şiir Kılkış, Goran Krajačić, Neven Duić, Marc A. Rosen, Moh'd Ahmad Al-Nimr, Accelerating mitigation of climate change with sustainable development of energy, water and environment systems, Energy Conversion and Management, Volume 245, 2021, 114606, ISSN 0196-8904, https://doi.org/10.1016/j.enconman.2021.114606
11. Şiir Kılkış, Goran Krajačić, Neven Duić, Marc A. Rosen, Moh'd Ahmad Al-Nimr, Advances in integration of energy, water and environment systems towards climate neutrality for sustainable development, Energy Conversion and Management, Volume 225, 2020, 113410, ISSN 0196-8904, https://doi.org/10.1016/j.enconman.2020.113410
12. Şiir Kılkış, Goran Krajačić, Neven Duić, Luca Montorsi, Qiuwang Wang, Marc A. Rosen, Moh'd Ahmad Al-Nimr, Research frontiers in sustainable development of energy, water and environment systems in a time of climate crisis, Energy Conversion and Management, Volume 199, 2019, 111938, ISSN 0196-8904, https://doi.org/10.1016/j.enconman.2019.111938
13. Şiir Kılkış, Goran Krajačić, Neven Duić, Marc A. Rosen, Moh'd Ahmad Al-Nimr, Advancements in sustainable development of energy, water and environment systems, Energy Conversion and Management, Volume 176, 2018, Pages 164-183, ISSN 0196-8904, https://doi.org/10.1016/j.enconman.2018.09.015
14. Poul Alberg Østergaard, Neven Duic, Younes Noorollahi, Soteris A. Kalogirou, Recent advances in renewable energy technology for the energy transition, Renewable Energy, Volume 179, 2021, Pages 877-884, ISSN 0960-1481, https://doi.org/10.1016/j.renene.2021.07.111
15. Poul Alberg Østergaard, Neven Duic, Younes Noorollahi, Soteris Kalogirou, Latest progress in Sustainable Development using renewable energy technology, Renewable Energy, Volume 162, 2020, Pages 1554-1562, ISSN 0960-1481, https://doi.org/10.1016/j.renene.2020.09.124
16. Poul Alberg Østergaard, Neven Duic, Younes Noorollahi, Hrvoje Mikulcic, Soteris Kalogirou, Sustainable development using renewable energy technology, Renewable Energy, Volume 146, 2020, Pages 2430-2437, ISSN 0960-1481, https://doi.org/10.1016/j.renene.2019.
17. Markel Penalba, Jose Ignacio Aizpurua, Ander Martinez-Perurena, Gregorio Iglesias, A data-driven long-term metocean data forecasting approach for the design of marine renewable energy systems, Renewable and Sustainable Energy Reviews, Volume 167, 2022, 112751, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112751
18. Feijoo F, Pfeifer A, Herc L, Groppi D, Duić N, A long-term capacity investment and operational energy planning model with power-to-X and flexibility technologies, Renewable and Sustainable Energy Reviews, Volume 167, 2022, 112781, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112781
19. T. Králík, J. Knápek, K. Vávrová, D. Outrata, D. Romportl, M. Horák, J. Jandera, Ecosystem services and economic competitiveness of perennial energy crops in the modelling of biomass potential – A case study of the Czech Republic, Renewable and Sustainable Energy Reviews, Volume 173, 2023, 113120, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.113120
20. Czechia C. Prades-Gil, J.D. Viana-Fons, X. Masip, A. Cazorla-Marín, T. Gómez-Navarro, An agile heating and cooling energy demand model for residential buildings. Case study in a mediterranean city residential sector, Renewable and Sustainable Energy

Reviews, Volume 175, 2023, 113166, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2023.113166
21. Lorenzo Mario Pastore, Gianluigi Lo Basso, Matteo Sforzini, Livio de Santoli, Technical, economic and environmental issues related to electrolysers capacity targets according to the Italian Hydrogen Strategy: A critical analysis, Renewable and Sustainable Energy Reviews, Volume 166, 2022, 112685, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112685
22. Monica Salvia, Diana Reckien, Davide Geneletti, Filomena Pietrapertosa, Valentina D'Alonzo, Sonia De Gregorio Hurtado, Souran Chatterjee, Xuemei Bai, Diana Ürge-Vorsatz, Understanding the motivations and implications of climate emergency declarations in cities: The case of Italy, Renewable and Sustainable Energy Reviews, Volume 178, 2023, 113236, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2023.113236
23. X. Masip, Enrique Fuster-Palop, C. Prades-Gil, Joan D. Viana-Fons, Jorge Payá, Emilio Navarro-Peris, Case study of electric and DHW energy communities in a Mediterranean district, Renewable and Sustainable Energy Reviews, Volume 178, 2023, 113234, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2023.113234
24. Nikolaos E. Koltsaklis, Jaroslav Knápek, Assessing flexibility options in electricity market clearing, Renewable and Sustainable Energy Reviews, Volume 173, 2023, 113084, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.113084
25. Şiir Kılkış, Urban emissions and land use efficiency scenarios towards effective climate mitigation in urban systems, Renewable and Sustainable Energy Reviews, Volume 167, 2022, 112733, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112733
26. Menghang Zhang, Tingxiang Yan, Wei Wang, Xuexiu Jia, Jin Wang, Jiří Jaromír Klemeš, Energy-saving design and control strategy towards modern sustainable greenhouse: A review, Renewable and Sustainable Energy Reviews, Volume 164, 2022, 112602, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112602
27. C. Piselli, A. Fronzetti Colladon, L. Segneri, A.L. Pisello, Evaluating and improving social awareness of energy communities through semantic network analysis of online news, Renewable and Sustainable Energy Reviews, Volume 167, 2022, 112792, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112792
28. G. Barone, A. Buonomano, C. Forzano, G.F. Giuzio, A. Palombo, G. Russo, A new thermal comfort model based on physiological parameters for the smart design and control of energy-efficient HVAC systems, Renewable and Sustainable Energy Reviews, Volume 173, 2023, 113015, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.113015
29. Marian Trafczynski, Mariusz Markowski, Krzysztof Urbaniec, Energy saving and pollution reduction through optimal scheduling of cleaning actions in a heat exchanger network, Renewable and Sustainable Energy Reviews, Volume 173, 2023, 113072, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.113072
30. Shahzeb Tariq, Usman Safder, ChangKyoo Yoo, Exergy-based weighted optimization and smart decision-making for renewable energy systems considering economics, reliability, risk, and environmental assessments, Renewable and Sustainable Energy Reviews, Volume 162, 2022, 112445, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112445
31. Meysam Majidi Nezhad, Mehdi Neshat, Giuseppe Piras, Davide Astiaso Garcia, Sites exploring prioritisation of offshore wind energy potential and mapping for wind farms

installation: Iranian islands case studies, Renewable and Sustainable Energy Reviews, Volume 168, 2022, 112791, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112791
32. Massimiliano Manfren, Patrick AB. James, Lamberto Tronchin, Data-driven building energy modelling – An analysis of the potential for generalisation through interpretable machine learning, Renewable and Sustainable Energy Reviews, Volume 167, 2022, 112686, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112686
33. Wuxia Zhang, Yupeng Wu, John Kaiser Calautit, A review on occupancy prediction through machine learning for enhancing energy efficiency, air quality and thermal comfort in the built environment, Renewable and Sustainable Energy Reviews, Volume 167, 2022, 112704, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112704
34. Henrik Lund, Jakob Zinck Thellufsen, Peter Sorknæs, Brian Vad Mathiesen, Miguel Chang, Poul Thøis Madsen, Mikkel Strunge Kany, Iva Ridjan Skov, Smart energy Denmark. A consistent and detailed strategy for a fully decarbonized society, Renewable and Sustainable Energy Reviews, Volume 168, 2022, 112777, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112777
35. Kemal Masera, Abul Kalam Hossain, Advancement of biodiesel fuel quality and NOx emission control techniques, Renewable and Sustainable Energy Reviews, Volume 178, 2023, 113235, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2023.113235
36. Kah Yung Yap, Hon Huin Chin, Jiří Jaromír Klemeš, Solar Energy-Powered Battery Electric Vehicle charging stations: Current development and future prospect review, Renewable and Sustainable Energy Reviews, Volume 169, 2022, 112862, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112862
37. Spiros Gkousis, Kris Welkenhuysen, Tine Compernolle, Deep geothermal energy extraction, a review on environmental hotspots with focus on geo-technical site conditions, Renewable and Sustainable Energy Reviews, Volume 162, 2022, 112430, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112430
38. L. Pustina, J. Serafini, C. Pasquali, L. Solero, A. Lidozzi, M. Gennaretti, A novel resonant controller for sea-induced rotor blade vibratory loads reduction on floating offshore wind turbines, Renewable and Sustainable Energy Reviews, Volume 173, 2023, 113073, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.113073
39. Linda Colarullo, Jagruti Thakur, Second-life EV batteries for stationary storage applications in Local Energy Communities, Renewable and Sustainable Energy Reviews, Volume 169, 2022, 112913, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112913
40. Aušra Pažėraitė, Vidas Lekavičius, Ramūnas Gatautis, District heating system as the infrastructure for competition among producers in the heat market, Renewable and Sustainable Energy Reviews, Volume 169, 2022, 112888, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112888
41. Ziqiang He, Yunfei Yan, Ting Zhao, Zhien Zhang, Hrvoje Mikulčić, Parametric study of inserting internal spiral fins on the micro combustor performance for thermophotovoltaic systems, Renewable and Sustainable Energy Reviews, Volume 165, 2022, 112595, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112595
42. V. Vidović, G. Krajačić, N. Matak, G. Stunjek, M. Mimica, Review of the potentials for implementation of floating solar panels on lakes and water reservoirs, Renewable and Sustainable Energy Reviews, Volume 178, 2023, 113237, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2023.113237

43. Nan Wang, Julian Wang, Yanxiao Feng, Systematic review: Acute thermal effects of artificial light in the daytime, Renewable and Sustainable Energy Reviews, Volume 165, 2022, 112601, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112601
44. M. Herrando, A. Coca-Ortegón, I. Guedea, N. Fueyo, Experimental validation of a solar system based on hybrid photovoltaic-thermal collectors and a reversible heat pump for the energy provision in non-residential buildings, Renewable and Sustainable Energy Reviews, Volume 178, 2023, 113233, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2023.113233
45. Chu W, Vicidomini M, Calise F, Duić N, Østergaard PA, Wang Q, da Graça Carvalho M. Recent Advances in Technologies, Methods, and Economic Analysis for Sustainable Development of Energy, Water, and Environment Systems. Energies. 2022; 15(19):7129. https://doi.org/10.3390/en15197129
46. Østergaard, P. A., Johannsen, R. M., Duić, N., & lund, H. (2022). Sustainable Development of Energy, Water and Environmental Systems and Smart Energy Systems. International Journal of Sustainable Energy Planning and Management, 34, 1–4. https://doi.org/10.54337/ijsepm.7269
47. Trafczynski, M., Urbaniec, K., Mikulčič, H. et al. Introductory remarks on the special issue of Optimization and Engineering dedicated to SDEWES 2021 conference. Optim Eng 23, 2075–2090 (2022). https://doi.org/10.1007/s11081-022-09772-x
48. Sahin O, Bertone E. Sustainable Development of Energy, Water and Environment Systems (SDEWES). Sustainability. 2022; 14(21):14184. https://doi.org/10.3390/su142114184
49. Arduin I, Andrey C and Bossmann T. What energy infrastructure will be needed by 2050 in the EU to support 1.5°C scenarios? [version 1; peer review: 2 approved]. F1000Research 2022, 11:387. https://doi.org/10.12688/f1000research.109399.1
50. Fikry A, Lim SC and Ab Kadir MZA. EMI radiation of power transmission lines in Malaysia [version 2; peer review: 2 approved]. F1000Research 2022, 10:1136 https://doi.org/10.12688/f1000research.73067.2
51. Eugen Rusu, Assessment of the wind power dynamics in the North Sea under climate change conditions, Renewable Energy, Volume 195, 2022, Pages 466-475, ISSN 0960-1481, https://doi.org/10.1016/j.renene.2022.06.048
52. Giacomo Lo Zupone, Changjun Liu, Silvio Barbarelli, Jinyue Yan, Bin Liang, Understanding the development and interaction of wake induced by an open centre turbine and its array design implications, Applied Ocean Research, Volume 129, 2022, 103358, ISSN 0141-1187, https://doi.org/10.1016/j.apor.2022.103358
53. Barbarelli, Silvio, Vincenzo Pisano, and Mario Amelio. 2022. "Development of a Predicting Model for Calculating the Geometry and the Characteristic Curves of Pumps Running as Turbines in Both Operating Modes" Energies 15, no. 7: 2669. https://doi.org/10.3390/en15072669
54. S. Barbarelli, G. Florio, N.M. Scornaienchi, Developing of a small power turbine recovering energy from low enthalpy steams or waste gases: Design, building and experimental measurements, Thermal Science and Engineering Progress, Volume 6, 2018, Pages 346-354, ISSN 2451-9049, https://doi.org/10.1016/j.tsep.2017.12.007
55. Meysam Majidi Nezhad, Azim Heydari, Mehdi Neshat, Farshid Keynia, Giuseppe Piras, Davide Astiaso Garcia, A Mediterranean Sea Offshore Wind classification using

MERRA-2 and machine learning models, Renewable Energy, Volume 190, 2022, Pages 156-166, ISSN 0960-1481, https://doi.org/10.1016/j.renene.2022.03.110
56. Best B, Thema J, Zell-Ziegler C et al. Building a database for energy sufficiency policies [version 2; peer review: 2 approved]. F1000Research 2022, 11:229 https://doi.org/10.12688/f1000research.108822.2
57. Cristofari, A.; Rinaldi, F.; Tudisco, F. Total Variation Based Community Detection Using a Nonlinear Optimization Approach. SIAM J. Appl. Math. 2020, 80, 15 https://doi.org/10.1137/19M1270446
58. Adhikari RS, Aste N, Manfren M. Optimization concepts in district energy design and management – A case study. Energy Procedia 2012;14:1386–91. https://doi.org/http://dx.doi.org/10.1016/j.egypro.2011.12.1106.
59. Andrea Bartolini, Stefano Mazzoni, Gabriele Comodi, Alessandro Romagnoli, Impact of carbon pricing on distributed energy systems planning, Applied Energy, Volume 301, 2021, 117324, ISSN 0306-2619, https://doi.org/10.1016/j.apenergy.2021.117324
60. Eveloy, Valerie, and Tesfaldet Gebreegziabher. 2018. "A Review of Projected Power-to-Gas Deployment Scenarios" Energies 11, no. 7: 1824. https://doi.org/10.3390/en11071824
61. Xinyu Li, Machiel Mulder, Value of power-to-gas as a flexibility option in integrated electricity and hydrogen markets, Applied Energy, Volume 304, 2021, 117863, ISSN 0306-2619, https://doi.org/10.1016/j.apenergy.2021.117863
62. Domenico Mazzeo, Münür Sacit Herdem, Nicoletta Matera, John Z. Wen, Green hydrogen production: Analysis for different single or combined large-scale photovoltaic and wind renewable systems, Renewable Energy, Volume 200, 2022, Pages 360-378, ISSN 0960-1481, https://doi.org/10.1016/j.renene.2022.09.057
63. Bellocchi, Sara, Michele Manno, Michel Noussan, and Michela Vellini. 2019. "Impact of Grid-Scale Electricity Storage and Electric Vehicles on Renewable Energy Penetration: A Case Study for Italy" Energies 12, no. 7: 1303. https://doi.org/10.3390/en12071303
64. Ahamer, Gilbert. 2022. "Why Biomass Fuels Are Principally Not Carbon Neutral" Energies 15, no. 24: 9619. https://doi.org/10.3390/en15249619
65. Dogus Guler, Barbara P. Buttenfield, Georgios Charisoulis, Tahsin Yomralioglu, Comparative analysis of bioenergy potential and suitability modeling in the USA and Turkey, Sustainable Energy Technologies and Assessments, Volume 53, Part C, 2022, 102626, ISSN 2213-1388, https://doi.org/10.1016/j.seta.2022.102626
66. Robert Bedoić, Filip Jurić, Boris Ćosić, Tomislav Pukšec, Lidija Čuček, Neven Duić, Beyond energy crops and subsidised electricity – A study on sustainable biogas production and utilisation in advanced energy markets, Energy, Volume 201, 2020, 117651, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2020.117651
67. Wieruszewski, Marek, and Katarzyna Mydlarz. 2022. "The Potential of the Bioenergy Market in the European Union—An Overview of Energy Biomass Resources" Energies 15, no. 24: 9601. https://doi.org/10.3390/en15249601
68. Mancini, Francesco, and Gianluigi Lo Basso. 2020. "How Climate Change Affects the Building Energy Consumptions Due to Cooling, Heating, and Electricity Demands of Italian Residential Sector" Energies 13, no. 2: 410. https://doi.org/10.3390/en13020410
69. Livio de Santoli, Francesco Mancini, Benedetto Nastasi, Serena Ridolfi, Energy retrofitting of dwellings from the 40's in Borgata Trullo - Rome, Energy Procedia,

Volume 133, 2017, Pages 281-289, ISSN 1876-6102, https://doi.org/10.1016/j.egypro.2017.09.389
70. Rongling Li, Andrew J. Satchwell, Donal Finn, Toke Haunstrup Christensen, Michaël Kummert, Jérôme Le Dréau, Rui Amaral Lopes, Henrik Madsen, Jaume Salom, Gregor Henze, Kim Wittchen, Ten questions concerning energy flexibility in buildings, Building and Environment, Volume 223, 2022, 109461, ISSN 0360-1323, https://doi.org/10.1016/j.buildenv.2022.109461
71. Cheng Fan, Yutian Lei, Yongjun Sun, Marco Savino Piscitelli, Roberto Chiosa, Alfonso Capozzoli, Data-centric or algorithm-centric: Exploiting the performance of transfer learning for improving building energy predictions in data-scarce context, Energy, Volume 240, 2022, 122775, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2021.122775
72. Manfren, Massimiliano, Maurizio Sibilla, and Lamberto Tronchin. 2021. "Energy Modelling and Analytics in the Built Environment—A Review of Their Role for Energy Transitions in the Construction Sector" Energies 14, no. 3: 679. https://doi.org/10.3390/en14030679
73. Benedetto Nastasi, Massimiliano Manfren, Daniele Groppi, Mario Lamagna, Francesco Mancini, Davide Astiaso Garcia, Data-driven load profile modelling for advanced measurement and verification (M&V) in a fully electrified building, Building and Environment, Volume 221, 2022, 109279, ISSN 0360-1323, https://doi.org/10.1016/j.buildenv.2022.109279
74. Angelo L.C. Ciribini, Daniela Pasini, Lavinia C. Tagliabue, Massimiliano Manfren, Bruno Daniotti, Stefano Rinaldi, Enrico De Angelis, Tracking Users' Behaviors through Real-time Information in BIMs: Workflow for Interconnection in the Brescia Smart Campus Demonstrator, Procedia Engineering, Volume 180, 2017, Pages 1484-1494, ISSN 1877-7058, https://doi.org/10.1016/j.proeng.2017.04.311
75. Sibilla M, Manfren M. Envisioning Building-as-Energy-Service in the European context. From a literature review to a conceptual framework. Archit Eng Des Manag 2021:1–26. https://doi.org/10.1080/17452007.2021.1910924
76. Thomas Holm, Tory Borsboom-Hanson, Omar E. Herrera, Walter Mérida, Hydrogen costs from water electrolysis at high temperature and pressure, Energy Conversion and Management, Volume 237, 2021, 114106, ISSN 0196-8904, https://doi.org/10.1016/j.enconman.2021.114106
77. Matteo Genovese, Alexander Schlüter, Eugenio Scionti, Francesco Piraino, Orlando Corigliano, Petronilla Fragiacomo, Power-to-hydrogen and hydrogen-to-X energy systems for the industry of the future in Europe, International Journal of Hydrogen Energy, 2023, , ISSN 0360-3199, https://doi.org/10.1016/j.ijhydene.2023.01.194
78. M. Genovese, P. Fragiacomo, Hydrogen refueling station: Overview of the technological status and research enhancement, Journal of Energy Storage, Volume 61, 2023, 106758, ISSN 2352-152X, https://doi.org/10.1016/j.est.2023.106758
79. Manuel Bailera, Pilar Lisbona, Energy storage in Spain: Forecasting electricity excess and assessment of power-to-gas potential up to 2050, Energy, Volume 143, 2018, Pages 900-910, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2017.11.069
80. Feng Zhang, Athuman Salimu, Lei Ding, Operation and optimal sizing of combined P2G-GfG unit with gas storage for frequency regulation considering curtailed wind power,

International Journal of Electrical Power & Energy Systems, Volume 141, 2022, 108278, ISSN 0142-0615, https://doi.org/10.1016/j.ijepes.2022.108278

81. Federico Zenith, Martin Nord Flote, Maider Santos-Mugica, Corey Scott Duncan, Valerio Mariani, Claudio Marcantonini, Value of green hydrogen when curtailed to provide grid balancing services, International Journal of Hydrogen Energy, Volume 47, Issue 84, 2022, Pages 35541-35552, ISSN 0360-3199, https://doi.org/10.1016/j.ijhydene.2022.08.152
82. Niccolò Aste, Michela Buzzetti, Paola Caputo, Massimiliano Manfren, Local energy efficiency programs: A monitoring methodology for heating systems, Sustainable Cities and Society, Volume 13, 2014, Pages 69-77, ISSN 2210-6707, https://doi.org/10.1016/j.scs.2014.04.006
83. Sanda Lenzholzer, Gerrit-Jan Carsjens, Robert D. Brown, Silvia Tavares, Jennifer Vanos, YouJoung Kim, Kanghyun Lee, Awareness of urban climate adaptation strategies –an international overview, Urban Climate, Volume 34, 2020, 100705, ISSN 2212-0955, https://doi.org/10.1016/j.uclim.2020.100705
84. Battistella, C., Bortolotti, T., Boscari, S., Nonino, F. and Palombi, G. (2023), "The impact of cultural dimensions on project management performance", International Journal of Organizational Analysis, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/IJOA-11-2022-3498
85. Javier García-Martínez, José Luis Reyes-Patiño, Luis Bernardo López-Sosa, Luis Fabián Fuentes-Cortés, Anticipating alliances of stakeholders in the optimal design of community energy systems, Sustainable Energy Technologies and Assessments, Volume 54, 2022, 102880, ISSN 2213-1388, https://doi.org/10.1016/j.seta.2022.102880
86. Valeria Casalicchio, Giampaolo Manzolini, Matteo Giacomo Prina, David Moser, From investment optimization to fair benefit distribution in renewable energy community modelling, Applied Energy, Volume 310, 2022, 118447, ISSN 0306-2619, https://doi.org/10.1016/j.apenergy.2021.118447
87. Mike B. Roberts, Arijit Sharma, Iain MacGill, Efficient, effective and fair allocation of costs and benefits in residential energy communities deploying shared photovoltaics, Applied Energy, Volume 305, 2022, 117935, ISSN 0306-2619, https://doi.org/10.1016/j.apenergy.2021.117935
88. Indre Siksnelyte-Butkiene, Dalia Streimikiene, Tomas Balezentis, Artiom Volkov, Enablers and barriers for energy prosumption: Conceptual review and an integrated analysis of business models, Sustainable Energy Technologies and Assessments, Volume 57, 2023, 103163, ISSN 2213-1388, https://doi.org/10.1016/j.seta.2023.103163
89. N. Padmanabhan, K. Bhattacharya and M. Ahmed, "Procurement of Energy, Primary Regulation, and Secondary Regulation Reserves in Battery Energy Storage Systems Integrated Real-Time Electricity Markets," in IEEE Systems Journal, vol. 16, no. 4, pp. 6602-6613, Dec. 2022, doi: 10.1109/JSYST.2022.3182116
90. Ramin Dehghani, Asghar Akbari Foroud, Two-stage risk assessment of the electricity retailers in the day-ahead energy and primary-secondary reserve markets with flexible demand responses and parking lots, Journal of Energy Storage, Volume 55, Part B, 2022, 105626, ISSN 2352-152X, https://doi.org/10.1016/j.est.2022.105626
91. Federico Rossi, Beatrice Castellani, Andrea Presciutti, Elena Morini, Elisabetta Anderini, Mirko Filipponi, Andrea Nicolini, Experimental evaluation of urban heat island mitigation potential of retro-reflective pavement in urban canyons, Energy and Buildings,

Volume 126, 2016, Pages 340-352, ISSN 0378-7788, https://doi.org/10.1016/j.enbuild.2016.05.036
92. Sara Bellocchi, Michele Manno, Michel Noussan, Matteo Giacomo Prina, Michela Vellini, Electrification of transport and residential heating sectors in support of renewable penetration: Scenarios for the Italian energy system, Energy, Volume 196, 2020, 117062, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2020.117062
93. De Pascali, Paolo, Saverio Santangelo, Francesca Perrone, and Annamaria Bagaini. 2020. "Territorial Energy Decentralisation and Ecosystem Services in Italy: Limits and Potential" Sustainability 12, no. 4: 1424. https://doi.org/10.3390/su12041424
94. Adhikari RS, Aste N, Manfren M. Multi-commodity network flow models for dynamic energy management – Smart Grid applications. Energy Procedia 2012;14:1374–9. https://doi.org/http://dx.doi.org/10.1016/j.egypro.2011.12.1104.
95. Harazin J and Wróbel A. Analysis and study of the potential increase in energy output generated by prototype solar tracking, roof mounted solar panels [version 2; peer review: 2 approved]. F1000Research 2022, 9:1381 (https://doi.org/10.12688/f1000research.27641.2)
96. Lim JY, Tan WN and Tan YF. Anomalous energy consumption detection using a Naïve Bayes approach [version 1; peer review: 1 approved with reservations]. F1000Research 2022, 11:64 (https://doi.org/10.12688/f1000research.70658.1)
97. Rankinen J-A, Lakkala S, Haapasalo H, Hirvonen-Kantola S. Stakeholder management in PED projects: challenges and management model. Int J Sustain Energy Plan Manag 2022;34 http://doi.org/10.54337/ijsepm.6979
98. Crupi, Francesco. 2022. "Urban Regeneration and Green and Blue Infrastructure: The Case of the “Acilia–Madonnetta” Urban and Metropolitan Centrality in the Municipality of Rome" Urban Science 6, no. 3: 56. https://doi.org/10.3390/urbansci6030056
99. Del-Busto F, Mainar-Toledo MD, Ballestín-Trenado V. Participatory Process Protocol to Reinforce Energy Planning on Islands: A Knowledge Transfer in Spain. Int J Sustain Energy Plan Manag 2022. http://doi.org/10.54337/ijsepm.7090
100. Hany N and Alaa H. Thermal comfort optimization through bioclimatic design in Mediterranean cities [version 2; peer review: 1 approved, 1 approved with reservations]. F1000Research 2022, 10:1047 (https://doi.org/10.12688/f1000research.73017.2)
101. Cumo, Fabrizio, Fabio Nardecchia, Sofia Agostinelli, and Flavio Rosa. 2022. "Transforming a Historic Public Office Building in the Centre of Rome into nZEB: Limits and Potentials" Energies 15, no. 3: 697. https://doi.org/10.3390/en15030697
102. Balen I, Maljković D. A step towards decarbonised district heating systems: Assessment of the importance of individual metering on the system level. Int J Sustain Energy Plan Manag 2022;34. http://doi.org/10.54337/ijsepm.7088
103. Volkova A, Hlebnikov A, Ledvanov A, Kirs L, Et al. District Cooling Network Planning. A Case Study of Tallinn. Int J Sustain Energy Plan Manag 2022;34 http://doi.org/10.54337/ijsepm.7011
104. Alemam, A., Al-Widyan, M. I., Technical, economic, and environmental assessment of integrating solar thermal systems in existing district heating systems under Jordanian climatic conditions, J. sustain. dev. energy water environ. syst., 10(3), 1090395, 2022, DOI: https://doi.org/10.13044/j.sdewes.d9.0395
105. Putkonen N, Lindroos TJ, Neniškis E, Žalostība D, Norvaiša E, Galinis A, et al. Modeling the Baltic countries’ Green Transition and Desynchronization from the Russian

Electricity Grid. Int J Sustain Energy Plan Manag 2022;34 http://doi.org/10.54337/ijsepm.7059
106. Daniele Groppi, Shravan Kumar Pinayur Kannan, Francesco Gardumi, Davide Astiaso Garcia, Optimal planning of energy and water systems of a small island with a hourly OSeMOSYS model, Energy Conversion and Management, Volume 276, 2023, 116541, ISSN 0196-8904, https://doi.org/10.1016/j.enconman.2022.116541
107. Pieper H, Lepiksaar K, Volkova A. GIS-based approach to identifying potential heat sources for heat pumps and chillers providing district heating and cooling. Int J Sustain Energy Plan Manag 2022;34. http://doi.org/10.54337/ijsepm.7021
108. Soto Carrión, C , et al., Multi-Temporal Analysis of the Glacier Retreat Using Landsat Satellite Images in the Nevado of the Ampay National Sanctuary, Peru, J. sustain. dev. energy water environ. syst., 10(1), 1080380, 2022, DOI: https://doi.org/10.13044/j.sdewes.d8.0380
109. Ishak I, Othman NS and Harun NH. Forecasting electricity consumption of Malaysia's residential sector: Evidence from an exponential smoothing model [version 1; peer review: 1 approved with reservations]. F1000Research 2022, 11:54 (https://doi.org/10.12688/f1000research.74877.1)
110. Jean, W., Brasil Junior, A. C. P., Solar model for Rural Communities: Analysis of Impact of a Grid-Connected Photovoltaic System in the Brazilian semi-arid region, J.sustain. dev. energy water environ. syst., 10(3), 1090405, 2022, DOI: https://doi.org/10.13044/j.sdewes.d9.0405
111. Antonio Galli, Marco Savino Piscitelli, Vincenzo Moscato, Alfonso Capozzoli, Bridging the gap between complexity and interpretability of a data analytics-based process for benchmarking energy performance of buildings, Expert Systems with Applications, Volume 206, 2022, 117649, ISSN 0957-4174, https://doi.org/10.1016/j.eswa.2022.117649
112. Čurčić, T., Kalloe, R. R., Kreszner, M. A., van Luijk, O., Puertas Puchol, S., Caba Batuecas, E., Salcedo Rahola, T. B., Gaining insights into dwelling characteristics using machine learning for policy making on nearly zero-energy buildings with the use of smart meter and weather data, A systematic literature review, J. sustain. dev. energy water environ. syst., 10(1), 1090388, 2022, DOI: https://doi.org/10.13044/j.sdewes.d9.0388
113. Atta, N. and C. Talamo. 2020. Digital Transformation in Facility Management (FM). IoT and Big Data for Service Innovation. Research for Development. doi: https://doi.org/10.1007/978-3-030-33570-0_24
114. Zhelun Chen, Zheng O'Neill, Jin Wen, Ojas Pradhan, Tao Yang, Xing Lu, Guanjing Lin, Shohei Miyata, Seungjae Lee, Chou Shen, Roberto Chiosa, Marco Savino Piscitelli, Alfonso Capozzoli, Franz Hengel, Alexander Kührer, Marco Pritoni, Wei Liu, John Clauß, Yimin Chen, Terry Herr, A review of data-driven fault detection and diagnostics for building HVAC systems, Applied Energy, Volume 339, 2023, 121030, ISSN 0306-2619, https://doi.org/10.1016/j.apenergy.2023.121030
115. Hagen Fritz, Mengjia Tang, Kerry Kinney & Zoltan Nagy (2022) Evaluating machine learning models to classify occupants' perceptions of their indoor environment and sleep quality from indoor air quality, Journal of the Air & Waste Management Association, 72:12, 1381-1397, DOI: 10.1080/10962247.2022.2105439

116. Gaetani, I., A. Luna-Navarro, and F. Anselmo. 2022. "People Who? Why Occupant Behaviour Modelling is Not (Yet) Included in the Design Workflow.". https://doi.org/10.26868/25222708.2021.30590
117. Rajesh Kotireddy, Pieter-Jan Hoes, Jan L.M. Hensen, A methodology for performance robustness assessment of low-energy buildings using scenario analysis, Applied Energy, Volume 212, 2018, Pages 428-442, ISSN 0306-2619, https://doi.org/10.1016/j.apenergy.2017.12.066
118. P.A. Østergaard, H. Lund, J.Z. Thellufsen, P. Sorknæs, B.V. Mathiesen, Review and validation of EnergyPLAN, Renewable and Sustainable Energy Reviews, Volume 168, 2022, 112724, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112724
119. Matteo Giacomo Prina, Marco Cozzini, Giulia Garegnani, Giampaolo Manzolini, David Moser, Ulrich Filippi Oberegger, Roberta Pernetti, Roberto Vaccaro, Wolfram Sparber, Multi-objective optimization algorithm coupled to EnergyPLAN software: The EPLANopt model, Energy, Volume 149, 2018, Pages 213-221, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2018.02.050
120. Matteo Giacomo Prina, Fabio Capogna Fornaroli, David Moser, Giampaolo Manzolini, Wolfram Sparber, Optimisation method to obtain marginal abatement cost-curve through EnergyPLAN software, Smart Energy, Volume 1, 2021, 100002, ISSN 2666-9552, https://doi.org/10.1016/j.segy.2021.100002
121. Rasmus Magni Johannsen, Brian Vad Mathiesen, Katerina Kermeli, Wina Crijns-Graus, Poul Alberg Østergaard, Exploring pathways to 100% renewable energy in European industry, Energy, Volume 268, 2023, 126687, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2023.126687
122. H. Stančin, M. Šafář, J. Růžičková, H. Mikulčić, H. Raclavská, X. Wang, N. Duić, Influence of plastic content on synergistic effect and bio-oil quality from the co-pyrolysis of waste rigid polyurethane foam and sawdust mixture, Renewable Energy, Volume 196, 2022, Pages 1218-1228, ISSN 0960-1481, https://doi.org/10.1016/j.renene.2022.07.047
123. Hosseinnejad, A., Saboohi, Y., Zarei, G., Shayegan, J., Developing an integrated model for allocating resources and assessing technologies based on the watergy optimal point (water-energy nexus), case study: a greenhouse, J.sustain. dev. energy water environ. syst., 11(1), 1100416, 20323, DOI: https://doi.org/10.13044/j.sdewes.d10.0416
124. Hirschnitz-Garbers, M., Araujo Sosa, A., Hinzmann, M., Exploring Perspectives on Climate-resource-nexus Policies: Barriers and Relevance in Different World Regions, J.sustain. dev. energy water environ. syst., 10(3), 1090408, 2022, DOI: https://doi.org/10.13044/j.sdewes.d9.0408
125. Ibrahim, M. M., Technical and Economic Comparison between Solar and Wind Energy Supplying Desalination System, J. sustain. dev. energy water environ. syst., 10(2), 1080382, 2022, DOI: https://doi.org/10.13044/j.sdewes.d8.0382
126. Amar Kumar Barik, Dulal Chandra Das, Integrated resource planning in sustainable energy-based distributed microgrids, Sustainable Energy Technologies and Assessments, Volume 48, 2021, 101622, ISSN 2213-1388, https://doi.org/10.1016/j.seta.2021.101622
127. Hasan Mehrjerdi, Off-grid solar powered charging station for electric and hydrogen vehicles including fuel cell and hydrogen storage, International Journal of

Hydrogen Energy, Volume 44, Issue 23, 2019, Pages 11574-11583, ISSN 0360-3199, https://doi.org/10.1016/j.ijhydene.2019.03.158
128. Yueming Wen, Siu-Kit Lau, Jiawei Leng, Ke Liu, Sustainable underground environment integrating hybrid ventilation, photovoltaic thermal and ground source heat pump, Sustainable Cities and Society, Volume 90, 2023, 104383, ISSN 2210-6707, https://doi.org/10.1016/j.scs.2022.104383
129. M. Soltani, Farshad M. Kashkooli, A.R. Dehghani-Sanij, A.R. Kazemi, N. Bordbar, M.J. Farshchi, M. Elmi, K. Gharali, Maurice B. Dusseault, A comprehensive study of geothermal heating and cooling systems, Sustainable Cities and Society, Volume 44, 2019, Pages 793-818, ISSN 2210-6707, https://doi.org/10.1016/j.scs.2018.09.036
130. Dedinec, A., N. Markovska, V. Taseska, G. Kanevce, T. Bosevski, and J. Pop-Jordanov. 2012. "The Potential of Renewable Energy Sources for Greenhouse Gases Emissions Reduction in Macedonia." Thermal Science 16 (3): 717-728. https://doi.org/10.2298/TSCI120202128D
131. J. Žužul, A. Ricci, M. Burlando, B. Blocken, G. Solari, CFD analysis of the WindEEE dome produced downburst-like winds, Journal of Wind Engineering and Industrial Aerodynamics, Volume 232, 2023, 105268, ISSN 0167-6105, https://doi.org/10.1016/j.jweia.2022.105268
132. Ricci, R. Vasaturo, B. Blocken, An integrated tool to improve the safety of seaports and waterways under strong wind conditions, Journal of Wind Engineering and Industrial Aerodynamics, Volume 234, 2023, 105327, ISSN 0167-6105, https://doi.org/10.1016/j.jweia.2023.105327
133. Alessio Ricci, Ivo Kalkman, Bert Blocken, Massimiliano Burlando, Andrea Freda, Maria Pia Repetto, Large-scale forcing effects on wind flows in the urban canopy: Impact of inflow conditions, Sustainable Cities and Society, Volume 42, 2018, Pages 593-610, ISSN 2210-6707, https://doi.org/10.1016/j.scs.2018.08.012
134. Casalicchio, V., Manzolini, G., Prina, M.G., Moser, D. (2021). Renewable Energy Communities: Business Models of Multi-family Housing Buildings. In: Bisello, A., Vettorato, D., Haarstad, H., Borsboom-van Beurden, J. (eds) Smart and Sustainable Planning for Cities and Regions. SSPCR 2019. Green Energy and Technology. Springer, Cham. https://doi.org/10.1007/978-3-030-57332-4_19
135. Valeria Casalicchio, Giampaolo Manzolini, Matteo Giacomo Prina, David Moser, From investment optimization to fair benefit distribution in renewable energy community modelling, Applied Energy, Volume 310, 2022, 118447, ISSN 0306-2619, https://doi.org/10.1016/j.apenergy.2021.118447
136. Francesco Calise, Francesco L. Cappiello, Massimo Dentice d'Accadia, Maria Vicidomini, Thermo-economic optimization of a novel hybrid renewable trigeneration plant, Renewable Energy, Volume 175, 2021, Pages 532-549, ISSN 0960-1481, https://doi.org/10.1016/j.renene.2021.04.069
137. Calise, Francesco, Massimo Dentice D'Accadia, Antonio Piacentino, and Maria Vicidomini. 2015. "Thermoeconomic Optimization of a Renewable Polygeneration System Serving a Small Isolated Community" Energies 8, no. 2: 995-1024. https://doi.org/10.3390/en8020995
138. Marco Gambini, Michela Vellini, Hybrid thermal power plants: Solar-electricity and fuel-electricity productions, Energy Conversion and Management, Volume 195, 2019, Pages 682-689, ISSN 0196-8904, https://doi.org/10.1016/j.enconman.2019.04.073

139. Ćosić, B., N. Markovska, V. Taseska, G. Krajačić, and N. Duić. 2013. "Increasing the Renewable Energy Sources Absorption Capacity of the Macedonian Energy System." Journal of Renewable and Sustainable Energy 5 (4). https://doi.org/10.1063/1.4812999
140. Dick Magnusson, Who brings the heat? – From municipal to diversified ownership in the Swedish district heating market post-liberalization, Energy Research & Social Science, Volume 22, 2016, Pages 198-209, ISSN 2214-6296, https://doi.org/10.1016/j.erss.2016.10.004
141. Michele Tunzi, Theofanis Benakopoulos, Qinjiang Yang, Svend Svendsen, Demand side digitalisation: A methodology using heat cost allocators and energy meters to secure low-temperature operations in existing buildings connected to district heating networks, Energy, Volume 264, 2023, 126272, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2022.126272
142. Ziqiang He, Yunfei Yan, Shuai Feng, Xiuquan Li, Ruiming Fang, Zhiliang Ou, Zhongqing Yang, Numerical investigation on a multi-channel micro combustor fueled with hydrogen for a micro-thermophotovoltaic system, International Journal of Hydrogen Energy, Volume 46, Issue 5, 2021, Pages 4460-4471, ISSN 0360-3199, https://doi.org/10.1016/j.ijhydene.2020.10.160
143. S.K. Chou, W.M. Yang, K.J. Chua, J. Li, K.L. Zhang, Development of micro power generators – A review, Applied Energy, Volume 88, Issue 1, 2011, Pages 1-16, ISSN 0306-2619, https://doi.org/10.1016/j.apenergy.2010.07.010
144. Herman Zahid, Abdullah Altamimi, Syed Ali Abbas Kazmi, Zafar A. Khan, Abdulaziz Almutairi, Floating solar photovoltaic as virtual battery for reservoir based hydroelectric dams: A solar-hydro nexus for technological transition, Energy Reports, Volume 8, Supplement 13, 2022, Pages 610-621, ISSN 2352-4847, https://doi.org/10.1016/j.egyr.2022.08.088
145. G. Kakoulaki, R. Gonzalez Sanchez, A. Gracia Amillo, S. Szabo, M. De Felice, F. Farinosi, L. De Felice, B. Bisselink, R. Seliger, I. Kougias, A. Jaeger-Waldau, Benefits of pairing floating solar photovoltaics with hydropower reservoirs in Europe, Renewable and Sustainable Energy Reviews, Volume 171, 2023, 112989, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2022.112989
146. M. Vellini, S. Bellocchi, M. Gambini, M. Manno, T. Stilo, Impact and costs of proposed scenarios for power sector decarbonisation: An Italian case study, Journal of Cleaner Production, Volume 274, 2020, 123667, ISSN 0959-6526, https://doi.org/10.1016/j.jclepro.2020.123667
147. A.D. Wills, I. Beausoleil-Morrison & V.I. Ugursal (2018) Adaptation and validation of an existing bottom-up model for simulating temporal and inter-dwelling variations of residential appliance and lighting demands, Journal of Building Performance Simulation, 11:3, 350-368, https://doi.org/10.1080/19401493.2017.1369570
148. Carlos E. Ochoa, Myriam B.C. Aries & Jan L.M. Hensen (2012) State of the art in lighting simulation for building science: a literature review, Journal of Building Performance Simulation, 5:4, 209-233, https://doi.org/10.1080/19401493.2011.558211
149. Richard M. Tetlow, C. Philip Beaman, Abbas A. Elmualim, Kevin Couling, Simple prompts reduce inadvertent energy consumption from lighting in office buildings, Building and Environment, Volume 81, 2014, Pages 234-242, ISSN 0360-1323, https://doi.org/10.1016/j.buildenv.2014.07.003

150. Adrie de Vries, Jan L. Souman, Boris de Ruyter, Ingrid Heynderickx, Yvonne A.W. de Kort, Lighting up the office: The effect of wall luminance on room appraisal, office workers' performance, and subjective alertness, Building and Environment, Volume 142, 2018, Pages 534-543, ISSN 0360-1323, https://doi.org/10.1016/j.buildenv.2018.06.046
151. Au BWC, Chan KY, Sahdan MZ et al. Realisation of Solid-State Electrochromic Devices Based on Gel Electrolyte [version 2; peer review: 2 approved]. F1000Research 2022, 11:380 (https://doi.org/10.12688/f1000research.73661.2)
152. Samson Yip, Andreas K. Athienitis, Bruno Lee, Early stage design for an institutional net zero energy archetype building. Part 1: Methodology, form and sensitivity analysis, Solar Energy, Volume 224, 2021, Pages 516-530, ISSN 0038-092X, https://doi.org/10.1016/j.solener.2021.05.091
153. Domenico Mazzeo, Nocturnal electric vehicle charging interacting with a residential photovoltaic-battery system: a 3E (energy, economic and environmental) analysis, Energy, Volume 168, 2019, Pages 310-331, ISSN 0360-5442, https://doi.org/10.1016/j.energy.2018.11.057
154. Yumna Kurdi, Baraa J. Alkhatatbeh, Somayeh Asadi, Houtan Jebelli, A decision-making design framework for the integration of PV systems in the urban energy planning process, Renewable Energy, Volume 197, 2022, Pages 288-304, ISSN 0960-1481, https://doi.org/10.1016/j.renene.2022.07.001
155. Talamo, C., M. Lavagna, C. Monticelli, N. Atta, S. Giorgi, and S. Viscuso. 2020. Re-NetTA. Re-Manufacturing Networks for Tertiary Architectures. Research for Development. https://doi.org/10.1007/978-3-030-33256-3_28