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Special Issue on Progress in Smart and Sustainable Technologies

1. Introduction

Recent developments in information technologies allowed for intense digitalization in all spheres of engineering allowing new perspectives, as well as offering advanced solutions to societies. The energy related field is one of the most dynamic development field with respect to the potential application of the smart and Internet of Things (IoT) based technologies (Nižetić et. al. 2020).

Due to ongoing energy transition the importance of smart technologies (concepts or

solutions) have become especially interesting in order to reach sustainable energy systems, (Kamyab et al., 2020). Advancements in the area of renewable energy technologies (Najafi et al., 2021), energy storage technologies (Groppi et al. 2021), energy savings technologies (Feng et al., 2021) and circular economy concepts, (Fan et al., 2020) are progressing.

Intense development of hardware as well as software solutions, such as different mobile applications, Cloud Computing, Deep Learning, Artificial Intelligence, Machine Learning, etc., allowed novel market opportunities and services, (Tuysuz et al., 2020). The open and important issue is the environmental applicability of different smart solutions and how to achieve and ensure a sustainable development in a rapid development. The benefits of smart technologies should be based on the pillars of sustainability with ensured minimization of environmental footprints and maximization of useful benefits.

Various engineering disciplines are called upon to provide their input, ensure the diffusion of fundamental and applied knowledge, and to respond to the present and upcoming challenges, which are typically complex and intertwined.

The virtual Special Volume (VSI) will include invited extended papers from **SpliTech2020 (5th International Conference on Smart and Sustainable Technologies)**, that was held online from September 23rd 26th in Bol (Island of Brač), Croatia. The SpliTech conference is a multidisciplinary conference covering a range of topics, but with a focus on smart and sustainable technologies towards a smart and low-carbon development. The participants at the **SpliTech2020** are highly encouraged to submit papers to this Special Volume for possible publication in JCLP. Authors who have not attended the conference but have suitable papers in hands are also welcome to submit a paper for this virtual Special Volume.

This SV is open to all engineering disciplines and a wide range of research topics addressing smart and sustainable technologies in general. The main emphasis would be directed to the progress in smart and sustainable technologies and how to reduce potential harmful impacts to the environment. Review papers are also accepted with the main focus being on advancements in smart technologies with a strong link to practical applications in all sectors.

The Journal of Cleaner Production is a well-known and important platform for sharing multidisciplinary knowledge, innovations directed to cleaner production and sustainable development. Therefore, this SV encourages submission of cross-disciplinary research work addressing major contemporary issues and exploring solutions to build a sustainable future.

2. Topical areas

This “Call for Papers” (CfPs) for the SV of the Journal of Cleaner Production (JCLP) provides opportunities for scholars, industrial researchers, business and governmental officers to

collaborate and accelerate the transition towards a smart and sustainable society. Papers should include comprehensive, up-to-date literature reviews, combined with novel theoretical and experimental investigations.



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Paper topics for this SV include, but will not be limited to, the following topics:

(1) **Smart technologies in renewable energy systems**

The decarbonisation of power systems will cause an expected intense rise in renewable energy technologies in the upcoming decades as a direct consequence of the energy transition, (Poggi et al., 2020). Renewable energy systems are being modified by implementation of smart solutions. The main goal is to improve efficiency of the renewable energy systems as well as to manage more efficient control in demanding operating circumstances. Currently, market available renewable technologies have a relatively modest overall energy conversion efficiency, so in that sense smart technologies are providing an opportunity for further necessary efficiency improvements. Special focus should be directed to energy storage technologies since they play a key role in the efficient utilization of renewable energy technologies. Smart solutions in the demand side management (Kathirgamanathan et al., 2021) as well as control strategies of smart grids are also key to enable energy savings, improvement of comfort, and finally reduction in harmful footprints to the environment.

(2) **Smart technologies in energy savings**

Energy systems are becoming more complex where usually a mix of different energy technologies is being considered. Hybrid energy systems (Xu et al., 2021) allows for a combination of renewable energy technologies and more acceptable fossil fuel options, as a transition phase to fully renewable energy systems. The implementation of smart solutions can allow for efficient management of the energy systems leading to energy savings. The problem of over-excessive waste heat generation also creates an opportunity to consider various smart based solutions that would ensure efficient heat utilization, (Musharavati et al., 2021). The important problem is how to improve industrial facilities with respect to energy savings and how to reduce pollutant releases, by implementation of the smart solutions. Buildings are also challenging regarding the introduction of novel and advanced smart energy systems, devices or appliances. In the previous sense, the potential for improvements is sensible enabling an integral approach for harmonization of different smart technologies in building facilities. Building should be also apprehended as interactive and complex energy systems with vital role for instance in electric vehicles, where in that direction a development of novel and advanced energy systems is key. In general, there is a necessity for consideration and analysis of different energy saving strategies in all major sectors (buildings, transport and industry), which are supported by smart technologies.

(3) Smart technologies in circular economy, supply chain management and environmental protection



One of the key population issues, besides energy supply, is related to over excessive waste generation. The fast development of smart gadgets is also a long-term, problem due to the rising amount of electronic waste. The development and upgrade of circular economy concepts (strategies) is key (Aguilar-Hernandez et al., 2021) to secure a sustainable development, and to treat waste as valuable resource. The application of smart solutions in waste management is significantly progressing with constant rise in novel and market based solutions. A supply chain management is also a focusing area where smart solutions can help to improve logistics, transportation and develop novel business models, (Esmailian et al., 2020). Environmental protection can benefit from the implementation of smart concepts and solutions that would secure advanced monitoring and detection systems that could be used for environmental protection and prediction of potential hazardous situations.

(4) Smart technologies in smart cities and urban infrastructure

The Smart city concept is currently the most intense research area with respect to the application of IoT technologies, (Ahad et al., 2020). The infrastructure pressure on cities is rising with the population rise, which indicates the necessity for transformation of current infrastructural approaches to cities and dense urban areas in general. Smart and sustainable technologies can help solve global infrastructural challenges in cities. Smart cities seek for further technological progresses that would enable more efficient daily services in the cities, such as effective transportation, smart management in energy and water supply systems, improved security systems, etc. Various challenges are still present in the development of the smart city concept and that are mainly focused on implementation issues. The integration aspect is challenging due to a relatively large number of sensing technologies that needs to be harmonized to maximize the benefits from smart technologies.

3. Tentative schedule

Contributors with proposals for papers are encouraged to communicate with the Co-editors by e-mail. The following schedule will guide the development of this VSI:

4. Submissions

Full papers are invited for potential publication in this VSI of the JCLP. Submissions should be between 9,000 and 13,000 words for **comprehensive/integrative reviews**, between 7,000 and 8,500 words for **full research/theoretical papers** with broad empirical studies, and between 5,000 and 7,000 words for **case studies**.

All authors with accepted abstracts must follow JCLP's "Guide for Authors" which can be

accessed via the following link: <https://www.elsevier.com/journals/journal-of-cleaner-production/0959-6526/guide-for-authors> (<https://www.elsevier.com/journals/journal-of-cleaner-production/0959-6526/guide-for-authors>) and follow the standard submission procedures of Elsevier's Editorial System (EES). To submit a manuscript, please go to <http://ees.elsevier.com/jclepro> and select this virtual Special Volume "**SpliTech2020**". All submissions are subject to standard peer review, revision, and re-submission processes. The manuscripts may be rejected after these processes due to poor quality.

Papers must be written in good English. Authors with limitations in the command of written English are recommended to have their papers edited by an **English Scientific Editor** before the first submission because poorly written pieces can compromise the decisions during the review process. Similarly, they should have their final document edited by an **English Scientific Editor** before they submit it to the editorial team for the final review and for publication within the Journal of Cleaner Production.

5. Guest editorial team

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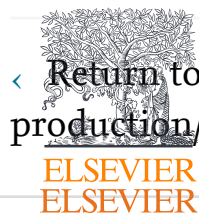
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