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Towards Sustainable Work Models: A Conceptual Exploration of Flexible Work and Environmental Impact

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ABSTRACT
This paper examines how flexible work models, especially remote work, influence the environment. From a Human Resource Management perspective, flexible work goes beyond simply meeting employees needs, it is an organizational effort to reduce carbon footprints and support eco-friendly business practices. The study shows that working from home can decrease emissions from commuting, lower energy use in offices, and encourage more sustainable work habits. However, It also addresses challenges such as the need for effective digital tools, concerns about monitoring employees, and the risk of mixing work with personal life. By focusing on both the advantages and challenges, this paper argues that flexible work plays a significant role in creating greener workplaces. It will likely become even more important as work culture in the future.

INTRODUCTION
The necessary transition to new work models has made flexible arrangements central to organizational strategies, with remote work becoming the leading trend. What was once seen as a temporary change has now developed into a sustainable practice that is reshaping how employees and organizations function. From a Human Resource Management (HRM) viewpoint, flexibility is no longer simply about convenience for employees; it is now a key factor in organizational performance, employee well-being, and long-term sustainability.

Remote work, in particular, reduces the need for commuting and physical office spaces, offering clear environmental benefits like lower carbon emissions and decreased energy use. At the same time, it improves work-life balance, boosts talent retention, and strengthens organizational stand in a competitive market. These outcomes show that flexible work models benefit both employees and employers while supporting broader societal goals of reducing environmental impact.

For HRM leaders, the challenge is to develop and implement policies that weave flexibility into organizational culture. This involves ensuring fairness, managing performance effectively, and providing equal opportunities for growth across remote teams. By making flexibility a key part of workforce strategies, HR professionals can meet employee expectations while preparing organizations for success in the evolving landscape of work.

This paper investigates how flexible work models, particularly remote work, can promote sustainable practices by reducing environmental footprints and altering workplace dynamics.

CONCEPTUAL FRAMEWORK
- **Independent Variable: Flexible Work Models**
  - Remote Work
  - Hybrid Work
  - Flexible Scheduling

- **Mediators**
  - Employee Well-being & Work–Life Balance
  - Organizational Efficiency & Adaptability
  - Environmental Sustainability
- **Dependent Variables**
  - **Employee Outcomes**: Job Satisfaction, Retention, Performance
  - **Organizational Outcomes**: Productivity, Innovation, Employer Branding
  - **Societal/Environmental Outcomes**: Lower Carbon Emissions, Sustainable Development

LITERATURE REVIEW

Hook, A., Court, V., Sovacool, B. K., & Sorrell, S. (2020). This study explores how teleworking, enabled by ICTs, reduces work travel and its impacts on energy consumption. Findings show telework can significantly cut CO_2 emissions, but these gains are sometimes offset by increased home energy use or additional non-work travel. The study emphasizes that telework is not always a guaranteed "green" solution.

Vyas, L. (2022). Vyas investigates how COVID-19 disrupted labour markets, pushing remote work into the mainstream. The study highlights emerging inequalities, new skills learned, and a shift towards hybrid models. It concludes that remote and hybrid work will likely remain popular, especially for white-collar work, but a one-size-fits-all solution is not feasible.

Kitou, E., & Horvath, A. (2008).This study examined telework in the U.S. and found potential reductions in air emissions like CO_2, NOx, SO_2, PM10, and CO. However, telework had little effect on N_2O and CH_4. The authors stress that while commuting-related emissions fall, increased home energy consumption can offset these benefits, making careful planning necessary.

Hook, A., Court, V., Sovacool, B. K., & Sorrell, S. (2020). The study reviews evidence on teleworking's climate impacts. It acknowledges positive potential but warns of uncertainties, especially concerning increased non-work travel and home energy use. Findings show that while benefits exist, overall economy-wide energy savings tend to be modest, and in some cases, negligible or negative.

Wang, B., Liu, Y., Qian, J., & Parker, S. K. (2021). This research links virtual work characteristics with performance and well-being. It finds that social support reduces remote working challenges, autonomy lowers loneliness, but workload and monitoring increase work–home interference. Interestingly, workload also reduced procrastination, with self-discipline moderating many of these effects.

Navaratnam, S., Jayalath, A., & Aye, L. (2022). The study quantified GHG emissions and energy costs from WFH practices. Results showed WFH can significantly cut emissions and costs, especially when strategically scheduled. The authors suggest these findings can guide policymakers in designing sustainable hybrid work models post-COVID.

Wu, H., Chang, Y., & Chen, Y. (2024). This study compared GHG footprints of WFH and office work. It found WFH reduced emissions by 29.11% (≈4.06 kg CO_2e/person/day), largely due to less commuting and workplace use. However, residential emissions increased by 1.51 kg per day, highlighting trade-offs.

Ohnmacht, T., Z'Rotz, J., & Dang, L. (2020). Research on Swiss coworking spaces showed commuting-related CO_2 emissions were far lower in urban spaces (350 kg/year) than in rural areas (940 kg/year). If workers only used coworking spaces, commuting CO_2 emissions would fall by 10%. The study highlights urban coworking's potential to help meet climate commitments.

Halefom, T. H., Moglia, M., Nygaard, C. A., & Pojani, D. (2024).
This systematic review shows that while WFH can deliver environmental, social, and economic benefits, outcomes are not straightforward. Current urban planning often undermines WFH benefits, and lifestyle shifts may offset gains. Significant reductions in travel occur only when employees work from home three or more days weekly.

Yildizhan, H., Hosouli, S., Yılmaz, S. E., Gomes, J., Pandey, C., & Alkharusi, T. (2023). The study found flexible work improves happiness, stress, motivation, and overall well-being. Importantly, a four-day workweek cut commuting emissions by 20%, amounting to 6.07 kg CO_2e per person. The authors highlight its dual benefits for employees and the environment, recommending it for HR and policy strategies.

Collett, M. (2024) This study explores the carbon effects of a four-day workweek in the UK. Findings suggest emissions may initially rise due to carbon-intensive leisure consumption. However, over time, reductions could occur, depending largely on productivity trends and long-term work–life changes.

Argyro Avgoustaki (2025) This study, based on conservation of resources theory, shows that informal flexibility i-deals have a stronger positive impact on employee well-being than formal flexible work arrangements. Work effort mediates this relationship, linking flexibility to well-being. A gap favoring informal over formal flexibility further enhances employee well-being.

Ziyan Guo (2023) This study, grounded in self-determination theory, shows that flexible work arrangements (FWA) boost innovation behavior among knowledge employees, partly through enhancing thriving at work. Moreover, supportive HR policies strengthen this effect, offering practical insights for managers to foster innovation.

Sourabh Kumar (2023) This paper explores how increasing work and life demands have shifted focus from work-life balance to work-life integration (WLI), emphasizing flexibility as key. It examines the factors influencing WLI and the role of flexible work arrangements in enabling successful integration.

Chandra Sekhar (2023) The study shows that supervisor support mediates the link between flexible work arrangements (FWAs) and job performance. Supervisors shape social exchange relationships by fostering shared values and supportive behaviors. Their support makes employees feel valued, which in turn enhances job performance.

Michael Dunn (2023) This study explores how platform workers perceive flexibility in the evolving digital work environment. It identifies two key dimensions—task flexibility and spatial flexibility—shaped by platform attributes. Different platform types influence how workers experience and navigate flexible work arrangements.

Heejung Chung (2023) This study finds that flexible working in UK dual-earner couples with young children can both support integration and reinforce traditional gender roles. Homeworking tends to increase women's share of childcare, while flexitime—especially in lower-paid jobs—promotes a more equal division of labour. The impact varies depending on how boundaries are managed and occupational context.

Rhian Indradewa (2023) The study on 229 respondents in Jakarta found that flexible work arrangements positively influence work-life balance and job satisfaction. Work stress showed no moderating effect, while emotional exhaustion moderated the relationship between work-life balance and job satisfaction. The findings suggest HR can adopt flexible policies to improve efficiency and reduce workspace costs.

Marcello M. Mariani (2022) Flexible working practice (FWP) is a popular practice in the 21st century, but its adoption has been criticized for its potential downsides. This 11-year systematic review examines the hidden costs and implications of FWP, focusing on health, legal, and spatial dimensions. It suggests a holistic approach for future research.

Nichole V Shifrin (2022) The COVID-19 pandemic has increased the availability of flexible work arrangements (FWA) to employees, with research linking them to positive outcomes like reduced conflict, better psychological health, and increased role satisfaction. A meta-analytic review found that FWA are associated with better physical health, reduced absenteeism, and fewer somatic symptoms, suggesting they can help employees maintain their health. However, no association was found between FWA and physical activity.

Alina Ewald (2022) Fathers' flexible work found four main barriers: gender norms, weak policies, workplace expectations, and class differences. Fathers remain invisible and stigmatized at work, highlighting the need for policy and practice changes to support men's caregiving roles.

Rahman Shiri (2022) Employee-oriented flexible work, such as worktime control and working from home, may provide small benefits for mental health by reducing stress, burnout, and depressive symptoms. However, effects were modest and inconsistent across study designs. More rigorous randomized and quasi-experimental studies are needed to confirm these health impacts.

FINDINGS

- According to several scholars, flexible working reduces traffic congestion, leading to improved air quality.
- Researchers highlight that fewer daily commutes directly lower greenhouse gas emissions.
- From an academic viewpoint, minimizing the need for large office spaces decreases commercial energy demand.
- As per environmental studies, flexible work cuts down on office-related waste such as paper, plastics, and water.
- Literature emphasizes that the rise of virtual meetings reduces business travel and its carbon footprint.
- Some authors argue that shifting energy use to households raises concerns over electricity and heating/cooling demand.
- Studies reveal that increased dependence on digital infrastructure contributes to the growing carbon footprint of data centers.
- As per sustainability experts, flexible work may foster eco-friendly lifestyles like home gardening and localized consumption.
- Findings suggest that reduced commuting also contributes to lowering urban noise pollution.
- According to comparative research, the home energy impact varies across climates, with higher costs in extreme weather regions.
- Authors warn that heavy reliance on electronic devices in remote work settings can accelerate e-waste generation.

SUGGESTIONS

- Remote work reduces emissions but its benefits decline if employees increase non-work travel. Lifestyle changes must complement remote work to sustain environmental gains.
- Shorter workweeks lower energy use and transport emissions, but adoption needs support to prevent burnout. Research should compare sustainability outcomes across industries.
- Stronger policies and incentives are needed to promote flexible schedules that balance environmental benefits with economic growth.
- Green shared offices reduce equipment waste and offer alternatives for employees who dislike working alone at home.
- Remote employees often feel "always on." HR must implement health programs, right-to-disconnect policies, and clear boundaries for long-term adoption.
- Research can explore how smart systems, digital tools, and green IT can enhance sustainability in flexible work.
- HR can drive training, awareness, and culture shifts to normalize sustainable flexible work while maintaining productivity and well-being.

CONCLUSION

The conceptual exploration of flexible work and its environmental impact highlights that flexible work models are not only beneficial for employees and organizations but also hold significant potential for advancing sustainability goals. By reducing commuting, optimizing workspace usage, and lowering organizational overhead costs, flexible work contributes to a measurable decrease in carbon emissions and resource consumption. At the same time, such models foster employee well-being, productivity, and organizational resilience, reinforcing the dual benefits of efficiency and sustainability.

However, the sustainability of flexible work arrangements depends on thoughtful implementation. Issues such as digital energy consumption, unequal access to technology, and employee well-being must be carefully addressed to ensure long-term viability. As organizations transition toward hybrid and remote models, embedding environmental considerations into flexible work policies can create a more holistic approach that balances social, economic, and ecological priorities.

In conclusion, flexible work is not merely a human resource strategy but a transformative work model with the capacity to align organizational practices with the broader sustainability agenda. Future research should deepen empirical investigations into the environmental impact of flexible work, providing evidence-based insights to guide policies that simultaneously support people, performance, and the planet.

Despite the generally positive verdict on teleworking as an energy-saving practice, there are numerous uncertainties and ambiguities about its actual or potential benefits. These relate to the extent to which teleworking may lead to unpredictable increases in non-work travel and home energy use that may outweigh the gains from reduced work travel. The available evidence suggests that economy-wide energy savings are typically modest, and in many circumstances could be negative or non-existent. Despite the generally positive verdict on teleworking as an energy-saving practice, there are numerous uncertainties and ambiguities about its actual or potential benefits. These relate to the extent to which teleworking may lead to unpredictable increases in non-work travel and home energy use that may outweigh the gains from reduced work travel. The available evidence suggests that economy-wide energy savings are typically modest, and in many circumstances could be negative or non-existent.
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