

The New Ways of Working Network brings together thought leaders from disciplines such as workplace design, information technology, knowledge management, human resources, human factors, and organizational culture to collaborate and discuss new ways of working in a distributed world.

Environmental Sustainability Through New Ways of Working

Author: Hal Levin

Sustainability is more than a fad; it is an increasing focus for corporations in terms of investor relations, stock value, and customer opinion. Although sustainability impacts of many aspects of work, such as building usage, office equipment, commuting, air travel and meeting patterns, sustainability through new ways of working in a holistic sense has not been directly researched. However reductions in energy consumption, corporate real estate, and travel associated with many aspects of distributed work may provide environmental benefits.

This paper explores the relationship between environmental sustainability and new ways of working, especially distributed work. Key questions include: Can new ways of working contribute to a more sustainable way of working and a more sustainable world – and if so, how? Are new work practices part of the problem or part of the solution?

The author outlines the basis for current thinking about options related to new ways of working that may contribute to environmental sustainability. These include:

- Location and distribution of workplaces and workers (distributed locations, satellite centers, telecommuting, offshoring)
- Building and workplace planning (reduction of square footage, higher densities)
- Urban design (higher densities to encourage mass transit and reduce commute times)
- Information technologies (telepresence systems)
- Organizational work practices (learning to work remotely with distributed teams)

First, the author considers definitions of environmental sustainability and looks at sustainability from several perspectives: short-term and long-term views as well from organizational, societal and environmental perspectives.

A quarter of all global greenhouse-gas emissions come from power and heat generation, which is mostly used in domestic and commercial buildings, and by industry. Transport accounts for 14% of GHG emissions, making it the third largest source of emissions jointly with agriculture and industry. Aviation is expected to account

for 5% of the total warming effect in 2050. Direct combustion of fossil fuels and biomass in commercial and residential buildings, account for 8% of emissions. These direct emissions are expected to increase by around two thirds between 2000 and 2050.

The author reviews available literature on new ways of working and environmental sustainability. He located research in the following areas:

- **Telework, distributed work, and commuting.** Telecommuting, satellite offices, and other forms of distributed work have sustainable aspects, but not all effects are favorable. For example, local trips may increase. Also, office-related impacts may not be lowered unless the office space is reduced as a result.
- **Air travel.** Air travel is a big contributor to unsustainable current work patterns. Aviation accounts for about 10% of greenhouse gas emissions from transportation in the U.S., or about 2.7% of total national greenhouse gas emissions.
- **Remote or distance work locations (including outsourcing).** Global and outsourced company operations may also increase the amount of long-distance air travel.
- **Real estate.** Underutilized workstations, partly due to new ways of working, are a potential source of energy savings. Because many office buildings are only 40 - 50% occupied, this creates opportunities to reduce the number of workstations provided. However, the net effect may not be major. While offices comprise 19% of commercial building floor area in the US, they account for only 3.7% of total primary energy used in the US.
- **Computing.** Distributed work may either increase or decrease energy consumption, depending on the distribution of network storage and access. Recently, a coalition of major IT organizations announced plans to achieve a 50% reduction in power consumption of computers.

Potential mitigating corporate actions include: adding flexible time schedules and shift management options; taking advantage of satellite office locations; eliminating unused work space; instituting company bus services;

leveraging distributed call centers; projecting a sustainable corporate image; creating a “paperless” office; incenting employees to drive fuel-efficient cars; and developing travel reduction programs.

Tentative conclusions

The author notes that the opportunities for environmental sustainability through new ways of working have not been sufficiently researched.

Reducing office real estate may in itself have little impact on environmental sustainability—since office use of energy accounts for only 1.6% of total US energy consumption; however such reductions may produce costs savings both in building costs and energy savings.

The distribution of work groups nationally and internationally may be propelling increased air travel. If this is true, this can have a profoundly negative impact on environmental sustainability.

In order to achieve a significant impact on environmental sustainability, a more systemic approach to new ways of working will be required. The approach can include reduced commuting, including driving and use of public transit.

Finally, it is apparent that a good general model for assessing the sustainability of new ways of working is needed, a model that considers the diverse variables of work distribution and location, commute patterns, air travel, information technologies and real estate size and locations. NewWOW is currently developing such a model.

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55

Other features:
extensive footnotes,
charts and appendices

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About the author: Hal Levin is a Research Architect with Building Ecology Research Group, Santa Cruz, California. Mr. Levin has conducted research and provided consultation in the areas of buildings’ impacts on occupant health and comfort, as well as on the larger environment. He is extensively published in journal articles, book chapters, conference papers, and newsletters.

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