Without adequate governmental intervention it will be up to the scientific community at large to make sure we reduce energy use and dependence on fossil fuels. The most effective way to achieve this is by coupling these reductions with economic gains as to entice profit motivated companies to implement our suggestions. Since energy use is not a major cost for most corporations linking a decrease in energy use to an increase in worker satisfaction and productivity is one option.

According to Wargocki et al. increased satisfaction with temperature experience is linked to the largest increase in self-estimated job performance. This suggests that improving this satisfaction could be a great way of boosting productivity in an office environment. Since implementing separate climate controlled zones within an office is rather inefficient (by for example requiring neighbouring cubicles to be cooled and heated at the same time) and costly a solution should be sought for this.

Research by Huebner et al. shows that there is a correlation between the colour temperature of lighting and the way room occupants experience temperature. Te Kulve et al. did further research into this topic, looking at both physical reactions of the occupants and self-reported results. They found more indications that thermal discomfort in building occupants can be partially compensated through changes in lighting colour and intensity.

This means that instead of implementing better temperature control for separate occupants it might be possible to introduce a smart lighting system in office buildings. This could also enable a decrease in the differential between air temperature inside and outside of buildings, resulting in increased efficiency of climate control systems. Providing separate workers with their own personal lighting can also have other positive effects on workers, increasing their productivity further(Allen et al.). The combination of increases in worker productivity and temperature control efficiency should more than make up for the cost of implementing smart lighting systems, especially in new and refurbished office buildings.

Wargocki P, Frontczak M, Schiavon S, Goins J, Arens E, and Zhang H. 2012. Satisfaction and self-estimated performance in relation to indoor environmental parameters and building features. Proceedings of 10th International Conference on Healthy Buildings, Brisbane, Queensland.

Huebner, G., Shipworth, D., Gauthier, S., Witzel, C., Raynham, P., & Chan, W. (2016). Saving energy with light? Experimental studies assessing the impact of colour temperature on thermal comfort. Energy Research & Social Science, 15, 45–57. https://doi.org/10.1016/j.erss.2016.02.008

Te Kulve, M., Schlangen, L., & Van Marken Lichtenbelt, W. (2018). Interactions between the perception of light and temperature. Indoor Air, 28(6), 881–891. <https://doi.org/10.1111/ina.12500>

J.G. Allen et al., 2017, The 9 foundations of a healthy building: