

# Exploring a designers responsibility when creating a workspace and ways they can support the circular economy.

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# Prologue

I have chosen this question and topic to discuss current concerns that I, like many other designers, may have regarding our impact on the planet. As compared to most people, designers can influence the built environment, everyday lives, and subsequently our planet.

Designers are taught to be aware of and have reason for their decisions. They are taught to think about how space can affect a person's day to day life such as their journey, movements, productivity, wellbeing and much more. Alongside this, designers must also consider sustainability.

Through researching this topic, the impact on the future of our planet seems to me - now more than ever - to be as important as the impact our designs have on people. As an interior designer I feel a great responsibility and privilege in my ability to influence space. In the process of creating this essay, my passion for sustainable design has grown through my findings. This, paired with training I attended throughout November 2022 to become a carbon literacy facilitator for Manchester Metropolitan University, has left me feeling both concerned and optimistic about my future in the design industry.

Aims of the essay:

- To explore sustainable design options in workplaces.
- To discuss how sustainable design can be complex.
- To suggest that knowledge and awareness could be the key to success.
- To analyse evidence of the possibilities of sustainable design through the inclusion of examples and case studies.
- To offer explanations as to why sustainable designs are chosen.

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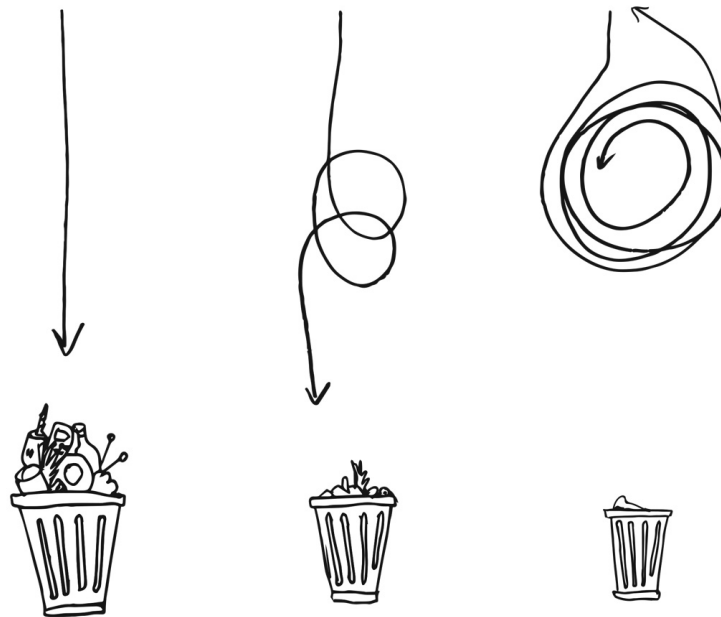
## Key Terms

Earth Day: Earth Day began in 1970, when twenty million Americans came together to demand greater protection for the planet. (Earthday, no date)

Embodied carbon: ‘...the carbon dioxide (CO<sub>2</sub>) emissions associated with materials and construction processes throughout the whole lifecycle of a building or infrastructure.’ (Cure Carbon, 2020:online)

Net zero: ‘...refers to a state in which the greenhouse gases going into the atmosphere are balanced by removal out of the atmosphere.’ (Net Zero Climate, no date:online)

Circular economy: ‘...an all-encompassing approach to life and business, where everything has value and nothing is wasted.’ (Zero Waste Scotland, no date:online)



*Figure 1: An illustration of the circular economy. (Source: Zero Waste Scotland, no date: online)*

## Introduction

To firstly establish as human caused climate change is an ongoing topic, NASA states that 'Based on well-established evidence...about 97% of climate scientists have concluded that human-caused climate change is happening' (no date:online).

In a video by the UK Green Building Council titled, Net Zero Whole Life Carbon Roadmap for the Built Environment, it is stressed that the UK needs to decarbonise its built environment, which is currently '...directly responsible for 25% of total U.K emissions' (UKGBC, 2021:0min 36). As designers play a part in influencing the built environment, suggestions to help decarbonise it will be put forward and analysed throughout the essay.

While global warming is considered to be one of the major environmental problems of our time, this essay aims to shed light on a designers' role in global efforts to reduce emissions and reach net zero.

It will also consider the responsibilities and constraints designers may already face when creating a workspace. This will be shown through the inclusion of potential regulations, human needs, and time and cost restraints. Through exploring ways in which designers - primarily interior designers - can create workspaces that support the circular economy, potential further benefits will be discussed. Such as how sustainable, biophilic design can additionally support client and occupants needs.

The essay presents a variety of sources from specialists in the areas of office design and sustainability. From the information, it may be evident that with every new design, the possible implications on the planet, equally to people, must be considered.

Subject topics that will be explored are waste, greenhouse gas (GHG) emissions, and future planning. Whilst critically analysing these topics, the essay will also be mindful of multiple standpoints, and the challenges designers may face.

Despite global efforts up to now, a page written titled Climate Action on the United Nations website suggests that our current national climate plans fall short of what is needed as GHG emissions '...are now at their highest levels in history.' They even claim there will be an increase in GHG emissions in the coming years (no date:online). As not all the suggestions for a sustainable workspace design in this essay are regulatory standards, it points out a designer's individual responsibility. As national plans may fall short, the examples and case studies in this text offer suggestions to enable designers to act now, without waiting for government restrictions to influence their decisions.

David Attenborough, on a documentary titled Climate Change – The Facts, says 'The cost of action far outweighs the cost of inaction', (BBC, 2019:1hour). The documentary infers that halting climate change is about saving ourselves, not the planet, which enforces the urge to act now. Throughout the documentary individual responsibility is also stressed, similarly to the recurring point in this text of a designers' responsibility.

# History

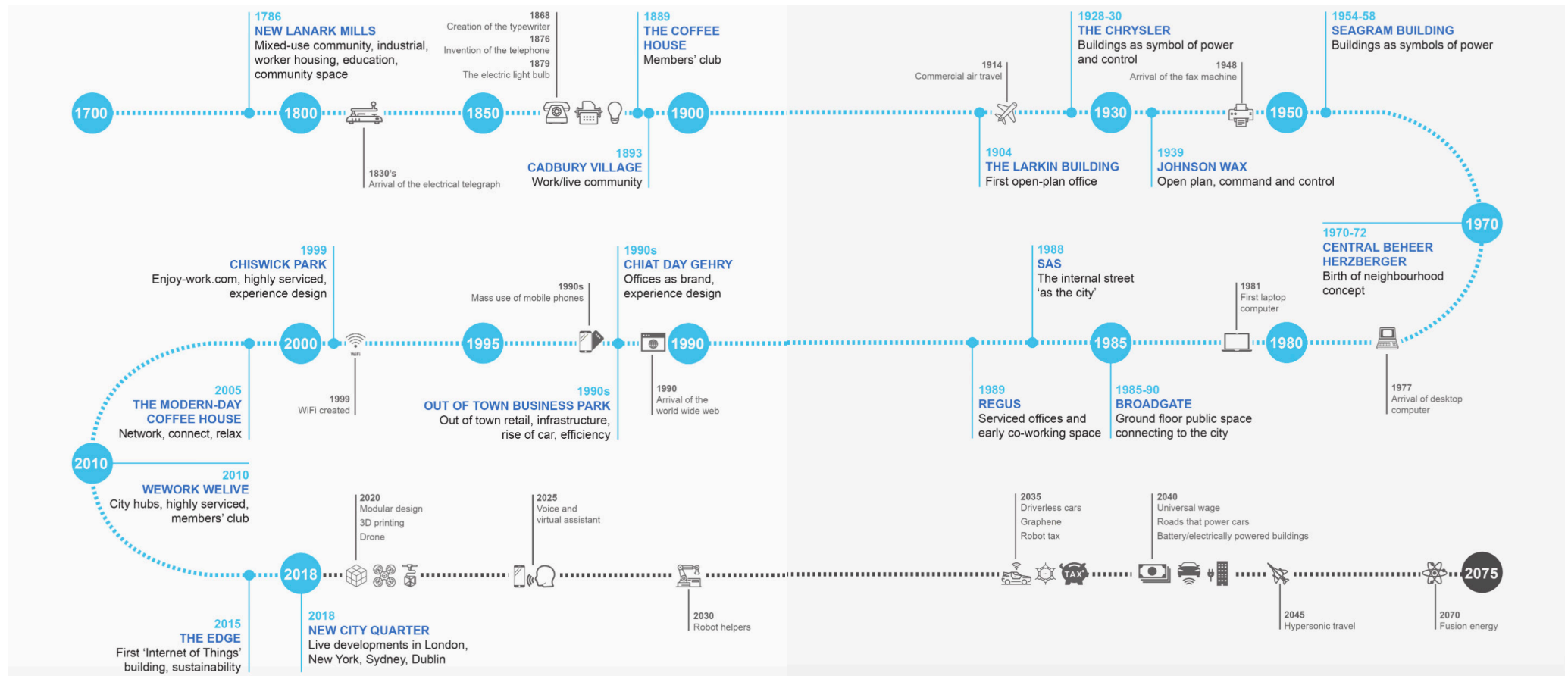


Figure 2: (Source: Gillen, 2019:15-16) A time line of workplace design.

In respect to the limited word count of this essay, and since many other academic texts that have been influential to this writing repeat the same information, it is favoured to include the time line (see figure 2) to provide a historical synopsis of workplace design. The time line from the book Future Office Next Generation Workplace Design by Nicola Gillen is relevant as it is important to have some knowledge of the historical past of workplace design, and the possible future predictions, while allowing this essay to focus on the present facts.

## Adaptable Design For Future Use

Gillen describes the circular economy in saying 'A new model is emerging where resources are kept in use and the value is retained' (Gillen, 2019:26). Although at present this concept is nothing new as it is a practice widely used by designers, it does firstly raise the question about value. The value Gillen is referring to could be the embedded value in existing materials such as GHGs. A question can also be raised as to who values what, as clients may value aesthetic trends and low upfront costs higher than sustainability.

This leads to the issues that come with fast paced design evolution and consumption. Gillen claims that '...workplaces conceived now could already be obsolete by the time they are completed. There is also a legacy of buildings proving hard to adapt that are being demolished.' (Gillen, 2009:25).

This opens a reoccurring point for this essay whereby adaptable, lasting design is of high importance. Due to adaptable, trend resistant designs providing one of the best solutions for prolonging the lifespan of precious resources.

As inevitably, every building will be refurbished, demolished, or changed in some way. It seems counterproductive to design without considering the need to adapt in the future.

Gillens point highlighting how buildings don't have the means to recover existing materials supported on a documentary covering topics of climate change and the planet where they claim that waste is the result of design (Gillen, 2009:25).

The narrator says, 'When we make products, we rarely build in the means to recover the raw materials.' They suggest that if we design products so that the raw materials can all be recovered, '...our use of resources could be infinite.' (Breaking boundaries: The science of our planet, 1 hour:6 mins) This suggests that designing to support the circular economy, is fundamental to providing ourselves with future resources, as demolition and waste is unsustainable.

In the book *The Responsive Office – People and Change*, the author states that 'The increased speed of technological innovation has also meant that interior layouts must change rapidly and easily' (Duffy, et al., 1990:99). This quote suggests that the driving force for adaptable design in 1989 may have been the speed of innovation and need to keep up with the changing times as opposed to sustainability. Whereas now, flexibility and sustainability also create the same need for adaptable designs.

In support of this concept, David Cheshire, author of the chapter Fit for the Future - Sustainability and Adaptive Building, provides figure 3. An illustration of what a case study of an adaptive building fit for the future might look like.

A space designed in this way, following these principles would therefore be possible to support the circular economy and the needs of its client and users by ensuring that the design is future proof and provides a place for each of the day to day needs in a workplace. The adaptable design is less resilient to change and would take minimal effort to almost completely remodel in its proposed lifespan. Therefore, a designer's responsibility in supporting the circular economy and the needs of the client can be met simultaneously. This is due to possible time and cost savings through eliminating the need to demolish in the future. It would also be supporting the office space occupants day to day needs by providing an adaptable space that can be tailored to suit their work.

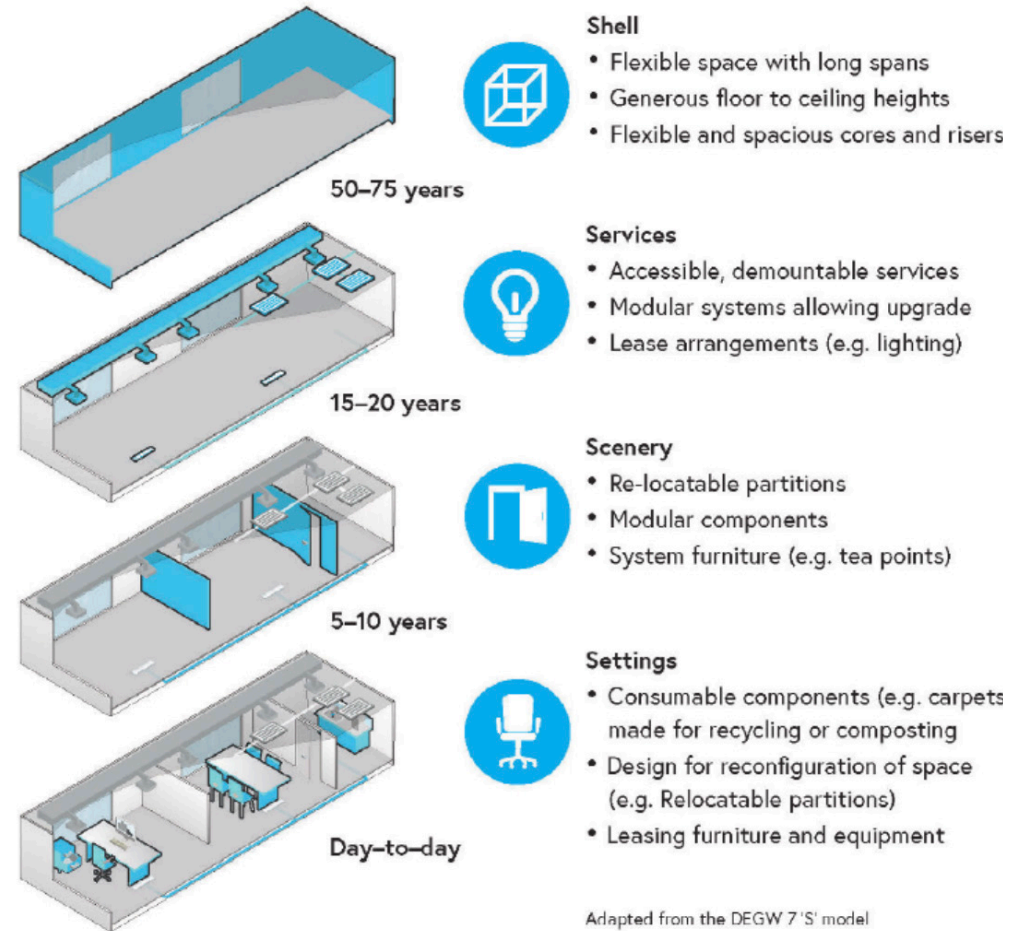


Figure 3: A proposal of adaptable design strategies and their individual lifespan (Source: Cheshire, 2019:27).



## Embodied Carbon In Materials

A designers' knowledge of sourcing materials and being aware of embodied carbon is another key factor when assessing how well they can fulfil the client's brief and support the circular economy.

In the book *The Responsive Office: People and Change*, it is suggested that timber is considered in construction because of its sustainability (Duffy, et al., 1990). Drew Plunkett adds a suggestion in the book *Construction and Detailing for Interior Design*, saying that 'Timber is the most versatile building material'. (Plunkett, 2015:160). These notions give reason as to why we see so much timber in design. However, the specification of timber may not always be as positive as it seems. On the documentary 'Can We Still Save the Planet?', Kenny Hay from Land and Forestry Scotland, the Scottish Government agency responsible for managing the nations woodlands says, 'Britain is the second largest timber importer by volume in the world, behind China.' (Can We Still Save the Planet?, 2022:34mins 30). It could be suggested that the large consumption of timber as a country is influenced by designers' specifications, and although timber is a natural resource, the way and rate at which it is being imported can be damaging to the environment. The narrator supports this in saying, 'According to recent data, deforestation is responsible for 11 percent of our global emissions...' (BBC iPlayer, 2022:35mins 40). Therefore, although the impact of adding timber to designs can be beneficial due to the fact it is naturally resourceful in comparison to other, more damaging materials, if designers are unaware of where they are importing goods from and their carbon footprint, they could inadvertently be harming the planet more than they might think. This is because emissions produced during the transportation of timber can be high. The high number of CO<sub>2</sub> emissions can be seen in figure 4, including the three modes of transporting goods – road, aviation and shipping.

## Global CO<sub>2</sub> emissions from transport

This is based on global transport emissions in 2018, which totalled 8 billion tonnes CO<sub>2</sub>. Transport accounts for 24% of CO<sub>2</sub> emissions from energy.

Our World  
in Data

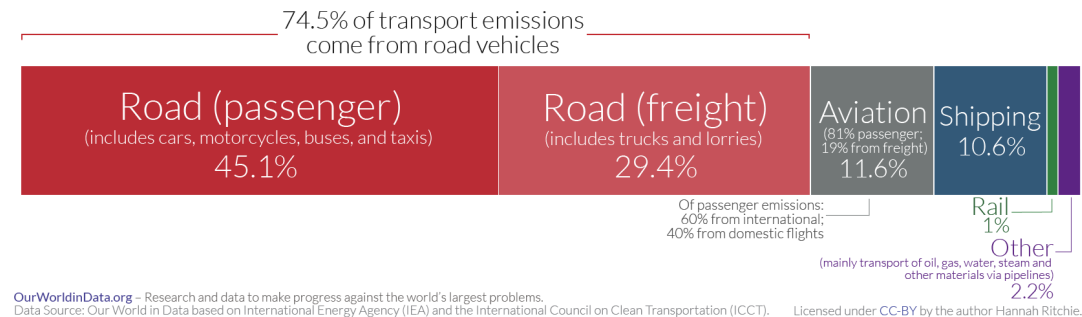


Figure 4: 'Global CO<sub>2</sub> Emissions From Transport' (Source: Ritchie, 2020:online).

This point highlights the importance of education and knowledge on sourcing materials to support the circular economy as well as their users' needs, because rising carbon dioxide (CO<sub>2</sub>) levels and consumption can be linked back to the designers' choices and their responsibility to the climate.

It could be suggested that proper education of sourcing materials needs to be implemented on a national scale within design courses, and possibly some mandatory education within design practices, beyond higher education. A positive solution to this problem could be to ensure that where possible, designers will first reuse any existing timber they may have from the original space into their new proposal. Other solutions would be to suggest sourcing timber to reuse from local salvage yards and purchase timber locally, or at least within the UK. This could then reduce carbon emissions through minimising the transportation of goods, thus reducing a designers negative impact on the planet. Finally, however, the implications of this choice may not always be in favour of the client. This could be due to possible higher monetary costs, and time consumption.

## Case Study: Apple Store

As previously pointed out, reusing existing materials in design is almost always the most sustainable option. However, this could prove difficult in supporting the clients needs in some cases, or may not be an option. In this instance, new products and materials will need to be specified, and there are ways in which a designer can also support the circular economy in doing so.

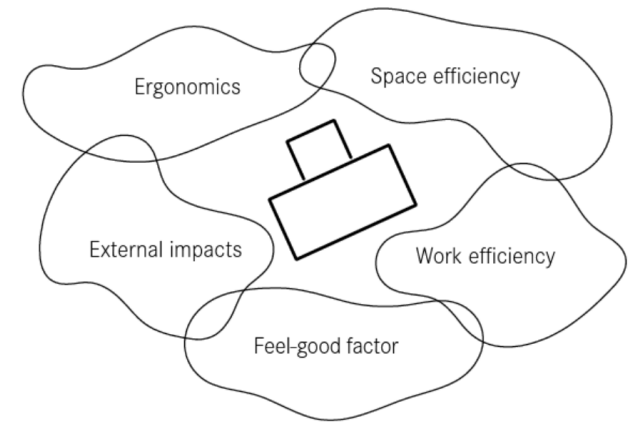
As Bert Bielefeld shows throughout the book *Office Design*, there are many determining factors to note in the process of designing such space, such as the dimensions of desks, chairs and movement areas (Bielefeld, 2018), along with many requirements that designers must consider and meet. Bielefeld includes an illustrated example of such requirements (see figure 5).

With that being said, a point made previously that concluded the reuse of existing materials as likely always being the most sustainable option, may not be available in certain designs. This could be because new additions are necessary to enable the design to meet requirement of an office place, and to fulfill the need of clients and occupants.

As an example of what may need to be included in a new workplace design, and as their positives on flexibility have already been highlighted in this essay, to the right is an image showing the use of partitions with sustainable properties (see figure 6).

As the use of timber in design has been previously mentioned to have sustainable benefits due to being a natural resource, the use of living plants and trees in design can support the circular economy further as they do not use the additional energy through deforestation. Also, potentially using less energy through the elimination or reduction of manufacturing and transportation.

Figure 6 show Apple's London store, although this is a retail space, it is also the workplace for employees interacting with customers, the open plan space uses trees as multifunctioning partitions and seating. Through analysing the image alone, and without detailed information of this design, it is a suggestion that the trees could have been grown and transported within the UK. However, as this is not specified in the description, it is important to note that if they were imported from overseas, their embodied emissions would significantly rise, therefore lowering their sustainability as a design option.



*Figure 5: 'Requirements of an office workplace'*  
(Source: Bielefeld, 2018:11).



*Figure 6: Tree partitions in Apple store.*  
(Source: Young, 2016:online)

Added to the benefits this biophilic design can have for the planet; including plants and trees has also been proven to benefit people. In the book, *Nature Inside: A Biophilic Design Guide*, the author's William D. Browning and Catherine O. Ryan suggest that the biophilic design philosophy is derived from an inherent need for humans to connect with nature (Browning and Ryan, 2020). In explaining this instinctive need, they suggest that designers utilise this fact in the spaces they create. They say spaces can have a like to the savannah desert with 'clustered trees' and 'semi open spaces' (Browning and Ryan, 2020:114), similarities you can see within the Apple design, where this philosophy could have been used.

The authors of another book called *Biophilic Design: The Theory, Science, and Practice of Bringing Buildings to Life* also explain the philosophy of biophilic design as humans instinctive need to be surrounded by nature. They claim that many spaces now, unfortunately show no understanding of ecology (Kellert, et al., 2008), suggesting that people are working in spaces that are not supporting their basic needs for connection. Which could be agreed with in the respect of offices that have little to no connection to the natural world.

The designers reason for using trees for the Apple store could be based on this philosophy, or simply conceptual or aesthetic. Whatever the design reasoning, it is proven that biophilic design can support the circular economy through lowering emissions, as well as supporting the needs and wellbeing of the occupants. Below is a list of benefits biophilic design has on people that could make it desirable in the workspace.

Benefits of biophilic design (Browning and Ryan, 2020):

- Relaxation and stress relief
- Lower blood pressure and heart rate
- Decrease chronic pain
- Improve cognitive function
- Increase positive emotion
- Reduce fatigue, aggression and sadness

Overall, and regardless of the designers own reasoning for creating this space, the design does have a number of benefits for both people and planet. As the human wellbeing benefits from the biophilic design have been addressed, the conclusion of the additional benefits are as followed:

- Acting as partitions and seating reduces the need of additional furniture, therefore reducing the use of resources in support of the circular economy.
- The use of biophilic design can attract and retain staff to a workplace, supporting the clients needs in relation to capital gain.
- Through making partitions multifunctional, the client benefits from space utilisation, and the users workflow and productivity could be increased.
- As the partitions are not permanent fixtures that would need demolishing, the adaptable design supports the circular economy and client.

All of these possible benefits have the ability to increase overall profits for a company. Whether Apple here is capitalising on an enticing trend, or has an understanding of biophilic design, they are able to benefit from this design as the client, but also provide a space with many benefits for the occupants, that additionally supports the circular economy.

## Values of Green Design

As stated in the Beyond the Business Case report by the World Green Building Council (WGBC), the most substantial obstacles sustainable buildings face relates to finance, with the main barrier being 'High (perceived or actual) first costs' (WGBC, 2021:14). However, it is also said that 'Design technologies for constructing sustainable buildings are increasing in accessibility and cost competitiveness' (WGBC, 2021:46). This suggests we should expect to see an increase in the uptake of circular design in align with an increase in cost competitiveness.

Although there are many possible benefits of circular design, some highlighted in this essay, these alone do not explain why we already see sustainable designs being chosen over lower costing, less sustainable designs. This point therefore offers a deeper understanding of why circular design would be favoured. There is real value being recognised in green design. Case to case, clients' priorities and values will differ, so a few values such as corporate image, risk mitigation and asset value will be explored.

To firstly explore the idea of corporate image value, authors Penny Bonda and Katie Sosnowchik of Sustainable Commercial Interiors provide detail of Greenpeace's headquarters. The office was designed for Greenpeace, driven by their green missions (Bonda and Sosnowchik, 2007). The open plan layout of the project made savings in unused drywall and doors, while increasing workspaces (Bonda and Sosnowchik, 2007). The reduction in materials and wasted space here supports the circular economy, concurrently to the client and occupants through increased workspace. More to the point, the example supports the theory that workplaces might be designed sustainably in favour of aligning with their corporate image, as a post occupancy survey concludes 96% of occupants state the new space provides a better 'Overall spirit and energy', and 97% agreeing that their office '...is a prototype of both ideals and practice with Earth in mind...' (Bonda and Sosnowchik, 2007:240). This proves that designing the workspace in alignment with their green beliefs and image was a success, evidenced in the feedback. This example shows how green designs can help a company as a positively perceived image could help attract and retain high end employees, clients and investors.

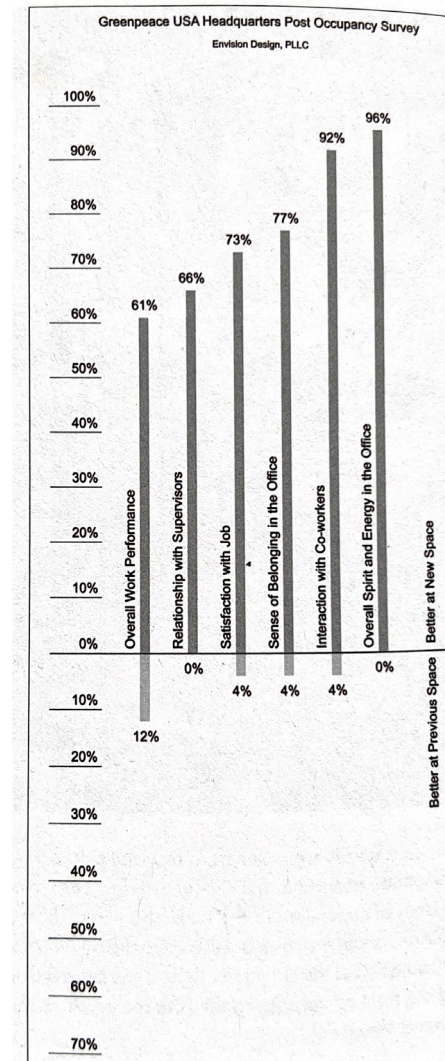


Figure 7: Post occupancy survey.  
(Source: Bonda and Sosnowchik, 2007:240)

To further note regarding the open plan layout of the Greenpeace headquarters, John Pile claims in his book *Open Office Planning: A Handbook for Interior Designers and Architects*, 'Open plan offices can save wasteful tasks' (Pile, 1978:31). Adding another suggestion to the list of savings the Greenpeace office could have. However, open plan office designs can come with certain problems, two mainly being lack of privacy and acoustical consideration. As explained by Pile, ideas such as the *Burolandschaft* concept; the German term coined by the first open planners in the 1950's, was first met with such concerns from office planners (Pile, 1978). These may be the same concerns that the employees of Greenpeace had, because although the design was an overall success, the proposal of the open plan layout did receive '...considerable employee resistance to change...' (Bonda and Sosnowchik, 2007:237) meaning smaller rooms and phone closets were added to the design. This meant the space could not be completely open plan and used additional resources.

To conclude, although sustainable office spaces like Greenpeace can be more expensive initially, the client may regard their corporate image highly, understanding the additional benefits that appearing to work sustainably can bring. Ultimately, a space that portrays the company's mission well could attract and retain high end employees, clients and customers. Subsequently, this will enable a designer to support the circular economy, clients and occupants in many ways.

Another recognised co benefit of sustainable design is investment and asset value. A study shows that '...green building features and practices can and do benefit the market value of a real estate asset' (Bonda and Sosnowchik, 2007:221). Suggesting that additionally to benefiting from a positive corporate image, a green office design has the potential to charge higher premiums than more unsustainable spaces, as the higher market value of such workspaces is increased. This, paired with the additional benefits highlighted previously on how green, biophilic design can benefit humans, will support the value perceived by occupants and clients. For example, if the office was to be a coworking space, the client would be able to charge a higher premium for their space, as people value the benefits of working in green spaces. To add, '...one in three workers may be toiling away in a workplace that is making them ill' (Bonda and Sosnowchi, 2007:221). As awareness of this rises, it could be expected that clients and occupants will choose to work in and invest in green spaces, as they are aware of the benefits. This will enable designers to build a case to back their decisions and persuade a client to opt for green design, supporting the circular economy.

Finally, the risk mitigation of investing in green design could hold value for clients. As claimed in a report from The World Bank, carbon pricing is one of the most debated tools for reducing the effects of climate change today. They say that ‘Despite the economic and social upheaval of COVID-19, carbon pricing instruments, such as a carbon tax or energy tax related to carbon content, have continued to be rolled out or increased in ambition’ (The World Bank, 2022:9).

Therefore, it can be expected that a client would favour a sustainable construction plan, to mitigate the risk of being taxed. To add to this, the client will also value the risk mitigation of a space that is designed to operate sustainably too, as there is said to be an increase in carbon taxes, having a space already equipped to produce lower carbon emissions will mitigate the risk of being taxed in the future, as well as eliminating the need to be adjust the space again to cope with increased restrictions.

Although there may be a continued increasing roll out and ambitions, it is suggested in the report that the statistics still do not reflect what needs to be done to meet the Paris Agreement targets on decarbonisation. It is said that ‘Worldwide, 68 carbon pricing instruments (CPIs), including taxes and emissions trading systems (ETs), are operating (The World Bank, 2022:9)’. As it is claimed targets will not be met with our current regulations, designers and clients should expect them to increase. Therefore, as designers and clients become aware of expected prices, they will be inclined to opt for designs that give off lower emissions in the construction and operation of the space.

To add to this, ‘The International Maritime Organization is considering placing a price on emissions from international shipping activities’ (The World Bank, 2022:9). If this was to happen, it could also affect the choice of imported goods and materials for the project. Adding additional cost of emissions to materials imported for office spaces could deter clients from doing so. This would additionally support the circular economy as explained previously, reducing transportation of goods can significantly decrease the overall emissions of a project.

Together, these examples of values are the driving forces designers need. They can equip designers with an extensive business case for their sustainable design proposals. The added benefits mean that green designs and specifications are more likely to be adopted by clients, as they will likely value one or more of the points explored above. Therefore, this can enable designers to fulfil their part in supporting the circular economy, while also supporting the clients and occupants in numerous ways. These co benefits, along with many more, therefore give reason to why we continue to see the welcoming of sustainable design in our built environment, regardless of people’s care for sustainability.

## Conclusion

This essay has discussed a variety of factors to consider when designing a workspace. It investigated the various options available to a designer when attempting to create a space that can support both people and the planet. Climate change experts' words and numerous scientific facts have highlighted our responsibility as humans to protect our future. While designers have highlighted and provided examples of how this can be supported through the spaces they create and materials they use.

As our built environment continues to consume a large portion of the earth's natural resources, alarming predictions such as 'by 2030, three billion people worldwide who are currently living in poverty will join the middle-class level of consumption' have been made (Gillen, 2019:26). Although this is a good thing for people, the question is to what end, and will we sustain the growing consumption. As demand is predicted to rise, it is clear that designers will play a significant role in continuing to develop innovative ideas and expanding their knowledge of advancements in new, sustainable materials and design features. As it appears that designing with the future in mind is the only way to ensure we have one. The rate of change and the need for refurbishment and creation of our built environment highlights some systemic issues within the design and construction industry; if we design to support this, we have a better chance of reducing costs and waste.

It is important to recognise that much of this information has come from authors and case studies where the designers have a passion for and prior knowledge of sustainable design. As a result, we should not assume that these options are always simple and straightforward to suggest and implement. Furthermore, the fact that not everyone shares the same desire for sustainability and belief in climate change has been considered. This has been shown through the inclusion of multiple benefits circular design can also offer clients and occupants such as potential increased productivity and cost savings.

Having said that, the fact that Earth Day, which began with around 20 million people, is now celebrated across 190 countries by over 1 billion people (earthday.org, no date:online) demonstrates how the number of sustainability supporters continues to grow. This, combined with the Paris Agreement, described on a United Nations webpage as a '...legally binding international treaty...' that '...entered into force on 4 November 2016' (no date:online), demonstrates that much of our global society is currently working toward the same goals and targets for reducing GHG emissions, providing an optimistic outlook for the uptake of circular design.

Therefore, this can provide the optimism needed for designers that may fear resistance toward green design from clients and occupants, as designers can be hopeful that they will be provided with more government backed regulations to support them. Therefore, they will have less limitations and restrictions as the options to choose a cheaper, unsustainable design may not be available or follow government policies in the future.

Designers can also be optimistic about the fact that they may experience less resistance from clients and occupants as education and global understanding of climate change increases. An example of this is already being implemented within the UK education system. Starting in 2022, Manchester Metropolitan University have said they are ‘...embedding Carbon Literacy training onto courses across the University. This means it will be provided as a standard part of many (eventually all) degree courses.’ (Manchester Metropolitan University, no date:online).

Therefore, we can expect to see an increase in global awareness of climate change, as well as a growing sense of individual responsibility for the planet, resulting in an overall welcoming support for future, sustainable design solutions.

Based on the information and statistics gathered for this essay, this is a decisive decade for our future, and for designers today, it appears impossible not to design in support of the circular economy.

To conclude, the importance of a designer in all of this is their ability to influence changes in our built environment and the way people use space. As this essay has demonstrated, there are numerous possibilities. Finally, according to Gillen, ‘...the belief that people are a company’s most important and costly resource is now widespread...’ (Gillen, 2019: xiii), demonstrating that, aside from sustainability, clients will always be interested in investing in great design, which will hopefully be able to support the circular economy in a broad range of ways.



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