

Title: Impacts of Mandatory Climate Change Reporting in Construction: A Paradigm Shift for Sustainable Corporate Practices

Abstract:

Using a conversation method, the elements and effects (intended and unintended) of proposed mandatory reporting of climate metrics by stakeholder companies in the Australian construction industry, are reflected on. The paradox of accepting the need for climate change adherence and reporting required mandatory metrics by each stakeholder, independent of each other emerged as a clear problematic impact. The conversations reinforced known impacts of mandatory reporting in construction, cost increases, lack of expertise, vague government policy and incompleteness across the sector as so many small and medium companies do not have to comply. The conversations raised an obvious problem about how effective this mandatory reporting will really be, considering the SMEs domination of the industry.

Keywords: Climate mandatory reporting, construction, climate metrics, impact of policy

Introduction:

The issue of climate change has evolved from an environmental concern to a critical business imperative. Liu et al (2022) argue that 'increasingly demanding project requirements, stringent regulatory environments, and the urgent need to create a positive industry climate all exert great pressure on construction companies'. Recognising the far-reaching impact of corporate activities on climate, there is a growing global trend towards mandatory climate change reporting for businesses across sectors. This paradigm shift reflects the urgency of addressing climate change, promoting transparency, and fostering sustainable practices. In this paper, we report a preliminary investigation of the potential perceived impacts of mandatory climate reporting in the Australian Construction Industry.

Climate Change reporting is now recognized as a Business Imperative. The scientific consensus on the reality of climate change and its link to human activities has prompted a review of corporate responsibilities. The construction sector contributes significantly to greenhouse gas emissions. The construction industry emits about 39% of the world's energy-related CO₂ emissions (Lee et al 2018; Burt et al 2023), and accounts for 36% of global energy consumption (The Global Status Report for Building and Construction: United Nations Environment Programme 2022:6). Mandatory climate reporting in Australia will require construction businesses to assess and disclose their carbon footprint and encourage the adoption of sustainable practices. Transparency is at the core of this mandatory reporting. Construction companies will be required to disclose their greenhouse gas emissions, energy consumption, and sustainable practices. This transparency is argued to foster accountability, both internally and externally, and for stakeholders, including investors, clients, and the public, will enable them to gain insights into a company's environmental performance, influencing decision-making and resource allocation.

Impact of mandatory compliance in construction

Mandatory compliance is the norm in Construction. Issues such as Health and Safety (Cedillo et al 2019; Yiu et al 2019); waste disposal (Shooshtarian et al 2022); adoption and use of BIM (Hall et al 2023; Saka and Chan 2023), financial reporting (Assaad and El-Adaway 2020) form part of most construction companies' management domain globally. In all cases the output is 'disclosure' as a report to specified compliance authorities (government departments; Professional Bodies;

Banks; statutory corporate management bodies etc.). Disclosure can be twofold: a) mandatory disclosure, when regulatory authorities impose on companies to disclose certain elements of information; and b) voluntary disclosure, when companies decide to disclose more information than required because they deem that this will benefit them (Popova et al 2013). However, what is clear in the research literature is that compliance comes with impacts, some are noted in the following discussion.

Amoah and Sibelegwana (2022) have shown that incomplete compliance in construction settings can result from one or more of the following: a lack of quality management system implementation, cash flow problems, lack of adequate plant equipment, poor site coordination, substandard material, inexperience supervisors, lack of drawing specifications, the inexperience of artisans, poor work scheduling, lack of communication with consultants and poor contracts managements are significant contributory factors to non-compliance to quality standard among emerging contractors. These non-compliance issues, they argue, resulted in reduced profits, loss of clients, reduced firm reputation, bankruptcy, court action, reduced team morale on sites, lack of company expansion, and increased insurance premiums to emerging contractors.

In a recent analysis of extant research in the residential building industry in Australia, Lu et al (2022) found mandatory compliance impacts included gaming which emerged from flawed rating tools which were then gamed by practitioners to achieve a compliant result when the project was actually under-compliant (Lu et al 2022; O'Leary et al., 2018). There were often insufficient knowledge levels or a lack of required skills, resulting in incomplete compliance. Burt et al (2023) developed a detailed list of competencies need to address climate action issues in construction and noted that many of these competencies are new and require new knowledge within construction organisations. Lu et al (2022) also note the impacts of inconsistent implementation and interpretation of requirements among stakeholders. This resulted from inadequate knowledge and from conflicting expectations of what was actually meant to be complied with, again resulting in incomplete or deficient compliance. Van der Heijden (2016) and Enker & Morrison (2019) noted similar impacts resulting from the difficulties in compliance with low-carbon building requirements. Lu at al (2022) also noted the impact of ineffective mandatory compliance resulting from human behaviours of building end-users, who might have low awareness of energy efficiency, or have ignorant attitudes toward low carbon and energy efficiency. A prevailing explanation is the difficulties in compliance with low-carbon building requirements.

There are also unintended impacts from mandatory compliance in construction. These include a lack of proactive training, bureaucracy in the design and construction approval process, cost increases, poor implementation, inadequate technical guidelines, poor planning, regulatory deficiencies and delayed in site inspections (Nwadike and Wilkinson 2022). Unintended financial impacts of mandatory compliance include disincentivisation. Felta and Gallery (2011) investigated licensing requirements creating differential financial reporting obligations for the construction industry in Queensland, Australia regulated by The Queensland Building Services Authority (QBSA). Their research shows that construction licensees are categorizing themselves as smaller to avoid the more onerous and costly financial reporting of higher licensee categories. This impact, they argue, is consistent with US findings from the 2002 Sarbanes-Oxley (SOX) regulations which created incentives for small firms to stay small to avoid the costs of compliance with more onerous financial reporting requirements.

Similarly, Dainty et al (2017) examined the BIM mandate in the construction industry in the UK. They argued that a critical discourse is developed around the ways in which political reform

agendas, centred on BIM, might not stimulate innovation on a wider scale, but could act to disenfranchise small firms that are unable (or unwilling) to engage with them.

Methodology

This research is exploratory and uses a 'conversational method' (Swain and King 2022) to elicit the perceived impacts of climate reporting in the Australian Construction sector. Swain and King (2022) posit that there are actually two distinct types of informal conversation that can be used as data: those that are overheard or observed conversations that occur during researchers' observations during fieldwork – either structured or unstructured, and those shared or participatory conversations that involve an interactive dialogue between the researcher and another person or other people or, as in this case, between the three researchers themselves.

A review of the contemporary qualitative research literature over the last 10 years shows that informal conversations are used by researchers today across a variety of knowledge domains (e.g. Arrazola & Bozalongo, 2014; Berg and Sigona, 2016; Thomson and Trigwell, 2018). Straatemeier et al (2010) argue that these types of research are not primarily to develop a causal model or to develop theory or generalizations, but rather to develop knowledge for the design and realisation of artefacts (as, for instance, in engineering or architecture), or for the improvement of the performance of existing entities (as, for instance, in medicine or management). Reid et al (2005) argue that understanding the experience or project offers the opportunity to learn from the insights of experts. Honey et al (2020) add that people with lived experience have reported benefits from doing this type of research such as skill development and improvement. As such the evidence discovered is self-reported. One could argue that this constitutes bias. However, there is a counter argument by Grant et al (2001) that in-depth understanding through conversations allows the phenomenon to be studied closely, and longitudinally, taking cognisance of an "insider" perspective. Conventional quantitative research, they argue, will not reach the required level of penetration to develop a fuller understanding.

The value of this type of research is that it can result in emergence of quality data which sometimes gets lost in formal interviews (Swain and King 2022) or where people or respondents in formal interviews can give answers that they think the researcher wants to hear (Small and Calarco 2022; Suchman and Jordan 1990; Fowler and Mangione 1990).

Swain and King (2022) further argue, as do we, that informal conversations invariably produce better, in the sense of more authentic or richer, data in less artificial contexts than formal interviews, but, in our experience, they can, and frequently do so; there is often less performativity, and so they may get nearer to the reality of individuals' experiences, values and perceptions. This problem is also noted by Brinkman (2022).

This conversational research approach was used in this instance because the issue is emergent and immediate in the Australian context as compliance on climate change becomes mandatory in mid 2024 and, like for many in the industry, is provoking conversations. The conversations were between 3 people, a senior academic who has also worked in the construction industry as a design engineer, a principal design engineer from an engineering company that is impacted by the proposed changes, and another senior academic with many years' experiences in policy implementation effects in the IT industry. The conversation emerged informally from conversations held over a period of some months and then it was suggested we sit together and bring our different perspectives to the conversation. The conversation was recorded and

transcribed using cloud-based video conferencing software “Zoom” (Archibald et al 2019; Santhosh et al 2021). The formal process took 3 hours.

The following discussion reports the outcomes of that conversation, not as an attempt to draw definitive conclusions, but rather to identify problems and issues that are considered probable to emerge as impacts from the proposed mandatory changes. The researchers used open coding using live coding, a method called live coding which allows for simultaneous manual coding while listening or watching audio or video recording, to look for common themes (Parameswaran et al 2020). These propositions will then be more formally investigated as a longitudinal study.

Impacts

The impacts discussed below are not considered to be definitive, nor comprehensive. They emerged as the key immediate issues. In each case there is some explanation and then exemplary extracts from the discussion are presented as illustrative of identification or recognition of perceived impacts.

Significant increase in costs

Increased costs of doing business are an obvious impact of demanding more mandatory compliance. New employees will be needed with the required expertise in jobs that don't exist now. They add to costs however, they challenge what companies have been doing to now. The participants said:

“What is the role and responsibility and expertise and capability of that person as the climate officer?”

“Is that person the expert we need? They don't have the expertise in your company's domain. We used to have someone come in and try to talk to us to see how we do things. They can then build systems that can help us. But that person is not a mechanical engineer, nor a structural engineer. They are computer engineers. They really don't understand the context of the words we used, and they built something which was not really helpful... It is not a legislated requirement yet, however companies are focusing and progressing in this area because it appears transparent auditing of carbon footprint will be mandated. It is likely that we'll need a certifier on embodied energy for a new building. Recent state government in NSW, Australia has legislated embodied emission measurement and reporting for all developments from 1 October 2023.

However, it was recognised in the conversation that this may be somewhat idealistic and is certainly not heterogeneous and importantly has cost implications. The participants said:

“There are a lot of people in companies out there that either don't want to know or this hasn't hit them yet, and it's another cost of doing business, and they won't want to know it until they have to get on top of it.”

“Has anybody even thought about the economics of the building industry in terms of every time you put a new compliance in to practice, I mean anything. It adds significantly to cost, and it's not just a single one-off cost... I think people just think it's simplistic. Oh, it's a one-off cost to implement compliance. Hmm! That's wrong. So, it's not. It's multiplied. And the example we just had with, okay, a big builder like XXX is not building units anymore.”

“... seems like this area is about to create another job, in fact a new industry. And someone has to pay for it which will have to be the end user eventually. More compliance will mean engineering design fees will increase and these will need to be passed onto the client. And so, therefore, the person that's wanting the building has to pay more... that's just a natural progression.”

While mandatory reporting introduces compliance costs, it also opens avenues for financial benefits. Companies that demonstrate a commitment to sustainability may access green financing options, benefit from grants and incentives, and attract socially responsible investors. Financial institutions increasingly consider environmental, social, and governance (ESG) factors in their decision-making processes, making robust climate reporting a strategic advantage in accessing capital.

Uncertainty about what companies have to measure.

The mandatory compliance on climate for construction in Australia will be data driven. The conversant noted:

“The trouble is, how do we measure that? And how do we influence that? ... the first thing to be mandated is that you have to understand your organization's current carbon footprint. Large companies like ours are already internally mapping this across all our offices. So to work out what our carbon footprint is, I'm not sure where the measure is being taken, whether it's once you get to the office, and what we produce, not worrying about the carbon footprint for all our people getting to and from work. But we're just starting out on that journey and have champions in place in each office, and we're looking at what we're doing as a company with our carbon footprint, and how we reduce it. Now does that relate to the designs we produce? I'm not sure that this is the intent. For now, we are looking at the operation of doing business and the carbon footprint for that process and not what carbon is in the designs produce. That is covered off under separate design rules as mentioned earlier, but it's only early days, and I'll be delving into that as well. This is what I think.”

“We don't have a uniform measure yet. But I then sort of gravitated towards the construction side. Yeah, if we go and look at the total embodied carbon in the building, let's have a look at the energy that's used to actually put it together.”

“I'm not sure if I was a Construction Company that it would be up to me or a new certifier who would have to record all of the movement of material before it gets to the construction site and then at which point do we start measuring, because, if I follow your design, for example, you produce this building design, and I just build it, my day-to-day carbon footprint from my operation would be for mandatory reporting. What am I supposed to capture? What am I supposed to record and declare? ... does the measurement problem go to the origin, or does it go to the point of use or the point that I can control? This means that if it's from the point of origin. there's a massive supply chain involved which involves fuel, costs, carbon production, time, etc.”

The conversation then focused on an example raised one of the three researchers.

“As a design engineer responsible for reporting on climate change metrics, I wonder what has to be measured and by who? In the construction process, there are many companies that will have to report their climate metrics. I can measure the carbon footprints of our

organization and each company, of the many can also measure their carbon footprint. But who collate that? How does each stakeholder along the construction process know what the carbon footprint is prior to their participation in the process, and what happens after?”

The ensuing conversation raised other issues ...

“OK we report this information then what? Who will look at it? What are they going to do with the report that every company has to submit? Will there be an offset when recycling, for example of construction waste, is fed back into the process? (Figure 1) What measure or benchmark will authority/official use to assess these reports? How will the validity of the reports be checked? What type of feedback is expected? Will this process add an additional stakeholder(s) into the already fragmented construction process? Will this lead to increase the cost of construction?”

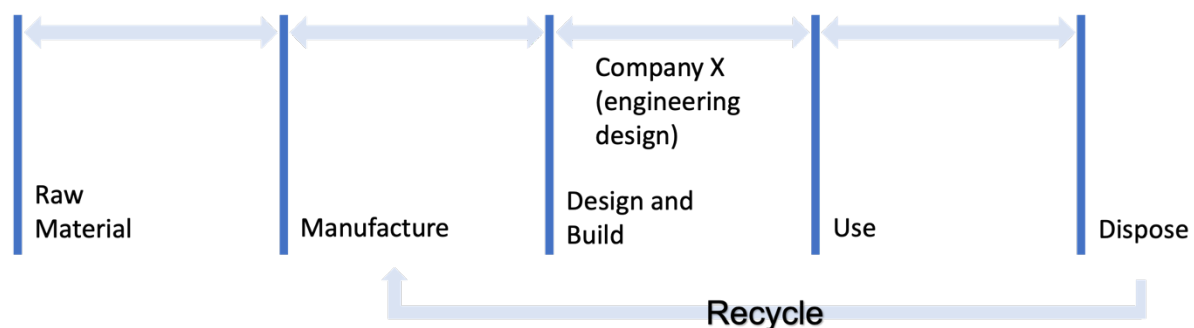


Figure 1 Construction process

The conversation then identified that this is then complicated by the possible/probable disassociation from the problem by each of the stakeholders involved. One current example was used to illustrate what was believed could happen with mandatory reporting on climate.

“Come early September this year (2023) there was going to be a practice standard issues by NSW state government for engineers working under recent legislation for engineering design of residential buildings. The practice standards had embedded duties of care and fit for purpose requirements that were onerous to the individual engineer working for a company. The engineering community was not ready for some elements of the standard including insurance. The insurance required was not available from the insurance industry. Also, the standard would push risk onto the individual engineer that they had not ability to control. Property Industry advocates including Engineers Australia the Property Council and Consult Australia, and the Insurance Council contributed to the request for comment from the Government. The standard was going to go live at end of September 2023. However, it's all gone quiet. Those standards have not been enforced yet. This may be due to the feedback from industry especially the response to government from Engineers Australia who observed that individual engineers working for large companies don't take out individual insurance but rely on the company's insurance. Also, those engineers don't control the insurance arrangements of their company or the contracts into which the company enter, they just carry out the designs for the company; the standards suggest

that and if they make a mistake, they are personally at financial risk. Why would they do it and then if they make a mistake are exposed to high personal financial risk. These are unintended consequences for bringing such changes and mandatory reporting. We have to advance in this area, but no one's thought about the unintended consequences. And there's a few examples that are happening daily, including experienced engineers getting out of design, because the personal risk has become too high. good established building contractors also saying, I'm not building those types of buildings anymore. Now, those builders suddenly don't need all the sub-contractors. They're not putting the volume of work through”.

Lack of required knowledge and expertise

The discussion highlighted an apparent paradox. Construction companies have accepted the 'green revolution' for some time. Green Star ratings for buildings are accepted as the norm. As part of this process there can be positive impacts.

“Employee Engagement and Talent Attraction: Employees increasingly seek purpose-driven workplaces that align with their values. Mandatory climate reporting signals a company's commitment to environmental responsibility, making it an attractive employer for environmentally conscious talent. Engaging employees in sustainability initiatives not only boosts morale but also contributes to a culture of responsibility and accountability.”

Clarity and government implementation timelines

The conversation noted the complexity and segmentation of the construction industry and the need for clarity in the proposed mandatory reporting on climate in construction industry in Australia. The requirements mandated are not clear enough.

“If they want you to record operating carbon footprint, which means that from your day-to-day operation as an engineering consultant you will produce a certain amount, where as for a construction company their day-to-day operation is to build and so their carbon footprint will be different and is varied from business to business and project to project.... I don't believe we're mature enough to say. Well, you know, we can report on this building, and here's all the records of everything in this building, right from raw resources. Maybe down the track they will, but that's certainly my understanding is not here yet, and so this is a guide! ... However, I note that in producing the designs, we have a whole sustainability section that is working with clients to show them how we can reduce carbon by good design. So would that have to factor into a design consultancy, I would think.”

“So, it comes back to measurement again. Yes. What do you measure? You know you have it on a building site. From what you guys have said, embodied energy is stored carbon in timber, or whatever right? But you're not responsible for that. In the erection stages of the building. You're already responsible for the design and the size of materials there. Yeah, what's in the materials that they're using potentially?”

Unintended consequences

The conversation highlighted that the majority of companies involved in the Construction Industry in Australia will be exempt from this reporting as it does not apply to companies with less than 100 employees. Over 95% of companies in the construction industry in Australia are in this category. Will this achieve the desired targets for carbon reduction?

Construction projects involve complex supply chains with materials sourced globally. Mandatory reporting extends the environmental scrutiny beyond the construction site to encompass the entire supply chain. Construction companies are compelled to assess the carbon footprint associated with the extraction, production, and transportation of materials. This broader perspective encourages sustainable sourcing practices and reduces the embodied carbon in construction projects.

Aspiration/Opportunities

The requirements of mandatory reporting on climate will, the conversants noted, encourage further innovation and enable opportunities strategically for construction companies to become leaders in carbon reduction. The conversations noted:

“The new mandates focus on the building industry. Construction is producing 39% of the world's energy-related CO2 emissions and if the building industry could reduce that by 15%, they're big opportunities”.

“We know innovations are happening... the potential for green concrete is huge reducing offsetting the amount of carbon that's produced... we also need to rethink timber buildings. In the short term it decreases carbon but what happens to all that embodied carbon in the long term? Once you dispose of it, you're still going to release carbon if you're not careful, so that that to me is just shifting a problem down there.”

Conclusion:

Mandatory climate change reporting represents a transformative force shaping the future of business. Beyond its regulatory implications, it fosters a paradigm shift towards sustainability, transparency, and resilience. Businesses, including those in the construction sector, are compelled to confront their environmental impact, adapt to a changing climate, and innovate for a more sustainable future. In doing so, they not only comply with regulatory requirements but also gain a competitive edge, build stakeholder trust, and contribute to global efforts in mitigating climate change. The journey towards mandatory climate reporting is not just a regulatory necessity; it is a crucial step towards a more sustainable and resilient business landscape. While mandatory climate reporting presents challenges, it also stimulates innovation. Companies must navigate complexities such as data collection, verification, and the integration of climate-related risks into their operations. Overcoming these challenges requires innovative solutions, pushing businesses to explore new technologies, methodologies, and partnerships. In essence, mandatory reporting acts as a catalyst for the innovation necessary to meet climate-related goals.

Mandatory reporting acts as a catalyst for the adoption of sustainable practices. Businesses compelled to disclose their environmental impact are incentivized to invest in energy efficiency, renewable energy sources, and sustainable supply chain management. This shift towards eco-friendly practices not only reduces a company's carbon footprint but can also result in operational cost savings and improved resource efficiency. In essence, mandatory reporting serves as a mechanism for aligning environmental stewardship with economic interests.

So, what next? The issues raised in this exploration of the impacts of mandatory policy concerning sustainability practices will be explored in further conversations with practitioners and with policy makers. The intent is to build a body of knowledge that can be then utilised to develop broader scale research with the intention of developing more substantial theory.

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