

# Gaming in a Carbon Regulated World

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## INTRODUCTION

Digital games have yet to grapple with the fact that they are fundamentally dependent on the cheap and reliable generation of electricity, as well as being imbricated in a host of other carbon intensive processes necessary for the industry to function in its current form. As a result, games stand largely unprepared at the edge of a number of compelling challenges. In this paper I propose to spell out the nature of just one of these challenges that the games industry may need to respond to – and the potential rewards for those who are able to anticipate it – taking the form of carbon regulation and its likely effects on energy generation and end-consumer pressures on electricity usage. The World Energy Council’s most optimistic of its recent forecasts for the future pace of decarbonisation of the world’s energy supply only permits intermittent renewables (wind, solar, etc.) to “reach 39% of electricity generation by 2060.” (World Energy Council, 2016) Electricity generation and use, in this context, is then a prime target for strong emissions regulations, with dramatic consequences for an industry dependent upon consumers’ access to cheap electricity for the consoles and devices necessary to play games. Clearly this will have significant consequences for the games industry depending on the shape and form that this regulation comes in.

Nobel laureate in chemistry Paul Crutzen, who received the award for his work on CFC’s and the hole in the ozone layer, went on to work on climate change, warning of a possible scenario in which the situation becomes so dire that a “carbon dictatorship” emerges to ensure the earth remains habitable. (Flannery, 2005: 290) Similarly, the consensus in the scientific community has been for some time now that “the level of global emissions of greenhouse gases needs to lead to atmospheric concentrations somewhere between 450 and 500 ppm to avoid serious, if not catastrophic, effects on life and property.” (Patrinos & Bradley, 2009: 949) Having already passed 400 ppm, and with global emissions not yet declining, time appears to be running out to avoid some version of Crutzen’s scenario. Furthermore, avoiding this scenario it is safe to say will require draconian carbon regulations with more economic impact than those implemented currently. This paper will explore the consequences of this for the games industry.

Following in the footsteps of a number of scholars of the environmental consequences of digital media and high-tech industries (See: Taffel, 2012; Cubitt, 2017; Maxwell &

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Miller, 2012) this paper applies a narrower, more focused lens by considering digital games at the intersection of carbon emissions regulation specifically in the context of consumer electricity use. As with all work about the future, it involves a significant degree of informed speculation, and maintains resonances with the tradition of ‘scenario planning’, developed (somewhat ironically) by energy companies like Shell in the 1970s in response to the first oil crisis, to assist in long term strategic planning to anticipate structural shifts affecting entire business sectors. (Cornelius, et al., 2005) The paper first outlines the main dynamics and drivers behind a carbon emissions reduction scheme on a global scale, a scheme which the games industry will be required to contend with. It details the forms that this scheme is most likely to take, contingent on either a soft transition (extending existing market driven regulations) or a hard transition of social upheaval (following Crutzen’s “carbon dictatorship”), drawing on the work of Wainwright and Mann’s (2012) scholarship that presents a kind of ‘possibility space’ for future global responses to climate change in a geopolitical context.

A principle feature of the argument in this paper is that the specific form that regulation comes in will not change the overall prognosis for the industry. Whether it is a liberal market-style regulation or to a populist Trump-style “carbon dictator” all possible scenarios leave the games industry exposed to decarbonisation pressures. While the latter scenario presents the greater challenge for the industry, even the former stands to make a significant impact on digital games and the way they are played, at the very least by changing market incentives and price signal for energy efficiency and consumption.

The paper examines how the games industry could respond to the challenges of these possible impositions and limitations, and suggests that a positive interpretation of these developments is possible. A radically different games industry could be ushered in, with a greater emphasis on energy efficient devices and significant implications for the kinds of games that can be developed. Parallels and prototypes for the types of proactive responses needed already exist today, with a number of traditions both within and outside the commercial games industry that take quite a different approach to the mainstream. Examples from the ‘demoscene’, with its ethos of “doing more with less” offers one potential avenue for the industry’s response to increased regulatory and/or consumer demands for increased, even draconian energy efficiency under a carbon dictatorship scenario. Likewise, an industry-wide turn away from photorealism and the ever increasing demands of graphical processing power would be prudent in such a scenario. One can think of Nintendo’s current position in the marketplace, as well as the rise of mobile gaming, both occurring through and making great success of the proliferation of less than maximally powerful devices. The case of Nintendo is a particularly illuminating example for its (in general) emphasis on *stylistic* approaches to visual design over hardware-taxing (and thus, energy intensive) photorealism, providing a possible sign of things to come, and a template for adapting to changing consumer or regulatory demands.

An avowedly speculative paper, this work presents a series of educated guesses to help flesh out one part of the real world ‘possibility space’ (Bogost, 2008) that the commercial games industry as a whole may face in the near future in order to better prepare it for the challenges it may face and the transformations it may require.

## **OPTIONAL BIO**

Dr. Benjamin Abraham is a scholarly teaching fellow in the School of Communication at the University of Technology Sydney. His research and teaching has a highly

interdisciplinary focus across games and digital media/culture, internet activism, nonhuman philosophy, finance studies, and climate change.

## **BIBLIOGRAPHY**

- Bogost, Ian. "The Rhetoric of Video Games" in *The Ecology of Games: Connecting Youth, Games, and Learning*, edited by Katie Salen. The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning. The MIT Press: Cambridge, MA., 2008, pp. 117–140.
- Cornelius, P., Van de Putte, A., and Romani, Mattia. 'Three Decades of Scenario Planning in Shell' in *California Management Review*, vol. 48 no. 1, Fall 2005.
- Cubitt, S. *Finite Media: Environmental Implications of Digital Technologies*. Duke University Press: Durham & London, 2017.
- Flannery, T. *The Weather Makers: The History and Future Impact of Climate Change*. Grove, New York, United States, 2005.
- Maxwell, R. & Miller, T. *Greening the Media*. Oxford University Press, 2012.
- Patrinos A. N. & Bradley, R. A. 'Energy and Technology Policies for Managing Carbon Risk' in *Science*, vol. 325, August 2009.
- Taffel, S. 'Escaping attention: digital media hardware, materiality and ecological cost' in *Culture Machine*, vol. 13, 2012.
- Wainwright, J. & Mann, G. 'Climate Leviathan.' *Antipode* vol. 45 no. 1, 2013, pp.1-22.
- World Energy Council. 'World Energy Scenarios | 2016 – The Grand Transition' report by World Energy Council in collaboration with Accenture Strategy and Paul Scherrer Institute, 2016.