



Inequality of overconsumption: The ecological footprint of the richest

>working paper_

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Abstract

Extreme inequality and the wealth concentrated in the hands of the richest 1% is gaining increasing attention. However, these debates often do not include discussion of unsustainable levels of consumption (referred to as overconsumption) that are contributing to dangerous climate change and another potential mass extinction. Meanwhile debates on how to make consumption more sustainable usually do not factor in how inequality can undermine this goal. Research that does look at both inequality and environmental impact tends to focus on comparisons between countries based on national level indicators such as the Gini coefficient and per capita carbon footprints.

This Working Paper complements these existing debates by exploring the links between inequality and overconsumption within countries. While there is a need to reduce overconsumption across society given current levels of inequality this Working Paper focuses on the ecological footprints of High Net Worth Individuals (HNWIs) who are people with at least US\$1 million in investable wealth, excluding their primary residence and other personal items. A person's ecological footprint is the total amount of carbon dioxide emissions and natural resources they consume in a given year.

Intuitively HNWIs have large ecological footprints but there is no data to confirm this. More research is urgently needed in this

area which could help to inform policies to target HNWIs to reduce their negative impact on the environment.

In a context of extreme inequality there are key challenges in trying to get HNWIs to reduce their ecological footprint which need to be factored in to policies that target them - some HNWIs may be disconnected from the reality of the ecological crisis; HNWIs have more resources to adapt to climate change; environmental taxes may have less effect on HNWIs because they can afford to continue polluting; and HNWIs may not respond to sustainable consumption information initiatives.

Keywords

inequality; wealth; purchasing; data sources; resources; sustainable consumption.

1. Introduction

1.1 Twin challenges: Tackling both inequality and overconsumption across society

Pressure is growing for concrete action to deal with today's extreme levels of inequality of income and wealth. The rich are getting richer around the world with huge disparities in wealth between and increasingly within countries (Byanyima, 2015; Piketty, 2014; Ortiz and Cummins, 2011). Public awareness

exploded in the wake of the 2008 financial crisis with increasing anger against the richest who were dubbed 'the 1%' (Stiglitz, 2011). High levels of inequality have become so difficult to ignore that even mainstream actors such as the World Economic Forum and the International Monetary Fund have called for action (Elliot, 2014; Mohammed, 2015; Bretton Woods Project, 2014). According to Oxfam, 'the combined wealth of the richest 1% will overtake that of the other 99% of people' by 2016 and it is estimated the wealth of the 80 richest people doubled in cash terms between 2009 and 2014 (Oxfam, 2015). While inequality is often measured in terms of income, wealth or consumption (The Economist, 2014), it is important to highlight that income inequalities are 'tightly intertwined with inequalities of power and related with issues such as ethnicity, and gender' with women often 'overrepresented in the lowest quintiles of income distribution' (FES, 2015, p.7).

Debates on inequality mainly focus on the reasons why income and wealth are becoming increasingly concentrated in fewer hands (e.g. Stiglitz, 2013) and whether there is a positive or negative relationship between inequality and economic growth (e.g. Jackson and Victor, 2014; Donnan, 2014; Cingano, 2014). However, these debates often do not address the fact that the current global consumption of resources has seen around 50% of key species disappear since 1970, with signs that we are on the verge of another mass extinction (WWF, 2014; Drake, 2015). We face the prospect of runaway climate change (IPCC, 2013) and have lived beyond the planet's biocapacity since the 1970s meaning that it 'takes 1.6 Earth's to support humanity's demand on nature' (Overshoot day; WWF, 2014; BBC, 2015). Countries including the United States (US), United Kingdom (UK), Japan and China are all in overshoot, defined as being 'when humanity's demand on nature exceeds the biosphere's supply, or regenerative capacity' (Global Footprint Network, 2015). We are beyond the point of just making consumption more efficient (Jackson, 2011); this is why this working paper refers to overconsumption instead of just consumption. Levels of overconsumption need to be reduced to ensure the nine planetary boundaries, several of which have already been crossed (including climate change and loss of biosphere integrity) are not crossed permanently (Stockholm Resilience Centre, 2015).

Attempts to make consumption more sustainable, such as public campaigns to raise awareness and the introduction of eco-labels, have not been effective enough on the large-scale that is needed (Seyfang and Paavola, 2008), particularly in developed countries in the areas of food and transport (Peattie and Peattie, 2009). This has led some critics to note that the most sustainable product 'is the one you never bought in the first place' (Capstick et al., 2015, p.435). The result is that there is an on-going debate in the field of sustainable consumption about how effective these campaigns have been and if this approach should continue to be a priority (e.g. Jackson, 2005; Ehrenfeld, 2010).

Given current levels of inequality, there is a noticeable lack of research and data on how sustainable consumption efforts have affected the consumption patterns of the richest in society. For example, there is increasing understanding of the diverse reasons why and how people consume energy, whether this is based on economic, psychological, sociological or education theories (Chatterton, 2011), their particular energy cultures based on their norms, material culture and energy practices (Stephenson et al., 2015), and the importance of recognising diverse and complex energy publics (Chilvers and Pallett, 2014). These insights need to be explored in relation to different groups

across society, and particularly in relation to the richest in different countries because they are likely to have a large ecological footprint.

1.2 Existing research on inequality and the environment

Where there is discussion of the links between inequality and the environment this often focuses on:

1. *How different income groups are affected by environmental degradation differently.* For example, a recent study found that across the US there was a correlation between income and exposure to industrial air pollution (Peries, 2015). Research since the 1980s has shown how in the US poorer groups such as Native Americans, African Americans, Latinos, and European immigrants are often more exposed to environmental hazards from landfills, sewage treatment plants, incinerators, and pollution and chemicals dumped by industry (Brehm and Pellow, 2013; Newell, 2005). This leads to disadvantaged groups suffering negative impacts on their health (Wakefield and Baxter, 2010). This pattern is also seen in developing countries where the poorest suffer disproportionately from incinerators that burn waste (GAIA, 2015) and dumping of e-waste which often originates in the global north (Ottaviani, 2015).
2. *Whether more equal or unequal societies have a different impact on the environment.* When experts such as Nicholas Stern and Joseph Stiglitz discussed the links between inequality and climate change in April 2015 they covered the relationship between unequal societies and their environmental impact, noting that more unequal societies have larger greenhouse gas emissions and less recycling (The Graduate Centre, 2015). Danny Dorling found that in general more unequal societies in the global north have higher levels of pollution, consume more meat and fish, take more flights, use more water for domestic use, and dump more household waste (Dorling, 2010). Other studies also found that more equal developed countries tend to recycle a higher proportion of their waste (Wilkinson and Pickett, 2010).
3. *Whether as countries become richer and reach a certain income per capita they decrease their environmental degradation.* This is known as the environmental Kuznets curve, where 'in the early stages of economic growth degradation and pollution increase, but beyond some level of income per capita the trend reverses, so that at high-income levels economic growth leads to environmental improvement' (Stern, 2003: p.1). There is an on-going debate about whether this is what happens in practice (e.g. Chen et al., 2010; Berthe and Elie, 2015; Chancel, 2014) with one critique being that it is not accurate because richer countries have outsourced their environmental impact which appears to be the case with air pollution (Lin et al., 2014).

In addition, much of the debate on inequality and negative environmental impact (points 2 and 3 above) tends to make conclusions based on national level indicators such as a country's population, level of inequality and greenhouse gas emissions. For example, the countries with the highest consumption per person are in the Middle East, the US and Europe. Despite having smaller populations than China and India (both over 1 billion) the US with 321 million and the European Union with 503 million people have much bigger per capita ecological footprints (CIA World Factbook, July 2015 estimates; WWF, 2014). However, because per capita figures are the average

use of natural resources in a country they hide the inequality of overconsumption. As Tim Di Muzio notes wealth per capita is 'a measure that is often used to obscure extreme patterns of wealth inequality' (Di Muzio, 2015, p.27). The same could be said to apply to the ecological footprint.

1.3 Purpose of this working paper

This working paper will complement the existing debates mentioned above by focusing on the inequality of overconsumption within countries with a specific focus on HNWIs, instead of comparisons between countries based on per capita data, as is currently often the case. Because of today's extreme inequality we need to know more about ecological footprints of different groups within countries, particularly of the richest due to their potentially large ecological impact.

In many countries in the global north, where historically overconsumption has been concentrated, and to a lesser extent in some emerging economies such as China, large sections of the population are overconsuming. The purpose of this working paper is not to ignore the fact that we all have a responsibility to live sustainably, it is simply to focus in on the consumption patterns of the richest at a time when inequalities are so extreme in many countries across the world. There is a deliberate focus on the extreme consumption habits of the richest, and the challenges in making them more sustainable, as one way to illustrate the challenges of reducing the ecological footprint across all of society.

Despite the simultaneous rise in inequality and natural resource use, there has not been a corresponding increase in research and initiatives that aim to tackle both issues simultaneously. For example there is still not enough 'accurate and disaggregated data available at the moment on how unequal and how concentrated humanity's use of natural resources is, either within or between countries' (Raworth, 2012). This data is needed to inform policies to target different groups in society differently, including the richest, to reduce their ecological footprint. Section 3 of this Working Paper looks at the specific challenges for policies that aim to change the consumption patterns of HNWIs.

This Working Paper does not provide any overall policy recommendations on how to simultaneously address inequality and overconsumption of the world's resources. Rather the aim is to provoke an open public debate on this complex and controversial area within countries, so that people can discuss the policies that are appropriate to their diverse national contexts.

1.4 The rise of 'plutonomy'

The importance of identifying the full ecological footprint of the richest is illustrated by the rise of 'plutonomy' (Di Muzio, 2015; Galasso, 2015). As the rich get richer 'the world is dividing into two blocs - the plutonomies, where economic growth is powered by and largely consumed by the wealthy few, and the rest' (Citigroup, 2006 quoted in Di Muzio, 2015, p.143) The result is that 'the multitude has such a low share of overall income in plutonomies that they cannot be key drivers of increasing demand - particularly for luxury goods' (Di Muzio, 2015, p.144). Plutonomy has been observed in countries such as the US, Canada, the UK and Australia (Makdissi and Yazback, 2015; Bakker and Felman, 2014) which all have large ecological footprints (GFN, 2014).

Tim Di Muzio notes 'dominant owners have far more cash

resources at their disposal than their poorer counterparts and can thereby command far more of the earth's materials for their own consumption' (Di Muzio, 2015, p.495). This could certainly be the case given that in 2014 the world's HNWIs were worth around \$56.4 trillion in 2014 and held around \$14.6 trillion in cash and deposits (World Wealth Report, 2015).

1.5 A holistic approach: exploring the relationship between redistribution and the ecological footprint

The starting point of this working paper is that extreme levels of inequality and overconsumption both need to be addressed. While this might seem obvious to people working in either field, what is becoming increasingly clear is that they need to be addressed together (Laurent, 2014). A study by Motesharrei et al., released in 2014 argues that if we do not deal with these twin challenges together our society could face collapse. The study found two key features of collapse for advanced societies in the past 5,000 years - including the Romans, Mayans and in China and India - have been 'the stretching of resources due to strain placed on the ecological carrying capacity, and the division of society into Elites (rich) and Commoners (poor)'. They recommend reducing resource use and distributing resources more equitably (Motesharrei et al., 2014).

Since the 2008 financial crisis, there has been increasing awareness and pressure for action to be taken to tackle extreme inequality (Stiglitz, 2011). While there is still a long way to go in terms of concrete action it is conceivable that at some point governments could attempt to reduce these disparities. If measures were put in place to reduce inequality by redistributing wealth and income, how would this affect the national ecological footprint? To begin to predict what would happen if there was redistribution we need to know what the ecological footprint is of different groups in society. This means digging deeper than national level data to try and identify which groups are responsible for rises or falls in the national ecological footprint.

Some authors suggest reducing inequality would reduce environmental impact (Laurent, 2014; Wilkinson and Pickett, 2010). For example this could mean that greater numbers would be able to afford 'greener' goods and services (Berthe and Elie, 2015), such as installing domestic renewable energy in Germany (Grösche and Schröder, 2014). But it is not clear if sections of the population suddenly had more wealth that this would definitely reduce the aggregate ecological footprint (Steffen and Smith, 2013). This is a particularly important question given the projected rise in global population to 9.7 billion by 2050 (UN DESA, 2015). It will be important to explore how different types of redistribution, such as pure and efficient redistribution via measures including an increase in the minimum wage or taxes (Piketty, 2015), would affect the national ecological footprint (Parsons, 2015).

2. An exercise in attempting to quantify the ecological footprint of the richest

I knew it would be very difficult to obtain information on the environmental impact of the richest so the objective was to try and observe trends based on the data I could find. I looked for types of data that could help to quantify the overconsumption of the wealthiest whilst knowing it would not give a complete picture of their ecological footprint. The exercise below is just one way of approaching this question. As this is an evolving research area with large gaps in data (Capstick et al., 2015) the

aim of this working paper is to stimulate collaboration and innovative ideas on measuring the ecological footprint of HNWIs. To submit data go to: <http://whygreeneconomy.org/information/ecological-footprint-of-the-richest>.

2.1 Identifying the richest in society

This Working Paper focuses on HNWIs. According to the latest World Wealth Report in 2014, there were around 14.6 million HNWIs defined as 'having a minimum of US\$1 million in investable wealth, excluding primary residence, collectibles, consumables, and consumer durables'. The majority of HNWIs lived in the US (4.3 million), Japan (2.4 million), Germany (1.1 million), China (890,000), UK (550,000) and France (494,000) (World Wealth Report, 2015). Together these make up nearly 10 million people.

Other sources, such as the 2014 billionaire census, estimate there are 2,325 billionaires with a combined worth of \$7.3 trillion (12% increase compared with 2013). Billionaires are defined as 'those individuals with a net worth of US\$1 billion or above'. The majority of billionaires live in the US (571), China (190), UK (130), Germany (123), Russia (114), India (100), Switzerland (86) and Hong Kong (82) (Wealth-X, 2014; Forbes, 2015). As would be expected the location of billionaires broadly correlates with the list of countries where HNWIs live.

2.2 Defining the ecological footprint

This working paper uses the ecological footprint as a reference point to discuss the overconsumption by HNWIs and the richest in society. The Global Footprint Network methodology explains that the 'ecological footprint of a person is calculated by considering all of the biological materials consumed and all of the carbon dioxide emissions generated by that person in a given year'. This includes a person's consumption of products from fisheries, cropland, grazing land, forests (wood and capture of carbon dioxide), and also use of urban land (GFN, 2015). There are limitations in using this uniform approach across different geographical areas and also due to insufficient data, which are acknowledged by the creators of the ecological footprint methodology (BBC, 2015).

2.3 Lack of detailed data on HNWIs environmental impact

This exercise focuses on the following key countries where HNWIs are concentrated: the US, Japan, China, UK and France (Germany is not included due to a lack of data). There is overconsumption in all these countries as they are all in overshoot (the population's use of resources exceeds national biocapacity). The objective is not to compare countries because they all have different contexts and population sizes.

There is no data or research available on the ecological footprint of the very richest in these countries. This is a telling fact in itself as it shows the lack of transparency around the negative environmental impact of the richest and the urgency to correct this.

While intuitively some HNWIs live resource intensive lifestyles flying in private jets and living in luxury mansions there are other HNWIs who use their wealth to invest in projects to protect the environment and reduce greenhouse gas emissions in developing countries. What is missing is research and data that quantifies the impact on the environment of HNWIs overall or as a group of individuals.

2.4 Transport fuels and meat consumption of the richest 10% of the population

To try to get an indication of the size of the ecological footprint of the richest this Working Paper uses household expenditure surveys because of their relative ease in identifying the consumption patterns of different income groups. While this is not ideal, because it means broadening the scope to the richest 10% of the population (by income) instead of just HNWIs, it is a starting point. A common way of acquiring household expenditure data are via surveys that use a representative sample.

I chose to focus on fuels for private transport and meat as two key indicators as well as looking at total expenditure. The reason for this choice is that private transport and food (along with domestic energy use) have been identified as the main sources of individuals' environmental impact in developed countries (Peattie and Peattie, 2009). In 2012, total transport emissions (including aviation) made up around 20% of total EU emissions (EC, 2015), while in the US it was nearly a third (EPA, 2015). Meanwhile the production, transportation and packaging of meat has a huge ecological footprint with livestock estimated to be associated with 14.5% of annual global emissions (FAO, 2013). In addition these two indicators represent examples of direct (fuel used in private vehicles) and indirect (meat) greenhouse gas emissions. It is important to cover both types of indicator because there are numerous studies that show the majority of emissions in developed countries are often indirect, for example from food, consumer electronics, clothing and recreation (Capstick et al., 2015; Büchs and Schnepf, 2013; Druckman and Jackson, 2008).

2.5 Findings: how much more the richest 10% spend

My review of household expenditure surveys in the US, Japan, China, UK and France shows that the richest 10% of the population (by income) spend more than each of the income deciles below them on private transport and on meat. For example in the US, the richest 10% accounted for 23% of total expenditure, and 16% of expenditure for private transport and 16% of expenditure for meat. These figures were broadly similar in Japan, UK and France. Meanwhile in China the available data shows that the richest 10% spent an estimated 14 times more than the poorest 10%. This is not a surprising outcome because the richest have more wealth to spend in the first place.

For full details and references on household expenditure surveys covering the US, Japan, China, UK and France see:
<http://whygreeneconomy.org/information/ecological-footprint-of-the-richest>.

The assumption here is that because the richest 10% (by income) spend more than each of the income deciles below them, then this will translate into the richest 10% having a larger ecological footprint. This seems a reasonable assumption given that 'empirical analysis has shown a higher per-capita use of environmental resources by high income groups, while poorer segments of society, due to their lower levels of consumption, cause less harm to the environment' (Pye et al., 2008, p21; Laurent, 2014). An OECD review in 2008 noted 'most studies conclude that consumption behaviour-related environmental pressure increases with household income. This can be observed

in relation to waste, recycling, transportation choices and domestic use of energy and water' (Berthe and Elie, 2015).

2.6 The limitations of household expenditure surveys

However, household expenditure surveys only give an insight in to the ecological footprint of the richest 10%. The amount of money spent might not accurately reflect the ecological footprint because either the market price of goods and services are:

1. 'Too low' e.g. negative externalities such as emissions of greenhouse gases used to make or transport the product are not included in its price.
2. 'Too high' e.g. organic food which often has a low (or beneficial) impact on the environment may be more expensive than mass produced food produced by industrial agriculture (Nierenberg, 2015).

When attempting to track the environmental impact of the richest it is important to keep in mind that the richest can afford more expensive things such as organic food and eco-friendly goods that may cost more but are better for the environment (Berthe and Elie, 2015). In addition research shows that some products with the same carbon footprint are sold at different prices (Gough et al., 2011) and that the richest tend to pay higher prices (Girod and De Haan, 2010). In these cases expenditure would not be an accurate way to measure the actual volume of goods and services purchased, and therefore not a good way to determine the ecological footprint.

Other limitations include:

- Household expenditure surveys are based on samples
- There is a risk data is not accurate because it is difficult to get information on the spending of the richest (Bernasek, 2006).
- Grouping households together by income hides the diversity of consumption levels within an income level (Capstick et al., 2015).

3. Key challenges in reducing the ecological footprint of the richest in the context of extreme inequality

3.1 Factoring in extreme inequality and diversity of HNWIs in to policy

To reiterate, in many countries in the global north, and to a lesser extent in some emerging economies such as China, large sections of the population are overconsuming and therefore action to reduce ecological footprints needs to be taken across society. The focus here is on the richest because levels of inequality are so high and by virtue of their extreme wealth HNWIs hold a unique position in society.

In the context of extreme inequality, I believe there are a range of challenges in trying to get HNWIs to reduce their ecological footprint, which will need to be factored into policies that specifically target them. In various ways the challenges that are presented below also apply to other parts of society, but they are particularly relevant to HNWIs because of their extreme wealth.

The objective of discussing the challenges below is to generate debate and to develop appropriate policies. It is not to make claims about how all HNWIs think or act because they are clearly not a homogenous group. Indeed, just in the top 10 richest

people in the world there are very different attitudes to the environment. For example, the world's richest man Bill Gates openly talks about the risks of climate change and in the summer of 2015 committed to invest one billion dollars in renewable energy (GatesNotes, 2015), although it is estimated he still has one billion dollars invested in fossil fuel companies (Howard, 2015). Meanwhile Charles and David Koch (fifth and sixth richest people) who made part of their fortune from the oil industry are accused of funding research to question the role of human activity in causing climate change (Coleman, 2015), with Greenpeace estimating this to be US\$61 million between 1997 and 2010 (Greenpeace, 2012). This diversity means the challenges and implications for policies explored below will not apply to all HNWIs in the same way. Future policies cannot assume HNWIs are one homogenous group that can be targeted in exactly the same way.

The analysis below is based on the countries in the global north where most HNWIs live - the US, Japan, UK and France - because this is where overconsumption has historically been concentrated.

3.2 Key challenges

3.2.1. Challenge 1: The pressure to emulate conspicuous consumption of luxury goods

Implications for policy: HNWIs may attempt to use their extreme wealth to bypass policies that aim to reduce ecological footprints because of competition between HNWIs to consume luxury goods.

Hervé Kempf argues the process of emulation taking place within HNWIs is a driver of conspicuous consumption (Kempf, 2008), defined as 'where there is heavy societal pressure to maintain high consumption patterns and where competitive spending and displays of wealth are encouraged by society' (WBCSD, 2008, p.9). While conspicuous consumption takes place at all levels in society as Tim Di Muzio notes 'the drive for social status and the display of differential positionality through practices of conspicuous intra-class consumption' is leading to an 'on-going consumptive arms race' where the 'merely affluent do not try to keep up with the Joneses, but with the Slims and Gateses of the world', even if this means going in to debt to do so (Di Muzio, 2015, p.156).

Examples of this include competition for the largest yacht and mansions. Di Muzio charts the trend of ever larger super-yachts with the Eclipse owned by Russian oligarch Roman Ambamovich holding the record at 533 feet and 2 inches long until it was replaced by the Azzam in April 2013 measuring 590 feet owned by president of the United Arab Emirates, Khalifa bin Zayed bin Sultan Al Nahyan (Di Muzio, 2015). Di Muzio argues this has a knock-on effect on the rest of society as, 'the consumptive practices of dominant owners are helping to lock global society into an unsustainable and ethically indefensible quest for perpetual economic growth. This growth project not only undermines calls for needed social and economic change but also threatens populations with environmental collapse' (Di Muzio, 2015, p.492).

One way to try and quantify the environmental impact of conspicuous consumption is to examine how much is spent on

'luxury goods' (such as designer apparel and accessories; luxury cars, private jets and yachts; mansions and hotels; and holidays), while keeping in mind there is no guarantee that expenditure always directly correlates to the ecological footprint (see section 2.2.5). Today's global luxury goods market continues to grow but it is difficult to accurately state its size (Roberts, 2014; Dewey, 2009). According to Forbes in 2014 an estimated US\$437 billion was spent on luxury cars, US\$278 billion on personal luxury goods (including perfume, jewellery, clothing and accessories), US\$187 billion on hotels, US\$48 billion on luxury food, US\$23 billion on private jets, US\$22 billion on luxury furniture, US\$8 billion on yachts and US\$1 billion on cruises (McCarthy, 2015). It is interesting to note that the largest sales of luxury goods in 2014 match where most of the HNWI live, for example the US, Japan, Italy, France, China and the UK (Statista, 2014).

It is important to keep in mind that an increasing number of people outside the HNWI are also buying luxury goods and services (Deloitte, 2014). This means that any research specifically on the ecological footprint of HNWI would probably need to focus in more on goods and services that it can be assumed are mainly consumed by the richest globally because of their cost (see the Forbes Cost of Living Extremely Well Index, DeCarlo, 2013).

Focusing in on luxury cars, its sales continue to boom, partly because of the increasing number of millionaires and as producers have got better at targeting their wealthy clients. IHS Automotive data shows over 250,000 luxury cars (such as the Lamborghini and Bentley) were sold in 2014 compared to 100,000 in 2009 (Stock, 2015). The biggest increase was seen in China (450%), followed by North America (170%), the Middle East (125%) and Europe (60%) with this market expected to get bigger with sales predicted to grow by around 40% by 2020. However, it should be noted there are also luxury cars that have a less damaging impact on the environment such as the Tesla electric car which can cost between US\$75,000 (Tesla, 2015) and US\$144,000 (Reuters, 2015), and whose sales continue to grow in the US (Cobb, 2015), and now increasingly in China (Addady, 2015).

Another luxury product that would be interesting to look at is private jet ownership and hire, to quantify its direct and indirect greenhouse gas emissions. It appears that conspicuous consumption of this good is on the rise. NetJets is one of the biggest providers of these services and is expanding significantly. It is owned by Warren Buffet, one of the world's richest people. It has a huge fleet of around 710 airplanes (more than Lufthansa) and has 'more than 5,500 fractional owners, hundreds more customers who buy small blocks of flying hours...and flights to 1,900 airports in 100 countries across the globe' (Huber, 2015).

3.2.2 Challenge 2: Extreme inequality could mean some HNWI are disconnected from the reality of the ecological crisis

Implications for policy: Due to their extreme wealth some HNWI may be able to avoid experiencing the consequences of climate change and biodiversity loss in their daily lives, meaning they do not see the urgency of changing their consumption habits.

Extreme inequality is leading to a situation where sections of the super-wealthy may in some ways be increasingly disconnected

from the rest of society. As a result they could be considered to mainly live in a 'bubble' with other HNWI. Within HNWI there will be different levels of awareness about dangerous climate change and the potential sixth mass extinction taking place around us (IPCC, 2013; Drake, 2015). However, it is possible that sections of HNWI are able to avoid experiencing this reality directly in their daily lives.

Increasingly, the very richest live in exclusive residences (often gated) and some even own their own islands. They use private transport (cars, private jets, yachts, even submarines). They pay to use private healthcare, eat at exclusive restaurants (Di Muzio, 2015) and attend exclusive events such as the Davos World Economic Forum and the Singapore Yacht Show (Wealth-X, 2014). Hervé Kempf argues the result is that 'the leisure class, at the summit, cuts itself off from society' and that this is possible because the group of the wealthiest has grown sufficiently large that the richest no longer need to interact with the rest of the population (Kempf, 2008, p.65). More research is needed to document to what extent this exclusive lifestyle means HNWI avoid dealing with the ecological crisis in their day to day lives. One area that would be good to explore is how much HNWI are aware of the environmental impact of their personal waste, for example food waste and e-waste.

For those HNWI that work, it could be that they are less likely to see the reality of the destruction of the environment in their day to day work places (and this could also be argued for the less wealthy too). Although more research is needed to confirm if this is the case, it is interesting to note that the majority of billionaires fortunes are based on industry sectors where in theory they would be less likely to physically come face to face with air pollution from factories, toxic landfills and opencast mining. According to the list of billionaires that Forbes lists as the Richest People on the Planet in 2015 around 1,250 made their money in finance, investments, fashion, retail, gaming, health care, logistics, media, medicine, real estate, sports, technology and telecommunications (Kroll and Dolan, 2015). Meanwhile, one would expect the estimated 380 billionaires whose wealth is based on sectors such as oil, energy, metals and mining, automotive, manufacturing and construction sectors to have more of an idea of the ecological impact of how their money is made. However, arguably even they are probably still a few steps removed from the reality of what these industries do because they probably hold managerial positions in offices located in the global north.

As mentioned previously, HNWI are not a homogenous group and different individuals are likely to have radically different attitudes towards the environment. The point is not that HNWI have no idea about environmental issues; it is that it is possible they are less likely to have to face this reality in their day jobs which may contribute to them being more disconnected.

An emblematic sector is finance and investments (around 260 billionaires work in this sector according to the Forbes list). The mentality and criteria for decision-making of those who work in the financial sector has been much debated since the epic 2008 financial crisis. While acknowledging that there were diverse reasons for why the crisis happened (e.g. Kaletsky, 2010; Orrell, 2012), several trends highlight the disconnect between the financial sector and the environment (many of which also apply to other economic sectors such as manufacturing and extractives). Essentially, these trends emphasise that the finance sector's working culture can mean that the environment comes very far down your list of personal priorities:

- The short-term nature of decision-making based on quarterly performance (Barton, 2011) perhaps best epitomised by the recent surge in High Frequency Trading (Scott, 2015);
- Priority given to maximising returns to managers and shareholders (Chang, 2011, p. 11);
- The growing chasm between the financial sector and the real economy (Bello, 2013, p.50; Przewoska, 2014);
- The fact that environmental and social consequences are not factored in (Laurent, 2014; Unburnable Carbon, 2013; UNEPFI, The Corporation). An example of an attempt to rectify this are the growing calls for financial institutions to fully account for 'natural capital' by placing an economic value on the services provided for 'free' by nature that they depend on to generate profit (Natural Capital Declaration, 2012), although as noted this is a very controversial proposal (Kenner, 2014).

The disconnect prevalent in the financial sector matters because HNWIs own a large amount of assets and investments around the world (Di Muzio, 2015) and within the countries with the highest HNWl populations (see share of wealth held by the top 1% in the OECD Wealth Distribution database in 2010 and 2012) (OECD, 2012). This means a huge chunk of wealth generated by the financial sector goes to HNWIs (Konczal, 2010; OECD, 2015).

Another way HNWIs may be more cut off from the reality of environmental degradation is related to how income correlates with exposure to environmental pollution. A key example of this is that it is the poorest sections of society in the US, Japan, UK and France who are more likely to suffer from air pollution. Key drivers of air pollution are road transport, power generation and waste disposal (OECD, 2014). Progress has been made in reducing air pollution in the US, Japan, UK and France, partly as a result of outsourcing their emissions to countries such as China (Lin et al., 2014), but in many the levels are still above what is recommended by the World Health Organisation (OECD, 2011). OECD reports observe that the impact of air pollution is 'more severe on subjects with low socio-economic status, due to a combination of greater susceptibility, higher exposure and worse access to health care' (OECD, 2011, p.30; OECD, 2013).

In the US landmark studies were undertaken by the General Accounting Office in 1983 and by the United Church of Christ Commission for Racial Justice in 1987 which found race was a key factor in determining where hazardous waste facilities were located (Newell, 2005). These findings are confirmed by more recent research which show a strong correlation between where non-white low income groups live and exposure to industrial air pollution (Boyce et al., 2014), such as nitrous dioxide (Clark et al., 2014), which results in the poorest spending more of their money on healthcare. Different explanations are given for this environmental injustice ranging from the fact that companies place hazardous facilities where land is cheap and there are plenty of workers, the underlying racism of decision-makers who see less of a problem in locating polluting facilities in areas where racial minorities live (Brehm and Pellow, 2013), to the fact that poorer communities often have fewer resources than richer communities to resist these type of facilities (Newell, 2005).

In Japan there have been significant reductions in air pollution since the early 2000s as a result of regulations to incentivise reductions (Japan Ministry of Environment, 2014; Hasunuma et al., 2014) and because hundreds of facilities were closed in the 1990s following public pressure for dirty incinerators to be closed because of negative health impacts (GAIA, 2003; Greenpeace, 2004). However, Japan still had an estimated 1,200 municipal solid-waste incinerators in operation in 2010 releasing

pollutants such as cadmium (Ono, 2013; Takeda and Takaoka, 2013). More research is needed to confirm if these incinerators are located close to or far away from wealthier areas.

Meanwhile, in the UK a study of selected neighbourhoods in England found a correlation between higher concentrations of particulate matter (PM10) and nitrogen dioxide (NO2) in the most deprived 20% of neighbourhoods, which were often non-white areas (Fecht et al., 2014). Previous research by Friends of the Earth found there were higher levels of carcinogen emissions in more deprived areas of the UK (Dyer, 2015).

In France research has shown that the areas of the country with high levels of air pollution, mainly urban areas where more industry is located, are also where there are greater levels of poverty. These areas also have higher levels of inequality (measured by income and standard of living) and the poorest are more likely to be affected by the pollution (Lavaine, 2015). In Paris, wealthy neighbourhoods often have high levels of air pollution but 'low socioeconomic status are more vulnerable to air pollution episodes' (Deguen et al., 2015). This is because they are less likely to be in good health to begin with, have fewer resources to access good healthcare, are less able to leave the city on holiday, and are more likely to have been exposed to pollution in their workplace.

As the examples above show, the richest suffer less from air pollution. As inequality deepens this is likely to continue because the rich will be able to carry on transferring their negative environmental impact to the poorest, and using their superior resources to protect themselves when they are affected (Laurent, 2014).

3.2.3 Challenge 3: When HNWIs experience the reality of the ecological crisis they have more resources to adapt and insulate themselves

Implications for policy: Instead of making the link between their overconsumption and climate change impacts they experience HNWIs might respond by using their extreme wealth to try and insulate themselves and continue their resource intensive lifestyles.

Some HNWIs have not been able to escape the impact of climate change through hurricanes, floods or heat waves. However, there is evidence that suggests the poorest in society are hit hardest by extreme weather events because of their high level of vulnerability prior to the disaster. In relation to storms this vulnerability can include lack of resources to evacuate or deal with the storm damage e.g. knowledge, technology, well maintained housing, healthcare, and political representation (Cutter et al., 2003; Braubach and Fairburn, 2010), which are more likely to be held by the richer groups in society (Pye et al., 2008).

In addition the richest in society have the resources to insulate themselves from future impacts so that they will not suffer the same as everyone else the next time disaster hits. As Naomi Klein notes: 'for a long time, climate change was treated by environmentalists as a great equalizer, the one issue that affected everyone, rich or poor' but this is not the reality as the richest in the US can pay for private aid such as fire-fighters (Klein, 2012).

To illustrate these points I discuss two specific events: Superstorm Sandy and the 2003 heat wave in France.

Superstorm Sandy hit the eastern coast of the US in late October and early November 2012. It killed over one hundred people, left millions without electricity and caused tens of billions of dollars in damage (CNN, 2013). Several authors argue the storm exposed existing inequality by exacerbating underlying vulnerabilities based on poverty and race (Faber, 2015; Hogan, 2012; Cagle, 2012; Rohde, 2012). Reuters reported that 43% 'of the 518,000 households in New York and New Jersey asking for federal aid after Superstorm Sandy reported annual incomes of less than \$30,000' (Reuters, 2013).

There are also claims the richest residents in New York received more support in the immediate aftermath (Kastenbaum, 2012; Superstorm Research Lab, 2013) with richer areas such as Lower Manhattan having 'electricity, heat and hot water back within days' compared to poorer neighbourhoods that stayed flooded (Greenberg, 2014). An estimated 80,000 public housing residents lost heat and hot water with electricity only restored after two weeks (Huang, 2012).

One blog concluded 'the grim reality is that the storm disproportionately impacted our city's most vulnerable populations - low-income people, people of color, and the elderly - in communities that are already overburdened with an unfair share of toxic pollution and health problems' (Huang, 2012). There is evidence that contamination from the heavy industry, toxic waste and chemical waste facilities, sewage plants and landfills was spread by the flood waters (Klein, 2014; Navarro, 2012).

Of course the homes of the richest in New York and New Jersey were also hit by the storm (Shwartz, 2012; Froelich, 2012) but one would assume they were more able to pay to repair their homes and cover insurance costs. Meanwhile the poorest who were already suffering due to the financial crisis faced losing their homes because they could not afford to pay their mortgages or insurance premiums (Centre for NYC Neighbourhoods, 2014; Alliance for a Just Rebuilding, 2014).

There is a lack of research on how HNWIs reacted to Sandy but it appears a key way that the richest in New York and New Jersey tried to insulate themselves from future hurricanes was to ensure they would have access to electricity (Gross, 2012). In the aftermath of the hurricane the company Generac, the leading manufacturer of standby and portable generators in the US, saw its sales of residential generators rise by 45% to \$255 million (NASDAQ, 2013). As several authors note it is mainly the richest who can afford standby generators (Klein, 2014; Lavelle, 2013; Kristof, 2012), which cost around US\$10,000 and are much more reliable than portable generators (Winter, 2012).

I now look at the heat wave which hit France in the summer of 2003 and that led to the deaths of between 15,000 and 19,000 people (Bamat, 2015). The majority of those who died were elderly people who lived alone. Several studies since have concluded that part of the explanation for this is that existing vulnerability and poverty were exacerbated during the heat wave (Keller, 2013; Poumadère et al., 2005; McGregor, 2005), although other studies have contested whether poorer neighbourhoods had higher rates of mortality (Ghiasi, 2011).

There are no specific studies on how the richest were affected by the heat wave. It could be that the richest were able to use their wealth to reduce the effect of the heat wave by paying for private healthcare at a time when public hospitals were overwhelmed

with tens of thousands of cases. More research is needed to confirm if this is what happened. For now all we know is that official statistics show the richest 20% spent an average of 662 Euros on health in 2003 compared to the poorest 20% who spent 496 Euros (Fesseau, 2009).

How might the richest in France have tried to insulate themselves against future heat waves? Following the heat wave in 2003 there was a spike in demand for residential air conditioning. It is estimated that at the start of 2003 around 5-6% of households had air conditioning but by early 2004 this had risen to 10% (AFP, 2004). Air conditioning manufacturers such as Daikin Industries reported the 'positive effect on air-conditioner sales accompanying record high summer temperatures' in France (Daikin, 2004, p.19). Although there is no data on which groups were behind this demand it could be that given their superior resources the richest bought more air conditioning units than the poorest because they could afford their installation and to pay higher electricity bills to use them. Air conditioning has been shown to play a crucial role in helping people to survive a heat wave with studies from the US concluding it has reduced heat related mortality (The Economist, 2013) and some have suggested one reason the poorest suffered more in 2003 was due to their lack of air conditioning (Salagnac, 2007).

If it is true that the richest in France bought more air conditioning to protect themselves against future heat waves (which have probably increased in frequency due to climate change) then this is particularly ironic because it has a significant ecological footprint as it uses a lot of energy, requires increased electricity capacity for peak use during heat waves and releases powerful greenhouse gases such as hydrofluorocarbons (The Economist, 2013; AFP, 2015).

3.2.4 Challenge 4: Environmental taxes and regulations may have less effect on HNWIs because they can afford to pay to continue polluting now and in the future

Implications for policy: HNWIs existing and future wealth means they could use these resources to cover the additional costs of environmental taxes or other regulations and so continue overconsuming.

An area that is generating a lot of interest and debate is whether measures such as carbon taxes, which in the case of individuals would make them pay more to use fossil fuels, are an effective policy option to reduce greenhouse gas emissions. Where inequality is dealt with in debates on environmental taxes it is often to assess whether a tax is progressive or regressive (e.g. Flues and Thomas, 2015; Chiroulet-Assouline and Fodha, 2014; Preston et al., 2013; Ekins et al., 2011) based on the fact the poorest often spend a larger proportion of their wealth on energy (Sternier, 2012).

There is less focus on how existing inequality (prior to the introduction of a tax) could mean the richest have enough wealth to pay for higher taxes and therefore continue to have a large carbon footprint. This is why more research is needed to establish whether environmental taxes have directly led to the richest reducing their consumption of fossil fuels.

For example there is a growing body of research on what has made the carbon tax introduced in 2008 in the Canadian province

of British Columbia successful. Studies show reductions in per capita fossil fuel consumption across the province (Elgie, 2014), with ongoing debates about how fair the carbon tax has been in terms of the impact of households of different incomes (e.g. Siadak and de Place, 2013). However, there is little research on whether it has directly led to a reduction in consumption by the richest. This is an important research question because income inequality is very high in British Columbia (MacLeod, 2014).

In the context of today's worsening inequality a related question is whether HNWIs would be able to continue to afford to pay the increased costs of environmental taxes indefinitely. As Thomas Piketty has shown the rate of return on wealth (of which HNWIs hold a large amount, see section 3.2.2) is rising faster than the rate of economic growth (Piketty, 2014). In the case of billionaires Oxfam notes that once accumulated their wealth 'takes on a momentum of its own, growing much faster than the broader economy in many cases', and illustrates the point by saying the 'aggregate wealth of today's billionaires has increased by 124 percent in the last four years and is now approximately \$5.4 trillion' (Oxfam, 2014, p.33).

This could mean that while environmental taxes mean HNWIs have to pay more to consume fossil fuels they can use the money generated from their existing wealth to cover this cost. Depending on the level of the tax this may allow them to indefinitely afford to continue polluting at the level they were doing prior to the introduction of environmental taxes or other regulations that made unsustainable goods and services more expensive. If this is the case then clearly HNWIs need to be targeted in a different way from the rest of the population.

An illuminating example of how HNWIs could react to regulations that restrict their use of resources is how some of the richest have reacted to the severe drought in California which led state governor Jerry Brown to declare a state of emergency in January 2014 (Governor of California, 2014). Voluntary efforts led to minimal reductions in water use leading governor Brown to introduce mandatory cuts requiring savings of 25% between April 2015 and February 2016 (State of California, 2015) which appear to have made an impact. By April 2015 water consumption had fallen around 13% and by July 2015 by 31% (Nirappil and Knickmeyer, 2015; Save Our Water, 2015).

However, in response to demands from authorities to reduce water consumption (such as not filling swimming pools) stories have emerged that several of the super-rich who live in the region, particularly in affluent Montecito, have continued to consume vast amounts of water and simply paid millions of dollars in fines for doing so (Bardach, 2014). Or they have paid above market rates to have water delivered from other areas (Allen, 2014). Water consumption has fallen in Montecito significantly suggesting that some of the richest have used less but this example demonstrates that not all of the HNWIs might be willing to be bound by regulation and could use their extreme wealth to maintain their large ecological footprints.

3.2.5 Challenge 5: HNWIs may not respond to initiatives that inform them about the ecological crisis and the damage their consumption does to the environment

Implications for policy: There are no guarantees that initiatives that aim to raise awareness about the importance of sustainable consumption will make HNWIs reduce their negative environmental impact because they might not always act rationally based on the information available to them.

Policies that focus on information as a tool for behaviour change among HNWIs should factor in the four challenges above because they could play a role in influencing whether they succeed or fail in making HNWIs reduce their ecological footprint.

A lot of effort is going in to making consumption more sustainable across society (not just aimed at the richest) based on the assumption that if individuals have more information about the negative impact of their consumption then they will change their behaviour (Allaway and Kochan, 2012). Much of the work on sustainable consumption is coordinated by the United Nations Environment Programme (UNEP). One focus area is education for sustainable consumption which raises awareness about unsustainable consumption and aims to 'foster a new generation of citizens who integrate sustainability in their personal and professional decisions' (UNEP, 2015). Another area is improving product information for consumers. The ten year consumer information programme is coordinated by UNEP, the European Commission, governments and non-governmental organisations. It notes 'research indicates that the demand for sustainable goods and services is high and growing, but consumers often remain unable to make informed choices' and therefore aims to use tools such as eco-labels and voluntary standards to guide 'consumers in their daily purchasing decisions so that they can make informed choices for sustainable goods and services' (UNEP, 2015).

Although there is a noticeable lack of research on whether this approach has had any effect on the consumption habits of HNWIs there are strong critiques that overall sustainable consumption initiatives have not been effective on the scale that is needed (Capstick et al., 2015; Peattie and Peattie, 2009; Seyfang and Paavola, 2008; Jackson, 2005).

Given the deteriorating ecological crisis it is crucial to investigate whether sustainable consumption information initiatives could effectively make HNWIs reduce their ecological footprint. As part of this exercise it is important to look at how general critiques of this approach apply to HNWIs in the context of worsening inequality.

One of the core assumptions of the sustainable consumption approach is that using available information 'consumers always make rational decisions with the goal of maximizing their economic self-interest' (Allaway and Kochan, 2012, p.1). Critics argue people do not just act out of their self-interest as: they have social, moral and altruistic motivations as well e.g. caring for strangers; people do not always base decisions on information e.g. because some of it is not available and it is impossible to process all information before taking a decision; and also they act based on emotions (Jackson, 2005; Orrell, 2012). This has led to the observation that individuals do not operate in a vacuum (we are influenced by the people we interact with) and that often decisions are influenced by group identity (Jackson, 2005).

If people do not always act rationally based on the information available to them, how does this apply to the consumption behaviour of HNWIs? As the challenge above of the pressure to emulate luxury consumption demonstrates, for instance the competition over super-yachts, it can be argued HNWIs do not always act rationally to maximise their economic self-interest and instead are sometimes influenced by their peers. This raises questions such as:

- Education: Is it realistic to assume that informing HNWIs of the negative environmental impact of building a larger

mansion or flying in a private jet will result in HNWIs voluntarily changing their behaviour?

- Consumer information: Is putting eco-labels on products such as food and furniture going to convince HNWIs to buy more eco-friendly versions if these are not the latest status symbol?

While the sustainable consumption approach has been broadened out with the realisation that information by itself does not always lead to behaviour change, for example taking in to account peoples values and circumstances (e.g. Peattie and Peattie, 2009; Seyfang and Paavola, 2008; Jackson, 2005), the provision of information is still a key focus. This is illustrated by target 12.8 of the Sustainable Development Goal on sustainable consumption (and production) which states: 'by 2030 ensure that people everywhere have the relevant information and awareness for sustainable development, and lifestyles in harmony with nature' (United Nations, 2015).

Sustainable consumption initiatives place a large amount of responsibility and agency on individuals to voluntarily buy more sustainable goods and services. In this regard, the following observation by Lewis Akenji is particularly pertinent when thinking about what will successfully influence HNWIs to reduce their environmental impact. He notes that to date policy makers have regarded 'individual consumption as a sovereign domain, which is beyond the reach of public intervention' (Akenji, 2013, p.3) but they routinely intervene in consumption of tobacco and alcohol based on health grounds. He concludes 'there is little logic in individual freedom that consumes away the livelihood of an entire planet!' (Akenji, 2013, p.3).

4. Conclusions

This working paper has explored the inequality of overconsumption within countries with a specific focus on HNWIs. This complements existing research that makes comparisons between countries based on national level indicators such as the Gini coefficient and per capita carbon footprints.

This Working Paper does not provide any overall policy recommendations on how to simultaneously address inequality and overconsumption of the world's resources. Rather the aim is to provoke an open public debate on this complex and controversial area within countries, so that people can discuss the policies that are appropriate to their diverse national contexts.

A key message of this Working Paper is that more research and data is needed on the ecological footprint of HNWIs to inform policies to target them to reduce their negative environmental impact. In developed countries, and to a lesser extent in some emerging economies, large sections of the population need to reduce their ecological footprint. Because of HNWIs' extreme wealth and their probable large ecological footprints we need more research and data to inform how to target them. As this is an evolving research area with large gaps in data (Capstick et al., 2015) the aim of this working paper has been to stimulate collaboration and innovative ideas on measuring the ecological footprint of HNWIs. To see country profiles and submit data go to: <http://whygreeneconomy.org/information/ecological-footprint-of-the-richest>.

Another key message is that in a context of extreme inequality

that there are huge challenges in trying to get HNWIs to reduce their ecological footprint which will need to be factored in to policies that specifically target them.

Key challenges identified by this Working Paper include:

- The competition for conspicuous consumption between HNWIs;
- Some HNWIs may be disconnected from the reality of the ecological crisis;
- HNWIs are likely to have more resources to adapt to and insulate themselves from the impact of climate change;
- Environmental taxes may have less effect on HNWIs because they can afford to pay to continue polluting.
- HNWIs may not respond to sustainable consumption information initiatives;

In pursuing this research and policy agenda further, I suggest that more attention is given to the following two themes:

1. *Exploring the relationship between redistribution and the ecological footprint.* If measures were put in place to reduce inequality by redistributing wealth and income how would this affect the national ecological footprint? Reductions in inequality could potentially lead to more people increasing their negative environment impact. This is particularly important given the projected rise in global population to 9.7 billion by 2050. For this reason, work on inequality must factor in the ecological crisis. It will be important to explore how different types of redistribution, such as pure and efficient redistribution via measures including an increase in the minimum wage or taxes (Piketty, 2015), would affect the national ecological footprint (Parsons, 2015).
2. *The ecological footprint of productive investments.* Given that HNWIs hold a large amount of assets and investments around the world (Di Muzio, 2015; OECD, 2012) it is important to calculate the ecological footprint of productive investments. This is to quantify the full impact of HNWIs on the environment, not just that associated with expenditure.

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