

**Bill Wirtz | The Essence of Free  
Market Environmentalism: protection  
through private property and the  
rule of law**



# **The Essence of Free Market Environmentalism: protection through private property and the rule of law**

**Bill Wirtz**

Policy Paper 16/40

October 2016

Contraditório Think Tank

[www.contraditorio.pt](http://www.contraditorio.pt)

e-mail: [info@contraditorio.pt](mailto:info@contraditorio.pt)

The analyses, opinions and findings expressed here are those of the author(s) and not necessarily those of Contraditório think tank.

Contraditório think tank is a freestanding, nonprofit, nonpartisan and nongovernmental think-and-do tank. We believe that free minds are absolutely critical to promote creativity, merit and responsibility. We believe in the effectiveness of individual responsibility.

We combine the evidence-based approach with the virtues of freedom and knowledge and the engagement in civic intervention.

Contraditório's Working Papers aim to stimulate the debate and to establish a distinctive mind mapping in the scrutiny of ideas and policies. Contraditório believes that the opposition of arguments is essential to the clarification of the debate and to build a well-informed opinion. We believe that knowledge exists only as the knowledge of individuals, nevertheless we agree that we can all profit from it.

**Citation:** Bill Wirtz, 2016, The Essence of Free Market Environmentalism: protection through private property and the rule of law, Policy Paper 16/40, Contraditório Think Tank, [www.contraditorio.pt](http://www.contraditorio.pt)

**Copyright:** This is an open-access paper distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by-nc-nd/2.5/pt/deed.en>)

---



## **ABSTRACT**

In the 21st century, public policy actors are increasingly confronted with environmental questions that, as for now, have been solved through actions of state-control. This paper studies the theories and practicality of free market environmentalism and its fundamental difference with current regulatory systems. The research focuses on the conceptualisation of property rights by different economists and philosophers and seeks to illustrate how the absence of state actors can indeed be beneficial.

Keywords: Environmentalism; free markets; state; property rights; rule of law

Author: Bill Wirtz



## **1. Introduction**

The end of the 20th century has started to shape the importance that environmentalism plays in politics and public discourse, through the birth of powerful NGO's such as Greenpeace or WWF, the development of recycling practices, the arrival of energy produced through alternative energy sources, the ever growing sensitivity towards endangered species, the emerging of environmentalist political parties or through political figures such as Al Gore, the embrace of the political mainstream of environmentalist policies. In the 21st century environmentalism is an integrated factor of public policy, yet there are a myriad of approaches in the aspect of how to achieve a drop in global temperature, less pollution or increased protection of endangered species.

Free-market environmentalism, a market approach to the protection of the environment, is a lesser known way of tackling these issues, yet it is not only appealing in its radical approach, but also divergent in theory within itself.

At the sound of hearing "free market environmentalism" (FME), there is a certain tendency to suggest that we are dealing with an oxymoron. A major contributor to this is that the notion that climate change and pollution are "market failures" is a widespread journalistic narrative. There is nonetheless a larger philosophy behind what makes the essence of free market theories, which especially goes into the concept of property rights and deep into economic theory. It promotes the study of spontaneous market evolution contrary to political action. Over the course of its analysis, it is to be immediately pointed out that essence of FME is not to advocate the absence of any intervention (or 'doing nothing'), but it rather says the actions of property rights through the rule of law and market demands as driving factors for increased sustainability on environmental issues.

## **2. A counter-intuitive concept**

At the sound of hearing "free market environmentalism" (FME), there is a certain tendency to suggest that we are dealing with an oxymoron. A major contributor to this



is that the notion that climate change and pollution are "market failures" is a widespread journalistic narrative. There is nonetheless a larger philosophy behind what makes the essence of free market theories, which especially goes into the concept of property rights and deep into economic theory. It promotes the study of spontaneous market evolution contrary to political action. Over the course of its analysis, it is to be immediately pointed out that essence of FME is not to advocate the absence of any intervention (or 'doing nothing'), but it rather says the actions of property rights through the rule of law and market demands as driving factors for increased sustainability on environmental issues.

### 3. Theoretic bases

#### 3.1. Property rights and the rule of law

The Heritage Foundation defines property rights as such:

*"The property rights component is an assessment of the ability of individuals to accumulate private property, secured by clear laws that are fully enforced by the state. It measures the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. It also assesses the likelihood that private property will be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts." (Heritage Foundation, 2016)*

Property rights are an essential good in the strive for free-market environmentalism, since they influence **human behaviour** through the changing **perception of responsibility**. The fundamental claim is that individuals hold their own property, when it is protected by government, as a higher good than their fear of regulatory sanctions. This is illustrated in the divide between **public property** and **private property**. For instance, this phenomenon comes to light when looking at the water consumption of flat buildings. It is difficult to encourage water efficiency through price signals (The Atlantic, 2011), since owners and renter of multi-flat buildings do not actually pay their



very own consumption. Instead, the water consumption is divided between all the tenants. An OECD report (OECD, 1999-2000) found that two-thirds of OECD member states meter more than 90% of single-family houses, yet for flat buildings the report only mentions "*a few a metered*". There is evidence supporting that individual metering of water reduces overall water consumption. In the United Kingdom, a study (Lis Stedman, 2006) shows an instant drop of 10%, while the 1993 tap German water report (Trinkwasserversorgung in Deutschland, 1993) shows a difference of an 18% lower consumption compared to flats that were not metered. This situation is comparable to nature of public property, since it follows the principle of **collectivism/common ownership**. The critique of FME towards this collective ownership is the loss of individual responsibility, a void which then has to be filled with regulation.

The American Property and Environment Research Center (PERC), a research institute dedicated to study of FME, describes to advantageous nature of property rights as follows (PERC, 2016):

*"Property rights make the environment an asset rather than a liability by giving owners an incentive for stewardship."*

The defence of property rights demands the existence of the rule of law, a justice system ready to establish property and that punishes its violation. If the use of property rights is not based on proper consent and they are in themselves not easily transferable, this would negate the concept of property rights as such and be contrary to FME (Richard L. Stroup, 2016). Without the existence of the rule of law and its implication of force, restricting the arbitrary use of power (Oxford Online Dictionary, 2016), property rights would be a mere philosophical concept that would have to be generally accepted before it could be established. Illustrations of the importance for the rule of law will be given in *FME in practice* chapter.

### 3.2 Coase Theorem

The British Nobel Prize-winning economist and author Ronald Coase (1910-2013), also known for his works on transaction cost analysis, developed this theorem in order



to best illustrate economic efficiency and allocation of resources on the marketplace when confronted with external factors, all in the absence of regulation. Apart from the assumption of the existence of clearly defined property rights, Coase did not suggest a solution to the confrontation of externalities, he merely observed that if confronted with the latter, and as long as the problem is reciprocal to conflicting parties, the marketplace would find the most efficient solution.

The Ronald Coase Institute develops the concept in his theorem as follows (Ronald Coase Institute, 2016):

*"Coase further suggested that, if transaction costs were zero, then it would not matter which of the affected parties were found to be legally liable for a social cost, since they could costlessly negotiate agreements to maximize their wealth; and the right to use property, make noise, or pollute would end up in the hands of the one who values the right the most."*

Coase famously illustrated his theory on the regulation of radio frequencies. In his counter-intuitive argument he suggested that a situation in which competing radio stations are trying to use the exact same radio frequency, no governmental regulation was needed and that in contrary, competing interests would find the most efficient outcome. As long as property rights were in use, the radio station that is able to accumulate the highest amount of value out of the use of the frequency will end up paying for its use, even if it was owned by a different station at the time. Coase opposes resource allocation in its classic economic perspective between central planning and spontaneous market order.

It needs to be said nonetheless that Coase recognised that it is impossible to wind back time, so that initial allocation of property rights by a governmental institution cannot be ignored. The transaction cost must therefore encompass the "head-start" of the station that the frequency was given to.

In summary, Coase theorem seeks for companies to internalise externalities to its absolute maximum. How does this apply to environmentalism?



The same principle that applied to the example of radio frequencies also applies to environmental externalities. If property rights work identically on factors such as pollution, then pollution - as a result of the production of goods - becomes a liability, a negative externality, that a company has take into account. Under these circumstances, actors on the marketplace need to negotiate, and thereby internalise these externalities. Supporters of this theorem as a solution to environmental problem believe that private ownership is the most effective protector of the environment, provided ownership is transferable and backed by courts that make people liable when their pollutants invade the person or property of others.

Further illustrations on the examples of pollution will be given in the chapter *FME in practice*.

### 3.3 Rothbardian anarchism

Murray N. Rothbard (1926-1995) was an economist, historian and political theorist who is at the philosophical heart of **anarcho-capitalism**. This belief system rejects the concept of a state, generally out of moral objection, and praises the effectiveness of peaceful interaction between individuals and the guiding hand of free markets. Although anarcho-capitalism rejects environmental regulations by government by principle, it does answer nonetheless to environmental policy. To understand a Rothbardian interpretation of FME (although Rothbard did notably reject the term of "free market environmentalism"), it needs to be pointed out that its proponents define property differently.

Rothbardians follow the **Labour Theory of Appropriation** of John Locke. Locke establishes property through usage and declares the possibility to live on an own property a **natural right**. For natural law theorists, a declaration of property (for instance through fencing off a piece of land) is meaningless. They believe that individuals own themselves and their own body, which makes them legitimate property holders of their own labour. As long as an individual utilises a piece of land for his own self-interest by actively putting labour into it, he is capable of calling this natural





resource his homestead property. Rothbardians adhere to this concept of self-ownership, however reject the concept of the **Lockean proviso**. The idea of the Lockean proviso, developed by the American philosopher Robert Nozick (1938-2002), is that the conversion from public property into private property included a moral sense of responsibility: the act of claiming property cannot make another individual worse off. This minimalist view on the accumulation of wealth calls for a certain scepticism in the realm of free-market thinkers. Columnist Matt Zwolinski writes about this :

*"This "Lockean proviso" has been thought by many to be difficult, if not impossible, to meet. How could any act of appropriation leave as much and as good for others, when natural resources are finite?" (Matt Zwolinski, 2013):*

Murray Rothbard rejected the Lockean proviso in the absence of knowledge of how to allocate resources for people's good (David Gordon, 2007). Rothbard also criticised Nozick's view on compensation, refuting that the act of compensating a liability justifies the prior violation of a right (Murray N. Rothbard, 1982). Here's where anarcho-capitalism parts ways with different other theories: while asserting the importance of property rights for the allocation of resources, Rothbardians are consequential when it comes to immediate pollution as a committed damage. Murray Rothbard admitted in his 1973 book *For A New Liberty* that pollution is a private property violation (Murray N. Rothbard, 1973):

*"The vital fact about air pollution is that the polluter sends unwanted and unbidden pollutants—from smoke to nuclear fallout to sulfur oxides—through the air and into the lungs of innocent victims, as well as onto their material property. All such emanations which injure person or property constitute aggression against the private property of the victims. Air pollution, after all, is just as much aggression as committing arson against another's property or injuring him physically. Air pollution that injures others is aggression pure and simple."*

Anarcho-capitalism therefore takes a radical position on the question of pollution, since it considers it to be in violation with the **non-aggression principle** (NAP). The



NAP rejects all forms of coercion and that no form of aggression can ever be justified, which leads its supporters to reject the concept of a state. The radical position of Rothbardian anarchism on environmental damage has been criticised (Ryan McMaken, 2016) for being too unforgiving and of lacking the support of clear definitions when it comes to the quantification of environmental damage and its origins.

### 3.4 Reformed tax systems - Geolibertarianism

The geolibertarian philosophy is convergent with classical liberalism and is not inherently tied to free market environmentalism by its interpretation of property rights. Although geolibertarians, like all libertarians, believe in the concept of **self-ownership**, that one is the property holder of one's body and therefore holds legitimate ownership of the fruits of one's labour, they refute that occupation of resources (such as land) for the accumulation of wealth makes these resources individual property. They believe instead that the planet is a common heritage that should be accessed by everyone equally under the law.

Geolibertarians suggest to reform the tax system in order to incentivise environmental protection, without being opposed to the general concept of free markets. They uphold the concept of **land value taxation** (LVT). LVT taxes unimproved land value (meaning the value of the land without the improvements made through human action, such as the construction of a house), and redistributes the so called *Citizen's Dividend*. This policy is known as the oldest existing **basic income** proposal, dating back to 483 BC (Wordsworth 1996), when a silver deposit was found in the village of Laureium near Athens in Greece. The Athenian leader Themistocles convinced the local population to invest the revenue from this deposit in a large fleet. This proposal was opposed to the idea of the statesman Aristides who wanted to share the dividend from the mine (10 drachmas each) equally among the population, as a basic income.

As a proponent of the Lockean proviso, Geolibertarianism rejects the accumulation of landmass by individuals and therefore encourages taxation as a means to come closer to a level playing field. In this instance the LVT is a mere concession issued by the



general public for the use of the individual piece of land, which **negates the concept of private property**. In this philosophy, which is at odds with certain aspects of most FME theories, the collective vision of property only applies to natural law, as it did for John Locke. Furthermore, this perception leads geolibertarians to favour centralised repercussions to the act of polluting, through favouring so called **Pigouvian taxes**

*"Pigouvian taxes, named after Arthur C. Pigou, a renowned English economist from the early 20th century, are designed to correct what economists call "market failures" or "negative externalities" that impose spillover costs on society, such as pollution".* (Tax Foundation, 2016):

Unlike other collectivist philosophies, geolibertarianism only applies Pigouvian taxes to environmental externalities such as pollution or the extraction of natural resources.

### **3.5 Altruistic market demands**

Outside of established theories, there is a point to be made about market demands. Microeconomics teaches that individuals follow a certain rational of a cost-benefit analysis. However, the charitable aspect of consumption cannot be ignored: there is for instance a higher demand in environmental labelling (so called eco-labelling), than there was before. The Global Eco-Labeling Network differentiates today between three types of labelling established by the International Organization for Standardisation (ISO) (Global Labelling Network, 2016):

#### **TYPE I:**

A voluntary, multiple-criteria based, *third party* program that awards a license that authorises the use of environmental labels on products indicating overall environmental preferability of a product within a particular product category based on life cycle considerations.

#### **TYPE II:**

Informative environmental *self-declaration* claims.



### **TYPE III:**

Voluntary programs that provide quantified environmental data of a product, under pre-set categories of parameters set by a qualified third party and based on life cycle assessment, and verified by that or another qualified third part.

The demand for these labels for the purposes of consumer transparency has been continuously increasing. This trend has been especially visible for organic products. A study by the Organic Trade Association (OTA) has found (Organic Trade Association, 2016) the expenditure on organic foods per household (in the United States) to more than double in the period between 2006 to 2016.

This development is indicative of a conscious of environmental protection among the general population, which does not necessate governmental control.

## **4. FME in practice**

### **4.1 Pollution**

In order to uphold the spirit of FME, private property rights need to be upheld, which is only possible through the rule of law, thus an effective court system. In practice, and paired with the definition of FME being that negative externalities become a liability, it means that in the case of pollution, individuals can sue companies and other individuals for the pollution they committed. In an article for the Cato Institute, Fred L. Smith Jr., and Kent Jeffreys describe this situation as such:

*"Pollution is generally some form of waste, but even if pollution were unavoidable in certain manufacturing processes, strongly enforced property rights would force polluters to either clean up or close shop. By definition, pollution is a trespass against someone's property or person. If the trespass is so minor that it creates no impact or*



*inconvenience for the property owner, it will normally be tolerated, even under common law rules.*" (Fred L. Smith, Jr., & Kent Jeffrey, 2016)

One example of practicing this respect for property rights leads to the inevitable conclusion that the principle that the polluter should pay for his pollution is correct. This can effectively be implemented for instance through the privatisation of motorways. If we presume the motorway is owned by a private company, then this company will be liable to the neighbouring landowners' loss of land value due to pollution and noise. Compensating those liabilities will be costly, and the owner of the motorway will proceed to levy this burden on the consumer, who are the initial polluters. This leads to the conclusion that there will be major incentives to not make use of a car, since its negative externality has to be taken into account.

Another effective illustration of this phenomenon would be the privatisation of waste disposal. Without looking into the question if it is paper or plastic bags in supermarkets that is the harmful choice for the environment, let us assume that both cost the exact same price. Under this premise, the market demand will be equal for both bags, since it will merely depend on the personal preference of the consumer, since he does not carry a heavier cost for one of them. This situation emerges when waste disposal is run by government, since the disposal of either bag bears the same cost as well in terms of what is charged. The question whether or not it is more difficult or not to dispose a plastic bag or a paper bag is never asked, since waste disposal is collectivised.

If we would now assume that waste disposal was a private service, then consumers and companies would **internalise externalities**: they would ask the question *which additional cost do I bear for either choice?* If it were indeed true that plastic bags are more difficult to dispose than paper bags (which by the pure nature of this illustration, and the marketplace as such, does not play any role), then consumers on all ends would be incentivised to opt for the paper bag. Here is where the invisible hand of the marketplace leads consumers to make sustainable choices.



## 4.2 Endangered species

When it comes to the protection of endangered species, free-market environmentalism draws out the effect of **economic incentives**. The question asked must therefore be: *what incentivises locals to protect animals they otherwise would have no interest in what so ever?* FME tries to shift the incentive away from escaping a governmental sanction by leaving these animals alone, to a positive and lucrative incentive to protect them.

A specific example of the effects that the rule of the marketplace has on endangered species can be seen with exotic wildlife animals such as the rhinoceros or lions in Africa. There is a consistent public outrage about trophy hunting, meaning the act of shooting rare animals for sport. The Humane Society defines trophy hunting as such :

*"Trophy hunting is defined as killing wild animals for their body parts, such as head and hide, for display but not primarily for food or sustenance." (Humane Society, 2016)*

This hunting sport has gotten increasingly popular over the years. As National Geographic reports in 2016, these hunters imported more than 1.26 million trophies to the United States between the years 2015 and 2014, which is an average of 126,000 trophy imports a year, or 345 a day (National Geographic, 2016).

Trophy hunting however is not the reason for why these species are endangered in the first place, they suffer considerably more from loss of habitat and poaching (Scientific American, 2016)(PoachingFacts, 2016). In the case of loss of habitat, the endangered animals are driven out due to agricultural expansion for the harvesting of timber, wood or fuel (WWF, 2016).

In accordance with FME, the local population can be incentivised economically to protect these animals. In fact, in Namibia, the revenue from trophy hunting is the main



revenue source for the funding of wildlife conservancies (Biological Conservation, 2007) and in South Africa trophy hunting reportedly incentivised locals to give rhinoceros' land to live on and to protect them from poachers (Conservation Magazine, 2015). This evolution has led the number of existing rhinoceros to jump from 100 in 1916 to over 18,000 today (World Wildlife Fund, 2016). According to South Africa's Department of Environmental Affairs the total revenue from trophy hunting was close to R807 million (52.3 million euros) in 2012 and just over R1 billion (64.8 million euros) in 2013 (South Africa Department of Environmental Affairs, 2012, 2013).

The author and libertarian economist Walter Block (Walter Block, 2016) described further illustrations in a lecture for the Australian Mises Seminar (Walter Block, 2013). In fact, Block talks about the specific **privatisation** of animals on a large scale. With the inquiry: "*How come the bison came close to extinction, yet there is still cattle?*", Block explains the incentive of protection of animals if they are private property. This is the so-called **Tragedy of the Commons**. This phenomenon is being defined as:

*"Archetypical social phenomenon where an attempt to exploit others (or 'the system') in one way or the other eventually turns out to be self-defeating." (Business Dictionary, 2016)*

Bisons were considered as wildlife that did not have a specific owner, so in order to maximise profit, people would hunt as many of them as possible, which ultimately drove them extinct. Cattle on the other hand were privatised, so killing cows that were not wild created a liability **and** a situation of violation of property, since they belonged to someone else. This system has not only protected cows from becoming extinct, it made it an incredible numerous animal that is harvested in multiple manners by modern agriculture.

Others, such as Peter J. Hill (PERC research), have concluded that the near extinction of the bison was due to the increasing demand in land for cattle, which proceeded to deprive them of their natural habitat. In his publication *Are All Commons Tragedies? The Case Of Bison In The Nineteenth Century* (P.J. Hill, 2014), Hill



explains that even though property rights in the open prairies were not well defined for the bison, there is no reason to believe that the tragedy of the commons applies. He claims that the bison is simply not a valuable resource, and there the establishment of rights for bisons was deemed unnecessary.

### **4.3 Innovation**

The underlying concept of all FME thinkers is the belief of the inability of knowing the future, being opposed to what Nobel-prize winning economist Friedrich A. Hayek (1899-1992) called *the pretence of knowledge*. They believe that future innovation is unpredictable, yet that its historical trend has only been positive in the sense of sustainability. Indeed, despite the dramatic population growth and therefore increased energy consumption, many everyday devices turn out to improve significantly over time. A notable example to this is the historical evolution of fuel economy in cars: in statistics (EPA, 2011) published by the US Environmental Protection Agency (Pew Charitable Trusts, 2011) show that fuel economy has dramatically increased since 1975, rising from about 10 MPG (miles per gallon) to over 30 MPG until 2010.

Although the agency might suggest that these changes are due to environmental protection regulation and carbon tax measures, more needs to be said : companies are, by nature, incentivised to produce cars with a higher fuel economy, since consumers demand lower petrol costs for their vehicles. Evidently so, the volatility of the petroleum market has also fostered the development of electrical cars.

If on the contrary governmental institutions were to overtax carbon emissions to a degree that the usage of a vehicle becomes a questionable investment for the consumer, then the lower demand will manifestly hamper innovation. This leads to the conclusion that in order to innovate in the sector of sustainable development, the exact products that today are considered to be harmful for the environment necessitate an increased demand.

## **5. Critique on the current centralised regulatory system**





## 5.1 The failure of market socialism

F.A. Hayek's *pretence of knowledge* applies to economics, the environment or public policy in general. He wrote in “*The Fatal Conceit*”:

*"The curious task of economics is to demonstrate to men how little they really know about what they imagine they can design."*

Free-market environmentalists issue the same critique towards the regulatory system we are momentarily in. They presume that knowledge about how to best preserve the environment cannot possibly lie in a political bureau, it is spread among all individuals. The same way that economic intervention creates malinvestments, government institutions unintentionally create wrong incentives and hamper economic growth.

Regardless of the nomenclature employed by market socialism, the goal remains the same: directing human behavior through state action. The presumption that advocates of state intervention defend is that individuals cannot possess the necessary knowledge and make "wrong choices". FME advocates tend to respond that if the concern that individuals fail to make the right choices is legitimate, then transferring the power of decision-making from some individuals to a group of individuals now called government is inherently counterproductive. FME rejects the notion that environmental solution can ever be directed through centralised control.

A report by the Utah-based policy research group *Strata* explained this phenomenon as such:

*"Unintended consequences easily arise from even the most well-intentioned policies. When making policies, government officials cannot know all relevant information or foresee all possible outcomes. Even with large numbers of well-educated advisors, policymakers can still pass flawed laws that impose unintended economic or environmental harm."* (Strata, 2016)

## 5.2 Easement of significant pollution



Free-market environmentalists criticise furthermore that unlike the pretended defence of the environment, current environmentalists fail to punish significant pollution. By denying the concept of property rights and therefore regarding polluting someone else's private property as trespassing, state-environmentalists rely solely on the sanctioning of legislation, all while individuals cannot act themselves on the pollution of their property by someone else. Allowing a court system to act upon liabilities would, according to FME thinkers, significantly reduce pollution.

### **Conclusion**

Environmental protection is undoubtedly one of the main challenges of the 21st century. This paper investigates the incentives created through the marketplace in the absence of centralised state regulation, how inducing personal responsibility through private property helps to protect the environment. If environmental protection includes the protection of property rights through the rule of law, then we can expect significant reduction of pollution and increased sustainable development over time. Free market environmentalism refuses the concept of the *pretence of knowledge* and recognises that the competencies regarding environmental protection lie in each and every individual.



## References

- Biological Conservation. 2007. *Economic and conservation significance of the trophy hunting industry in sub-Saharan Africa*. [ONLINE] Available at : <http://www.africanwildlifeconservationfund.org/wp-content/uploads/2011/09/Economic-and-conservation-significance.pdf> [Accessed 6 October 2016].
- Business Dictionary. 2016. businessdictionary.com. [ONLINE] Available at : <http://www.businessdictionary.com/definition/tragedy-of-the-commons.html> [Accessed 6 October 2016].
- Conservation Magazine. 2015. Spring 2015.
- David Gordon. 2007. *The History of Political Philosophy: From Plato to Rothbard*, June 9th, 2007.
- EPA. 2011. epa.gov. *Data & Testing* [ONLINE] Available at : <https://www3.epa.gov/fueleconomy/data.htm> [Accessed 6 October 2016].
- Fred L. Smith, Jr., & Kent Jeffrey. 2016. *A Free-Market Environmental Vision*. cato.org. [ONLINE] Available at : <http://www.cato.org/pubs/chapters/marlib23.html> [Accessed 6 October 2016].
- Global Ecolabelling Network. 2016. globalecolabelling.net. [ONLINE] Available at : <http://www.globalecolabelling.net/what-is-eco-labelling/> [Accessed 6 October 2016].
- Heritage Foundation. 2016. 2016 Index of Economic Freedom. heritage.org. [ONLINE] Available at : <http://www.heritage.org/index/property-rights> [Accessed 6 October 2016].
- Humane Society. 2016. February 2016. *Trophy Hunting by the Numbers*.
- Lis Stedman. 2006. Motivations for metering, Water 21, The Magazine of the International Water Association, April 2006, p. 26-28.
- Matt Zwolinski. 2013. libertarianism.org. *Locke and Nozick on the Justification of Property*, February 18th, 2013. [ONLINE] Available at : <http://www.libertarianism.org/blog/locke-nozick-justification-property> [Accessed 6 October 2016].
- Murray N. Rothbard. 1973. *For A New Liberty : The Libertarian Manifesto*.



Murray N. Rothbard. 1982. *The Ethics of Liberty*.

National Geographic. 2016. *Hard Numbers Reveal Scale of America's Trophy-Hunting Habit*. nationalgeographic.com. [ONLINE] Available at : <http://news.nationalgeographic.com/2016/02/160206-American-trophy-hunting-wildlife-conservation/> [Accessed 6 October 2016].

OECD. 1999-2000. The OECD Environment Program, *The Price of Water : Trends in OECD Countries*.

Organic Trade Association. 2016. ota.com. [ONLINE] Available at : <https://www.ota.com/resources/market-analysis> [Accessed 6 October 2016].

Oxford Online Dictionary. 2016. oxforddictionaries.com. [ONLINE] Available at : [https://en.oxforddictionaries.com/definition/rule\\_of\\_law](https://en.oxforddictionaries.com/definition/rule_of_law) [Accessed 6 October 2016].

PERC (Property and Environment Research Center). 2016. perc.org. [ONLINE] Available at : <http://www.perc.org/about-perc/free-market-environmentalism> [Accessed 6 October 2016].

Pew Charitable Trusts. 2011. pewtrusts.org. *Driving to 54.5 MPG : The History of Fuel Economy*. [ONLINE] Available at : <http://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2011/04/20/driving-to-545-mpg-the-history-of-fuel-economy> [Accessed 6 October 2016].

P.J. Hill. 2014. independent.org. *Are All Commons Tragedies? The Case of Bison in the Nineteenth Century*. [ONLINE] Available at : <http://www.independent.org/publications/tir/article.asp?a=984> [Accessed 20 October 2016]

PoachingFacts. 2016. poachingfacts.com. [ONLINE] Available at : <http://www.poachingfacts.com/poaching-statistics/rhino-poaching-statistics/> [Accessed 6 October 2016].

Richard L. Stroup. 2016. *Free-Market Environmentalism*. econlib.org. [ONLINE] Available at : <http://www.econlib.org/library/Enc/FreeMarketEnvironmentalism.html> [Accessed 6 October 2016].

Ronald Coase Institute. 2016. coase.org. [ONLINE] Available at : <https://www.coase.org/coaseretrospective.htm> [Accessed 6 October 2016].

Ryan McMaken. 2016. mises.org. *Are Libertarians Too Anti-Pollution ?* [ONLINE] Available at : <https://mises.org/blog/are-libertarians-too-anti-pollution>. [Accessed 6 October 2016].



Scientific American. 2016. 2015 : *Deadliest Year Ever for Rhinos*.  
scientificamerican.com. [ONLINE] Available at :  
<https://blogs.scientificamerican.com/extinction-countdown/2015-deadliest-rhinos/>  
[Accessed 6 October 2016].

South Africa Department of Environmental Affairs. 2012. 2013. africacheck.org.  
[ONLINE] Available at : <https://africacheck.org/wp-content/uploads/2015/09/Annexure-1-2012-Trophy-stats-5-August-2015.xls> &  
<https://africacheck.org/wp-content/uploads/2015/09/Annexure-2-2013-Trophy-stats-5-August-2015.xlsx> [Accessed 6 October 2016].

Strata. 2016. strata.org. *How Good Intentions Backfire : Negative Effects Of Federal Environmental Policies*. [ONLINE] Available at : <http://www.strata.org/goodintentions/>  
[Accessed 20 October 2016]

Tax Foundation. 2016. taxfoundation.org. [ONLINE] Available at :  
<http://taxfoundation.org/tax-topics/environmental-policy-and-pigouvian-taxation>  
[Accessed 6 October 2016].

The Atlantic. 2011. theatlantic.com. *The Simple Gadget That Could Slash Apartment Buildings' Water Use* [ONLINE] Available at :  
<http://www.theatlantic.com/technology/archive/2011/11/the-simple-gadget-that-could-slash-apartment-buildings-water-use/247965/> [Accessed 6 October 2016].

Trinkwasserversorgung in Deutschland. 1993. DIW-Wochenbericht 39/1993.

Walter Block. 2013. mises.org. *Walter Block: Free Market Environmentalism*.  
[ONLINE] Available at : <https://mises.org/blog/walter-block-free-market-environmentalism> [Accessed 6 October 2016].

Walter Block. 2016. walterblock.com. [ONLINE] Available at :  
<http://www.walterblock.com/about/> [Accessed 6 October 2016].

Wordsworth. 1996. ancientgreekbattles.net. [ONLINE] Available at :  
[www.ancientgreekbattles.net/Pages/48350\\_LaurionMine.htm](http://www.ancientgreekbattles.net/Pages/48350_LaurionMine.htm) [Accessed 6 October 2016].

World Wildlife Fund. 2016.

WWF. 2016. *Impact of Habitat Loss on Species*. wwf.panda.org. [ONLINE]  
Available at :  
[http://wwf.panda.org/about\\_our\\_earth/species/problems/habitat\\_loss\\_degradation/](http://wwf.panda.org/about_our_earth/species/problems/habitat_loss_degradation/)  
[Accessed 6 October 2016].

