

DRAFT WORKING PAPER  
Please do not quote or cite

**Property Rights: A Major Driver in EU/US Differences in Drilling for Shale Gas, and a Relatively Unexplored Factor Underlying Broader EU/US Environmental Policy Differences**

Bernard D. Goldstein

University of Pittsburgh Graduate School of Public Health  
Department of Environmental and Occupational Health  
and  
University of Cologne  
Department of Political Science and European Affairs

**EU-GLOBAL Program: “EU-Global Transatlantic Perspectives in a Changing Global Context: Multilateralism Through Regionalism” Project 2.7**

**ABSTRACT**

The United States has moved ahead more rapidly than the European Union in developing tightly-bound shale gas resources. Among the reasons given is that US but not EU citizens are able to own subsurface mineral rights. I review the evidence for this assertion and the role of other well-known EU/US factors in environmental policy, including the precautionary principle, and the acceptance of innovation and risk. I hypothesize that increasing and broadening US right wing concern about property rights extends well beyond the specifics of drilling for shale gas and has implications to EU/US differences in environmental policy, in particular underlying right wing US opposition to “green” initiatives. Analysis reveals that many US right wing organizations and leaders cite the defense of property rights as the basis for their opposition to sustainability initiatives, often raising concerns about Agenda 21, developed at the Rio meeting. Ten of 11 organizations specifically identified as being opposed to Agenda 21 cite the defense of property rights. The four of these organizations that mention shale gas in their web site are all supportive of shale gas development. Analysis of Republican party candidate for nomination in fall, 2015 finds that six of fifteen specifically cite concerns about property rights, a concern that is not expressed by any of the then five Democratic candidates. Similarly, the four quadrennial Republican party platforms since 2000 increasingly discuss defense of property rights while none of the Democratic party platforms do so. No such property rights language in right wing EU party platforms or in the writings of their party

leaders is found among the eight parties in the Europe of Nations and Freedom group of the European Parliament. The historical basis for this difference is explored. Also considered are other relatively unexplored EU/US differences particularly pertinent to shale gas, including the lesser degree of unity among US environmental organizations and the apparently greater prominence in the US of boundary organizations containing diverse stakeholders. Concern about property rights should be added to the analysis of EU/US differences in environmental policy.

## INTRODUCTION

The United States and the EU are on different trajectories in acceptance of drilling for deep underground natural gas sources that are tightly bound to shale. Using newer technology, known as unconventional gas drilling (UGD), there has been rapid exploitation of resources in most but not all US states with significant shale gas resources. The EU also has significant potential shale gas reserves and technological expertise.<sup>(1-3)</sup> In 2012 the EU parliament deferred to member states the right to independently determine whether to proceed with shale gas exploration but required that any such drilling be accompanied by a robust legal and regulatory framework. Events in the Ukraine heightening concerns about the security of natural gas imported from Russia, as well as economic competitiveness with the United States, has provided additional impetus to developing EU natural gas sources. But the EU is moving much more slowly based on public concerns, with bans in some countries and with reversal of initial enthusiasm in others.<sup>(1)</sup>

There is a rich literature exploring the reasons for EU/US differences on environmental issues. One relatively unexplored area is a greater concern in the US for property rights. The private ownership of subsurface property rights in the US but not generally elsewhere has been recognized as a reason for the US more rapid advancement in exploitation of shale gas resources.<sup>(2, 4)</sup> But the impact on broader environmental issues, including sustainability, of a concern for property rights in the US, particularly among right wing Americans, as compared to the EU, has not previously been documented.

Comparative analysis of the positions of EU and US political leaders shows that the frequent concern about property rights related to environmental factors of more right wing political groupings and party leaders in the US does not appear to exist in the EU. In addition, I briefly explore whether other relatively unrecognized differences between the US and EU pertinent to shale gas, including the role of NGOs, green parties and private foundations, may also be more broadly applicable to EU/US differences in response to environmental challenges.

## Overview of Unconventional Gas Development Technology

The technological innovations allowing retrieval of surface natural gas tightly bound to deep underground shale layers, rather than in underground gas pools, have led to a rapid increase in US natural gas availability which is projected to continue to increase from 5.0 trillion cubic feet per year in 2010 (23 percent of total U.S. dry gas production) to 13.6 trillion cubic feet per year in 2035 (49 percent of total U.S. dry gas production).<sup>(5)</sup>

UGD is usually defined based upon both the bending of the well pipe laterally within the shale layer and high volume hydraulic fracturing (HVHF) to break open seams within the shale layer. Much attention has been placed on the potential adverse environmental and human effects of the various chemical and physical agents added to the hydraulic fracturing fluid to facilitate removal of the gas from the shale, as well as the need to dispose of large volumes of relatively toxic flowback fluids.<sup>(6, 7)</sup> Characterizing the likely environmental and human health risks of UGD is confounded by the complexity of the process leading to many potential opportunities for problems. Wide variation in industry safety culture, local geology and the choice of technical processes has been noted as has major unexplained differences from site to site in the release of agents.<sup>(7-10)</sup>

## METHODS

Political parties and their party leaders in the US and EU were identified by search of relevant websites. Republican and Democratic Party platforms were obtained from the University of California Santa Barbara American Presidency Project.<sup>(11)</sup> The list of 2016 US presidential candidates was acquired from the Wikipedia site for the US Presidential election.<sup>(12)</sup> We used a review by the Southern Poverty Law Center to identify US organizations that opposed Agenda 21 and sustainability.<sup>(13)</sup>

In order to address our question as to whether right wing political organizations in the EU had similar concerns about property rights, we reviewed the statements of the parties, and party leadership, of members of the EU parliament party grouping known as Europe of Nations and Freedom. This bloc is the furthest right wing of the recognized EU parliamentary political groups and consists of parties from eight of the 28 EU countries and has 38 of the 751 parliamentary seats. Its membership was identified on Wikipedia and verified by viewing the European Parliament website.<sup>(14, 15)</sup> Translation was performed using the newest version of the Google Chrome browser and Google search engine, which have a translation feature built in to their programming. We excluded intellectual property rights and property issues related to national boundary disputes. The terms right and left wing are used, because the terms liberal and conservative are often understood differently in the EU than the US.<sup>(16, 17)</sup>

## RESULTS

### **Evidence of a specific concern about property rights and Agenda 21 among US right wing but not US left wing or the EU right wing**

Search of the 2000, 2004, 2008 and 2012 party platforms of the two major US political parties finds that property rights are present in all of the Republican but none of the Democratic party platforms. The language is often directly related to the environment. Sometimes this is expressed positively. For example, “We link the security of private property to our environmental agenda for the best of reasons: Environmental stewardship has best advanced where property is privately held”.<sup>(18)</sup> More recently, in the 2012 party platform, it was expressed as a need to defend property rights against environmental regulations: “...we pledge to ... ensure just compensation whenever private property is needed to achieve a compelling public use. This includes the taking of property ... by environmental regulations that destroy its value.”<sup>(19)</sup> This more defensive stance in 2012 is accompanied by the first mention of Agenda 21 in a Republican Platform: “We strongly reject the U.N. Agenda 21 as erosive of American sovereignty”.<sup>(19)</sup> Review of the expressed positions of Republican and Democratic party candidates for US President as of fall, 2015 reveals no evidence that any of the five announced Democratic party candidates discuss property rights. In contrast six of the fifteen Republican candidates take positions in defense of property rights. Noteworthy is that Donald Trump, one of the leading Republican candidates, is attacked by other Republicans for his failure to take such a position.<sup>(20)</sup> Although we could not find the defense of private property rights among his positions, Republican candidate Governor Christie of New Jersey has been criticized for willingness to respond to Superstorm Sandy by supporting the full restoration of flooded private properties as compared to the Democratic Governor of New York who is considering a retreat from at least some private properties for environmental protection.<sup>(21)</sup> No evidence of a concern about infringement of private property rights was found in review of the platforms or statements of EU right wing parties or their leaders.

### **Evidence of Linkage of Property Rights to Concern about Agenda 21/Sustainability among the US Right**

Of the eleven organizations identified by the Southern Poverty Law Center<sup>(13)</sup>, some were old main line right wing organizations such as the Heritage Foundation, which has had great influence since at least the Reagan Administration. Others were more recent fringe organizations that were limited in scope. Similar to the Republican Party Platform, review of the two older more influential organizations, the Heritage foundation and the John Birch Society, within the list of organizations against Agenda 21

identified by the Southern Poverty Law Center reveals that concerns about Agenda 21 and property rights have only appeared more recently.

Search of the web sites revealed that ten of these organizations opposed to Agenda 21 expressed concerns about property rights, the exception being the Constitutional Sheriffs and Peace Officers Association. The four organizations that discussed shale gas drilling all supported it. Review of the literature of these and similar organizations reveals statements such as the following from the Constitution Party. "The Agenda 21 plan of "sustainable development" views private ownership, single family homes, private car ownership and individual travel choices, and privately owned farms as destructive to the environment".<sup>(22)</sup> Similarly, Nancy Thorner of the Heartland Institute expresses the concern that "There is a definite push to have people become more dependent by relocating them from suburbs into cities, out of private homes into condos, and out of private cars onto their bikes or electric cars."<sup>(23)</sup>

Further evidence of the recent increase in the breadth and depth of concern about Agenda 21 comes from review of the positions of Newt Gingrich, Republican Speaker of the US House of Representatives from 1994-1998 who led a Republican counterattack against the policies of President Clinton. Gingrich is a prolific author and a former college history professor with a doctorate in European history. While previously expressing opposition to regulations that violate citizens' property rights, which he attacks in his description of a Green Conservative Platform<sup>(24)</sup> he does not begin to attack Agenda 21 until his campaign for the 2012 Republican presidential nomination, during which he is quoted as saying that he had not previously been aware of Agenda 21.<sup>(25, 26)</sup>

## DISCUSSION

### Overview of EU/US differences on environmental and related issues

The US and the EU member states are democracies with relatively highly developed economies. Although policy approaches often differ, overall there is a general similarity in environmental and public health goals, and in success in protecting public health and the environment. Often there is a convergence, with evidence of learning from each other, but sometimes divergence as well.<sup>(27-33)</sup> In the past, the US clearly led in environmental and public health actions such as removing lead from gasoline, the decline in cigarette smoking, the banning of thalidomide, the adoption of automobile catalytic converters, and insistence on transparency in governmental deliberations. However, many now believe that the EU has more than caught up and has taken leadership in important areas such as the

replacement of fossil fuels with wind and solar energy, more stringent worker protection standards, protecting the public against alleged unhealthy foods, and in acting on sustainability.<sup>(29, 34-42)</sup>

The differences between the US and the EU are often posed as the US being a more laissez-faire society, more dependent on post-event regulatory activity and litigation, while the EU is more precautionary in insisting that safety of any new technology or product must be proven in advance. While useful in considering how the US and EU differ, there are many contrary examples to each. For example, it was the laissez-faire US that curtailed its own tobacco industry. Similarly, the impressive German success in mandating a decrease in fossil fuel use and in the development of wind and solar energy does not overcome German public demand to shut down nuclear power plants after Fukushima with attendant increase in lignite coal use, nor public opposition to curtailing the fossil fuel energy costs caused by the lack of autobahn speed limits.<sup>(43)</sup>

Moreover, the suspicion that trade protectionism is more important than precaution has not been dispelled.<sup>(40, 42)</sup> The relative success of EU environmental regulatory approaches, other than outright bans, have also been questioned. Recently, British investigators,<sup>(44)</sup> noting the perception that the EU was now outperforming the US in environmental regulation, found instead that the US was more successful and more consistent in reducing benzene emissions from oil refineries. Germany which is considered to be most like the US in terms of an adversarial regulatory style was the EU country studied that had the best regulatory outcome. In contrast, the worst in reducing benzene emissions was the UK which is considered to have the regulatory approach most trust-based and driven by consensus.<sup>(44, 45)</sup> Jordan<sup>(46)</sup> previously pointed out that implementation of EU environmental regulations is challenged by the need to maintain a balance between national and EU policy goals. Arguably, the Volkswagen episode, along with other multinational issues such as prosecuting banks and arresting members of the FIFA board, suggests that the US adversarial style may lead to more effective implementation.<sup>(47)</sup>

Perhaps the most comprehensive comparison of precautionary aspects of EU and US regulation has been done by Wiener and his colleagues.<sup>(32)</sup> They find little overall difference but numerous specific examples of one being more precautionary than the other. They do find positive evidence of hybridization in which the EU and US learn from each other about the best approaches to assess and manage risk.

US citizens are believed to more strongly venerate their constitution than do Europeans,<sup>(48)</sup> perhaps reflecting its longevity and the lack of a history of multiple constitutions over time that characterizes most EU states. One example related to shale gas of the salience of the constitution is a full page NY Times advertisement by Yoko Ono and other anti-fracking advocates stating that the naming by industry of a newly proposed natural gas pipeline as the Constitution Pipeline was “Orwellian”.<sup>(49)</sup>

Recently, the Governor of Texas and a major Republican candidate, Ted Cruz, have called for a new Constitutional Convention to restore the original understanding of the US Constitution which they believe in agreement with left-wing constitutional scholars,<sup>(50)</sup> has created a federal state more readily able and willing to interfere with property rights,<sup>(51, 52)</sup> particularly since the time of the New Deal, and abetted by a Supreme Court decision that made a distinction between fundamental rights, such as speech, and non-fundamental rights, including property rights.<sup>(53)</sup>

Another EU/US difference is the greater success of toxic tort litigation in the US. In reviewing why litigation against tobacco companies has been far more successful in the US than the UK, Sirabonian<sup>(54)</sup> cited the relative ease of class action lawsuits promoted by US Federal Rules of Civil Procedure; the much greater likelihood in the UK that a losing plaintiff will be required to pay the defendant's attorney fees, and the much more frequent award of punitive damages in the US.

### **Current role of property rights in the differing US and EU approaches to UGD**

Consideration of EU/US differences in the approach to UGD has recognized the role of private rather than government ownership of subsurface rights.<sup>(2, 3)</sup> It is only in the US that property owners can negotiate for personal gain directly with the drilling company. Owners of rural land who have become wealthy because of UGD are prominently featured in industry advertisements and speak to this point at public hearings. To an unknown extent these advertisements and testimonials may have countered negative perceptions of "fracking" and the social amplification of risk due to lack of industry transparency and other risk perception issues.<sup>(55-59)</sup>

Evidence of the importance of private ownership in accepting UGD was provided in a study by our group<sup>(4)</sup> which analyzed a general quality of life survey that included 8 questions pertaining to the Marcellus shale of 128 total. The survey was responded to by over 500 residents of each of two adjacent Pennsylvania counties which had marked differences in shale gas drilling. In the high UGD county, among the 29.9% of the responders that answered yes to a question as to whether they or a family member had signed a UGD lease, 36.7 % strongly supported UGD while among those who did not have a lease only 18.7% recorded strong support (5 point Likert scale). In the low UGD county, after excluding the 4.3 % who responded yes to having a UGD lease in their family, only 16.3% gave strong support. The relatively small difference among non-leaseholders of the two counties suggests that extensive industry local television advertisement of the broader value of UGD, including tax revenues and jobs, had only slight effect on public acceptance. (Based upon random interviews, another EU/US difference is that television advertisements promoting UGD apparently are not common in the EU.)

The Energy Institute of the University of Cologne identified factors in addition to private property ownership enabling the US shale gas revolution and reviewed their pertinence to Europe.<sup>(2)</sup> These included the magnitude of shale gas resources; their location predominantly in sparsely populated areas; the availability of a technologically experienced industry and workforce; and the extensive existing distribution network. While recognizing the comparative difficulties in the EU, the authors concluded that it was realistic to expect a repetition of the shale gas revolution in Germany and Europe. But despite other EU expert reports supporting cautiously moving ahead in Germany and the EU, this has not happened.<sup>(3)</sup> In general, a gathering storm of public opposition has overcome government and industry plans. In Poland, disappointing results in test drilling also led to industry withdrawal. Compared to the US, in the EU the individual property owner may suffer the intrusion of drilling without significant financial benefit. Some attempts have been made to mollify local communities in advance by promising governmental subsidies, such as by the British Prime Minister David Cameron.<sup>(60)</sup>

Local support in Europe for shale gas drilling is likely also tempered by lack of support from environmental groups, while in the US at least some local and national environmental groups have been willing to cautiously work with industry on shale gas issues.<sup>(61)</sup> Their rationale includes the lesser environmental and global climate consequences of using natural gas as compared to coal for generating electricity. As a comparison, we reviewed the GMO issue and similarly found apparent complete opposition by EU NGOs which again is not the case in the US. American NGOs willing to engage with the shale gas industry have been severely criticized by other NGOs,<sup>(62)</sup> and there is at least one example in the US of pro-drilling forces inappropriately hiding behind alleged support from the Environmental Defense Fund.<sup>(63)</sup> The possible reasons for the relative EU unanimity among environmental NGOs include the potential for power to be exerted by Green parties in parliamentary democracies in which there is proportional representation, although this would not account for Britain which has a “first past the post” approach to parliamentary elections. Differences in charitable donations and distribution may also be at play. According to the EU, the US leads by far in the extent of personal donations to charitable organizations,<sup>(64)</sup> although the EU accomplishes much the same through other means. Much of the US funding is distributed through the US foundation community which has funded boundary organizations including industry and environmental groups which explore both the potential risks and benefits of shale gas.<sup>(61)</sup> Although there are innovative EU shale gas organizations involving combinations of industry, academia, or government, citizen groups do not seem to be involved.

American industry extols the value of US individual ownership of subsurface property rights as more likely to accomplish individual and local prosperity as compared to countries where government



ownership is said to lead to inefficiencies and corruption.<sup>(65)</sup> It is also at least arguable whether in a more precautionary society the necessity to prove safety would have inhibited the experimentation and multiple technological innovations that has led to the ability to recover natural gas tightly bound to deep underground shale layers.<sup>(66, 67)</sup> Daintith<sup>(68)</sup> however points out the historic inefficiencies in oil drilling in the United States related to wasteful competition among subsurface rights owners to drain the same pool of oil.

### **Property rights as an underlying EU/US difference in the approach to environmental issues**

Aside from a mention by Jasanoff, we can find no previous discussion of property rights as an EU/US difference. The concern for property rights can be placed within the context of the greater unease in the US about state control of individual freedom. In considering why the US differs from much of the developed world, Paarlberg cites a 2011 Pew Global Survey in which among two choices, US respondents were more likely to opt for “freedom to pursue life’s goals without state interference” while EU residents were more likely to choose “state guarantees that nobody is in need”.<sup>(69, 70)</sup>

Social trust has been explored as a reason for EU/US differences. While in general social trust is considered to be desirable, Kasperson and colleagues have pointed out that social distrust is built into the US constitution,<sup>(71)</sup> with its emphasis on a control of competing interests and its distrust of the concentration of elite power. They ask the question whether greater levels of trust are necessarily advantageous to democratic societies.<sup>(71, 72)</sup> An example of this relative distrust is that the large majority of US state capitals are in small cities chosen in part to avoid having political power in the same geographical location as economic power. While a generalization in that Boston is the capital of Massachusetts and Hague is the capital of the Netherlands, nevertheless the comfort level that Europeans have in cities like London or Paris serving as both their economic and political centers is not fully shared by Americans.

### **Historical Basis for US Concern with Property Rights**

The then highly controversial ratification by states of the US Constitution in 1788 proceeded only after agreement that amendments protecting the rights of individuals against the government would be added. The resulting ten amendments, known as the Bill of Rights, passed in 1789, includes the statement “nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation”.<sup>(73)</sup> This seeming equivalency between life, liberty and property was restated in the Fourteenth Constitutional Amendment in 1868 when the clause was specifically extended to state and local government.

The right to own property has a long history. The founders of the United States were well aware of the writings of John Locke (1632-1704) who argued that the ownership of property was an inalienable right on which civil and political rights were dependent.<sup>(74, 75)</sup> American founders often focused on the importance of providing rights to small landholders who were considered to be the basis for a society motivated toward freedom and advancement. The writings of some of the framers and early interpreters of the constitution suggest that property rights was considered as central to other rights. Examples include:

“The moment the idea is admitted into society, that property is not as sacred as the laws of God, and that there is not a force of law and public justice to protect it, anarchy and tyranny commence.”<sup>(76)</sup>

- John Adams, 1790

“The right to procure property and to use it for one’s own enjoyment is essential to the freedom of every person, and our other rights would mean little without these rights of property ownership.”

-Thomas Jefferson, 1816

“Government is instituted to protect property of every sort; as well that which lies in the various rights of individuals, as that which the term particularly expresses. This being the end of government, that alone is a just government, which impartially secures to every man, whatever is his own.”<sup>(77)</sup>

- James Madison, 1792

“The liberty of the press, trial by jury, the Habeas Corpus writ, even Magna Charta itself, although justly deemed the palladia of freedom, are all inferior considerations, when compared with a general distribution of real property among every class of people.”<sup>(78)</sup>

- Noah Webster, 1787

Such quotes are frequently relied upon by right wing politicians and commentators who today wish to place their concern about property rights and sustainability in the context of the American founders and the US Constitution.<sup>(51, 79-82)</sup> However, the belief that property rights were a highly significant concern during the discussion of the Bill of Rights is not fully supported by the review of these proceedings by Berkin.<sup>(83)</sup> She notes that James Madison, in his preparation for Congressional action to amend the recently ratified constitution so as to further limit federal government power, tabulated 42 distinct rights that had been specifically proposed by a state in their conventions ratifying the Constitution. An amendment to ban the taking of private property without appropriate compensation was not among them, but was added by Madison in his proposals.<sup>(83)</sup> This absence from the state proposals suggests that while the Lockean issue of property rights was of importance to many of the leading thinkers involved in developing the American constitution, it may not have been of more general concern.

Both liberal and conservative thought leaders have continued to emphasize the role of private property in the US. de Tocqueville, in his 1835 introduction to "On America" giving a rationale for the relevance of his book to France, cites the example of the role of private property ownership in the US to liberty.<sup>(84)</sup> Similar to de Tocqueville, Louis Hartz, a liberal Harvard political scientist, emphasized that the absence of a history of feudalism was the basis for American exceptionalism, a term now most familiar in relation to US foreign policy.<sup>(85)</sup> In Hartz's view the nation's founders were primarily European liberals who supported Lockean theories<sup>(86)</sup> and who came to America to achieve rights that they could not achieve in Europe, including property ownership. The idea that America differed because of the past absence of feudalism was adopted in the 20<sup>th</sup> Century by a branch of the American Communist Party as a rationale for a different American path toward communism. Stalin disagreed and expelled them.

Private property has been important in right wing philosophy and economics in Europe as well as the US. Ludwig von Mises, a leader of the Austrian School argued that all governments inherently try to augment their ability to control and curtail the freedom of individual actions, and would be successful were it not for the citizen's ability to own property. "Private property creates for the individual a sphere in which he is free of the state. It sets limits to the operation of the authoritarian will".<sup>(87)</sup> Hartz noted that the philosophy of the Austrian School took root in the US while mostly being ignored in Europe.<sup>(88)</sup> In the United States, the range of views about private property is reflected in quotes from three Nobel Prize winners. Milton Friedman, an economist on the right, has been quoted as stating bluntly that "Property rights are the most basic of human rights and an essential foundation for other human rights".<sup>(89)</sup> Paul Krugman, an economist on the left and *New York Times* columnist, has been criticized by the right for an alleged failure to even consider the importance of property rights.<sup>(90)</sup> On the far US left, Noam Chomsky is less respectful of property rights, which he differentiates from free speech in that its exercise does not affect the free speech rights of another individual, while an individual exercising property rights can exclude others from that property.<sup>(91)</sup>

Somewhat in contrast to the US, property rights, after much controversy, were not included as a specific human right in the articles of the European Convention on Human Rights (ECHR). However, it is the first of the rights that were added by inclusion within Protocol 1 of the ECHR, which has been separately ratified by all but 2 European countries. The language in Protocol 1 was reaffirmed in the Charter of Fundamental Rights of the European Union that came into force with the Treaty of Lisbon.<sup>(92)</sup> It has been argued that the overall implications in the US and the EU are similar in that the European Court of Human Rights and the US Supreme Court have come to similar decisions on the extent to which takings of private property for governmental purposes is allowed. To those on the right, the takings clause

in the US Constitution has been expanded by progressive interpretations that its use is now “promiscuous”.<sup>(51)</sup> Other formulations of human rights that do not recognize the right to property include the 1966 International Covenant on Civil and Political Rights and the 1966 International Covenant on Economic, Social and Cultural Rights. Both are conventions of the United Nations, a point which feeds into current US extreme right wing concern about the United Nations allegedly aiming at taking away American property rights. The EU Constitution, which was not ratified, also has been characterized as differing from the US Constitution in that it primarily focused on the obligations of the government toward its citizens rather than, as in the US, on primarily limiting the government’s authority over citizens.<sup>(93)</sup>

The takings issue became of particular importance in the US after a narrow Supreme Court decision against property owners who opposed a city’s plan to take, with compensation, their property to be used for attracting a private industry on the grounds that the public would benefit from the jobs and tax revenue.<sup>(94)</sup> This 2005 decision has led to an unprecedented surge in states passing laws prohibiting such actions, and has invigorated concern about defending private property against government.<sup>(95, 96)</sup> However, this concern for private property was evident beforehand as is clear from review of the 2000 and 2004 Republican platforms described above.

The literature on property rights and the environment often focuses on the issue of the commons, where overfishing or overgrazing is ascribed to the absence of a property rights regime.<sup>(97-99)</sup> Hardin’s groundbreaking work, *The Tragedy of the Commons*, has often been interpreted as a call for providing property rights to individuals as they would be less likely to overuse scarce ecosystem resources, an interpretation that is consistent with commentators and organizations on the right who stress the environmental value of defending property rights.<sup>(18, 100, 101)</sup> However, there is also a body of work that suggests that it is over simplistic to divide property rights simply into individual ownership and a commons, and that awarding individuals property rights to environmental resources is not a realistic or reliable remedy.<sup>(102-104)</sup> More recent approaches considering property rights in relation to sustainability stress the importance of having both a well-defined property rights regime and flexibility to address challenges in different geographical areas.

The objections of the US right, including the Tea Party, is not to takings of private property per se, if appropriately recompensed and if for valid governmental purposes. There is general recognition that under the US Constitution, the government has the right to take private property for the common good, such as building a highway or a school. The expressed concerns reflect the strong belief by the American right that government has an inherent tendency to become overbearing and to trample on personal

rights, and that the less government intrusion the better. They justify this view with quotations from the founders cited above.

Another pertinent quote from Jefferson is:

“I think our governments will remain virtuous for many centuries; as long as they are chiefly agricultural; and this will be as long as there shall be vacant lands in any part of America. When they get piled upon one another in large cities, as in Europe, they will become corrupt as in Europe.”<sup>(105)</sup> – Thomas Jefferson to James Madison, 1787

The context of the quote can be viewed as part of the response to those who would limit sprawl as being harmful to the environment or to public health.<sup>(106-108)</sup> This has led to the claim that Jefferson is the father of urban sprawl,<sup>(109)</sup> and to the present appearance of his quotes in the writings of advocates concerned about the impact on and preservation of rules on private property rights.<sup>(81)</sup> Further, the US right often stress their belief that government regulation of any kind, including environmental controls even when well-intentioned, often falls heaviest on small businesses contributing to their failure.<sup>(82)</sup>

The complexity of property law within the EU states has been explored by Schmid and associates who identified five different families of laws.<sup>(110)</sup> Among these, the US is closest to that of the Common Law in much of British Isles. English common law, as described by Blackstone, provided the basis for jurisprudence in the original American colonies. The British Parliament, in its gradual paring down of the landowning rights of the British aristocracy, took away private ownership of subsurface mineral rights in 1934 giving these rights to the crown.<sup>(111)</sup> While the new law gave ownership to the crown, it did not clearly give access to the property. Recent legislation by the government of Prime Minister Cameron, a supporter of UGD, to provide such access has been heavily opposed by environmental groups.<sup>(112)</sup> In his book, Daintith points out that in many other countries the question of who owned subsurface property rights was settled in the late 18<sup>th</sup> or early 19<sup>th</sup> century in favor of the central government in part because there was “no inconvenient constitutional protection of property rights”.<sup>(113)</sup>

The current power of the right wing of the Republican party, including its strength in the US Congress as well as locally, means that the increasing concern about property rights can have major implications to how the US approaches current and forthcoming environmental challenges. Protection of endangered species and of desired ecosystems, including land uses that mitigate against global climate change, such as forestry, often depends on maintaining land use regulations that extend over areas far larger than individual properties. Mandating the cooperation of private property owners for the common good inherently limits the rights of the property owner. Stehr has reviewed the extent to which concern that democratic governance is insufficient to meet the unprecedented threat of climate change has led

scientists and others to advocate curtailing democratic rights to meet the challenge.<sup>(108)</sup> Such an approach would do anathema to those to whom property rights has been assigned moral value in the defense of liberty. Local concern about Agenda 21 and the United Nations has already led to blocking pro-environmental regulation at the local level.<sup>(113, 114)</sup> In 2012 Baldwin County in southern Alabama had its carefully drawn development plan voted down by activists vociferously concerned about Agenda 21 infringing on property rights, and the State of Alabama unanimously passed a law, signed by the Governor, that includes language saying that it would be illegal to use Agenda 21 as the basis for decisions. A similar resolution passed both houses of Tennessee but was not signed by its Republican Governor. A 2014 review in a California planning journal of successes of property rights advocates that have affected local planning concluded that this is now a fact of life and recommends how planners can best work with these advocates to achieve planning goals.<sup>(115)</sup> Concern about property rights in relation to environmental policies appears to be not only deepening but also affecting a broader range of the US right as is evident by the first appearance of an anti-Agenda 21 statement in the mainstream Republican Party Platform in 2012,<sup>(19)</sup> and the addition of Agenda 21 to the web sites of far right organizations not primarily concerned about environmental issues or property.

Recent evidence of the continued tension surrounding property rights in environmental issues is President Obama's January 2016 veto of a bill passed in Congress that would have overturned EPA's 2015 expansion of the waters subject to federal EPA oversight. The definition of the "Waters of the United States" now includes ponds and wetlands within private property to protect ecosystems and for other environmental considerations. The response of the Republican sponsor of the bill to the President's use of pollution prevention to justify his veto was "We all want clean water. This rule is not about clean water. Rather, it is about how much authority the federal government and unelected bureaucrats should have to regulate what is done on private land."<sup>(116)</sup>

The relative absence of discourse about property rights in Europe and among the US left should not be construed as a lack of support for the role of private property in a free society. But I can find no overt evidence of any concern among EU right wing political leadership that response to environmental threats are a challenge to the right to private property. Property rights issues and concern about loss of sovereignty to the United Nations should not be overlooked as factors in explaining differences between the EU and US in environmental protection.

**Acknowledgments.** I gratefully acknowledge the very helpful assistance and insights of my colleagues at the University of Cologne, the University of Stuttgart and at Pitt, as well as the excellent organizational skills of the staff at the EUCE. A particular thanks to Juliann Hudak, an MPH student at the Graduate

School of Public Health, whose superb research and organizational skills have contributed greatly to this work.

## REFERENCES

1. Blythe K, Jeffries R, Travers M. An International Perspective of Challenges and Constraints in Shale Gas Extraction. In: Kaden DA, Rose TL, editors. Environmental and Health Issues in Unconventional Oil and Gas Development. Netherlands: Elsevier; 2016. p. 225-48.
2. Growitsch C, Hecking H, John C, Panke T. Unkonventionelles Erdgas in Europa – Effekte auf Versorgung, Nachfrage und Preise bis 2035 Institute of Energy Economics University of Cologne, 2013 December. Report No.
3. Fracking for Shale Gas Production: A contribution to its appraisal in the context of energy and environment policy Berlin: 2013 May 2013. Report No.: 18.
4. Kriesky J, Goldstein BD, Zell K, Beach S. Differing opinions about natural gas drilling in two adjacent counties with different levels of drilling activity. Energy Policy. 2013;58:228-36. doi: <http://dx.doi.org/10.1016/j.enpol.2013.03.005>.
5. EIA. Annual Energy Outlook 2012: With Projections to 2035. In: Administration USEI, editor. Washington, D.C. : Office of Integrated and International Energy Analysis: U.S. Department of Energy; 2012.
6. Goldstein BD, Brooks BW, Cohen SD, Gates AE, Honeycutt ME, Morris JB, et al. The Role of Toxicological Science in Meeting the Challenges and Opportunities of Hydraulic Fracturing. Toxicological Sciences. 2014;139(2):271-83. doi: 10.1093/toxsci/kfu061. PubMed PMID: PMC4064016.
7. Adgate JL, Goldstein BD, McKenzie LM. Potential public health hazards, exposures and health effects from unconventional natural gas development. Environ Sci Technol. 2014;48(15):8307-20. doi: 10.1021/es404621d. PubMed PMID: 24564405.
8. Nash J, editor Assessing the potential for self-regulation in the shale gas industry. Workshop on Governance of Risks of Shale Gas Development; 2013 August 15 - 16, 2013: National Academies of Science, Engineering, and Medicine.
9. Esswein EJ, Snawder J, King B, Breitenstein M, Alexander-Scott M, Kiefer M. Evaluation of some potential chemical exposure risks during flowback operations in unconventional oil and gas extraction: preliminary results. J Occup Environ Hyg. 2014;11(10):D174-84. Epub 2014/09/02. doi: 10.1080/15459624.2014.933960. PubMed PMID: 25175286.
10. Allen DT, Sullivan DW, Zavala-Araiza D, Pacsi AP, Harrison M, Keen K, et al. Methane emissions from process equipment at natural gas production sites in the United States: liquid unloadings. Environ Sci Technol. 2015;49(1):641-8. Epub 2014/12/10. doi: 10.1021/es504016r. PubMed PMID: 25488307.
11. Woolley J, Peters G. The American Presidency Project: The University of California at Santa Barbara; 1999-2016. Available from: <http://www.presidency.ucsb.edu/index.php>.
12. United States Presidential Election, 2016. Available from: [https://en.wikipedia.org/wiki/United\\_States\\_presidential\\_election,\\_2016](https://en.wikipedia.org/wiki/United_States_presidential_election,_2016).
13. Beirich H, Potok M, Smith J, Terry D. AGENDA 21: The UN, Sustainability and Right-Wing Conspiracy Theory. Montgomery, Alabama: Southern Poverty Law Center, Center IPotSPL; 2014 April 2014. Report No.

14. Europe of Nations and Freedom. Available from: [https://en.wikipedia.org/wiki/Europe\\_of\\_Nations\\_and\\_Freedom](https://en.wikipedia.org/wiki/Europe_of_Nations_and_Freedom).
15. Europe of Nations and Freedom. European Parliament: MEPs [Internet]. Available from: <http://www.europarl.europa.eu/meps/en/search.html>.
16. Anonymous. The isms of the week: Liberalism and Libertarianism. *ism of the week* [Internet]. 2010. Available from: [http://www.economist.com/blogs/johnson/2010/10/ism\\_week](http://www.economist.com/blogs/johnson/2010/10/ism_week).
17. Hayek FA. Postscript: Why I am not a conservative. In: Hamowy R, editor. *The constitution of liberty: the definitive edition. The Collected Works of F.A. Hayek*. 17. United States: The University of Chicago Press; 2011. p. 519-33.
18. Republican Party Platform. *Political Party Platforms: Republican Party Platform of 2000* [Internet]. 2000 July 31. Available from: <http://www.presidency.ucsb.edu/ws/?pid=25849>.
19. We Believe in America: 2012 Republican Platform. *Political Party Platforms: 2012 Republican Party Platform* [Internet]. 2012 August 27.
20. Verbruggen R. Donald Trump and Eminent Domain: A brief history. *National Review* [Internet]. 2011 April 19. Available from: <http://www.nationalreview.com/article/265171/donald-trump-and-eminent-domain-robert-verbruggen>
21. Flint A. Property Rights and Climate Change. *Lincoln Institute of Land and Policy*. 2013:21-2.
22. Key Issues: STOP Agenda 21. *The Constitution Party* [Internet]. Available from: <http://www.constitutionparty.com/our-principles/key-issues/>
23. Thorner N, O'Neil B. Somewhat Reasonable: The Policy and Commentary Blog of the Heartland Institute [Internet]2014. Available from: <http://blog.heartland.org/2014/04/U-N-AGENDA-21-IMPACTS-PRIVATE-PROPERTY-RIGHTS-AND-FREEDOM/>.
24. Gingrich N. Who we are. In: DeSantis J, editor. *To save America: stopping Obama's secular-socialist machine*: Regnery Publishing, Inc; 2010. p. 5-34.
25. Murphy T. Newt Gingrich's Anti-Sustainable Development Crusade. *Political Mojo* [Internet]. 2011. Available from: <http://www.motherjones.com/mojo/2011/11/newt-gingrich-agenda-21-sustainable-development-crusade>
26. Acosta J. *Politickicker* [Internet]: CNN. 2011 November 18. Available from: <http://politickicker.blogs.cnn.com/2011/11/18/whats-with-newt-gingrich-and-agenda-21/>
27. Hammitt JK, Wiener JB, Swedlow B, Kall D, Zhou Z. Precautionary regulation in Europe and the United States: a quantitative comparison. *Risk Analysis*. 2005;25(5):1215-28.
28. Harrington W, Morganstern RD, Sterner T, Davies JC. Lessons from the case studies. In: Harrington W, Morgenstern RD, Sterner T, editors. *Choosing environmental policy: comparing instruments and outcomes in the United States and Europe*. Washington, D.C.: Resources for the Future Press; 2004. p. 240-70.
29. Vogel D. *The Transatlantic Shift in Regulatory Stringency. The Politics of Precaution: regulating health, safety, and environmental risks in Europe and the United States*. Princeton and Oxford: Princeton University Press; 2012. p. 1-21.
30. Jasanoff S. A Living Legacy: The Precautionary Ideal in American Law. In: Tickner JA, editor. *Precaution, Environmental Science, and Preventative Public Policy*. Washington: Island Press; 2003. p. 227-40.
31. *The Reality of Precaution: Preparing Risk Regulation in the US and Europe*. Wiener EJ, Rogers M, J. H, Sand P, editors. United States: Earthscan; 2014.
32. Swedlow B, Kall D, Zhou Z, Hammitt JK, Wiener JK. A Quantitative Comparison of Relative Precaution in the United States and Europe, 1970-2004. In: Wiener JB, Rogers MD, Hammitt JK, Sand PH, editors. *The Reality of Precaution: Comparing Risk Regulation in the United States and Europe*. United States and Canada: Earthscan; 2011. p. 377-410.



33. Svedin LM, Luedtke A, Hall TE. Introduction. Risk regulation in the United States and European Union: controlling chaos. United States: Palgrave Macmillan; 2010. p. 1-25.
34. Lightfoot S, Burchell J. Green hope or greenwash? The actions of the European Union at the World Summit on sustainable development. *Global Environmental Change*. 2004;14(4):337-44. doi: 10.1016/j.gloenvcha.2004.07.002.
35. Keleman RD, Vogel D. Trading Places: The Role of the United States and the European Union in International Environmental Politics. *Comparative Political Studies*. 2009;43(4):427-56. doi: 10.1177/0010414009355265.
36. Vogler J, Stephan HR. The European Union in global environmental governance: Leadership in the making? *International Environmental Agreements: Politics, Law and Economics*. 2007;7(4):389-413. doi: 10.1007/s10784-007-9051-5.
37. Bach D, Newman AL. The European regulatory state and global public policy: micro-institutions, macro-influence. *Journal of European Public Policy*. 2007;14(6):827-46. doi: 10.1080/13501760701497659.
38. Jacoby W, Meunier S. Europe and the management of globalization. *Journal of European Public Policy*. 2010;17(3):299-317. doi: 10.1080/13501761003662107.
39. Rayner T, Jordan A. The European Union: the polycentric climate policy leader? *Wiley Interdisciplinary Reviews: Climate Change*. 2013;4(2):75-90. doi: 10.1002/wcc.205.
40. Vogel D, Toffel M, Post D, Aragon NU. Environmental Federalism in the European Union and the United States. In: Wijen F, Zoeteman K, Pieters J, van Seters P, editors. *A Handbook of Globalisation and Environmental Policy: National Government Interventions in a Global Arena*. Cheltenham: Edward Elgar; 2012. p. 321-61.
41. Svedin LM. European Power by Design. *International Studies Review*. 2014;16(1):154-7. doi: 10.1111/misr.12109.
42. Donkers R. US changed course, and EU surged forward. *The Environmental Forum*. 2006:49.
43. Lepisto C. Why the German Environmental Minister doesn't support a speed limit on autobahns2013. Available from: <http://www.treehugger.com/cars/why-german-environmental-minister-doesnt-support-speed-limit-autobahns.html>
44. Gouldson A, Carpenter A, Afionis S. Environmental leadership? Comparing regulatory outcomes and industrial performance in the United States and the European Union. *Journal of Cleaner Production*. 2015;100:278-85. doi: 10.1016/j.jclepro.2015.03.029.
45. Lange B, Gouldson A. Trust-based environmental regulation. *Science of The Total Environment*. 2010;408(22):5235-43. doi: 10.1016/j.scitotenv.2010.07.052. PubMed PMID: 20797772.
46. Jordan A. The implementation of EU environmental policy: a policy problem without a political solution? *Environment and Planning*. 1999;17:69-90.
47. Rosenberg E. EU's aspiration trumped by US implementation. *The Environmental Forum*. 2006:51.
48. Liptak A. When American and European Ideas of Privacy Collide. *The New York Times*. 2010.
49. Ono Y. The Constitution Pipeline. *The New York Times*. 2015.
50. Gerstle G. Federalism in America: Beyond the Tea Partiers2010. Available from: <https://www.dissentmagazine.org/article/federalism-in-america-beyond-the-tea-partiers>.
51. Pilon R. The Constitutional Protection of Property Rights: America and Europe. *American Institute*. 2008;XLVIII(6):1-36.
52. Walters E. Abbott Calls on States to Amend U.S. Constitution. *The Texas Tribune* [Internet]. 2016. Available from: <http://www.texastribune.org/2016/01/08/abbott-calls-states-amend-us-constitution/>
53. *United States v. Carolene Products Co.* 304 U.S. 144, 153 n.4 (1938).

54. Sirabionian A. Why Tobacco Litigation Has Not Been Successful in the United Kingdom: A Comparative Analysis of Tobacco Litigation in the United States and the United Kingdom. *Northwestern Journal of International Law and Business*. 2005;25(2):485-508.
55. Graham JD, Rupp JA, Schenk O. Unconventional Gas Development in the USA: Exploring the Risk Perception Issues. *Risk analysis : an official publication of the Society for Risk Analysis*. 2015;35(10):1770-88. doi: 10.1111/risa.12512. PubMed PMID: 26460730.
56. Goldstein BD. Relevance of transparency to sustainability and to Pennsylvania's shale gas legislation. In: Dernbach JC, May JR, editors. *Shale Gas and the Future of Energy: Law and Policy for Sustainability*. NEW HORIZONS IN ENVIRONMENTAL AND ENERGY LAW. UK and US: Edward Elgar Publishing, Inc.; 2016. p. 165-86.
57. Goldstein BD, Renn O, Jovanovic AS. Public Health, Risk Perception, and Risk Communication: Unconventional Shale Gas in the United States and the European Union. In: Kaden DA, Rose TL, editors. *Environmental and Health Issues in Unconventional Oil and Gas Development*. Netherlands: Elsevier; 2016. p. 107-27.
58. Jovanovic A, Pfau V, Hahn R. Public perception of new energy technologies: Survey on public acceptance of fracking as energy alternative in Germany Discussion paper. 2014.
59. Sandman P. Fracking Risk Communication 2013. Available from: <http://www.psandman.com/col/fracking.htm>
60. Watt N. Fracking in the UK: 'We're going all out for shale,' admits Cameron. *Fracking* [Internet]. 2014. Available from: <http://www.theguardian.com/environment/2014/jan/13/shale-gas-fracking-america-all-out>
61. Center for Sustainable Shale Development (CSSD) 2013. Available from: <https://www.sustainableshale.org/>.
62. Song L, Bagley K. EDF Sparks Mistrust, and Admiration, With Its Methane Research 2015. Available from: <http://insideclimatenews.org/news/07042015/edf-sparks-mistrust-and-admiration-its-methane-leaks-research-natural-gas-fracking-climate-change>
63. Henderson P. Docs and drilling. *Pittsburgh Post-Gazette* [Internet]. 2014 January 10, 2014. Available from: <http://www.post-gazette.com/opinion/letters/2014/01/10/Docs-and-drilling.print>
64. Giving More for Research in Europe: The role of foundations and the non-profit sector in boosting R&D investment. Report. (EC) DGRotEC; 2005 September 2005. Report No.
65. Gruy HJ. *History of the Ownership of Mineral Rights: Swift Energy Company*; 1999.
66. Dekkers M, Bock K, Rubsamen H, Liveris A, Hansen R, Galindez A, et al. The Innovation Principle: Stimulating Economic Recovery. In: Barroso MJM, Rompuy MHV, Schulz MM, editors. 2013.
67. Orset C. Innovation and the precautionary principle. *Economics of Innovation and New Technology*. 2014;23(8):780-801. doi: 10.1080/10438599.2014.907667.
68. Daintith T. The rule of capture: naming and blaming. *Finders Keepers? How the law of capture shaped the world oil industry*. Washington, D.C. London: Earthscan; 2010. p. 3-17.
69. Cohen R. Incurable American Excess. *The New York Times*. 2015 August 6, 2015;Sect.The Opinion Pages.
70. Paarlberg R. *The United States of Excess: Gluttony and the Dark Side of American Exceptionalism*. United States: Oxford University Press; 2015.
71. Kasperson RE, Golding D, Kasperson JX. Risk, Trust and Democratic Theory. In: Cvetkovich G, Lofstedt RE, editors. *Social Trust and the Management of Risk*. UK: Earthscan Publications Ltd.; 1999.
72. Cvetkovich G, Lofstedt R. Risk, Trust and Democratic Theory. *Social Trust and the Management of Risk*. London: Earthscan Publications Ltd; 1999.
73. United States Constitutional Amendment V.

74. Forde S. John Locke and the Natural Law and Natural Rights Tradition: The Witherspoon Institute; 2011. Available from: <http://www.nlnrac.org/earlymodern/locke>.
75. Locke J. The Second Treatise of Government. In: Laslett P, editor. Two Treatises of Government revised ed. 1965.
76. Adams J. Letter from John Adams to Samuel Adams on October 18, 1790. . In: Adams CF, editor. The Works of John Adams, Second President of the United States: with a Life of the Author, Notes and Illustrations, by his Grandson Charles Francis Adams 6. Boston: Little Brown and Company c1856; 1790. p. 277-81.
77. Madison J. Property. The National Gazette. 1792 March 27, 1972.
78. Webster N. An Examination into the leading principles of the federal constitution proposed by the late convention held at Philadelphia. Philadelphia: 1787.
79. Claeys ER. Takings, Regulations, and Natural Property Rights. Cornell Law Review. 2003;88(6):1-124.
80. Knight P. American Policy Center: 25 Years Leading the Fight for American Property Rights and Sovereignty [Internet]. DeWeese T, editor: American Policy Center. 2006. Available from: <http://americanpolicy.org/2006/08/21/senator-george-allen-pushing-anti-property-rights-initiative/>
81. DeWeese T. American Policy Center: 25 Years Leading the Fight For American Property Rights and Sovereignty [Internet]: American Policy Center. 2012. Available from: <https://americanpolicy.org/2012/12/26/why-the-founding-fathers-matter/>.
82. Quinn GJ. Contemporary Ideas. The American idea of freedom: how liberty depends on property rights & general education. South Carolina: CreateSpace Independent Publishing Platform; 2013. p. 73-81.
83. Berkin C. The Bill of Rights: The fight to secure America's liberties. New York, NY: Simon & Schuster; 2015. p. 56.
84. de Tocqueville A. Introductory chapter. Democracy in America. 1. [Internet]: Project Gutenberg 2006.
85. Restad HE. Old Paradigms in History Die Hard in Political Science: US Foreign Policy and American Exceptionalism. American Political Thought. 2012:53-76.
86. Diggins JP. Knowledge and Sorrow: Louis Hartz's Quarrel with American History. Political Theory. 1988;16(3):355-76. doi: 10.2307/191577.
87. von Mises L. Liberalism in the Classical Tradition. 3rd ed. San Francisco, CA Irvington-on-Hudson, NY: Cobden Press. The Foundation for Economic Education; 1985.
88. Hartz L. The Liberal Tradition in America. 1991 ed. Orlando, FL: Harcourt Inc.
89. Blackwell K. Milton Friedman's Property Rights Legacy 2014 July 31. Available from: <http://www.forbes.com/sites/realspin/2014/07/31/milton-friedmans-property-rights-legacy/>.
90. Epstein A, Richard. Setting Krugman Straight. Defining Ideas 2014.
91. Noam Chomsky on Religion and Faith, 2014. Youtube [Internet]. Available from: <https://www.youtube.com/watch?v=aZ51k8EiKh0>.
92. Article 17 - Right to property. EU Charter of Fundamental Rights [Internet]. Available from: <http://fra.europa.eu/en/charterpedia/article/17-right-property>.
93. Niskanen WA. Comparing the U.S. and EU Constitutions. Commentary [Internet]. 2003. Available from: <http://www.cato.org/publications/commentary/comparing-us-eu-constitutions>.
94. Kelo v. City of New London, 545 U.S. 469, (2005).
95. Somin I. The political and judicial reaction to kelo. The Washington Post. 2015 June 4
96. Epstein R. Kelo v. City of New London Ten Years Later: There has been some progress, but much is left to do. National Review Online. 2015 June 23, 2015.

97. Eggert H. Jens Warming on Open Access, the Pigovian Tax, and Property Rights. *History of Political Economy*. 2010;42(3):469-81. doi: 10.1215/00182702-2010-021.
98. Hardin G. The Tragedy of the Commons. *Science*. 1968;162(5364):1243-8.
99. Ostrom E, Burger J, Field CB, Norgaard RB, Policansky D. Revisiting the commons: local lessons, global challenges. *Science*. 1999;284(5412):278-82.
100. Brubaker E. Property Rights: The Key to Environmental Protection. In: Schneider N, editor. *A Breath of Fresh Air: The Fraser Institute*; 2008. p. 95-106.
101. Mcardle M. How Property Rights Could Help Save the Environment: At the same time, the environmental limitations of property rights and markets should not be overstated 2012. Available from: <http://www.theatlantic.com/business/archive/2012/05/how-property-rights-could-help-save-the-environment/257756/>
102. Ostrom E, editor *Beyond Markets and States: Polycentric Governance of Complex Economic Systems*. Workshop in Political Theory and Policy Analysis; 2009.
103. Hanna S, Folke C, Maler K-G. Property Rights and Environmental Resources. In: Hanna S, Munasinghe M, editors. *Property Rights and the Environment*. Washington, D.C. : International Bank for Reconstruction and Development, The World Bank; 1995. p. 15-29.
104. Guerin K. Property Rights and Environmental Policy: A New Zealand Perspective. 2003:47.
105. Jefferson T. Letter To James Madison Paris, Dec.20, 1787. *The Letters of Thomas Jefferson 1743-1826* [Internet]. 1787. Available from: <http://www.let.rug.nl/usa/presidents/thomas-jefferson/letters-of-thomas-jefferson/jefl66.php>
106. Frumkin H. Urban sprawl and public health. *Public Health Reports*. 2002;117(3):201-17.
107. Pincetl S. The Preservation of Nature at the Urban Fringe. In: Wolch J, Pastor Jr. M, Dreier P, editors. *Up Against the Sprawl: public policy and the making of Southern California*. Minneapolis University of Minnesota Press; 2004. p. 225-51.
108. Stehr N. Exceptional Circumstances: Does climate change trump democracy. *Issues in Science & Technology*. 2016;XXXII(2):37-44.
109. Vazquez L. Thomas Jefferson: The Founding Father Of Sprawl? 2006 February 20. Available from: <http://www.planetizen.com/node/18841>.
110. Schmid CU, Hertel C, Wicke H. Real Property Law and Procedure in the European Union. European University Institute (EUI) Florence/European Private Law Forum Deutsches Notarinstitut (DNotI) Würzburg 2005 May 31, 2005. Report No.
111. *Legislation & Policy: Mineral Ownership*. UK: Minerals UK:Center for Sustainable Development; 2014.
112. *Green Scissors: Cutting Wasteful and Environmentally Harmful Spending and Subsidies*. Washington, D.C.: Friends of the Earth, 1996 Contract No.: Report.
113. Daintith T. The least worst property rule? Finders Keepers? How the law of capture shaped the world oil industry. Washington, D.C. and London: Earthscan; 2010. p. 411-38.
114. Kaufman L, Zernike K. Activists Fight Green Projects, Seeing U.N. Plot. *The New York Times*. 2012 February 3, 2012;Sect. U.S.
115. Frick KT. Can planners find common ground with Tea Party and property rights activists on means even if they don't agree on ends? 2014 July 30, 2014. Report No.
116. Ernst J. Press Release: Ernst Remains Committed to Scrapping WOTUS Rule 2016. Available from: <https://www.ernst.senate.gov/public/index.cfm/press-releases?ID=6023003E-6B46-4FFE-A9D9-12671F2A9798>