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NEGATIVE PHILOSOPHY / OPENING QUOTES

Doomsday scenarios of ethanol never happened

Renewable Fuels Association 2014. (ethanol industry trade association) “Celebrating Seven Years of the Renewable Fuel Standard” 17 Dec 2014 <http://www.ethanolrfa.org/wp-content/uploads/2015/09/EISA-7-Year-Anniversary.pdf>

Meanwhile, the doomsday outcomes threatened by opponents of the RFS simply have not materialized. Corn acres have fallen, agricultural land use continues to decline, the Gulf of Mexico “dead zone” continues to contract, deforestation rates continue to fall, and food price inflation continues to follow normal historical trends.

Ethanol makes a significant contribution to the American economy

Dr. John M. Urbanchuk 2014 (PhD economics; Managing Partner, ABF Economics) 17 Feb 2014 “Contribution of the Ethanol Industry to the Economy of the United States” <http://www.ethanolrfa.org/wp-content/uploads/2015/09/ABF_Ethanol_Economic_Impact_US_2013.pdf>

Ethanol producers are part of a manufacturing sector that adds substantial value to agricultural commodities produced in the United States and make a significant contribution to the American economy. Expenditures by the ethanol industry for raw materials, other goods, and services represent the purchase of output of other industries. The spending for these purchases circulates through the local and national economy, generating additional value-added output, household income, and employment in all sectors of the economy.

MINOR REPAIR

Keep the RFS but modify it to phase in more advanced and cellulosic renewable fuels instead of corn ethanol

Margo Oge 2016 (*director of the Environmental Protection Agency’s office of transportation and air quality from 1994 to 2012) NEW YORK TIMES 29 Jan 2016* The Problem With the Ethanol Mandate That Iowa Loves <http://www.nytimes.com/2016/01/29/opinion/the-problem-with-the-ethanol-mandate-that-iowa-loves.html?version=meter+at+null&contentId=&mediaId=&referrer=https%3A%2F%2Fwww.google.com%2F&priority=true&action=click&contentCollection=Politics&module=RelatedCoverage&region=EndOfArticle&pgtype=article>

Still, the existing federal fuel standard, as imperfect as it may be, is now an essential component of our efforts to reduce greenhouse gas emissions and slow [climate change](http://topics.nytimes.com/top/news/science/topics/globalwarming/index.html?inline=nyt-classifier&version=meter+at+2&module=meter-Links&pgtype=article&contentId=&mediaId=&referrer=https%3A%2F%2Fwww.google.com%2F&priority=true&action=click&contentCollection=meter-links-click). To move forward, the E.P.A. should phase in the fuel standard mandate in a predictable way to provide a growing market for advanced and cellulosic renewable fuels.

Air pollution threat means we should repair the standards to move forward with next-generation renewable fuels

Margo Oge 2016 (*director of the Environmental Protection Agency’s office of transportation and air quality from 1994 to 2012) NEW YORK TIMES 29 Jan 2016* The Problem With the Ethanol Mandate That Iowa Loves <http://www.nytimes.com/2016/01/29/opinion/the-problem-with-the-ethanol-mandate-that-iowa-loves.html?version=meter+at+null&contentId=&mediaId=&referrer=https%3A%2F%2Fwww.google.com%2F&priority=true&action=click&contentCollection=Politics&module=RelatedCoverage&region=EndOfArticle&pgtype=article>

The United States needs to reduce carbon pollution from cars and trucks by 80 percent by 2050. Advances in propulsion technology alone will not be enough to meet that goal. Passenger cars will have to not only go farther on less fuel, but also travel those miles on lower-carbon fuel. As the candidates continue their quest for the White House, the question should not be, as it was in Iowa, “Do you support the renewable fuel standard?” but “How do we move to the next generation of renewable fuels?” We must demand an approach that spurs innovation and makes steady progress on lower-carbon fuels.

HARMS / SIGNIFICANCE

No impact on food prices

Food prices would be about the same even if RFS were repealed

Congressional Budget Office 2014 (non-partisan agency of Congress that researches public policy) 26 June 2014 The Renewable Fuel Standard: Issues for 2014 and Beyond <https://www.cbo.gov/publication/45477>

Food Prices Would Be Similar Whether the RFS Was Continued or Repealed  
Roughly 40 percent of the U.S. corn supply is used to make ethanol. To the extent that the Renewable Fuel Standard increases the demand for corn ethanol, it will raise corn prices and put upward pressure on the prices of foods that are made with corn—ranging from corn-syrup sweeteners to meat, poultry, and dairy products. CBO expects that roughly the same amount of corn ethanol would be used in 2017 if fuel suppliers had to meet requirements equal to EPA’s proposed 2014 volumes or if lawmakers repealed the RFS, because suppliers would probably find it cost-effective to use a roughly 10 percent blend of corn ethanol in gasoline in 2017 even in the absence of the RFS. Therefore, food prices would also be about the same under the 2014 volumes scenario and the repeal scenario. By contrast, corn ethanol use in 2017 would be about 15 percent (or 2 billion gallons) higher under the EISA volumes scenario. CBO estimates that the resulting increase in the demand for corn would raise the average price of corn by about 6 percent. However, because corn and food made with corn account for only a small fraction of total U.S. spending on food, that total spending would increase by about one-quarter of one percent.

ICTSD Study: RFS had little or no impact on food prices

Geoff Cooper 2013 (Vice President for Research & Analysis, Renewable Fuels Association) Busting Big Oil Myths on the RFS and Ethanol, Part II: Food Prices 30 May 2013 <http://www.theenergycollective.com/gcooperrfa/230491/busting-big-oil-myths-rfs-and-ethanol-part-ii-food-prices>

A [recent study](http://ictsd.org/downloads/2011/12/the-impact-of-us-biofuel-policies-on-agricultural-price-levels-and-volatility.pdf) commissioned by the International Centre for Trade and Sustainable Development (ICTSD) examined the impacts of ethanol policies, including the RFS and now-defunct blender’s tax credit, on world crop prices in the 2005-2010 timeframe. Using a partial equilibrium economic model, the study found corn prices in 2009/10 wouldn’t have been any different at all with or without the RFS in place. Corn prices would have been just 3.3% lower, on average, in the entire five-year study period without the RFS and ethanol blender’s tax credit, the study found. The effect of the RFS and other ethanol-related policies on other crops is even less. If the RFS had not existed from 2005-2010, wheat prices would have been an average of just 1.6% lower, soybean prices would have been an average of 1.7% lower, and rice prices wouldn’t have been any different at all. These results are explained by the fact that economic factors other than the RFS and tax credit were primarily responsible for ethanol growth, and that even market-based ethanol expansion had only modest effects on corn prices: “Higher crude oil prices would have increased the demand for biofuels and would have created strong market-driven investment incentives that would have resulted in a large expansion of the US ethanol industry even without the [RFS and tax credit].”

Economic benefits of ethanol

Ethanol contributes > $44 billion/year to the US economy

Dr. John M. Urbanchuk 2014 (PhD economics; Managing Partner, ABF Economics) 17 Feb 2014 “Contribution of the Ethanol Industry to the Economy of the United States” <http://www.ethanolrfa.org/wp-content/uploads/2015/09/ABF_Ethanol_Economic_Impact_US_2013.pdf>

The impact of the ethanol industry on the U.S. economy is summarized in Table 2. The full impact of the spending for annual operations of ethanol production, co-product output, and R&D is estimated to have contributed more than $44 billion to the nation’s GDP in 2013. A significant component of this is from agriculture, reflecting the importance of ethanol demand to total corn utilization, the aggregate value of crop production, and crop receipts and farm income.

Ethanol production yields co-products worth $8.8 billion/year with little additional cost

Dr. John M. Urbanchuk 2014 (PhD economics; Managing Partner, ABF Economics) 17 Feb 2014 “Contribution of the Ethanol Industry to the Economy of the United States” <http://www.ethanolrfa.org/wp-content/uploads/2015/09/ABF_Ethanol_Economic_Impact_US_2013.pdf>

Most ethanol is produced by dry mills that also produce valuable co-products in the form of distillers dried grains (DDG) and industrial corn oil. The ethanol industry produced an estimated 35.2 million tons of DDG and 2.9 billion pounds of industrial corn in 2013 with an aggregate market value of $8.8 billion. It is notable that these co-products are produced with little additional expenditures.

Ethanol supports > 386,000 jobs

Dr. John M. Urbanchuk 2014 (PhD economics; Managing Partner, ABF Economics) 17 Feb 2014 “Contribution of the Ethanol Industry to the Economy of the United States” <http://www.ethanolrfa.org/wp-content/uploads/2015/09/ABF_Ethanol_Economic_Impact_US_2013.pdf>

Jobs are created from the economic activity supported by ethanol production. While ethanol production is not a labor-intensive industry (accounting for about 12,000 full time equivalent direct jobs nation-wide)8, the economic activity of supporting industries generates a substantial number of jobs in the nation. When the direct, indirect and induced jobs supported by ethanol production, construction activity, agriculture, and R&D are included, the ethanol industry supported more than 386,000 jobs in 2013.

Ethanol puts almost $31 billion/year into pockets of Americans

Dr. John M. Urbanchuk 2014 (PhD economics; Managing Partner, ABF Economics) 17 Feb 2014 “Contribution of the Ethanol Industry to the Economy of the United States” <http://www.ethanolrfa.org/wp-content/uploads/2015/09/ABF_Ethanol_Economic_Impact_US_2013.pdf>

Economic activity and associated jobs produce income for American households. The economic activities of the ethanol industry put nearly $31 billion into the pockets of Americans in 2013. The distribution of income gains by industry are summarized in Table 4.

Gasoline Prices

Iowa State U. Study: Increase in ethanol reduced gasoline prices 25 cents/gallon, and RFS will maintain this benefit

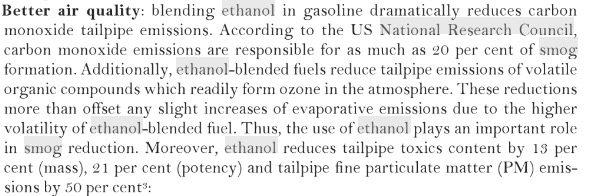
Center for Agricultural & Rural Development, Iowa State Univ. 2011. (Amani Elobeid, Miguel Carriquiry, Jacinto F. Fabiosa, Kranti Mulik, Dermot J. Hayes, Bruce A. Babcock, Jerome Dumortier, and Francisco Rosas) “Greenhouse Gas and Nitrogen Fertilizer Scenarios for U.S. Agriculture and Global Biofuels” June 2011 <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiHn4yZloPNAhVM4yYKHXdyD8IQFggcMAA&url=http%3A%2F%2Flib.dr.iastate.edu%2Fcgi%2Fviewcontent.cgi%3Farticle%3D1543%26context%3Dcard_workingpapers&usg=AFQjCNFqMKHrwCASFZFso0DSbZMvsIG4Nw&sig2=f0AGBactR25cK04lgTjyqA&bvm=bv.123325700,d.eWE>

This link between energy and agriculture becomes stronger as energy prices continue to rise and the agricultural feedstock becomes more competitive in the energy market. Conversely, agriculture now influences energy given the competition of the agricultural feedstock, through biofuels, in the energy sector (Muller et al., 2007). Du and Hayes (2011) found that, on average, the increase in ethanol production over the period 2000-2010 reduced wholesale gasoline prices by $0.25 per gallon. Continued support for increased biofuel production through mandates such as the Renewable Fuel Standard (RFS) is expected to strengthen these linkages.

Air Pollution

Ethanol reduces air pollution

European Renewable Energy Council 2010 (European renewable energy trade association, based in Brussels, Belgium) RENEWABLE ENERGY IN EUROPE <https://books.google.com/books?id=pT3O_zOH31EC&pg=PA227&lpg=PA227&dq=%22national+research+council%22+ethanol+smog&source=bl&ots=OTMfn7gc_i&sig=fYbfzfN-cyPK4mVl3MzKoWOU1tc&hl=en&sa=X&ved=0ahUKEwie_ZWBn4PNAhVHYyYKHZLzDv0Q6AEIRjAH#v=onepage&q=%22national%20research%20council%22%20ethanol%20smog&f=false>



Fertilizer runoff / Hypoxia / Gulf of Mexico Dead Zone

No explosion in fertilizer usage, despite doubling of corn production since 1980

The Fertilizer Institute 2015. (fertilizer industry trade group. Ethical note about the date: Article is undated but has to have been written in 2015 or later based on information contained internally) “Fertilizer Use” <https://www.tfi.org/statistics/fertilizer-use>

Between 1980 and 2014, U.S. farmers more than doubled corn production using only slightly more fertilizer nutrients than were used in 1980. This analysis is based on fertilizer application rate and corn production and acreage data reported by the U.S. Department of Agriculture’s (USDA) National Agricultural Statistics Service (NASS). Specifically, in 1980, farmers grew 6.64 billion bushels of corn using 3.2 pounds of nutrients (nitrogen, phosphorus and potassium) for each bushel and in 2014 they grew 14.22 billion bushels using less than 1.6 pounds of nutrients per bushel produced. In total, this represents an 114 percent increase in production using only 4.5 percent more nutrients during that same timeframe. Corn production accounts for half of U.S. fertilizer use.

There is no Gulf of Mexico “Dead Zone” - the area is teeming with fish!

Dr. Michael W. Courtney, Joshua M. Courtney 2013. (Michael C. - PhD in physics, Mass. Institute of Technology; Assistant Professor of Mathematical Sciences and Director of Quantitative Reasoning Center – US Air Force Academy. Joshua - with BTG Research, a firm that focuses on science and technology to better protect armed forces and law enforcement professionals and also applies their research to wildlife management) 23 June 2013 National Oceanic and Atmospheric Administration Publishes Misleading Information on Gulf of Mexico "Dead Zone"  <http://arxiv.org/abs/1306.5366>

Mississippi River nutrient loads and water stratification on the Louisiana-Texas shelf contribute to an annually recurring, short-lived hypoxic bottom layer in areas of the northern Gulf of Mexico comprising less than 2% of the total Gulf of Mexico bottom area. Many publications demonstrate increases in biomass and fisheries production attributed to nutrient loading from river plumes. Decreases in fisheries production when nutrient loads are decreased are also well documented. However, the National Oceanic and Atmospheric Administration (NOAA) persists in describing the area adjacent to the Mississippi River discharge as a "dead zone" and predicting dire consequences if nutrient loads are not reduced. In reality, these areas teem with aquatic life and provide 70-80% of the Gulf of Mexico fishery production.

Hypoxia zones in the Gulf of Mexico are short-lived, small, and have no significant impact

Dr. Michael W. Courtney, Joshua M. Courtney 2013. (Michael C. - PhD in physics, Mass. Institute of Technology; Assistant Professor of Mathematical Sciences and Director of Quantitative Reasoning Center – US Air Force Academy. Joshua - with BTG Research, a firm that focuses on science and technology to better protect armed forces and law enforcement professionals and also applies their research to wildlife management) 23 June 2013 National Oceanic and Atmospheric Administration Publishes Misleading Information on Gulf of Mexico "Dead Zone"  <http://arxiv.org/abs/1306.5366>

Suggestions that these short-lived, relatively small (<2% of the Gulf of Mexico area), regions of bottom water hypoxia have significant negative impacts on Gulf of Mexico fisheries are misleading and unsupported by data.  Grimes (2001) has pointed out that 70-80% of Gulf of Mexico fisheries production comes from the areas surrounding the Mississippi River discharge and that the increased fisheries production results from nutrient-enhanced increases in primary production.

Gulf of Mexico fish species are doing great - not impacted by hypoxia

**Analysis: The reason these 8 PhDs give for why fish are doing fine is that the species that live in the Gulf breed and move through areas of the water in times and places that are not affected by hypoxia.  The one species that is having problems isn’t caused by hypoxia but by market forces.  Not only is hypoxia not harming them, they have actually been increasing during the same time the hypoxia was increasing.**

Dr. THOMAS S. BIANCHI, Dr. STEVEN F. DIMARCO, Dr. PIERS CHAPMAN, Dr. ROBERT D. HETLAND , Dr. JOHN W. MORSE, Dr. Mead Allison , Dr. James Cowan , and Dr. Gil Rowe 2008. (Bianchi, Dimarco, Piers, Hetland, and Morse - are all PhD and professors in dept. of Oceanography at  Texas A&M Univ., College Station.  Allison - PhD, professor in dept. of Earth & Environmental Sciences, Tulane University.  Cowan - PhD, professor in Dept of Oceanography and Coastal Sciences, Louisiana State Univ.  Rowe - PhD, head of the marine biology department at Texas A&M University, Galveston)  Controlling Hypoxia on the U.S. Louisiana Shelf: Beyond the Nutrient-Centric View, Eos, Vol. 89, No. 26, 24 June 2008  <http://www.academia.edu/19193919/Controlling_Hypoxia_on_the_U.S._Louisiana_Shelf_Beyond_the_Nutrient-Centric_View>

Fisheries landings data (Louisiana and Gulf-wide) during the hypoxia-monitoring period of 1985–2007 show that fisheries production—assuming that landings data reflect production—has increased over the period of record for combined catches of  all species, excluding Gulf menhaden (Brevoortia patronus), whose decline in catches is apparently driven by market forces [Cowan et al., 2008]. This may seem counterintuitive, based on the negative impact hypoxia has had on fisheries in other estuarine regions. However, species such as Gulf menhaden, penaeid shrimps and many other commercially important species spawn on the shelf in the late fall (e.g., red drum, Atlantic croaker), winter (Gulf menhaden), or early spring (penaeid shrimps), and these species’ post-larvae and juveniles have reached estuarine nurseries prior to the annual development of hypoxia on the shelf. Most high-value summer spawners spawn close to estuary mouths or far offshore  (e.g., spotted sea trout, red snapper, respectively), or in the water column above the hypoxic zone (e.g., anchovies and other forage fishes). Thus, many species are either spatially or temporally disconnected from the hypoxic zone in their weakly mobile and vulnerable early life stages on the shelf.

NOAA publishes misleading maps and exaggerated descriptions about so-called “dead zone” in the Gulf

Dr. Michael W. Courtney, Joshua M. Courtney 2013. (Michael C. - PhD in physics, Mass. Institute of Technology; Assistant Professor of Mathematical Sciences and Director of Quantitative Reasoning Center – US Air Force Academy. Joshua - with BTG Research, a firm that focuses on science and technology to better protect armed forces and law enforcement professionals and also applies their research to wildlife management) 23 June 2013 National Oceanic and Atmospheric Administration Publishes Misleading Information on Gulf of Mexico "Dead Zone"  <http://arxiv.org/abs/1306.5366>

On June 18, 2013, NOAA published a misleading figure purporting to show the "dead zone" in an article predicting a possible record dead zone area for 2013 ([this http URL](http://www.noaanews.noaa.gov/stories2013/20130618_deadzone.html)). This area is not a region of hypoxic bottom water at all nor is it related directly to 2013 predicted hypoxia. This figure appeared as early as 2004 in a National Aeronautics and Space Administration (NASA) article ([this http URL](http://www.nasa.gov/vision/earth/environment/dead_zone.html)) as a satellite image where the red area represents turbidity and is much larger than the short-lived areas of hypoxic bottom water documented in actual NOAA measurements. Thus, it is misleading for NOAA to characterize the red area in that image as a "dead zone." The NOAA has also published other misleading and exaggerated descriptions of the consequences of nutrient loading.

Nutrient loading is boosting red snapper numbers - it’s good for fish! No harm from hypoxia

Joshua M. Courtney, Dr. Amy C. Courtney, Dr. Michael W. Courtney  2013.  (Joshua - with BTG Research, a firm that focuses on science and technology to better protect armed forces and law enforcement professionals and also applies their research to wildlife management.  Amy - Ph.D. in medical engineering and medical physics in a joint Harvard/MIT program; served on the physics faculty of the United States Military Academy.  Michael - PhD in physics, Mass. Institute of Technology; Assistant Professor of Mathematical Sciences and Director of Quantitative Reasoning Center – US Air Force Academy ) Nutrient Loading Increases Red Snapper Production in the Gulf of Mexico, Hypotheses in the Life Sciences, Vol 3  <http://www.hy-ls.org/index.php/hyls/article/view/100/87>

A large, annually recurring region of hypoxia in the northern Gulf of Mexico has been attributed to water stratification and nutrient loading of nitrogen and phosphorus delivered by the Mississippi and Atchafalaya rivers. This nutrient loading increased nearly 300% since 1950, primarily due to increased use of agricultural fertilizers. Over this same time period, the red snapper (*Lutjanus campechanus*) population in the Gulf of Mexico has shifted strongly from being dominated by the eastern Gulf of Mexico to being dominated by the northern and western Gulf of Mexico, with the bulk of the current population in the same regions with significant nutrient loading from the Mississippi and Atchafalaya rivers and in or near areas with development of mid-summer hypoxic zones. The population decline of red snapper in the eastern Gulf is almost certainly attributable to overfishing, but the cause of the population increase in the northern and western Gulf is subject to broad debate, with the impact of artificial reefs (primarily oil platforms which have incr­eased greatly since the 1960s) being the most contentious point. Nutrient loading has been shown to positively impact secondary production of fish in many marine systems. The present paper offers the hypothesis that increased nutrient loading has contributed significantly to increased red snapper population in the northern and western Gulf of Mexico. Nutrient loading may be working in synergy with the abundant oil platforms both increasing primary production and providing structure encouraging red snapper to feed throughout the water column.

Fish populations are increasing in the so-called Gulf of Mexico “dead zone”

Joshua M. Courtney, Dr. Amy C. Courtney, Dr. Michael W. Courtney  2013.  (Joshua - with BTG Research, a firm that focuses on science and technology to better protect armed forces and law enforcement professionals and also applies their research to wildlife management.  Amy - Ph.D. in medical engineering and medical physics in a joint Harvard/MIT program; served on the physics faculty of the United States Military Academy.  Michael - PhD in physics, Mass. Institute of Technology; Assistant Professor of Mathematical Sciences and Director of Quantitative Reasoning Center – US Air Force Academy ) Nutrient Loading Increases Red Snapper Production in the Gulf of Mexico, Hypotheses in the Life Sciences, Vol 3  <http://www.hy-ls.org/index.php/hyls/article/view/100/87>

The authors have been following the literature on nutrient loading and hypoxia in the Gulf of Mexico [1-3] for several years. Characterizations of these areas as ―dead zones‖ perplexed us, because we had personal experience with the Louisiana-Texas shelf teeming with life, and we knew that Louisiana harvests tremendous quantities of seafood and also that Louisiana supports one of the best sport fisheries in the Gulf of Mexico. Our anecdotal observations and review of available data seemed to suggest that several sport species of fish (red drum, spotted sea trout, red snapper) are both plumper and more plentiful in Louisiana waters, and we have often considered hypothetical explanations for these observations.

Most fish caught in the Gulf come from the so-called “dead zone”.   Mississippi River runoff enhances fisheries!

Joshua M. Courtney, Dr. Amy C. Courtney, Dr. Michael W. Courtney  2013.  (Joshua - with BTG Research, a firm that focuses on science and technology to better protect armed forces and law enforcement professionals and also applies their research to wildlife management.  Amy - Ph.D. in medical engineering and medical physics in a joint Harvard/MIT program; served on the physics faculty of the United States Military Academy.  Michael - PhD in physics, Mass. Institute of Technology; Assistant Professor of Mathematical Sciences and Director of Quantitative Reasoning Center – US Air Force Academy ) Nutrient Loading Increases Red Snapper Production in the Gulf of Mexico, Hypotheses in the Life Sciences, Vol 3  <http://www.hy-ls.org/index.php/hyls/article/view/100/87>

Grimes [8] pointed out that the fact that 70-80% of Gulf of Mexico fishery landings come from waters surrounding the Mississippi delta provided strong circumstantial evidence that nutrient enhancement enhances fishery production, and this is consistent with a large body of work suggesting riverine discharge nutrient enhances fisheries [9]. Grimes [8] suggested that two major groupings, estuary dependent species such as red drum (Sciaenops ocellatus), spot (Leiostomus xanthurus), and Atlantic croaker (Micropogonias undulatus), and coastal species such as king mackerel (Scomberomorus calvalla), Spanish mackerel (Scomberomorus maculatus), and bluefish (Pomatomus saltatrix) were most likely to be influenced by this nutrient enrichment.

Egypt Study:  A collapsed fishery recovered when fertilizer runoff increased

Joshua M. Courtney, Dr. Amy C. Courtney, Dr. Michael W. Courtney  2013.  (Joshua - with BTG Research, a firm that focuses on science and technology to better protect armed forces and law enforcement professionals and also applies their research to wildlife management.  Amy - Ph.D. in medical engineering and medical physics in a joint Harvard/MIT program; served on the physics faculty of the United States Military Academy.  Michael - PhD in physics, Mass. Institute of Technology; Assistant Professor of Mathematical Sciences and Director of Quantitative Reasoning Center – US Air Force Academy ) Nutrient Loading Increases Red Snapper Production in the Gulf of Mexico, Hypotheses in the Life Sciences, Vol 3  <http://www.hy-ls.org/index.php/hyls/article/view/100/87>

Nixon and Buckley [10] review evidence that secondary production in marine systems tends to be increased by nutrient enrichment. One example is the collapse of the fishery on the Egyptian shelf after the closing of the Aswan dam in 1965. This restricted the deposition of inorganic nutrients by the annual Nile flood; subsequently the fishery collapsed. However, use of inorganic fertilizers and point source discharge of nutrients increased markedly in the Nile delta after that time, and the resulting increase in inorganic nitrogen coincided with a dramatic recovery of the fishery that began in the early to mid 1980s and has continued to the present.

Baltic Study:  Fertilizer (nitrogen and phosphorus) runoff boosted fish population by 8 times

Joshua M. Courtney, Dr. Amy C. Courtney, Dr. Michael W. Courtney  2013.  (Joshua - with BTG Research, a firm that focuses on science and technology to better protect armed forces and law enforcement professionals and also applies their research to wildlife management.  Amy - Ph.D. in medical engineering and medical physics in a joint Harvard/MIT program; served on the physics faculty of the United States Military Academy.  Michael - PhD in physics, Mass. Institute of Technology; Assistant Professor of Mathematical Sciences and Director of Quantitative Reasoning Center – US Air Force Academy ) Nutrient Loading Increases Red Snapper Production in the Gulf of Mexico, Hypotheses in the Life Sciences, Vol 3  <http://www.hy-ls.org/index.php/hyls/article/view/100/87>

A third example discussed by Nixon and Buckley [10] is the Baltic Sea, which has received increasing amounts of nitrogen and phosphorus from agricultural runoff, urban wastewater, and enriched atmospheric deposition for many decades. Between an early study in 1920-1923 and a later assessment in 1976-1977, the benthic biomass above the halocline was estimated to increase by 2-10 times. Marked decreases in benthic biomass below the halocline over the same interval were attributed to decreases in oxygen due due to eutrophication. Nixon and Buckley also describe Thurow's historical reconstruction [12] of biomass and finfish yield in the Baltic Sea showing that both biomass and finfish yield were low in the first half of the 20th century, then increased sharply after about 1950. After considering a number of other possible factors [12], Thurow concluded that nutrient loading and subsequent eutrophication were responsible for the 8-fold increase in fish biomass.

Cuba study: Reduced fertilizer runoff led to reduced fish productivity in Cuban waters in the 1990s

Dr. Julio A. Baisre and Zenaida Arboleya 2006. (Baisre - PhD in fisheries; Senior Fisheries Advisor of the Cuban Minister of Fisheries. Arboleya - works for the Ministry of Fisheries, Cuba ) Fisheries Research 81 (2006) 283–292, Going against the ﬂow: Effects of river damming in Cuban ﬁsheries <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiWwuLT-YLNAhWCYyYKHTFMARwQFggcMAA&url=http%3A%2F%2Fwww.academia.edu%2F1346523%2FGoing_against_the_flow_Effects_of_river_damming_in_Cuban_fisheries&usg=AFQjCNF3KypRdXMxu5GGl8hwewILqxcvcg&sig2=mWOjQVUP2iTmSuVdf7uEtA&bvm=bv.123325700,d.eWE> (brackets added)

The interruption of natural ﬂuxes of water, nutrients and sediments by river regulation can be expected to have had signiﬁcant ecological impacts downstream from dams. There was evidence of a drastic reduction in N[itrogen] inputs to the Cuban landscape during the1990s due to a serious contraction in the rural economy, in particular, a dramatic reduction in fertilizer use (Fig. 1) and the burning of fossil fuels (Baisre, in press). We present evidence here that nutrient retention in reservoirs and other ecological changes derived from river damming had severe impacts on the ecology of estuarine areas and on coastal ﬁsheries.

**END QUOTE. Baisre and Arboleya go on elsewhere in the same context to conclude QUOTE:**

The oligotrophication of the estuarine and coastal waters in Cuba, driven by a drastic reduction in the use of fertilizers and the burning of fossil fuels (Baisre, in press), together with the environmental changes and habitat losses associated to river damming severely depleted the catches of the species which are more dependent on estuaries during their life cycles.

SOLVENCY

1. Ethanol usage would continue because it’s economical to do so

Ethanol is used because it boosts octane, not just because of the federal mandate

Dr Robert Wisner 2015 (professor emeritus at Iowa State Univ. and Biofuels Economist) Feb 2015 “Impact of Crude Oil Price Collapse on Corn Starch Ethanol” <http://www.agmrc.org/renewable-energy/ethanol/impact-of-crude-oil-price-collapse-on-corn-starch-ethanol/>

There is an additional factor besides government mandates that will very likely encourage continued ethanol production even if wholesale prices equal or modestly exceed those of gasoline. The petroleum industry uses ethanol to upgrade the octane content of gasoline to acceptable levels. Ethanol has 2/3 the energy content of gasoline but it’s much higher octane content adds value beyond just energy content. Other additives can be used to upgrade gasoline’s octane content but they appear to be more expensive than ethanol at current ethanol and crude oil prices.

Gasoline companies would go on using ethanol even without the government mandate

Dan Charles 2016 (journalist) National Public Radio 10 Feb 2016 “The Shocking Truth About America's Ethanol Law: It Doesn't Matter (For Now)” <http://www.npr.org/sections/thesalt/2016/02/10/466010209/the-shocking-truth-about-americas-ethanol-law-it-doesnt-matter-for-now>

I found two experts who've examined this question in great detail: Paul Niznik, an analyst at [Stratas Advisors,](https://stratasadvisors.com/) an energy consulting business in Houston, and[Scott Irwin](http://ace.illinois.edu/directory/sirwin), an economist who teaches at the University of Illinois. And here's their bottom line: If the law changed tomorrow and gasoline companies were free to ignore ethanol, they'd almost certainly keep right on blending ethanol into their fuel. Got that? The ethanol mandate requires gasoline companies to do something that, at the moment, they'd do anyway.

Ethanol usage would continue without a federal mandate because it’s the cheapest way to boost octane

Dan Charles 2016 (journalist) National Public Radio 10 Feb 2016 “The Shocking Truth About America's Ethanol Law: It Doesn't Matter (For Now)” <http://www.npr.org/sections/thesalt/2016/02/10/466010209/the-shocking-truth-about-americas-ethanol-law-it-doesnt-matter-for-now> (brackets added)

Octane is a measure of gasoline's tendency to ignite under pressure. If it's too low, the gasoline/air mixture in an engine's cylinders will burn too soon, creating damaging "knocking." The industry standard for gasoline is 87. But getting gasoline's octane rating up to that standard costs money. It means more refining of the petroleum, or using high-octane compounds in your gasoline formula, such as — you guessed it — ethanol. So gasoline companies aren't using ethanol for its energy — they're buying it for its high octane rating. There are other compounds that you can add to boost octane levels, but many, like alkylate or iso-octane, are generally more expensive than ethanol. Another additive that is widely used globally, called MTBE, has such a bad reputation for polluting the environment that many states have passed regulations that make it difficult to use. "As of today, the alternative sources of octane are more expensive," says [Univ. of Illinois economist Scott] Irwin, who just [updated](http://farmdocdaily.illinois.edu/2016/02/ethanol-position-as-octane-enhancer.html) his calculations on demand for ethanol last week.

2. Local & State regulations

Hard to stop using ethanol because of other regulations besides the federal RFS mandate

Dan Charles 2016 (journalist) National Public Radio 10 Feb 2016 “The Shocking Truth About America's Ethanol Law: It Doesn't Matter (For Now)” <http://www.npr.org/sections/thesalt/2016/02/10/466010209/the-shocking-truth-about-americas-ethanol-law-it-doesnt-matter-for-now>

 There's a complex set of local, state and federal regulations that also tend to favor ethanol. A few states require a 10 percent blend of ethanol. Others, like California, have air quality regulations that make it very difficult to replace ethanol. "It would be very hard to unravel things like that," Niznik says. "It's like the tax code. Lots of things are tied into it, and that makes it very hard to change."

DISADVANTAGES

1. Economic harm

Link & Impact: Without RFS, we lose $50 billion, lose jobs, and get higher gas prices

Tom Buis 2015. (President of the American National Farmers Union and is current CEO of Growth Energy; former served as the Senior Agriculture Policy Advisor for Senate Majority Leader Tom Daschle ) “GROWTH ENERGY’S BUIS SPEAKS AT ENERGY INDEPENDENCE SUMMIT” 23 Feb 2015 <http://www.growthenergy.org/news-media/press-releases/growth-energys-buis-speaks-at-energy-independence-summit/#sthash.AYq82by7.dpuf>

“The RFS has been the most successful energy policy this nation has enacted in the last forty years,” Buis noted. “It has helped reduce our dependence on foreign oil by nearly 50 percent, it is cleaner and better for our environment, it creates American jobs that cannot be outsourced, supports a robust rural economy and in 2014 it contributed more than $50 billion dollars to our GDP. Furthermore, it provides the American consumer with a choice and savings when they go and fill up at the pump.”

Backup Link & Impact: Ethanol is a major source of income for US farms: $29.4 billion in 2013

Dr. John M. Urbanchuk 2014 (PhD economics; Managing Partner, ABF Economics) 17 Feb 2014 “Contribution of the Ethanol Industry to the Economy of the United States” <http://www.ethanolrfa.org/wp-content/uploads/2015/09/ABF_Ethanol_Economic_Impact_US_2013.pdf>

The largest share of spending was for corn and other feedstock used as raw material to make ethanol. The ethanol industry used 4.8 billion bushels of corn on a gross basis in 2013, valued at more than $29.4 billion. Consequently, the ethanol industry is a major source of support for agricultural output and farm income.

2. Imported oil

Link: RFS is still needed because we still import oil

Prof. James Stock 2015. (Professor in the Harvard Economics Department and a Fellow at Columbia University's Center on Global Energy Policy. He served as a Member of the President's Council of Economic Advisers from 2013-2014) 4 June 2015 “U.S. renewable fuels move forward” <http://www.reuters.com/article/us-stock-biofuels-idUSKBN0OK04420150604>

Many in the oil industry would like to repeal the RFS. But repeal would be a mistake. Our climate challenges are real, and we remain net importers of oil – a situation likely to worsen with low oil prices as shale oil production declines and gasoline demand increases.

Link: Ethanol reduces US dependence on imported oil

Dr. John M. Urbanchuk 2014 (PhD economics; Managing Partner, ABF Economics) 17 Feb 2014 “Contribution of the Ethanol Industry to the Economy of the United States” <http://www.ethanolrfa.org/wp-content/uploads/2015/09/ABF_Ethanol_Economic_Impact_US_2013.pdf>

Ethanol reduces our dependence on imported oil and reduces the U.S. trade deficit. The production and use of ethanol displaces crude oil needed to manufacture gasoline. According to the Energy Information Administration (EIA), U.S. dependence on imported oil has dramatically declined since peaking in 2005. EIA credits increased use of domestic biofuels (ethanol and biodiesel) as one of the factors contributing to the steady decline in oil import dependence. EIA reports that in 2012 imports accounted for 40 percent of our crude oil and refined petroleum supplies and oil imports, compared to 60 percent in 2005.

Link: Ethanol dollars stay in the US and don’t go overseas for oil

Dr. John M. Urbanchuk 2014 (PhD economics; Managing Partner, ABF Economics) 17 Feb 2014 “Contribution of the Ethanol Industry to the Economy of the United States” <http://www.ethanolrfa.org/wp-content/uploads/2015/09/ABF_Ethanol_Economic_Impact_US_2013.pdf>

The production of 13.3 billion gallons of ethanol means that the U.S. needed to import 476 million fewer barrels of oil in 2013 to refine gasoline. This is roughly the equivalent of 13 percent of total expected U.S. crude oil and petroleum product imports in 2013. The value of the crude oil displaced by ethanol amounted to $48.2 billion in 2013. This is money that stays in the American economy.

Impact 1: Economic damage. Sending money overseas weakens the economy by reducing demand for US products

Ian Fletcher 2012. (Senior Economist of the Coalition for a Prosperous America, a nationwide grass-roots organization dedicated to fixing America’s trade policies and comprising representatives from business, agriculture, and labor. He was previously Research Fellow at the U.S. Business and Industry Council, a Washington think tank founded in 1933 ) The Fiscal Cliff and the Trade Deficit, HUFFINGTON POST 21 Nov 2012 <http://www.huffingtonpost.com/ian-fletcher/fiscal-cliff-trade-deficit_b_2169250.html>

For one thing, when America runs a trade deficit, we have to either borrow money from foreigners or sell off existing assets to them to cover the gap. And a lot of that borrowing and asset selling takes the form of federal debt instruments like T-bills. So our appetite for foreign credit to buy imports is related to our appetite for foreign credit to finance our government. For another thing, the reason the fiscal cliff could tip us back into recession is that it would suddenly reduce so-called aggregate demand. That's the economy's total demand for goods and services. But a trade deficit does the same thing, because it means that demand for goods and services is being satisfied by foreign producers, not American ones. So output, jobs, and industries suffer the same way.

Impact 2: Reduced global and US security, as oil dollars fund dangerous regimes

Rebecca Lefton and Daniel Weiss 2010 ([Rebecca Lefton](https://www.americanprogress.org/about/staff/lefton-rebecca/bio/) is a Researcher for Progressive Media and [Daniel J. Weiss i](https://www.americanprogress.org/about/staff/weiss-daniel-j/bio/)s a Senior Fellow and Director Climate Strategy at the Center for American Progress. ) 13 Jan 2010 “Oil Dependence Is a Dangerous Habit” <https://www.americanprogress.org/issues/green/report/2010/01/13/7200/oil-dependence-is-a-dangerous-habit/>

As a major contributor to the global demand for oil the United States is paying to finance and sustain unfriendly regimes. Our demand drives up oil prices on the global market, which oftentimes benefits oil-producing nations that don’t sell to us. The Center for American Progress finds in “[Securing America’s Future: Enhancing Our National Security by Reducing oil Dependence and Environmental Damage](http://cdn.americanprogress.org/wp-content/uploads/issues/2009/08/pdf/energy_security.pdf),” that “because of this, anti-Western nations such as Iran—with whom the United States by law cannot trade or buy oil—benefit regardless of who the end buyer of the fuel is.” Further, the regimes and elites that economically benefit from rich energy resources rarely share oil revenues with their people, which worsens economic disparity in the countries and at times creates resource-driven tension and crises. The State Department cites oil-related violence in particular as a danger in [Nigeria](http://travel.state.gov/travel/cis_pa_tw/tw/tw_928.html), where more than 54 national oil workers or businesspeople have been kidnapped at oil-related facilities and other infrastructure since January 2008. Attacks by insurgents on the U.S. military and civilians continue to be a danger in [Iraq](http://travel.state.gov/travel/cis_pa_tw/tw/tw_921.html). Our oil dependence will also be increasingly harder and more dangerous to satisfy. In 2008 the United States consumed 23 percent of the world’s petroleum, 57 percent of which was[imported](http://tonto.eia.doe.gov/energy_in_brief/foreign_oil_dependence.cfm). Yet the United States [holds less than 2 percent of the world’s oil reserves](http://www.eia.doe.gov/emeu/international/reserves.html). Roughly 40 percent of our imports came from Canada, Mexico, and Saudi Arabia, but we can’t continue relying on these allies. The majority of Canada’s oil lies in [tar sands](http://greeninc.blogs.nytimes.com/2009/02/19/obama-and-canadas-controversial-oil-patch/), a very dirty fuel, and Mexico’s main oil fields are projected [dry up within a decade](http://cdn.americanprogress.org/wp-content/uploads/issues/2009/08/pdf/energy_security.pdf). Without reducing our [dependence on oil](http://cdn.americanprogress.org/wp-content/uploads/issues/2009/08/pdf/energy_security.pdf) we’ll be forced to increasingly look to more antagonistic and volatile countries that pose direct threats to our national security.

3.  Decreased fishery production

Reducing nutrient loads in the Gulf would decrease fishery production

**Analysis:  Adding more nutrients (fertilizer runoff like nitrogen and phosphorus) to the Gulf up to a certain point increases fish quantities, then at some point it becomes too much and it starts killing more than it produces.  These guys are saying that right now we’re on the upward side of the trend, where more nutrients produce more fish - we haven’t reached the point yet where it causes more harm than good.  If we start reducing nutrient loads now, it will take away the positive benefits and reduce the fish population.**

Dr. Michael W. Courtney, Joshua M. Courtney 2013. (Michael C. - PhD in physics, Mass. Institute of Technology; Assistant Professor of Mathematical Sciences and Director of Quantitative Reasoning Center – US Air Force Academy. Joshua - with BTG Research, a firm that focuses on science and technology to better protect armed forces and law enforcement professionals and also applies their research to wildlife management) Predictions Wrong Again on Dead Zone Area - Gulf of Mexico Gaining Resistance to Nutrient Loading   <http://arxiv.org/ftp/arxiv/papers/1307/1307.8064.pdf>

Caddy (1993, 2000) points out that fisheries production increases in response to increased nutrient loading up to a point, and then declines. All the available evidence suggests that the Louisiana-Texas shelf is on on the rising edge or the top of fisheries response to nutrient loading and that decreasing nutrient loads delivered by the Mississippi River to the Louisiana-Texas shelf would likely have the effect of decreasing fishery production most years (Courtney and Courtney 2013).

Impact:  Net benefits.  While hypoxia does sometimes kill some fish, it also increases productivity in the total population.  The increases are often greater than the losses.

**Dr. Denise Breitburg, who advocates reducing nutrient loading into coastal waters, nevertheless admitted in 2002:**

Dr. Denise Breitburg 2002. (PhD in biology from Univ of Calif.-Santa Barbara; works with the Academy of Natural Sciences, Estuarine Research Center, Maryland) Effects of Hypoxia, and the Balance between Hypoxia and Enrichment, on Coastal Fishes and Fisheries, Estuaries Vol. 25, No. 4b, p. 767–781 August 2002 <http://www.serc.si.edu/labs/estuarine_ecology/pdf/Effects%20of%20hypoxia%20on%20fish%20%26%20fisheries%20-%20Estuaries%202002.pdf>

The effects of nutrient enrichment of coastal waters on fish populations and fisheries harvests present a contradictory picture. On one hand, fish kills affecting thousands to millions of fish have been associated with nutrient-related low oxygen events in coastal areas on each of the world’s continents, except Antarctica. On the other hand, a comparison of systems ranging from coral reefs to severely eutrophic temperate estuaries indicates that there is a positive relationship between nitrogen loading and fisheries yields in coastal waters (Nixon et al. 1986). Included in the analysis by Nixon et al. are estuaries and other semi-enclosed seas that are characterized by seasonal oxygen depletion. Comparison of 14 European estuaries and other semi-enclosed European seas found higher landings of both planktivorous and demersal fishes in eutrophic systems characterized by seasonal hypoxia than in oligotrophic systems (de Leiva Moreno et al. 2000). I explore the reasons for this seeming contradiction by asking what are the predominant effects of hypoxia on estuarine fishes in nutrient-enriched systems, how and where does hypoxia negatively affect fish populations and fisheries harvests, and why are effects of hypoxia difficult to detect on a system-wide basis. Although ecological functions and fisheries harvests can be severely disrupted within hypoxic waters, increases in finfish abundance on larger spatial scales resulting from the high productivity in nutrient-enriched systems are often greater than losses due to oxygen depletion.

4. Lose the transition to advanced bio-fuels like cellulosic ethanol

Link: RFS can lead us to cellulosic ethanol

Prof. James Stock 2015. (Professor in the Harvard Economics Department and a Fellow at Columbia University's Center on Global Energy Policy. He served as a Member of the President's Council of Economic Advisers from 2013-2014) 4 June 2015 “U.S. renewable fuels move forward” <http://www.reuters.com/article/us-stock-biofuels-idUSKBN0OK04420150604>

As I stressed in a paper I wrote for Columbia University's Center on Global Energy Policy, the most promising path for achieving the long-term goals of the RFS is through cellulosic ethanol, with the first commercial-scale plants now coming on line. For this reason, it is important that the RFS makes a commitment to increasing the amount of higher ethanol blends sold, that is, to move through the so-called E10 blend wall. The proposed rule does this, in a measured way, and that is a good thing.

Brink: RFS is the only way we can get 2nd generation biofuels

Prof. James Stock 2015. (Professor in the Harvard Economics Department and a Fellow at Columbia University's Center on Global Energy Policy. He served as a Member of the President's Council of Economic Advisers from 2013-2014) 4 June 2015 “U.S. renewable fuels move forward” <http://www.reuters.com/article/us-stock-biofuels-idUSKBN0OK04420150604>

Second generation biofuels made from non-food feed stocks remain the most plausible way to tackle these carbon emissions and energy security challenges over the next decade, and the RFS is the only meaningful policy tool we have to support those fuels.

Link: RFS can lead to long-term GHG (greenhouse gas) reductions even if it’s not reducing GHG today

Congressional Budget Office 2014 (non-partisan agency of Congress that researches public policy) 26 June 2014 The Renewable Fuel Standard: Issues for 2014 and Beyond <https://www.cbo.gov/publication/45477>

Reductions in Greenhouse Gas Emissions Because of the RFS Would Be Small in the Near Term but Could Be Larger Over the Long Term  
The production and use of different types of renewable fuels involve different amounts of greenhouse gas emissions. Estimates of those emissions are uncertain, and researchers’ predictions vary considerably. However, available evidence suggests that replacing gasoline with corn ethanol has only limited potential for reducing emissions (and some studies indicate that it could increase emissions). The success of the RFS in reducing the emissions from transportation fuels will depend mainly on the extent to which it causes people to substitute advanced biofuels—particularly cellulosic biofuels—for gasoline or diesel over the long run. However, a trade-off exists between the goal of limiting the cost of complying with the RFS (for example, by reducing the requirements for cellulosic biofuels) and the goal of providing a strong incentive for the development of better technologies for advanced biofuels.

Link: Increased greenhouse gases. Corn Ethanol is good (20% emissions reduction) but cellulosic will be better (80% reduction)

Margo Oge 2016 (*director of the Environmental Protection Agency’s office of transportation and air quality from 1994 to 2012) NEW YORK TIMES 29 Jan 2016* The Problem With the Ethanol Mandate That Iowa Loves <http://www.nytimes.com/2016/01/29/opinion/the-problem-with-the-ethanol-mandate-that-iowa-loves.html?version=meter+at+null&contentId=&mediaId=&referrer=https%3A%2F%2Fwww.google.com%2F&priority=true&action=click&contentCollection=Politics&module=RelatedCoverage&region=EndOfArticle&pgtype=article>

At best, corn ethanol provides a 20 percent reduction in greenhouse gas pollution over gasoline, while cellulosic fuel produces an 80 percent reduction in that pollution and doesn’t compete with food. The cellulosic industry has taken much longer to get off the ground than Congress anticipated. Production of this fuel is more complex and costly and requires significant upfront investments.

Impact: Human health problems and coastal flooding

Environment & Climate Change, Canada 2015 (agency of the national government of Canada) “Drivers and Impacts of Greenhouse Gas Emissions” <https://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=D4C4DBAB-1>

The release of GHGs and their increasing concentration in the atmosphere are already having an impact on the environment, human health and the economy. These impacts are expected to become more severe, unless concerted efforts to reduce emissions are undertaken.  
Environmental impacts  
Overall average annual temperatures are expected to increase.  
Snow, sea ice and glacier coverage will decrease due to higher temperatures, resulting in rising sea levels and increased coastal flooding.