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# Green dreams or pipe dreams?: Media framing of the U.S. biofuels movement

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## ABSTRACT

Using a frame analytic approach, we identify and analyze the media's portrayal of the recent movement to increase U.S. biofuels' investment and development. Using a dataset comprised of *New York Times* articles, we examine the contested terrain of biofuels discourse as some media coverage frames biofuels as beneficial, while other reporting constructs and packages counter-claims intended to resist development and portray biofuels as problematic. We focus on both the content of frames and strategies used by media claims-makers to assemble frames. We find that the media constructed three distinct frames in their efforts to shape public discourse: economic development, environment, and national security. These frames were constructed primarily by situating them within a larger political and economic context to gain public legitimacy. In this paper we will show how, in their efforts to construct meaning around biofuels, the media draw on frames that are coded with symbolic meanings that widely resonate with dominant cultural values.

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## 1. Introduction

From the laboratories of chemical engineers, to American cornfields and Brazilian sugarcane plantations, considerable human investment has been pursued in an effort to turn natural materials to energy. Farmers, economic developers, politicians, scientists, and venture capitalists alike claim that fuels produced from biomass hold the key to revolutionizing both energy and agriculture. Newspaper headlines herald the “green dreams” of biofuels, while billboards and television advertisements admonish us to “Live Green/Go Yellow.” Recently, however, “gold rush” [1] rhetoric has been tempered by detractors who counter talk of a biofuels bonanza. Where some see progress, now others see biofuel investment and development as not green, but “pipe dreams” – a pathway to both environmental and economic peril.

While friction and struggle are endemic in the pursuits of material and ideal interests [2], they are also reminders that energy and agricultural development exists in a larger societal context and, for this reason, are open to interpretation. Many of today's questions animating the work on biofuels are social psychological, yet these same frameworks are absent in contemporary biofuels development and policy-making. When they do appear, they are often integrated from the approach of rational choice and when actors fail to conform, they are labeled as irrational, deviants, or outliers, thereby justifying their marginalization. The response by many in the sciences and industry is to jettison their views from discourse and decision making.

Whether biomass is the future of U.S. crop production will undoubtedly be debated in small town coffee shops, in tariff and trade negotiations, as well as on the front pages of local and international newspapers for some time. The media is

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a key actor in writing this script and in the process, providing compelling social science data. As various analysts have argued, the media may amplify, facilitate, or orchestrate public concern about a particular event or situation, thereby contributing to consensus, resistance, or even moral panic [3,4]. Miller and Riechert argue that the context in which discourse occurs plays a pivotal role in public perception. They argue that in regard to debate over environmental issues, media representation tends to focus on “how to look at issues than about the facts or values involved” [5 p. 45].

It is this context – or biofuels script – advanced by the media that we investigate in this paper. A frame analytic approach [6] is adopted to investigate the content of biofuels media reporting in the *New York Times* and strategies used to punctuate content. Our aim in exploring the media’s portrayals of biofuels is to examine the socially constructed nature of alternative energy both as asset and social problem.

For the purposes of this paper, we see biofuels as combustible materials derived from plant material (biomass) produced primarily through the practice of agriculture. The most common biofuels used today are ethanol and biodiesel. In the U.S., ethanol is produced almost exclusively from corn glucose using the process of yeast fermentation. Although the more complex process of converting cellulosic materials into ethanol has been extensively studied, it has yet to become economically viable [7]. Biodiesel is produced through the chemical process transforming vegetable oil into diesel fuel [8]. In our analysis of the media reporting used in this study, the majority of the claims-making activity focuses primarily on the production of ethanol from corn and the potential of cellulosic production.

Scholars [9–11] have investigated how the media affects and shapes discourse, and, in turn, how language, ideas, interpretations, and symbols develop a unique culture [12]. We see a polarized media engaged in both advocating for and questioning biofuels as “culture producing actors and organizations” which “can be viewed as a ‘community of discourse’ engaged in the enunciation of new cultural codes [12 p. 181] that at times reinforce normative expressions, and, at other times, contest dominant representations.

As communities of discourse, the media frames events or problems in the world and situates them within a larger political and economic context [6,9,13]. For this reason, we explore both meanings assigned to biofuels through media framing as well as the strategic process of framing as a “discourse dance” [13] as various media claims-makers use their platform to convince others to accept their framing [14,15]. We will show how, in their efforts to construct meaning around biofuels, the media draw on frames that are coded with symbolic meanings that widely resonate with dominant, but competing, cultural values. This work has not only national, but international relevance as well. Opinion leading newspapers such as the *New York Times* have the global influence to shape development decisions and policy-making. Biofuels are increasingly being incorporated into globally integrated biofuels networks. Frames that reinforce this trajectory may bolster a global structure of agriculture that presents challenges both to food and energy security [16].

## 2. Framing overview

Advocates describe biofuels growth as a “renaissance” [17] “religion” [18], and a “revolution” [19]. Biodiesel proponents in the northeast U.S. have organized “Biodiesel Revivals”, while in the South, supporters adopted the moniker of “movement” and are building momentum due, in part, to country music icon Willie Nelson’s “BioWillie® brand biodiesel [20]. We adopt a social movement approach to the study of biofuels, in part, because media reporting reflects such transformative language. We also see efforts to institute biofuels production as less a sudden platform that emerged in the past few years, but as a “carry-over” [21,22] from previous efforts in the early part of the twentieth century to integrate renewable energy production into agriculture [23]. More generally, we view biofuels development as merely the latest exercise within the dominant repertoire of agriculture industrialization.

### 2.1. Frame alignment

The “frame alignment processes” literature is “credited with ‘bringing ideas back in’” to the study of social movements [24 p. 185]. An early sociological architect of frame analysis, Goffman [25 p. 21] defined the work of frames to be that which “locate, perceive, identify, and label” knowledge pertaining to the social world. Benford and Snow [6] extend this perspective in their seminal work on collective action and social movements. For Snow and Benford [26 p. 137], collective action frames are interpretative schemata that are used to “simplify and condense the ‘world out there’ by selectively punctuating and encoding objects, situations, events, experiences and sequences of action within one’s present or past environments.” To engage in framing is to strategically and purposefully craft meaning for self and others.

Frame theory privileges a fluid and interactive construction of reality over a structural reading of social life. It prevents analysts from “lapsing into either reification or treating meaning and ideas as given” or part of an inherent social structure detached from human agency [27 p. 1]. It is “an active, process-derived phenomenon that implies agency and contention at the level of reality construction” [26 p. 136], yet it falls short of a strict constructionist interpretation of social life where boundaries are infinitely malleable. Collective action frames are less cognitive mental models than socially negotiated and constructed schemata that grow out of interaction [6].

Frames function as a repertoire of knowledge stored in memory. Like a tool in a carpenter’s bag, frames, once constructed, have use value and can be retrieved to aid in organizing perception, facilitating sense-making, and providing guidelines for interpretation of social situations [28–31]. When they align with existing frames within ourselves or among others, they can be a guide to action to [re]establish order [25,30]. In this way, they are not static, but dynamic; nor are frames “merely aggregations of individual attitudes and perceptions, but are also the outcome of negotiating shared meaning” through social interaction [9 p. 111]. Frames help us understand how the ideas or experiences of individuals “hang

together in a relatively unified and meaningful fashion” providing continuity and accord [26 p. 138]. They also shed light on how individuals coherently and strategically present themselves to the public so as to cultivate a favorable impression and public following [25,26,31,32]. This will be especially useful in our analysis as we explore how the media frames the functions of biofuels to society in an effort to maximize legitimacy and cultivate public support.

Collective action frames serve three core framing tasks or functions [34,35]. The first function is diagnostic framing which serves to identify problems, label the situation as unjust, and attribute blame to an actor or structure. Prognostic framing advocates a line of action to remedy the condition – a solution. In our case, biofuels investment and development is a prognostic frame in that it is offered as a solution to larger social problems. These larger social problems – environmental threats, economic development, and national security challenges – function as diagnostic frames. Lastly, motivational frames galvanize individuals to action by providing a rationale for redress. Such core framing tasks are bold in that they upset cultural norms and the taken-for-granted workings of everyday life, asking readers to make a discursive shift and to ‘see’ the world differently and act in new ways [27].

## 2.2. Framing and social change

Before frames can spur action, however, they must align with the interpretative frames of others. Frame alignment is “the linkage of individual and SMO [social movement organization] interpretative orientations, such that some set of individual interests, values and beliefs, and SMO activities, goals, and ideology are congruent and complementary” [35]. In other words, frames must resonate with the beliefs and values of others or dominant cultural norms [9,33]. This is a prerequisite to mobilization. For example, sociological scholarship on agrarian mobilization has shown that agricultural protest has historically been tightly coupled to the economic downturns in agriculture [36,37]. Yet, deprivation does not necessarily lead to action, as resource mobilization theorists have shown [9,38] and as the farm crisis of the 1980s empirically demonstrates. Mooney and Hunt [22], for example, found in their analysis of U.S. farmer activism that structural determinants of mobilization, such as the state of the economy, while necessary, were insufficient to explain the emergence and success of agrarian mobilization. Before a sense of deprivation or injustice can be translated into action, individuals must first align their interests and agendas.

Frame alignment is a complicated process signified by the relative rarity of social movement insurgency in the U.S., yet it is arguably a key to mobilization. Effectiveness can be facilitated, however, by drawing from and altering “elements of the dominant culture, thus incorporating preexisting beliefs and symbols as well as oppositional values that emerge in the course of the struggle” [13 p. 373]. The construction of social problems is facilitated when actors, link problems to larger “cultural worries” that typify a society within a particular historical period. When frames tap into “larger moral troubles” they not only become “symbolic of a much more perplexing problem, but they also take on a sense of urgency” [39 p. 63]. In short, frames can be “extended”, allowing individuals

to draw on the ideological themes of other frames that have proven to effectively resonate with target audiences.

Here we view the movement to encourage biofuels development as a collective action frame operating within a master frame of renewable energy. The meaning and popular usages of renewable energy allows for the inclusion of more diverse movements such as biofuels, wind energy, hydropower, geothermal, etc. Likewise, we might see these movements as falling within the sphere of a more elaborate master frame of sustainability. When frames draw on master frames of this sort they benefit from the good will and utility that the master frame elicits. We begin this analysis by presenting the core collective action frames constructed that were packaged to solicit support for biofuels. We then turn to a discussion of how support of biofuels was met with skepticism and resistance as other media articulated persuasive counter-frames intended to reshape public beliefs and “whittle away’ on the frames already set up” by the dominant discourse” [14 p. 371]. Media counter-framing challenged the sweeping beneficial claims made about biofuels in an effort to construct new meanings of biofuels as part of a larger social problem, rather than a solution to U.S. energy challenges. Media actors did so by drawing from the reservoir of cultural norms and values rooted in the fabric of American identity.

## 3. Methods and data

Data for this study were derived from media coverage accounts of biofuels production in the *New York Times* (NYT), between January 1, 2006 and May 11, 2008. This time period was selected because an exploratory review of many media outlets revealed that this was when biofuels coverage intensified in the popular press. Over two years of data is sufficient to provide a glimpse into the development of frames along with the articulation of compelling counter-frames marshaled to resist investment and development of biofuels.

The NYT was selected because it is an “opinion-leading” newspaper [40]; it ranks among the top 100 mass media markets and provides comprehensive coverage of this emerging topic. The newspaper is considered a frontrunner in national and international issues, serving a large educated readership that is primarily urban with identifiable economic and energy issues and sensitive to environmental concerns. U.S. policymakers consider the NYT an important source of information [40]. In making our selection, we also considered the total and type of coverage given to issues pertaining to biofuels advocacy.

The articles analyzed for this study were obtained through a Lexus Nexus General News search. This database consists of U.S. newspapers ranked among the top 50 for circulation by the *Editor and Publisher Yearbook* as well as other national English language newspapers published outside the U.S. [41]. The specific search terms used to identify content-appropriate articles in the NYT were ethanol, biofuels, and renewable fuels. This search resulted in 640 articles. Only 432 of these entries were coded as the remainder were unrelated or only marginally related to our topic. Our total number of articles analyzed was 432, but some articles made multiple claims.

With this in mind, we coded a total of 722, positive and negative, claims from the 432 entries.

Inter-coder reliability between the two authors/coders was established by sampling 50 articles and coding them until both coders reached agreement on the three frames 90 percent of the time. Remaining articles were coded separately unless assessment was deemed unduly difficult, at which time, both coders consulted each other for resolution. Such cases were resolved through negotiation and consensus.

The NYT does not adequately address agricultural or local economic development interests. For this reason, findings presented in this paper represent an exploratory investigation of one newspaper with inherent limitations. Other media outlets should be investigated for diverse framings. While we see no reason that our findings fail to reflect the framing of biofuels beyond the NYT, they do only pertain to the discourse in the NYT and should not be scientifically generalized beyond these boundaries.

#### 4. Framing and re-framing biofuels

Our analysis revealed that the media crafted and packaged three diagnostic frames: economic development, environment, and national security. These frames were often combined to build the most forceful argument, yet their development was highly variable. Frames were frequently presented as declarative statements, or claims, with little or no empirical evidence or logical coherence. Little effort was made to systematically correlate how the increased production of biofuels might solve these social problems. Instead, an aim to generate deep emotions and firm convictions was common. This reinforces Miller and Riechert's [5] finding that media debate about environmental issues revolves more often around how to look at issues rather than the facts surrounding controversies. The primary frame most frequently employed was economic development with 355 claims, followed by the environmental frame with 242 references, and 125 claims make up the national security frame.

We begin by describing the content of these three frames to illustrate how the media present biofuels. We then turn to a fuller analysis of the economic development frame to reveal the strategies that were marshaled. Space does not allow the opportunity to examine the framing and counter-framing tactics embedded in the environment and national security frames. The strategic nature of frame development can be seen in the way media claims-makers attempt to embed their frames in the larger social context drawing on contemporary trends and events that evoke emotion and constitute part of individuals' experiential or perceptual realities (Fig. 1).

##### 4.1. Framing content

The national security frame was the least likely to be employed and challenged. It was composed of claims primarily accentuating Americans excessive dependence on fossil fuels, and, by extension, their suppliers – Middle Easterners. Over reliance upon "foreign oil" fostered vulnerability to potential supply disruptions that could come about from market changes or geo-political realignments. Arguments for

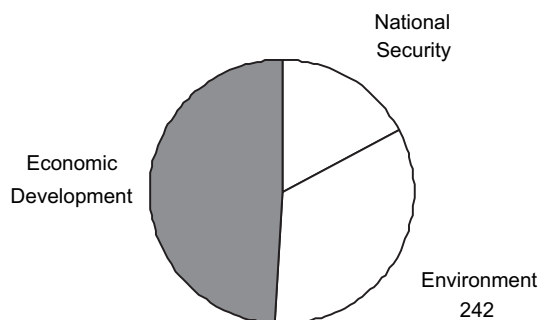


Fig. 1 – Number of times each frame was identified.

U.S. biofuels development were supported based on the assumption that the production of a domestic source of 'renewable' energy would function as a market corrective, reducing the price of global crude oil and also loosening Americans dependence on foreign oil, thereby resulting in political autonomy.

One hundred, or 80 percent, of the national security frames were supportive of this position, whereas only 20 percent ( $n = 25$ ) of the frames challenged biofuels capacity to help achieve national security. Fig. 2 presents framing activity by quarter and shows the overwhelming popularity of this frame throughout the time period. Only in the last quarter did more claims emerge from the media that countered the hopefulness about biofuels. It is important to note that counter-frames never actually challenged the notion that biofuels would not bring national security. They focused, instead, on obstacles to this goal. This was largely done by re-directing attention to current realities about the extreme nature of U.S. foreign oil dependence – stressing that corn ethanol can only meet a small percentage of current demand. Media strategically used statistical data to highlight the incongruence of supporters' claims with real consumption usage, concluding that such objectives were out of the range of achievement, therefore exaggerations.

Both attempts at framing and re-framing biofuels in light of national security offer important lessons. Efforts to frame biofuels as a corrective to national insecurity are very similar to the localism embedded in much of popular economic discourse today from campaigns to "buy American" to those

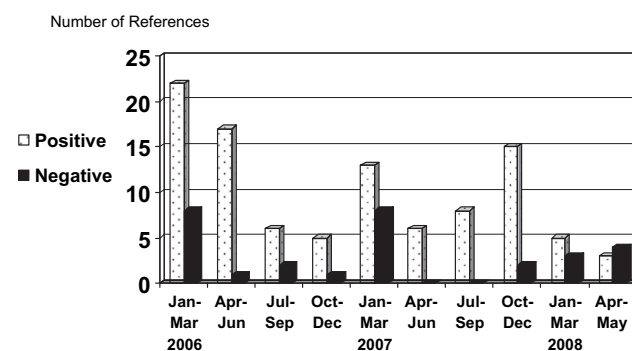


Fig. 2 – National security frame.

admonishing consumers to “eat local food.” As Hinrichs [42] and others have demonstrated, such appeals to the local can be a proxy for undesirable social relations such as exclusivity, defensiveness, and parochialism. These appeals to increase biofuels production resonate precisely because of the pervasiveness of such nativist proclivities that exalt localism as a counter to threats to global interdependence. Moreover, challenges to supportive claims never deconstruct the merits in this framing by way of counter-balancing the intolerance embedded in the claim. They use statistical data to highlight the depth of the task. Although such framing suggests the ascent of a “biofuels patriotism” infiltrating discourse, it is possible to imagine a “biofuels patriotism” that does not accentuate dysfunctional social relations, but serves as a call to “biofuels citizenship” that can elevate and broaden the boundaries of discourse through inclusivity, and catalyze a democratic renewable energy movement.

The second most prevalent frame used by the media to advocate for biofuels was organized around its impact on the environment. One hundred and forty references were coded, or 58 percent, articulating the environmental benefits to be gained from biofuels; forty-two percent ( $n = 102$ ) challenged these claims (see Fig. 3). The environmental frame was constructed primarily to convince readers that biofuels development could wean Americans from fossil fuel use, reduce carbon emissions, and slow global warming.

Positive environmental frames dominated for much of the time period under study, but the tide turned in early 2008. Fig. 3 shows that negative framing overtook positive claims during the first quarter of 2008. The media began to reframe the environmental boosterism of earlier reporting by punctuating frames with a narrative of environmental destruction rather than protection. Detractors argued that policy aimed at encouraging ethanol production was part of the problem, not the solution to environmental threats. Claims were made that biofuels were actually culpable in advancing deforestation, carbon sequestration, global warming, and other environmental disasters. Over time, many frames did offer room for congruence by distinguishing “good biofuels” from “bad biofuels”. For example, frames commonly differentiated corn ethanol (bad) from cellulosic ethanol (good).

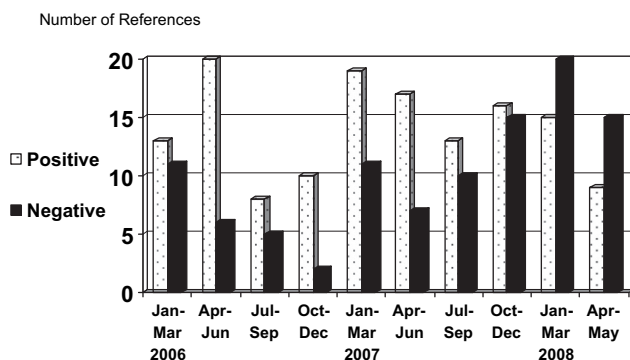


Fig. 3 – Environmental frame.

The frame employed most frequently was economic development. Of the 355 total economic development claims, 193 (54 percent) were positive, and 126 (45 percent) were negative. The media crafted a nuanced frame which took on a number of different dimensions, illustrating the intentional discursive attempts to package meaning. They were all situated within a larger political and economic context allowing them to access dominant cultural themes and apply these claims to biofuels. Before turning to an examination of economic development framing, we discuss the strategies for packaging the three frames collectively.

#### 4.2. Framing strategies

National security, environment, and economic development frames frequently articulated with one another less because they are independent discourses of this culture than they are alternative ways to frame biofuels that resonate with dominant cultural themes. In this way, they functioned as a repertoire of interpretative frames [21], or tool kit, that was drawn upon strategically to leverage their objectives, bundled together at times, and at other times used as a solitary explanation for biofuels advancement/rejection. The excerpt below exemplifies how the media drew from the biofuels repertoire to articulate the emergent nature of biofuels development.

[E]nergy, broadly defined, has become the most important geostrategic and geoeconomic challenge of our time – much as the Soviet Union was during the cold war – for four reasons: First, we are financing both sides of the war on terrorism: Financing the U.S. military with our tax dollars, and Islamist radicals and states with our energy purchases. Second, continued dependency on fossil fuels is going to bring climate change so much faster in an age when millions of new consumers in India and China are driving cars and buying homes. ... Third, because of the steady climb of oil prices, the seemingly unstoppable wave of free markets and free peoples, that we thought was unleashed by the fall of the Berlin Wall is now being stymied by a counterwave of petro-authoritarian states – like Iran, Venezuela, Russia, Nigeria, and Sudan – which now have more petro-dollars than ever to do the worst things for the longest times. ... Fourth, we will never plant the seeds of democracy in Iraq and the wider Arab world if we don't also bring down the price of oil (NYT APR28/07).

Such bundling as that reproduced above demonstrates attempts to extend the frames, articulating their complexity and allowing the architect to highlight nuances. With this strategy, frames are punctuated with symbolic codes such as the “Soviet Union,” “Cold War,” and “Berlin Wall.” Framed in this context, these symbols used analogy [8] to bolster effectiveness. Our energy problem is not connected to American consumerist lifestyles or entrenched economic inequality, but should be viewed as a battle to be waged similar to that of the Cold War. This allowed the media claims-makers to construct the problem as a moral struggle between good [capitalism and democracy] and bad [communism]. The Cold War has also come to be seen by many Americans as a conflict in which the

U.S. won, largely as a result of the triumph of capitalism over planned economies and through the exemplarily diplomatic negotiations of one man, Ronald Reagan. Transferring this sense of victory and dominance to the energy problem capitalized on the seriousness of the issue while reinforcing the idea that we are at war with nature and we can win this challenge as well.

#### 4.3. Framing economic development

In the following, we detail the content of the economic development frame more fully to cast light on the strategies used by the media. One of the primary ways the media articulated this frame was to punctuate the lightening pace at which biofuels were being developed and the economic rewards investors stood to gain.

There are many investments; one of the hottest in the business world has been the rush into alternative energy by venture capitalists. In 2006, they put at least \$727 million [727 M\$] into 39 alternative energy startups, compared with \$195 million [195 M\$] in 18 such firms in 2005, according to the National Venture Capital Association... None are potentially bigger than energy's \$1 trillion [1 T\$] annual market. Plus, energy has the benefit of creating potentially environmentally friendly technologies. The mantra in the venture capital world has become, "Do well by doing good" (NYT MAR7/07).

The strategic use of this claim was to punctuate the benefits over the costs associated with the development of biofuels. The larger the benefits, the greater the likelihood of support, especially from financial speculators. This framing also targets potential non-investors, as well, whose expectations are elevated when they learn biofuels investments are "one of the hottest in the business world." Such rhetoric can also generate high expectations for success and, in turn, nurture a complacency by implying that there is no need for behavioral change since biofuels will soon come to the rescue. An exaggerated likelihood for immediate success, coupled with an unreflexive critique of new agri-energy development agendas, mute meaningful discourse and can also foster a "bandwagon" effect.

By linking the frames to profitability, media claims-makers drew upon deep-seated moralities underpinning American culture such as free-market capitalism, in which the right to profit and unfettered competition are central. This also reinforced the notion that social change is a private matter and can be achieved through markets and individualized action, not unlike many contemporary campaigns to convince Americans to "vote with their fork" for change in the food system by making local and/or organic food choices. While the focus was frequently on private investment, rarely was it stated so obvious as in the claim, "Do well by doing good." This private mechanism for "doing good" resonates in a society where hyper-individualism is exalted. As Americans look ever increasingly toward maximizing the pursuit of self-interest and personal fulfillment, a sense of civic responsibility for the well-being of society is obscured.

In addition to communicating the robustness of the emerging biofuels market, the economic development frame could also be constructed to single out the economic gains that would accrue to special interests. We're going to "revitalize rural America. We're going to pull the plywood off the windows. We're going to create a \$700 billion [G\$] per year industry that is not here today," exclaimed one supporter (NYT FEB11/07). Indeed, for many in farm country, industry and the sciences, corn ethanol in particular was articulated as "yellow gold" (NYT JUN25/06) and economic development frames frequently capitalized on the image of cash-strapped farmers and beleaguered rural communities by highlighting the benefits they stood to gain while painting a picture of an entire region (rural Midwest) on the edge of disaster and uncritically looking to biofuels as their salvation.

The thought that the items so abundant in these fields may create electricity seems to soothe a worry people here have long held about the future of the region's farms. And the common goal of turning the place into BioTown seems to have jump-started the hopes of those who, over the years, have watched two grocery stores close, the Big Boy's garage shut-down, and the barber move away (NYT JUN4/06).

Such framing strategies stopped short of any reflexivity that might identify the reasons why rural renewal was so critical. Frames included no amplification of the massive energy inputs in American agriculture, nor were there any grievances pertaining to the capital intensity of farming, the valorization of cheap food in farm policy, or any of the other myriad political-economic forces confronting the agrifood system. While these frames highlighted farmers' enthusiasm for high-priced corn, they did not articulate the realities of life under the lean years of poorly priced corn [43]. In this way, the economic development frame stopped short of a thoroughgoing analysis of agricultural markets and rural politics, employing instead, the strategy of trading on visions of rural revival which trigger for many Americans symbolic codes regarding a golden age of simplicity in work and social relations organized in a landscape of pastoral beauty and tranquility, or the rural idyll.

Framing strategies also included more inclusive efforts to cultivate advocacy for biofuels. One approach was to look beyond the farmgate and highlight a place for entrepreneurial investment.

[E]thanol has become the province of agricultural giants that have long pressed for its use as fuel, as well as newcomers seeking to cash in on a bonanza ... As one of the hottest investments around ... The get rich quick atmosphere has drawn in a range of investors, including small farm cooperatives, hedge funds and even Bill Gates (NYT JUN25/06).

Both approaches used above appeal to universalizing interests [13] or ways in which biofuels presents something for everyone from small town farmers to industry moguls. It also incorporates a nod toward laissez-faire capitalism as room is made at the biofuels table for all. By presenting the economic growth potential as openly pluralistic, there is no need to trace the political and economic heft highly capitalized actors have to leverage investment and opportunity at

the expense of the less well heeled or struggling rural communities whose children peddle magazines to support school curricula. This reinforces the prevailing cultural belief that markets operate in the interests of the common good when unfettered and that human needs are best met without public involvement. Framed in this context, the political-economic project of neo-liberalism is elevated.

Using universalizing interests as a strategy to encourage biofuels support did not stop at national borders. The media also situated the need for biofuels production within a global context.

We will never plant the seeds of democracy in Iraq and the wide Arab world if we don't also bring down the price of oil. These Arab oil regimes will not change unless they have to, and as long as oil prices are soaring they won't have to. Iraq will become just another Arab state that taps oil wells instead of developing its people ... The price of oil is not soaring just because of greedy oil companies. It is soaring because of structural changes in the global energy market that could have vast consequences for America and the world if we do not respond in a comprehensive manner (NYT APR28/06).

This is a particularly interesting twist on the national security framing, positing not that we need oil independence out of vulnerability to OPEC price gouging, but that democratization of Arab nations can also be in our economic interest. This strategy links the fate of Americans to that of Arabs, and ultimately becomes a call to service, justifying further global intervention under the guise of leadership for the common good for both "America and the world." In this way, market competition brought on by biofuels can catalyze new governance structures. Attention is not directed toward regulating "greedy oil companies" – an area in which Americans, in concert with the state, might authentically have some legitimacy. Attention is directed to one-party states and dictatorships in oil-producing Arab nations where the historical record has recently shown that American intervention is unwelcome.

Although efforts to challenge the boosterism embedded in the economic development frame can be seen throughout the study period, Fig. 4 shows that positive claims enjoyed

dominance in the media for much of this time. By July–September 2007, however, more skepticism had seeped into the biofuels discourse, and, with the exception of one quarter, continued to dominate discourse for the remainder of the time period. Between July and September we identified an equal number of positive and negative claims, but in the following quarter there were 31 negative claims and only 23 positive claims-making up the economic development frame.

Rather than craft new frames, the strategy most frequently employed by the media was to cast doubt on the legitimacy of claims packaged to advocate for the economic benefits of biofuels. This reactive counter-framing typically punctuated the unintended consequences of biofuels growth.

The ethanol bust is undeniably here, and it's revealing the profound deficiencies of an industry that carried the promise of both ending American's dependency on foreign oil and revitalizing rural communities. While corn growers are reaping the benefits of high commodity prices, the impending industry shakedown will most likely push out small, farmer-owned refineries (NYT OCT8/07).

The media had framed biofuels as a win/win across the board. At times highlighting gains for farmers and rural communities and at other times punctuating rewards for investors, job seekers, and general economic growth. When livestock farmers began to see escalating feed prices and when the producers of crops, other than corn, began to lose rental acreage over to corn growers, as ethanol plants faced economic hardships, and as startup capital became scarce, this universalizing strategy [13] backfired. The media seized this discursive window of opportunity and illuminated the unevenness of biofuels development. Separating corn growers – those reaping high rewards – from small, farmer-owned, and often poorly capitalized, refineries and others who were structurally disadvantaged by biofuels, made visible the stratification of rural livelihoods and challenged 'win/win' claims-making. Highlighting the uneven nature of the biofuels burden prevented the development of new frames, but allowed them to "whittle away" at the exact frames constructed by supporters by impugning their validity with everyday experiences. By this time, biofuels investments had started to turn south and critiques were mounting in rural communities that tempered some of the enthusiasm for biofuels, especially corn ethanol. This approach aligned with the experiences of many and, in this way, enhanced empirical credibility.

Other economic counter-framing efforts challenged biofuels, not only as a burden unequally shared domestically, but as a global burden.

As soaring food prices threaten to unleash widespread hunger across Africa and other poor countries, President Bush is right to press Congress for more food assistance... The situation has become increasingly desperate as rising energy prices, growing world demand and government subsidized ethanol production—in the United States and Europe—have driven corn prices up by 25 percent over the last year. The prices of wheat and soybeans have doubled. There have already been food riots in several countries,

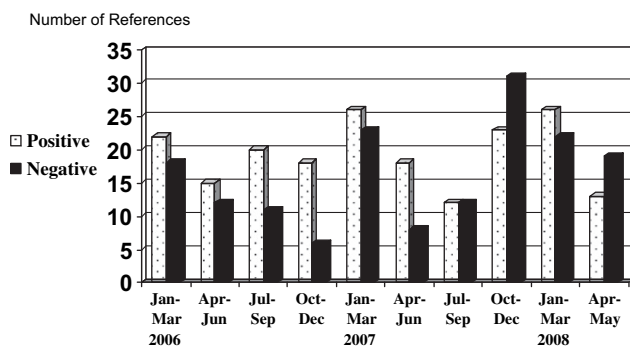


Fig. 4 – Economic development frame.

including Haiti, Egypt, and Somalia, with fears of more to come. Beyond emergency aid, wealthy donors also need to do a lot more to help Africa and other developing countries increase food production (NYT MAY6/08).

This framing strategy presents the impact of biofuels as a world food crisis. Crystallizing the economic price of biofuels by accounting for the rising cost of food and aid subsidies, challengers positioned U.S. policy in a global context and reminded the public of the geo-political costs that accompany national biofuels development. At the same time, such re-framing constructed an extreme and morally troublesome condition. According to Loseke [43], key to convincing others of a morally troublesome condition is the ability to craft meaning as extreme in nature. The use of terms like, “soaring”, “desperate”, and “emergency” were instrumentally used to construct extreme situations necessitating immediate and considerable action.

Debate over the rising cost of food also illustrates how media actors engage in the discourse dance to make their case. Supporters responded to counter-claims, such as the one above linking biofuels to the rising cost of food, by arguing, “Our addiction to oil (and market factors specific to wheat, milk, and other products) is causing food prices to rise far faster than the growing use of ethanol” (NYT SEP22/07). This example exemplifies both the fluidity of framing activity and framers’ ability to reinterpret cause and effect for their strategic ends.

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## 5. Conclusion

Our aim in this paper was to conceptually clarify how the media is beginning to portray biofuels in the U.S. This analysis suggests that the media’s framing of biofuels activity has two main characteristics: 1) They signal contemporary social and economic change; and 2) They provide a platform for advancing a discourse critical of dominant agri-energy trajectories. In identifying the interpretative frames used by media which advocates for and that which resist biofuels, we were able to cast light on the meanings assigned to biofuels by *New York Times* coverage. We were also able to explore the strategies by which *Times* claims-makers attempted to align their frames with the general public. These strategies reflected a concerted effort to link biofuels to a broader shared cultural experience. This was primarily done by bridging the frames of media claims-makers with frames that have proven to demonstrate a high degree of resonance in mainstream American culture.

In an effort to link the beneficial aspects of biofuels development to themes that have widespread affinity among Americans, such as national security, environmental protection, and economic development, media claims-makers were able to articulate, previously disassociated, themes. This was often accomplished by exaggerating opportunities provided by biofuels development in an effort to inspire frame alignment. These bridging efforts resonate because they are able to trade on a degree of empirical credibility with the general public. In other words, they map onto the everyday lived experience of many Americans as they interact in the world.

These techniques attempt to facilitate a sense of ‘we-ness’ or collective identity, and situate biofuels as a moral imperative, inciting a call to a larger public good, and, in this way, masking parochial tendencies and political divisiveness.

Efforts at frame alignment revealed a thin line of convergence or exaggerations that are at best tenuous and rest on a vulnerable foundation that can easily be re-framed as illegitimate. Constructing the functions that biofuels can play in such extreme ways assumes that values, desires, and fears are widely shared and agreed upon, rather than situated in social, economic, political, and geographic contexts. These assumptions disguise diversity for coherence and uniformity. The prevalence of three dominant collective action frames and the degree of frame competition suggests that contemporary framing is insufficiently persuasive to catalyze widespread consensus needed to achieve the institutional and policy changes necessary to advance biofuels production.

This evidence does suggest, however, that media representation of biofuels is shifting. The robustness and contentiousness of this discourse can serve as an opportunity. Media framing as represented in the NYT is teeming with friction and struggle because the unsettled nature of biofuels. More specifically, these tensions stem from competition to amplify and align with dominant, yet incompatible societal values. Further research is needed that explores more fully the dynamism of media framing in regards to the use of popular or elaborate consensus frames. A useful step in this direction is Mooney and Hunt’s extension of Goffman’s flat and sharp keys to demonstrate how single frames can take on nuanced distinctions separating institutional power and ‘outsiders’.

Efforts to reduce contentious discourse and foster consensus will be needed to advance a sustainable agri-energy system and these will require new discursive approaches. Needed are venues through which citizens can engage in deliberative dialogue and problem-solving to construct frames that build consensus and empowerment, a real sense of collective identity, mutuality, and stewardship. Agri-energy sustainability is best served by engaging citizens in opportunities to weigh lines of action open to them in thoughtful and deliberate ways that give citizens the tools to imagine and frame new and creative alternatives. Biofuels specifically, and renewable energy more generally, is a topic that is mobilizing people around environmental and lifestyle values. People increasingly want to live purposive lives that do not come at the expense of depleting our common natural resources. More research is needed that explores how opportunities can be catalyzed which allow individuals to confront issues with scientific-technical and political and economic complexity, such as biofuels, as thoughtful and informed citizens collaborating toward a common future.

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