

# Community Issues and the Bioeconomy Transition: Moving Independence from Imported Oil and Climate Change Up the Local Policy Agenda \*

Dr. Mark A. Edelman \*\*

My assignment today is to comment on Community Issues that are likely to emerge during the transition to a bioeconomy. There are many issues and some myths that are drivers of change in this transition. World hunger, biotechnology, food versus fuel, and indirect land use; organic, natural, local foods, obesity, nutrition, and food safety; housing, healthcare, credit institutions, and economic recovery; and others are among the issues being discussed. But today I would like to focus on two of the key drivers that underlie much of the discussion at this conference and they are not likely to disappear from the agenda anytime soon.

## **Issues Discussed:**

***What, if anything, should our Community do regarding the dual priorities of Reducing Dependence on Imported Oil and emerging incentives being written into Climate Change Policy?***

**Background:** Relying on oil imports from nations that are vulnerable to terrorism for a majority of our domestic transportation fuel supply has become a national security issue. Historical accounts suggest a major factor in the outcome of WWII was the Axis Powers basically ran out of oil and synthetic transportation fuels. Today not only does the U.S. rely on imported oil, but the world economy relies heavily on OPEC nations to supply the international demand as well. Historically, the U.S. relied on imported oil for only a fraction of our transportation fuels. However, with the economic growth and development of China, India, and other nations, it is clear that the U.S. can no longer rely on energy prices and international availability that the U.S. has enjoyed for most of

the past century. So a key issue for public deliberation is: What if anything should our community do to reduce our dependence on imported oil?

Scientists and political leaders from around the world have reached a high level of consensus regarding man's contributions toward global warming and the potential longer term impacts on our environment and quality of life should nothing be done. While initially, deciding against participation in the global treaty (Kyoto Accord) designed to establish a global framework for reducing the effects of carbon and other greenhouse gas (GHG) emissions, the U.S. is now on track toward reconsidering its global participation in the Copenhagen Climate Conference in December 2009 as well as considering major domestic policy initiatives for limiting and/or reducing domestic emissions of carbon and green house gases. The problem is that almost all human and economic activities have carbon and GHG emission impacts, therefore incentives that reduce harmful emissions or cause adjustments toward low carbon technologies and activities that sequester carbon are likely to impose costs on those of us who directly or indirectly use the old technologies. In addition, the incentives for adjusting to low carbon technologies and carbon sequestration activities may require active decisions to change the way business is done and perhaps some additional capital investment for which the returns are not fully known or recovered in the short run. So the second issue is also a key issue for public deliberation: What if anything should our community do to address climate change policy?

The second issue is even more intractable than the first, because it is potentially involves a continuous process of setting goals where as the first issue involves a finite goal. For example Brazil has demonstrated that energy independence is achievable within a decade or two, but, we are less certain about the probable consequences of climate change alternatives and whether this area of policy change will achieve its objectives.

My perceptions are informed by two nontraditional experiences involving rural communities. First, I had the opportunity to serve as an elected city council member for a rural community of 12,500

during the 1990s. Secondly, I have had good fortune to participate in several business related experiences. One such experience allowed me to participate as part of a business decision-making team that evaluated over 20 proposals from communities in a region that were interested in being selected for an ethanol plant in the earlier part of this decade. That process taught me, how important community resource factors sometimes become that most of us take for granted. It makes a difference if your community is at the end of a natural gas pipeline and your existing industry is using all of the current capacity. It makes a difference if your community is on the right rail road that will agree to service your new industry. It makes a difference whether your community owns its own municipal electric utility, is served by a rural electric cooperative, or is served by a large external investor owned utility because they are regulated by different bodies and have different incentives.

The opportunities for rural America are wide open. One often quoted study suggests that Agriculture provides 7% of the carbon and GHG emissions, but provides more than 20% of the potential offsets. Conventional ethanol capacity has tapped out the first 15bgy RFS mandate, and we are poised for the second RFS wave of cellulosic and advanced biofuels that will get us to 30 bgy of renewable fuels. Wind farms are cropping up all over the country thanks to a federal production tax credit. Iowa has become number 2 in wind turbine farms because of an added state production tax credit. Geothermal is becoming the standard system for new housing construction in many parts of the country. Thin film solar technologies are putting solar power in places that were unheard of in the past. With the right economic incentives, community digesters might spike industrial processing and animal wastes, with corn stalks, or wood chips to supply the smart grids during peak power demand or gaps when the wind doesn't blow the wind turbines. Or landfill methane collectors and community digester biogas might augment and replace a locally short supply of natural gas capacity. Hydro and nuclear power are being re-examined.

Commercial algae and duck weed farms are being examined as a biomass resource in part because algae growth is enhanced by carbon dioxide. Power plants and ethanol plants see a

potential opportunity for turning carbon dioxide waste streams into a source of biomass and carbon credits. Consuming more local food might save transportation fuel as well as reduce carbon and greenhouse gas emissions. One innovative Kellogg funded project in a Northeast Iowa community is looking at connecting local food with communitywide efforts to eat healthy, exercise, reduce obesity and improve school and community health. Farm organizations have been facilitating carbon credits for farmers who use no till crop farming practices, rangeland offsets, methane digesters, and tree plantings, why not make the opportunities more widely available to all who live in rural America just like the insurance products. I met a person at a recent trade show who developed and patented a cell phone-based system for aggregating and monetizing carbon credits to help finance low carbon household technology advances in Africa and other developing nations. If it can be done there, then it ought to work in rural America too.

Agriculture and rural America can stand pat and watch the policy debates pass by or they can figure out how to make the policy change opportunities work for all of rural America. It makes a difference how the policy incentives are written. Minnesota has a lot more wind turbines owned by farmers and local investors, whereas in Iowa the farmers receive a lease payment, but most of the wind farms are owned by the investor-owned utilities.

As Governor, Secretary Vilsack looked for ways to create new engines for economic growth in rural Iowa and was a big supporter of renewable fuels, biotechnology, and empowerment boards. Perhaps we are near a conclusion that too many scarce USDA Rural Development stimulus dollars are buying squad cars and emergency vehicles that can be purchased with local funds, when the critical focus ought to be on positioning agriculture and rural America to be competitive in the new global economic and policy environment. But government agencies will only fund what local community interests and agriculture ask for. If they ask for squad cars that is what they will get until the funds run out or are shifted to other priorities. The sustaining and growing communities in rural America will be led by leaders who figure out how to get things done to position their communities for the future and who don't take "no" for an answer.

The span of local decision-making influence varies from community to community depending on institutional history, local assets, and decision-making culture. The range of approaches will be as varied as there are community numbers. Some will do nothing unless they have to. Some will take the time to understand the direction of the new incentives and organize innovative initiatives designed to capitalize on any opportunities for creating new income streams for the local economic base. A vast majority of communities will follow the early adopters once the verdict comes in from the initial lessons learned and best practices.

Based on these perceptions, it appears that there are at least four circles of local decisions and decision-makers that are in play for a typical rural community. These are (1) local citizens, consumers, and household decisions, (2) local private business, industry, and nonprofit sector decisions, (3) local government, public sector, and communitywide decisions, and (4) external decisions made by regional entities or by a higher level of government. In Iowa we have 950 communities and all but those in the 12 metro areas are rural. Many decisions are made externally with some input from local decision-makers, but others are totally under local control and influence.

Let me outline six alternatives for communities to consider in approaching the transition to the bioeconomy. I will also provide an example for energy independence and climate change for each approach:

**I. Assessment and Education.** Create local community research and education initiatives to measure current energy use and emissions so as to report a baseline of impacts and the costs and benefits of the policy changes. Once the impacts are known more clearly, initiatives are planned to educate leaders and the public about the alternative courses of action and probable consequences in terms of outcomes.

**A. Energy Independence.** Identify the local transportation fuels consumption trends and mix (direct and indirect) such as availability of various alternative fuels, purchase of flexfuel, hybrid and electric vehicles, and provide education initiatives to inform citizens, business, agriculture, and community leaders about the probable consequences of the alternatives as well as facilitate effective participation in solutions.

**B. Climate Change.** Identify local carbon and GHG emissions (direct and indirect) and provide educational initiatives to inform citizens, business, agriculture, and community leaders about the alternatives, the probable consequences of the alternatives, and to facilitate effective participation in solutions.

**II. Local Incentives.** Provide encouragement for local citizens and private sector leaders to make informed decisions and provide incentives to act locally in the private sector and as individuals.

**A. Energy Independence.** Provide incentives and encouragement of initiatives to develop plans and conduct due diligence on individual and private sector approaches for stimulating conservation, deploying new renewable energy resources, and other technologies locally that would reduce dependence on imported oil. Examples might include local tax incentives for making alternative fuels available to local consumers and the private sector and/or tax incentives for purchase of flexfuel and hybrid vehicles by local citizens and businesses.

**B. Climate Change.** Provide incentives and encouragement for local citizens and private sector leaders to reduce carbon and GHG emissions by encouraging plans, approaches, and due diligence on incentives for deployment of new technologies to clean up local emissions, deploy new low-carbon and low-GHG technologies, and implement sequestration activities that may generate new income streams or reduce costs for local individuals and the local private sector.

**III. Community Enterprise Initiatives.** Create local government-led or public-private sector partnership initiatives to gather research on specific enterprise opportunities, develop plans, conduct due diligence, make informed decisions, and implement actions in a manner that addresses community-wide and/or local government activities that can influence outcomes.

**A. Energy Independence.** Create community-based initiatives that develop plans for shifting local government and the community toward purchase of renewable fuels and other technologies that reduce the dependence on imported oil. Examples might be purchase of flex fuel or hybrid vehicles for local government and local mandates for government to purchase alternative fuels.

**B. Climate Change.** Create community-based initiatives that develop plans for local public sector entities to deploy technologies to clean up emissions, deploy low-carbon and low-GHG technologies, and implement carbon sequestration activities that may generate new sources of income or reduce costs for the community.

**IV. External Decision Strategies.** Identify local leaders with expertise and linkages to external regional entities and higher levels of government so as to inform and influence them regarding likely strategies, outcomes, unintended consequences, and/or promotion of approaches that would in turn benefit the local community.

**A. Energy Independence.** Participate in regional entities and higher government decisions that encourage external distribution systems to make fuel choice locally available through vehicle distribution, blender pumps, and fuel distribution networks.

**B. Climate Change.** Participate in regional and statewide initiatives that encourage external enterprises to deploy technologies that clean up emissions, that deploy new low-carbon and low-GHG technologies, and that provide incentives for local sequestration activities to reduce local costs and generate new sources of income in the community. For example, incentives provided

by investor-owned utilities that deploy coal plants may be critical for creation of community digesters or methane land fills that cash flow long term.

**V. Continue the Status Quo.** The option often taken by local leaders is to continue the current system until there is sufficient rationale for change.

**A. Energy Independence.** If federal incentives and policies are adopted, local citizens, the private sector, and community that continue the status quo may likely experience higher costs.

**B. Climate Change.** If federal incentives and policies are adopted, local citizens, the private sector, and community that continue the status quo may likely experience higher costs.

**VI. A Combination of Alternatives.** The first four alternatives are not mutually exclusive and can be conducted simultaneously.

**Now that we have the basic alternatives and consequences framework down,** there are some elements that apply across the framework. It is important to recognize that signals and culture are important to the public. After working with entrepreneurial communities and communities that want to create an entrepreneurial culture for the past decade, I am always amazed and please at the accomplishments that communities can get for simply lifting up successful examples of what they would like to see others emulate. Media success stories, awards, competitions, and educational tours are low cost methods that have been used by Extension for years in stimulating opportunities to educate and provide lessons learned and best practices. I have wondered what would happen if Iowa were to provide a million dollar award for the community or county that would win a statewide competition for highest percentage renewable energy consumption per capita or least carbon and GHG emissions/most sequestration per capita. Such incentives provide clear signals, examples, success stories,

rewards, and models for others to learn from. They also empower and provide legitimacy for those who may want to take up the new mission.

It is also important to recognize that the four generic approaches above represent the beginnings of an Issue Map along the lines of a typical National Issues Forum template. As is the case with most public policy issues, the local decisions deal with only part of the picture that is related to the policy issues at that national and international level. In some cases, understanding the larger issue choices helps to understand the context for the local community decisions. For example, understanding the facts and fiction in the food versus fuel debate and the indirect land use debate might contribute to clearing up the political choices involved and the local stake in these issues.

I am currently working on a set of related issue maps for each of these topics that focus on each level of decision-making. There are a number of National Issues Forum networks encouraged by the Kettering Foundation around the country in which diverse groups of citizens get together to hear a short presentation and discuss the issues and alternatives over dinner with the intent of learning from each other and gaining a broader informed perspective. Many of these local groups draw citizens and leaders from diverse interests and backgrounds. In decades past a large portion of the NIF networks were organized and facilitated by Extension. They provide a useful model format for bringing leaders from diverse interests together in order to learn about the issue, alternative solutions, and probable consequences and then to discuss the alternatives as a means of identifying areas of agreement and disagreement among interests in the community. This allows leaders to shape proposals and build coalitions for a higher level of impact.

**In summary**, many public sector and industry trade association meetings and conferences are seeing a rapid growth in new vendors and consultants at their trade shows promoting carbon footprint assessments, “green streets”, “green buildings”, “green roofs”, “green homes”, “green electricity and light bulbs”, “green fuels and vehicles”, “green food”, smart grids, smart homes, smart cars, smart phones, and the list goes on. Everything is becoming “green and smart.”

At some point, there is a role for a disinterested third-party research-based adult education oriented institution to develop decision tools and provide objective information regarding the choices consumers, businesses, and communities make, so that they are enabled to make informed decisions, and to avoid waste and unintended consequences. These issues are nearly too big for one person, one discipline, or one institution, but maybe a coordinated national extension effort with some capable leadership might make some sense and have an impact on the outcomes.

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\*\* Edelman is a Professor in the Department of Economics at Iowa State University. He is an Extension Economist in Public Policy Education and currently serves as the Director of the Community Vitality Center, as statewide Regents approved center with a board of 27 leaders representing diverse community interests that approves the Center’s policies and projects. ISU Extension is the fiscal agent and administrative host for the Community Vitality Center.

**Selected References.**

1SKY. “Preliminary Analysis of H.R. 2454, The Waxman-Markey “American Clean Energy and Security Act of 2009” Updated: 5-20-2009.

Babcock, Bruce A. Center for Agriculture and Rural Development, Iowa State University. Statement to the House Agriculture Committee, Subcommittee on Conservation, Credit, Energy, and Research. May 6, 2009.

Edelman, Mark A. "Indirect Land Use: The Folly of Over-Indulgent Environmentalism?" CVC-  
ISUE working paper.

Edelman, Mark A. and David B. Patton. *The New Science of Food: Facing Up to our  
Biotechnology Choices*. A Project of Farm Foundation, Kettering Foundation, and National Issues  
Forum Institute ISBN:0-7872-9993-6. April, 2003.

Edelman, Mark A. Jon Roe, and David B. Patton. *Land Use Conflict: When City and Country  
Clash*. A project of the National Public Policy Education Committee in Cooperation with Farm  
Foundation and Kettering Foundation, Sept. 1999.

H.R. 2454. "American Clean Energy and Security Act of 2009."

Glauber, Joe. Chief Economist USDA. Statement before the House Agriculture Committee,  
Subcommittee on Conservation, Credit, Energy, and Research. May 6, 2009.

Oge, Margo T. Director, Office of Transportation and Air Quality, US EPA. Statement to the  
House Agriculture Committee, Subcommittee on Conservation, Credit, Energy, and Research.  
May 6, 2009.

Palella, David A. "Carbon Manna: The Carbon Micro-Profit Sharing System" see:  
[www.carbonmanna.org](http://www.carbonmanna.org) .

Zubrin, Robert. *Energy Victory: Winning the War on Terror by Breaking Free of Oil*. Prometheus  
2007.