ASSOCIATION OF CLIMATE CHANGE OFFICERS

Report

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Gaining New Perspectives: Lessons Learned from German Responses to Climate and Energy

Introduction

In 2011, two Association of Climate Change Officers (ACCO) Board Members, Valerie Patrick of Bayer Corporation and Melissa Adams of WGL Holdings, Inc., participated in the American Council on Germany's (ACG) Study Tour to gain new perspectives and information on climate and energy issues. The ACG Study Tours aim to give American professionals the opportunity to engage in a two-way dialogue with German officials, business leaders, journalists, and other experts to gain a better understanding of the German political, economic, social, and environmental landscape.

Climate change and energy are excellent examples of policy and economic topics that Germany has taken a very different strategic approach to compared to the United States. American representatives had the opportunity to learn directly from German experts about how the nation addresses energy and climate change challenges, and share U.S. ideas and practices with their German counterparts.

The purpose of this paper is to share some of the insights gained on the Study Tour with climate change professionals in the United States. Germany's energy and climate landscape differs in many ways from that of the United States. In Germany, renewable energy plays a much larger role in the energy mix, and climate change and energy efficiency are more fully integrated into decision making at all levels of society. Through interviews, Valerie Patrick and Melissa Adams discussed with ACCO some of the energy and climate differences that exist between Germany and the United States, the factors that contribute to these differences, and how certain German energy and climate practices can be utilized by organizations in the United States.

Excerpts from Interviews with Valerie Patrick and Melissa Adams

1. Why did you decide to travel to Germany to learn about climate and energy practices there?

Valerie Patrick (VP): I am the sustainability coordinator for Bayer's United States and Canada operations, and work in close cooperation with my counterparts at Bayer's global headquarters in Germany. Across Bayer's key businesses in material science, healthcare, and crop science, opportunities to support and expand renewable energy and climate change efforts are plentiful. Bayer's material science business has attractive new business opportunities that support climate change mitigation, climate change adaptation, and new renewable sources of energy. Because climate change can result in decreased food production and new routes to disease, new business opportunities are anticipated for Bayer's crop science businesses which would help increase food production and decrease the spread of

disease. This in turn will impact Bayer's healthcare businesses as it can offer diagnoses/treatment for and/or make treatments accessible to those impacted by these diseases.

I decided to go on the ACG Study Tour on Climate and Energy to learn how to be a more effective advocate for accelerating U.S. mitigation and adaptation actions because it is in Bayer's best business interests and it is in society's best interest.

Melissa Adams (MA): My interest was heavily driven by Germany's leadership role in energy, including efficient energy usage and high penetration of renewables such as solar and wind power. During the last few years I had worked with several German energy consultants and regional energy officials about the potential for utilizing district heating and cooling in the United States, a community heating system that is widely used throughout Germany. I was interested in learning more about the social, policy, and economic framework that shaped Germany's leadership.

The timing of the trip was particularly interesting given that it occurred against the recent backdrop of Fukushima and Germany's decision to curtail nuclear generation, a key part of its energy mix. Likewise, the trip occurred during the escalating European "financial crisis." This further heightened my interest in Germany's decision to move away from significant sunk investment in energy production in lieu of greener, more environmentally benign production. Given my role as Division Head for Sustainability and Business Development, I work with colleagues across our organization to develop and introduce clean and efficient energy solutions for our customers while achieving deep carbon reductions in our own operations. Identifying best practices and lessons learned from my German colleagues has been beneficial in helping us achieve our goals.

2. What were some of the climate or energy practices common in Germany that are not widely utilized in the United States?

VP: In my opinion, **t**he most impressive practice not done in the U.S. is that Germany has a national sustainability strategy that includes how the nation will manage sustainability as well as strategic goals for the areas of climate and energy, natural resources, world food supply, demographic change, and social responsibility. Germany's national sustainability strategy also has a comprehensive set of 35 metrics to measure progress towards the strategic goals. The strategic goals include specific targets for renewable energy use as a percentage of total energy use, increasing energy intensity, and reduction of absolute greenhouse gas (GHG) emissions. The national government provides a sustainability status report on these metrics and strategic goals to the public every four years. Leading up to this national sustainability program, the German Parliament had an "Enquete Commission" to develop a long-term plan to achieve a sustainable energy supply for Germany.

Another impressive practice was that the German Parliament has a sustainability assessment that every piece of draft legislation must go through before being brought to the Parliament. The assessment takes into account the unintended consequences of the legislation on the country's strategic sustainability goals.

MA: More so than in the U.S., German policies and use of energy tend to direct primary energy to its most productive and highest value purposes. For example, I queried certain government officials about the use of electricity for residential heating. There was stunned silence. The group couldn't comprehend my question. Finally, they responded, "Perhaps two percent." They finally asked why anyone would use electricity for home heating or hot water, given the inefficiency of directing high value electricity to a

thermal purpose. In Germany, efficient thermal energy is directly produced by natural gas or highly efficient district heating systems to supply heat and hot water. Both sources are at least three times as efficient, from a primary energy standpoint, as electricity. However, in the U.S. nearly one-third of residential heating and substantial amounts of hot water are provided by electricity.

I was also fascinated by the widespread use of feed-in tariffs to stimulate clean and renewable electricity production, most notably the history of the development of the tariff. It was explained that the idea was championed by affluent landowners whose property contained streams and rivers that could provide small-scale hydro power. While the tariff might have provided an economic boost to these land-owners, the primary driver for such development and resource utilization followed the Chernobyl disaster – way ahead of recent responses to Fukushima. Germans, who have a core cultural affinity with their forests and natural resources, were deeply concerned about the fallout from that environmental catastrophe and the role of nuclear power. Why not efficiently harness power from clean, domestic under-utilized hydro resources within Germany? Feed-in tariffs were originally developed to provide incentives for the development of these hydro facilities which were subsequently utilized to stimulate the development of small-scale solar installations.

3. What factors (cultural, political, historical, technological, etc.) contribute to the differences in climate and energy practices between Germany and the United States?

VP: During my visit to Berlin, I was struck by how strongly the Holocaust has shaped the culture, thinking, and behaviors of the thought leaders that we met. The experience of the Holocaust has created a very strong sense of stewardship and responsibility as a way to never repeat such an experience again. This strong sense of stewardship has led to an expectation by German citizens that their government plays a strong role in assuring societal well-being both nationally and globally. This strong sense of stewardship also drives the German government to factor in the agendas of key stakeholders when shaping regulation, policy, and legislation. Consequently, I felt that the experience of the Holocaust has fueled a strong desire by German citizens, thought leaders, and politicians to do what is right for the global society and planet when it comes to climate change and energy. In Germany, there is a commitment and support for taking mitigation and adaptation actions as a nation, and for developing and implementing a diplomacy strategy to lead the policy debate both in the European Union and globally that would be hard to duplicate anywhere else.

There are two sides to every coin. While much of Germany's commitment to take action on anthropogenic climate change is very commendable, their memories of incidents and disasters can be leveraged by others to incite actions that are more emotional than strategic. For example, the decision to phase out all nuclear power plants in Germany was made in response to the nuclear disaster at Fukushima Daiichi. The concerns raised by this disaster certainly need to be heeded and addressed through auditing and corrective actions at existing nuclear power plants and perhaps reflected in regulations for future plants. However, the total elimination of nuclear power plants takes away a significant bridge technology for mitigating greenhouse gas emissions in moving to a low-carbon way of life.

The culture in the United States has been shaped by the freedom and independence that founded our nation. This sense of independence means that a level of social consensus must be achieved or exist on a topic before government action can be taken. While there is technical consensus by climatologists that anthropogenic climate change is real and needs to be addressed before we pass a tipping point with dire consequences to our way of life, there is not yet social consensus in the United States. Andrew Hoffman

from the University of Michigan spoke about the concept of social consensus at a lunch lecture sponsored by Duquesne University on February 10, 2012. Andrew used cigarettes as an analogy to what he is seeing with anthropogenic climate change. Andrew reasoned that there was scientific consensus on the health dangers of cigarettes decades before there was social consensus. The social consensus marked when actions were taken by government to tax cigarettes and impose regulations, policies, and legislation on cigarette manufacturers. There was a lag between the scientific consensus and social consensus for several reasons: (1) the American public has a complex relationship with science, (2) the American public was not made aware of the key things that the science meant to smokers, and (3) smokers did not want to acknowledge that smoking was bad for their health because they depended on it. Andrew reasoned that the science of anthropogenic climate change is an even more complex topic then the science of cigarettes and expects social consensus to take even longer for climate change. I would suggest that the challenge of the 21st century is how to accelerate social consensus on climate change in the United States before we reach a "point of no return," beyond which no amount of mitigation and adaptation will rescue society from the negative forces of nature.

As it relates to technology, one important item to remember is: Invention is not the same thing as innovation. For an invention to be an innovation, it must be successful in the marketplace. In my experience, Germans tend to excel at invention, while Americans tend to excel at innovation. This means that in Germany there is more willingness to invest in research than in the United States, especially when there is uncertainty in the market. This can lead to inventions by Germans that can help with the transition to a low-carbon economy, even when the cost looks prohibitive for the market at the outset. I think that a balanced portfolio approach is needed by all. That is, both Germans and Americans need to be willing to invest in high-risk projects (important research in which both technical feasibility and market feasibility are uncertain), low-risk projects (the technical feasibility and market feasibility look reasonable based on experience), and those projects in between these two extremes.

MA: Resource availability, a profound respect for the natural environment, and the harsh effects of war seem to combine in Germany to produce a culture of efficiency, reflection, and perspective. Germans have a greater understanding and appreciation of the value of energy and a high degree of respect for the environment and natural resources. Some of this relates to their economic and cultural framework. For example, energy, most notably electricity, is far more expensive in Germany than the U.S. Additionally, unlike many places in the United States, most residential customers are willing to pay more for renewable energy. Germany imports about 75 percent of its natural gas and 85 percent of its oil which is a very different resource base than the United States. As a result, their policies and use of energy tend to direct primary energy to its most productive and highest value purposes. This tendency towards efficiency and environmental respect translates well to sustainability and carbon reduction. Germany's climate and energy goals are truly impressive and key drivers of ambitious execution initiatives, a very different backdrop than we have in the United States. Though we have made great improvements in many areas of energy efficiency, we tend to be less aware of the value of energy and the benefits of energy productivity. We tend to equate energy efficiency with denial and discomfort, rather than abundance and prosperity.

Likewise, it was interesting to gain an appreciation about how deeply environmental issues and efficient resource utilization resonate with many different strata and political groups within Germany. Germany does not have a two-party political system like the United States does. Instead, its parliamentary system requires that coalitions form, which takes negotiation, compromise, and working together. This system engenders greater conciliatory actions and less divisiveness. Though the Green Party is a powerful political force pushing environmental responsibility and climate action, there is also broad support from

all political parties, conservative and liberal, on the importance of environmental issues. For example, our hosts credited Germany's conservative property owners with creating the feed-in tariff and promoting renewable energy.

4. How does the role of government in climate and energy differ between Germany and the United States?

VP: The German government has taken a leadership role for German citizens in climate and energy by making these issues an integral part of a national sustainability strategy. The government also uses a sustainability assessment for all legislation to insure that short-term legislative actions do not detract from long-term strategic climate and energy goals.

On the other hand, the United States has not developed a federal strategy or approach to climate and energy. There has been leadership developed to address climate and energy challenges at individual regional, state, city, and county levels in the United States, but not across the nation. This bottom-up approach to addressing climate and energy challenges can still lead to unintended consequences and can be adversely impacted by federal actions which are being taken with no guiding strategy.

MA: Germany clearly recognizes and values the benefits of a clean energy economy. It has clear climate and energy goals and a road map for execution. It also has buy-in and support from the left and right and the parliamentary system drives compromise and collaboration. Energy and climate issues are cross-cutting issues that appear to resonate with each of Germany's dominant political parties – a very different situation than in the United States. The Green Party has effectively leveraged this interest and the German political system to drive a strong environmental agenda.

5. Were there any specific new strategies or practices you learned on the trip that you incorporated into your work once you got home?

VP: I learned enough about new advances in climate science during my trip to be able to create a "myth-buster" presentation to production employees at our Baytown, Texas facility. This presentation was designed to give production employees the desire to participate in a new bottom-up initiative at the facility to identify opportunities for reducing energy use. In preparing this presentation, I also found a great white paper about how to address myths (The Debunking Handbook by John Cook and Stephen Lewandowski, published in November 2011. See http://sks.to/debunk) that can really help in the race to gain social consensus for taking action to address anthropogenic climate change here in the United States.

I was very interested in the German government's step to work as a group and achieve consensus on the topics of climate change and energy by utilizing experts and engaging in what I imagine was quite an interesting discussion and debate. As a trained scientist (B.S., M.S., and Ph.D. in chemical engineering) with experience as a discussion facilitator, I am conceptualizing how to design a working session for legislators to have a discussion about what is known about anthropogenic climate change, dispel persistent myths, and generate action items from the new understanding.

I also learned about the Oregon Energy Trust from a fellow participant on the Study Tour. This has been a helpful resource and example to advance efforts with two organizations that Bayer supports: Sustainable Pittsburgh and the Energy Efficient Building Hub in Philadelphia.

MA: I was impressed with the degree to which Germany embraces and benefits from the thoughtful use of natural resources. I returned home inspired to support the development and acceptance of new clean and efficient energy solutions and the policies that can help them achieve market penetration. I took away a message that resource efficiency creates economic abundance.

I especially treasured the time we spent with Hasso Plattner, one of the cofounders of SAP AG, at a small private dinner and the discussion we held about the role of innovation and what's needed to preserve that kind of creativity. One of my favorite trip stops was to the D-School in Pottsdam (there is a sister facility at Stanford) where we met with professors and students who were engaged in out-of-the-box multi-disciplinary "solutioning" to meet a wide range of customer needs. I took home a fresh perspective about innovation and the need for personal renewal in order to make the leaps needed for true innovation.

6. What lessons did you learn as a result of this trip?

VP: For me personally it was more about absorbing all the information and expertise from the great list of speakers that ACG assembled and formulating questions to learn as much as possible from these experts in the short time we were able to interact.

Before the trip, I was trying to make the business case for a climate and energy strategy as part of a larger sustainability strategy mostly by virtue of revenue and reputation. I also talked about risk, but I now think there is a stronger business case to be made by using a risk management framework. I think this not only applies to business but also should apply to policy and legislation discussions. In this way you are comparing the risks associated with climate and energy to other risks that the enterprise is facing. This is a totally different discussion than trying to justify sustainability projects for cost reduction or revenue generation compared to the whole spectrum of other projects competing for resources to reduce costs and generate sales.

MA: Several opportunities and ideas emerged, ranging from innovative approaches to combining the use of wind and natural gas as a means for enhancing energy production to a greater awareness of how renewable and clean energy is being incorporated into the design and marketing strategy of German automobile manufacturers. I also treasured getting to know all of the trip participants, each of whom brought a unique perspective and set of experiences to the issues relating to climate and energy. The diversity of our tour participants elevated the trip's value and made for many interesting, animated, and memorable daytime Q&A sessions and late night discussions. Journalists, lobbyists, policymakers, elected officials, middle-school teachers – all of whom shared a common interest in the environment from different perspectives.

Understanding New Perspectives

Many climate and energy professionals would stand to benefit from broadening their experiences with new practices and perspectives from professionals who operate in entirely different environments than their own. It is always valuable to gain new perspectives and the German perspectives on energy and climate can differ markedly from ones found in the United States.

Especially for professionals looking for ways to expand renewable energy, applying German strategies to your own climate and energy issues can provide a valuable model of successful policy. For example, costs for installing renewable energy in Germany, especially solar, are much lower than prices in the

United States. This is primarily because the prevalence of solar power in Germany has allowed the installation process to become much smoother and quicker and thus decreased the "soft" costs of installation.[1] Also, the natural tendency in Germany to use energy for its highest efficiency use is not as common in the United States, as evidenced by the widespread use of electricity for heating here. Organizations could benefit by teaching employees to view energy through the German lens of energy productivity that incorporates primary energy use and resource stewardship.

Likewise, those professionals facing significant resistance to climate change action at their organization may be able glean some insights on how entities in Germany are able to gather broad support for climate change issues. Though the culture of an entire nation such as Germany cannot be "built" in the same way a corporate culture can, understanding how Germany's culture is so supportive of environmental stewardship is important for imparting those same values in your own organization.

Simply interacting with other climate professionals on the trip also gives substantial benefits, allowing professionals to update their knowledge and exposing them to different perspectives. This is one of the reasons ACCO constantly works to bring people together on climate change issues. Meeting new people and sharing information helps everyone involved and advances the field as a whole. Hopefully, events such as the ACG Study Tour will become more common and climate professionals will take advantage of them to advance their own knowledge and help their organizations better deal with climate change.

About Valerie Patrick

Dr. Patrick is the Sustainability coordinator for Bayer Corporation and Bayer MaterialScience LLC (BMS). In this role she develops strategy that facilitates and tracks progress towards the focal points of Bayer's regional North American vision on sustainable development. With 24 years of experience, Dr. Patrick has established herself as an effective leader of challenging technical initiatives and bringing valuable innovations to the business marketplace.

About Melissa Adams

Ms. Adams holds the post of Division Head for Sustainability and Business Development at WGL Holdings, Inc., the parent company of Washington Gas, where she leads the company's initiatives on Climate Change matters, including internal sustainability and new business development. Before assuming this new role, Ms. Adams led investor relations function for WGL and other Fortune 500 energy companies. Prior to that, she was the managing director of an energy and environmental communications and consulting firm that assisted Fortune 500 companies, national trade associations, and Federal Agencies on a wide range of energy and environmental issues. Ms. Adams is a graduate of The George Washington University.

[1] http://eetd.lbl.gov/ea/ems/reports/german-us-pv-price-ppt.pdf

About ACCO

The Association of Climate Change Officers is a 501(c)(3) non-profit membership organization for executives and officials worldwide in industry, government, academia and the non-profit community. ACCO's mission is to advance the knowledge and skills of those dedicated to developing and directing climate change strategies in the public and private sectors, and to establish a flexible and robust forum for collaboration between climate change officers. For more information about ACCO, please visit www.ACCOonline.org.

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