



**Bundesministerium  
für Wirtschaft  
und Technologie**

*The Project is supported by the  
Transatlantic Program of the Federal  
Republic of Germany as Part of the  
European Recovery Program (ERP) of  
the Federal Ministry of Economics  
and Technology*

# TRANSATLANTIC URBAN CLIMATE DIALOGUE

**Learning from each other  
in international networks.**



## Imprint

### Published by

Environmental Policy Research Centre (FFU)  
Freie Universität Berlin  
Innestraße 22, 14195 Berlin

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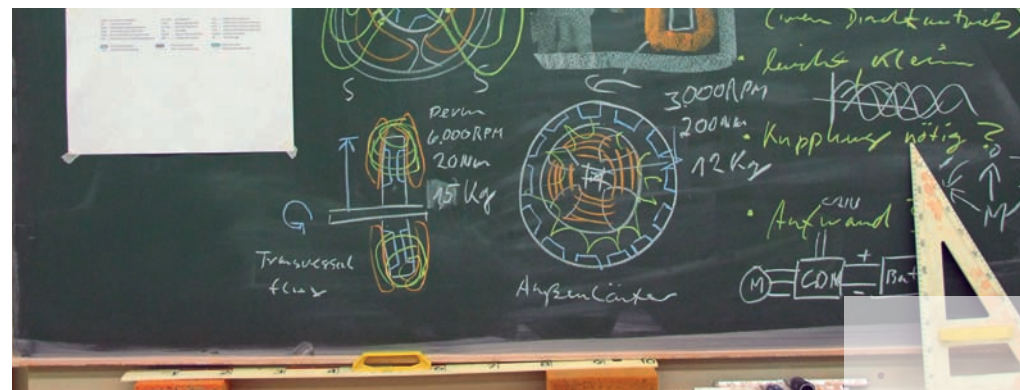
Homepage: [www.fu-berlin.de/tucd](http://www.fu-berlin.de/tucd)

Berlin, August 2013

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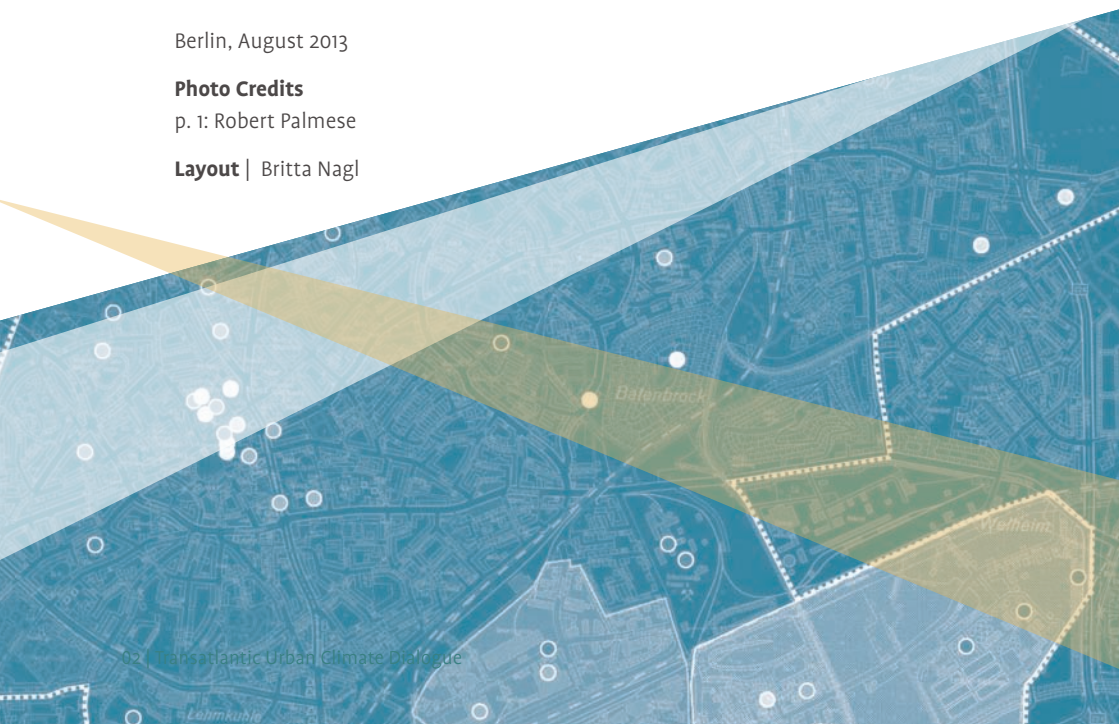
## The Project

Altogether, four problem-focused, goal-oriented and geographically-specific exchanges between local climate and energy policymakers, technical experts and practitioners from German and North American metropolitan regions were carried out. The participants represented the urban regions of

- the Ruhr Valley, Germany
- Northern Virginia, United States
- Guelph/Ontario, Canada
- Stuttgart, Germany.

The overall goal of this project, scheduled between 2011 and 2013, was to strengthen the formal search, review and application of mutually beneficial local-level energy and climate change policies between Germany and North America.

This dialogue is grounded in several model institutional partnerships and precedents of successful exchanges on urban sustainability between German and North American regions. These partnerships are characterized by the inclusion of governmental, academic and commercial partners. For instance, since 2000, the Northern Virginia Regional Commission has worked with the Verband Region Stuttgart to exchange and apply urban climate and sustainability policies. Guelph, Ontario, has worked since 2006 with metropolitan regions in Baden Württemberg to share best practices in applying comprehensive energy planning practices. The work of each of these partnerships has incorporated formal transfers and applications of urban sustainability innovations across the Atlantic.





Panoramic view  
over Ruhrgebiet  
© Robert Palmese

The **first workshop**, entitled “Urban Redevelopment in the Ruhr Region and Integrated Local Energy Planning”, took place from October, 17th to 19th, 2011 in Gelsenkirchen. The meeting concentrated on the urban industrial region of the Ruhr and the role of model energy planning considering the resurrection of industrial areas and their integration in local energy structures.

The **second workshop**, entitled „Renewable Energies and Implementation Actions in Community Energy Planning”, took place from May 2nd to 4th, 2012 in Arlington/Alexandria, USA. The meeting concentrated on energy and the built environment, maximizing jobs and investment and education/out-reach programs.

The **third workshop**, entitled „Sustainable Mobility” took place from November 26th to 28th, 2012 in Stuttgart. In expert talks with renowned speakers, an intensive exchange of ideas and methods for integrating sustainable mobility in spatial and regional planning was held. In addition, Environment Minister Franz Untersteller presented the „Integrated Energy and Climate Action Plan of Baden-Württemberg“.

The **fourth and last workshop** of this series took place between 15th and 17th of May 2013 in Guelph, Canada. The topic was communal energy planning. The purpose of this workshop was to assess the practical aspects of implementing community energy plans and in particular the critical issues of financing. In addition, this workshop focused on the international benchmarking and the role of public-private partnerships.



Infrastructure at James  
K. Polk Elementary School  
© Robert Palmese

Small electric car in Stuttgart  
© Georg Hubmann



Hamilton Community Energy  
© Robert Palmese



## Participating Institutions

### Canada

City of Guelph, Ontario, Canada

Guelph Hydro Inc



### Germany

Bottrop, InnovationCity Ruhr, Germany

Stadt Dinslaken

Verband Region Stuttgart, Germany

Nachhaltig mobile Region Stuttgart

Ministry for Economic Affairs, Energy, Building,  
Housing and Transport of the State of North Rhine-Westphalia

Foreign Economic Relations France, North-America



## Participating Institutions

### USA

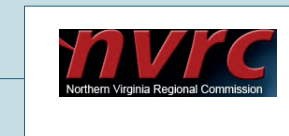
Massachusetts Institute of Technology, Dept. of Urban Studies  
and Planning

Northern Virginia Regional Commission, United States

Virginia Tech University's Metropolitan Institute

City of Purcellville, Virginia

Garforth International LLC



The project has been carried out and  
conducted by Freie Universität Berlin,  
Environmental Policy Research Centre



## Outcomes and Relevance for the Regions

### ➤ Workshop 1

Ruhr-Region

## Workshop #1 | Ruhr Region

### Relevant for North-America

#### Long-term Comprehensive Energy Conversion Program for Cities (InnovationCity Bottrop)

- ❑ Project initiated by *Initiativkreis Ruhr*, which consists of 69 businesses concerned with sustainable energy
- ❑ Emerged from a regional competition with monetary incentives
- ❑ Focus on expanding the transportation network, car sharing, retrofitting of residential areas, electro mobility and urban development
- ❑ Promoting the use of electric vehicles for public and private transportation
- ❑ Engaging the public and businesses to create a collective vision
- ❑ Aiming at a CO<sub>2</sub> reduction by up to 50% as well as a reduction of the energy demand by up to 50% by 2020
- ❑ Introducing technical innovations such as micro-CHP, district heating, heat pumps, process-heat, photovoltaic, urban renewal and climate adaptation as well as decentralised and efficient energy management
- ❑ Advancing urban redevelopment through a competition of cities in the region and entrepreneurship leads to local climate and energy initiatives

#### Hydrogen and Fuel Cell Technology as a Clean Alternative to Fossil Fuels (Hydrogen Competence Center H2 Ewald)

- ❑ Structural change (legacy as a focus to transform the region)
- ❑ Hydrogen production, storage, development and hydrogen supply
- ❑ Cooperation with companies, associations, local authorities and research institutions (*Ruhr H2 Network*)
- ❑ Energy storage of renewable sources through hydrogen to meet peak demand on the grid
- ❑ Developing strategies to store renewable energy as a response to economic challenges and the inclusion of both business and academic sector stimulate job creation



#### Energy Production and Reduction in Residential Housing (Energiepark Mont-Cenis)

- ❑ Community-scale combined heat and power can be integrated into a residential community
- ❑ *Energiepark Mont-Cenis* in Herne is a combined heat and power plant, which is housed in a glass enclosed structure with the largest solar PV arrays in Europe
- ❑ The solar panels on the roof generate 600,000 kw/h per year
- ❑ Three methane-gas based cogeneration units produce 9,000 mw/h of electricity and 12,000 mw/h heating energy that is used for the adjacent neighbourhood and the local hospital
- ❑ Fostering economic transition through scale projects

▲  
Wissenschaftspark  
Gelsenkirchen,  
conference venue  
© Robert Palmese

## Relevant for North-America

### Usage of Clean Energy Sources (Dinslaken)

- ⌘ In Dinslaken, 21% of the electricity demand is met with renewable resources
- ⌘ The city relies on clean energy sources, district energy, solar, biomass and natural gas and uses 40% sustainable sources for its heat supply while the German average is 12.1%
- ⌘ Stadtwerke Dinslaken – the heat, electricity and gas provider of the city – is mainly owned by the city, thus Dinslaken can rely on an economic approach to CO<sub>2</sub> reductions
- ⌘ The municipal energy supplier realises concepts for climate-friendly renovations
- ⌘ The city's district energy system reduces energy costs and CO<sub>2</sub> emissions via intensive use of waste heat
- ⌘ Over 50% of the buildings are linked to the district heating system, which is not obligatory but advantageous due to the cost savings
- ⌘ **Promotion of energy efficiency and renewable resources as important step towards a reduction of CO<sub>2</sub> emissions**

### Germany as Role Model

- ⌘ Enforcing minimum energy standards for buildings
- ⌘ Federal Electricity Feed-in Law (obligates public utilities to remunerate renewable energy generators at a fixed rate)
- ⌘ Taxes on gas, diesel fuel, heating oil, natural gas, electricity (*Ecological Tax Reform*)
- ⌘ Support for cogeneration (*Cogeneration Law*)
- ⌘ Climate and Energy Program to increase share of combined heat, power generation and renewable energy
- ⌘ Phase out nuclear energy production by 2022

## Relevant for Germany

### City of Guelph

- ⌘ Efforts for a fast growing city
- ⌘ *Community Energy Initiative* leads to a reduction of GHG emissions and allows cooperation between the city and its electric utility Guelph Hydro
- ⌘ Strategies:
  - ▶ Integration – energy density mapping and development of building standards
  - ▶ Networks – mobilising expertise, advocacy, resources and attraction of investment
  - ▶ Partners – inclusion of community partners
  - ▶ Governance – leadership and management, Mayors' Task Force on Community Energy
  - ▶ Economic development – job creation, entrepreneurship

### Northern Virginia

- ⌘ Implementation of a Community Energy and Sustainability Task Force consisting of local businesses, citizens, educational institutions, etc.
- ⌘ Aiming at a constant emission reduction
- ⌘ Communities have various action and energy plans: EcoCity Initiative, Private Sector Energy Task Force, Community Energy Plans
- ⌘ At regional level: Northern Virginia Regional Energy Strategy; it maintains partnerships to exchange knowledge and experiences, greater efficiency through scale projects

## Workshop #2 | Northern Virginia, US



▲  
Elected officials  
among the  
workshop  
participants  
© Robert Palmese

### Relevant for Germany

#### District Energy Systems (Arlington County)

- ▣ Arlington Community Energy Plan to reduce greenhouse gas emissions per resident by at least 3 tons/year
- ▣ District energy is central to the strategy of reducing GHG emissions
- ▣ As a scale project, it addresses energy demands and supply
- ▣ District Energy Systems allow for more efficient use of heat and decreases fuel waste in electricity generation
- ▣ Target: by 2030, 146 mw/h of combined heat and power (natural gas engines, small turbines, fuel cells) shall be distributed to high-density areas; by 2050, at least 10% of the needed energy could come from biofuels and recovered waste heat
- ▣ Communication strategies are key to achieve targets, especially within a community

#### Integrated Energy Master Plan (Crystal City)

- ▣ Analysis of potential district energy implementation: integrated areas have the potential of energy-related investment returns, competitiveness, increased energy supply reliability, affordability and eventually reduction of GHG emissions
- ▣ The total energy usage is supposed to be less than any comparable development elsewhere in Virginia; the energy use will be reduced by about 60% by 2050 and GHG levels decreased by around 70%
- ▣ Forming a task force with the most important stakeholders to create a framework for an integrated energy master plan

#### Reduction of the Carbon Footprint (Washington Gas HQ Facility)

- ▣ Headquarter as a building that represents the current state-of-the-art in construction and energy efficiency including high levels of recycled materials (31%) and reclaimed local wood: 21% of the construction materials were harvested and manufactured in the region
- ▣ Springfield Center HQ as a role model of corporate sustainability in construction
- ▣ The building has a Bloom Box fuel cell which converts clean natural gas to electricity
- ▣ This mechanism reduces GHG emissions by about 40% compared to conventional grid electricity
- ▣ The building is also targeting LEED Gold certification (Leadership in Energy and Environmental Design)
- ▣ Symbolic buildings with strong sustainability standards as role models

#### Alexandria City Energy Efficient Schools (James K. Polk Elementary)

- ▣ „Greenovation“ strategy towards green building technology
- ▣ Rehabilitation of an old school building by integrating various new systems such as the Eco-Air Fresh Air System, vegetated roof, sun shades, solar tubes, LED lights, recycling and composting system, etc.
- ▣ Installation of a “Greenovation Learning Lab” for students
- ▣ Eco learning in an Eco City

## Workshop 2

Northern  
Virginia

## Workshop 2

Northern  
Virginia

### Engaging the private sector (City of Guelph)

- ❑ Installation of *Smart Meter Systems*: monitoring and reporting the energy use on an hourly basis in order to reduce the peak demand
- ❑ Transparency that energy labelling (voluntary or regulations) is critical to building awareness of community and landlords, and how energy value is translated into property
- ❑ District energy implementation can be used to lure the support of developers
- ❑ Leaders must engage private sector and public sectors together to take renovation/retrofit to scale
- ❑ Focus on how to integrate the private sector concerning economic development

### Relevant for North-America

- ❑ Disclosure of energy consumption before purchasing real estate might be useful in Northern Virginia
- ❑ Implementation of several energy agencies and consumer organisations in the federal states
- ❑ Getting private sector participation for private investment, new entrepreneurship, greater support among population, feature new initiatives
- ❑ Thoughtful public outreach efforts that promote informed engagement and market/policy transformation
- ❑ Policies are needed to support energy efficient technology and the fusion of land-use and transportation
- ❑ Stronger emphasis on support for the development and application of renewable energy technologies
- ❑ The need for investment into distributed and district energy systems

## Workshop #3 | Stuttgart Region



### Relevant for North-America

#### Germany's National Development Plan for Electric Mobility

- ❑ Launching at least 1 million electric vehicles by 2020 (in Germany)
- ❑ Policy-making decisions, which will support the market research and product development in the field of electric mobility
- ❑ Implementation in showcases such as *LivingLab BWe mobile*: an intermodal, internationally connected, sustainable mobility concept
- ❑ Showcase supported by the federal government and more than 100 partners
- ❑ Installation of a pedelec loan and parking lot system, including 50 stations for pedelecs (electric bikes) around Stuttgart by 2015 for a rate of 12,00 Euro per month (Bietigheim-Bissingen)

#### Green Urban Development Strategy (Ludwigsburg)

- ❑ Implementation of a comprehensive sustainability management system aiming at ecological, economic and social development
- ❑ Innovative rental scheme for electric vehicles (5 electric cars, 30 pedelecs, cargo bikes and electric scooters) funded by public institutions

▲  
Carsharing as best-  
practice example  
© Georg Hubmann

### Workshop 3

Stuttgart

- ❑ Rental stations are located all over the city with vehicles powered with renewable energy from biomass
- ❑ The publicly supported think-tank *Energetikom e. V.* promotes innovative initiatives on climate protection and energy efficiency and brings together local stakeholders

#### Emission-free alternative form of transportation installed

#### City Supply through Technical Innovation (Waiblingen)

- ❑ Biogas conversion from the waste water treatment plant provides cogeneration and supplies the public network and heating for public buildings
- ❑ Grants for photovoltaic facilities of residents' roofs and energy saving building measures include the public into the scheme
- ❑ Grants are given complementary with state subsidy programs, thus financial support can reach up to 2,500 Euro for a one-family house or 5,500 Euro for apartment houses
- ❑ The city receives state subsidies for innovative projects like the dynamic passenger information displays for providing real-time departures at bus-stops
- ❑ Car sharing and public transport is promoted in order to reduce emissions and private transportation

#### City planning linked with innovative approaches in the energy sector

#### Sustainable Mobility and Climate Protection (Esslingen am Neckar)

- ❑ A run-of-the-river power plant produces 7,1 gw/h of electricity per year
- ❑ Other hydro power plants produce 15 gw/h which makes a total of 22 gw/h of electricity production
- ❑ This way of energy production reduces CO<sub>2</sub> and covers the electricity demand of 15,000 persons
- ❑ Synchronisation between local and regional public transport systems reduces emissions: E-Cars and CO<sub>2</sub> emission free trolley busses are in operation
- ❑ Installation of a pedelec station at the central station

### Relevant for both Germany and North-America

- ❑ Public transport can successfully be leveraged to catalyze redevelopment, and redevelopment can in turn support public transport use
- ❑ A coherent planning blueprint that is developed with broad stakeholder participation can engender stable, efficient, and dynamic redevelopment
- ❑ Involvement of different planning levels and sectors guarantees coordination of transport, land-use and financing
- ❑ Coordinated policies to promote transportation, housing, and business choices are important to ensuring the long-term success and viability of redevelopment projects
- ❑ Transportation should be more explicitly coordinated with land-use planning
- ❑ Planning practice and regulations still foster automobile use
- ❑ Federal and state funding can foster, counterbalance, or even block local policy choices
- ❑ Effecting changes in individual behaviour, land-use and transport systems is possible, but takes time
- ❑ Planning approach that is "satisfied with partial success by individual projects, but based on an overall strategy"

### Workshop 3

Stuttgart

Electric motorcycle  
© Georg Hubmann



## Workshop #4 | Guelph, CA



▲  
TUCD-group  
at Niagara Falls  
© Robert Palmese

### Relevant for both Germany and North-America

- ▣ **Retrofitting** was recognized as the future challenge in terms of energy efficiency and conservation

- ▶ The InnovationCity Ruhr Manual, a Blueprint for Urban Retrofitting, could serve as a role model for North American cities
- ▶ Retrofitting is effective but costly; Looking at the financing model of Bottrop: incentives of industry partners, special programmes of the local banks, federal public incentives on state/federal level

- ▣ **Participation** as crucial element for reaching ambitious energy goals

- ▶ Engagement of the local inhabitants is vital to realize the implementation of new energy infrastructure
- ▶ Local participation ensures the achievement of systematic targets concerning the future decentralization of energy systems

- ▣ **Decentralization** as the major development concerning future energy infrastructure

- ▶ From one-way systems to Smart Grid systems: Bi-directional power flows will require the participation of local entities and a new distribution system
- ▶ Individual/Micro-CHP as a big future chance

- ▣ **Data is the next fuel:** the more data, the more possibility to manage energy

- ▶ Both, Bottrop and Guelph are working on a systematic collection of data of energy use
- ▶ Integrated smart metering system (electricity, gas, water and heat) as an economical challenge

- ▣ **District Energy heating** as an important step towards a sustainable energy future in regard that heat dominates all other energy uses

- ▶ Clever systems are adaptable to different sources: the bigger the heat network, the better
- ▶ Economic impact significant in the examples of Dinslaken and Ettlingen (Germany)
- ▶ Bigger challenge in North America because additional infrastructure for cooling is needed
- ▶ The security of local supply and the self-reliance are main drivers for Markham (Canada) to invest in thermal energy systems

- ▣ **Resilience** was recognized as a central element in establishing district heating systems

- ▶ Especially important in North America due to frequent natural disasters
- ▶ Creating systems, which survive political and technical changes, is a challenge
- ▶ Shifting scale and risk: towards a zoning of energy supply and away from fossil fuels
- ▶ Waste-water treatment as future opportunity

## Workshop 4

Guelph

Adam Beck  
Generating Station  
© Robert Palmese



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## Comments of TUCD stakeholders

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**Bernd Tischler** | Lord Mayor of Bottrop



*“We see that InnovationCity Bottrop is effective and the local/regional climate protection policy gets positively influenced through its new progressive projects. InnovationCity is a pretty unique project with a strong focus on modernisation and public participation. Our aim is to make all our efforts transferable and at the latest in 2014, when our master plan will be ready, there will be proof about the transferability to other cities or countries.”*



**Markus Siehr** |  
Verband Region Stuttgart

*“Stuttgart Region is on its way to establish a regional concept for mitigation and adaptation issues. Doing this, strategies and methods in mobility, climate change and energy related terms are in focus. The case studies concerning communal energy planning (in Guelph) and energy-related economic issues (in Northern Virginia) are highly applicable and transferable into our region. In addition, the knowledge exchanges concerning the participation of citizens along with (spatial) planning of renewable energy facilities are some of the practical aspects we have a concrete benefit of.”*

*“The lessons learned and the knowledge exchange during the four workshops is highly transferable, even between the two involved German regions, “Ruhr” and “Stuttgart”. Learning about different strategies and framework conditions in other parts of the world, form the basis to strengthen the efforts on regional policies like e-mobility, heat islands and cold air requirements, especially in condensed settlements.”*

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## Comments of TUCD stakeholders

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**Dale Medearis**  
(middle)  
Northern Virginia  
Regional  
Commission,  
Senior  
Environmental  
Planner

*“The false assumption that is too often made in many cross-national policy transfer activities is that innovations can be copied from one jurisdiction to another. This implies that the entire innovation rather than pieces or elements will transfer. This was a fundamental lesson of the TUCD. We studied carefully what elements of district heating, transportation engineering, solar PV incentives – among many other innovations in Germany related to climate mitigation – could be applied into the unique political context of Northern Virginia. This is a defining characteristic of the TUCD and the transfer of knowledge that we helped to establish.”*

*“The energy plans are long-term and the adoption of the innovations must be put into a similar context. Were it so easy to fix the climate problems of Northern Virginia, it would have been done long ago. The same applies to the transatlantic transfer of lessons – the adoption also takes time. Be that as it may, there have been extraordinary successes over the past two years. The recent adoption of the comprehensive energy plans for Arlington County is but one example.”*

## Comments of TUCD stakeholders



**Rob Kerr** | City of Guelph,  
Corporate Manager, Community  
Energy

*“Many elements of the studies done within the projects are transferable to the Guelph and Ontario regions. However, two very specific aspects of the work are very transferable. Indeed, the project has initiated a process of transfer that is already underway:*

1. *Innovation City Bottrop: Bottrop is a city about the size of Guelph and therefore provides a very good parallel to learning strategies and tactics to engage the community in furthering the goals of Guelph's Community energy Initiative.*
2. *Municipal Thermal Distribution networks: Thermal energy distribution is a cornerstone of Guelph's Community Energy Initiative. Many of the municipalities that have been engaged in thermal energy services for a significant period of time. Guelph has not only learned about the technical aspects of building thermal energy networks but the methods and strategies for municipalities in building thermal energy utilities.”*

*“At the outset of the project, I asked the question: why is German energy use 50% of that in North America? Whether its per capita, per household, per km of car trips, etc., the number consistently holds up. The answer is complex. It's political, economics, cultural. With very few exceptions, is it technical – as is often assumed. This is a basic learning of the TUCD. While it is difficult to imagine that it is easy to transfer politics, economics and culture, it is extremely helpful in understanding the barriers in our region.”*

## Transatlantic Urban Climate Dialog *plus* | TUCD+



TUCD received a grant for an extension of the project from the Transatlantic Program of the Federal Republic of Germany as Part of the European Recovery Program (ERP) of the Federal Ministry of Economics and Technology. TUCD+ runs from October 2013 to September 2014.

The core structure of the TUCD+ will be the same as the previous TUCD-project. Two workshops are planned:

*The first workshop will take place February 2014 in Berlin, Germany, under the working title “Community Energy Planning and Implementation as a Critical Enabler in Activating the Business Community to Drive Local and Regional Economic Development”*

*The second workshop will take place summer 2014 in Washington, DC, USA, under the working title “Developing the Key Institutional, Regulatory and Structural Issues of Successful Municipal Utilities and their Role in Implementing CEP's and Driving Local and Regional Economic Development”*

Approximately 40 participants (elected officials, senior corporate representatives, technical experts and practitioners) from Germany, Canada and the United States will participate.

Again, the Environmental Policy Research Centre (FFU) of the Freie Universität Berlin will oversee this project.

Further information about the passed and future work of TUCD can be found under >[www.fu-berlin.de/tucd](http://www.fu-berlin.de/tucd)

