



Transatlantic Urban Climate Dialogue *plus*

Briefing Books

Catalyzing Neighborhood-Scale Energy and Economic Redevelopment

Workshop #1 Berlin, Germany
Monday, February 17th – Wednesday, February 19th, 2014

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Panel I

Monday, February 17th

Raising Public Awareness and Acceptance

Presentations:

Kathrin Bimesdörfer, Consultant at the IFOK GmbH: „Dialogue creates Future: An Agency in the Ministry for Economic Affairs, Energy, and Industry of the State of North-Rhine Westphalia”.

Keywords: Public awareness and acceptance; Approach of the agency; Examples/Cases.

Thomas Kiwitt, Verband Region Stuttgart: „Awareness - Communication and Information: the "Energiewende" in Stuttgart Region”.

Karen Farbridge, Mayor of the City of Guelph: “Energy and Community”.

Robert W. Lazaro, Mayor of Purcellville, Virginia: “Raising Public Awareness and Acceptance – the Purcellville Experience”.

Keywords: Community-Scale Planning, Cost-Effective Comprehensive Energy Management, Integrated Economic and Energy Implementation.

Henrik Vagt, IHK Berlin (Chamber of Commerce and Industry): "Raising awareness of climate protection in the local business community - How public and private sector initiatives promote the "Energiewende" in Berlin".

Key words: Local business community, acceptance of the transformation of the energy system ('Energiewende') in Berlin, initiatives from the public and private sector, networks, coaching, awards, events.

Activities of IHK Berlin

I. Energy Efficiency - “Table Berlin Plus”

The new energy efficiency “Table Berlin Plus” was founded under the auspices of the Berlin Chamber of Commerce and inspired by the positive experience of the first energy

efficiency network, founded in 2013. The Energy Efficiency Table Berlin is supported by the well-established network team and based on the LEEN methodology (LEEN-Learners of the Energy Efficiency Networks). The nine companies from Berlin, Brandenburg and Saxony-Anhalt seize the common goal to use energy more efficiently and thus better prepare their companies for the future challenges. Energy Efficiency Networks are the ideal combination of the economically meaningful measures with the aim to reduce the energy consumption and costs and to meet the climate change targets. The key to success is the technical engineering advice and experience. The experience shows that the companies involved in the energy efficiency networks outperform the German industry average companies by about two and a half the amount in terms of achieving the energy efficiency. Both medium-sized and large companies participate in this network. In order to participate, interested companies should have the annual energy costs of at least 250,000 Euros.

Companies involved in the energy efficiency networks:

- Bayer Pharma AG, Werk Berlin
- Beiersdorf Manufacturing Berlin GmbH
- BMW AG, Werk Berlin
- Boryszew Kunststofftechnik Deutschland GmbH, Gardelegen
- BVZ Berliner Zeitungsdruck GmbH
- Daimler AG, Mercedes-Benz Werk Berlin
- Freudenberg NOK Mechatronics GmbH & Co. KG Werk Berlin
- Kraftverkehr Nagel GmbH & Co. KG, Wustermark
- ppg>wegoflex GmbH, Trebbin
- Prignitzer Chemie GmbH & Co. KG, Wittenberge
- Zahna Fliesen GmbH, Zahna

II. City Contract Climate Protection: good climate actions for Berlin

The chambers and associations such as IHK, HWK, DGB and BUND have teamed up for a unique in Germany coalition for action “City Contract Climate Protection”. The aim of this campaign is to motivate local employees, businesses and citizens to contribute to the climate protection activities in Berlin and then publish their results on the Internet. Under the motto " actions speak louder than words " the “City Contract” went public in order to campaign, recruit, mobilize businesses and citizens and thereby encourage their participation in climate protection. The campaigners collect small and large climate protection actions as best practices on the website under the address: [www.stadtvertrag - klimaschutz.de](http://www.stadtvertrag-klimaschutz.de). Each individual who contributes to the improvement of the CO2 balance in Berlin, becomes a “voice” on the website because even small activities help

to protect climate. The diversity has no limits: using the sustainable insulation in the private home or the office building is just as important as the use of energy saving light bulbs.

The Contract is NOT a new climate alliance, because by motivating the stakeholders to contribute to the climate protection and to talk about it, the Contract does not rely on the commitment of each partner to save a specific amount of CO₂.

Strategy / action

The campaign has two main emphases:

1. Self-commitments through specific publicly acknowledged climate actions
2. Motivation through publication of best practices

The City Contract is focused on the areas with the largest energy consumption or loss, such as mobility, heating and hot water, electricity as well as buildings that are not energy efficient.

The Campaign has functioned till the end of 2013, and was coordinated by the chamber of crafts office. It was funded entirely from sponsorships. The main sponsors were GASAG and Stroer.

III. KlimaSchutzPartner Berlin

The "Climate Protection Partner Berlin" is a strong Berlin alliance of 10 chambers and associations. With their annual contest "Climate Partner of the Year" they are committed to prevent climate change in Berlin and show what practitioners can do because "the good examples encourage".

The award for the efficient and creative climate protection in Berlin is established by many prestigious projects. The projects are characterized by a smart mix of the different innovative energy saving and climate-friendly technologies and building operations. The range of the best practices includes the climate-friendly buildings, industrial and commercial energy saving projects and innovative energy concepts.

References:

Federal Environmental Agency (das Umweltbundesamt) - www.umweltbundesamt.de

1. Schweizer-Ries, Petra: Akzeptanz- und Partizipationsforschung zu Energienachhaltigkeit, 2011
2. Kuckartz, Udo; Rheingangs-Heintze, Anke: Umweltgerechtigkeit, Lebensqualität und persönliches Engagement, 2008

3. Kuckartz, Udo; Rheingangs-Heintze, Anke; Rädiker, Stefan: Determinanten des Umweltverhaltens- zwischen Rhetorik und Engagement, 2007

4. IHK Berlin - www.ihkberlin.de/innovation/Daten_Fakten_Netzwerke/2321152/EnergieEffizienz_Tisch_Berlin

Interesting Links:

KlimaSchutzPartner Berlin - www.klimaschutzpartner-berlin.de

IHK Berlin - www.ihk-berlin.de

Panel II

Monday, February 17th

Achieving Mutual Agreement

Presentations:

Dr. Hans-Joachim Ziesing, Ecologic Institute: “Challenges, restrictions and chances for climate protection policies on a local level: The example of the National Climate Initiative programs in Germany”.

Britta Oertel, IZT - Institute for Future Studies and Technology Assessment: “The Role of Service Innovation: Challenges and Strategies”.

Bernd Tischler, Lord Mayor of Bottrop: “National Platform for the Future City”.

Key Words: National Platform the City of the Future, Urban Technologies, InnovationCity Ruhr – Model City Bottrop, “Energiewende” (energy transition) from the bottom up, Climate-friendly city renovation

Klaus Hoppe, Head of Energy Department, Stadt Freiburg/Consultancy: “Integrating Energy Aspects in City Planning – Chances and Obstacles”.

Key Words: Introducing Municipal Building Standards, New Neighborhood Energy Schemes, Integration of Existing Buildings; Cooperation with Stakeholders (Energy Company, Building Companies, Citizens Groups); From Best Practice to Mainstream – lessons learned.

Statement of the German Association of the Cities and Municipalities (DStGB)

I. Energy Transition and Municipal Climate Protection

The energy transition is immensely important for the climate protection and is not possible to achieve without the active participation of the cities and municipalities. Cities and municipalities promote the use of renewable energy sources in the areas such as energy conservation, climate-friendly procurement and municipal green transport policy. They set examples and offer a platform for information, consultations and support. To use more renewable energy sources, build new power lines and create new sustainable infrastructures: these are only few important topics covered by municipalities. For example, the energy-efficient renovation of the public and private buildings saves approximately 40 percent of the total energy consumption. Therefore, a massive increase in public funding is required for building renovation, development of innovative environmental technologies and energy conservation and efficiency. The German Association of the Cities and Municipalities calls for an energy revolution. The nuclear phase-out as a goal of the energy transition requires compromises with citizens, meaning offering them information and involving them in the planning projects as early as possible. A fast and affordable energy transition with the ensured and secure energy supply cannot be realized at no-cost budget. Thus, the transparency and honesty in the debate is required because energy transition cannot be achieved without the massive public investment (estimated cost is three-digit billions over the next decades). The most expensive investments of the energy transition are the expansion of the electricity network grid, research on energy storage technologies, renewable energy development and promotion of the energy efficiency in the existing building stock.

II. Local Politics for Climate Protection and Adaptation Strategies to the Climate Change

Local municipalities make a significant contribution to Germany's pioneering role in the climate protection at the international level. More than 2600 German municipalities have committed to develop a Local Agenda 21 and thus, to support the Agenda 21 of the United Nations. The targets of the Agenda 21 are the strengthening of the global climate protection, the economical and efficient use of energy resources and the increased use of renewable energy sources. The global governance has finally recognized the growing role of the local authorities: the 2010 Climate Summit in Cancún has emphasized the importance of the local contributions to the decision-making process at the international level. The serious consequences of the climate change have already become apparent worldwide. Germany is not an exception - the greenhouse gases emitted today will

affect the local climate within the next decades, manifesting in the form of the heat waves and heavy rains. The municipalities and the local communities are seen as the key players in dealing with the consequences of the climate change. Therefore, an integrated municipal climate policy also includes strategies for adaptation to the climate change.

References:

Deutscher Städte- und Gemeindebund - German Association of the Cities and Municipalities
<http://www.dstgb.de/dstgb/Home/Schwerpunkte/Energiewende>

Panel III

Tuesday, February 18th

Establishing standards

Presentations:

Dr. Irene Wiese-von Ofen, Agenda21 Forum Essen: “Determination and activation of spaces in urban planning practice”.

Prof. Christa Reicher, Technical University Dortmund, Dept. Urban Land-Use Planning: “Strategies of urban qualification: the Ruhr Region”
Key Words: Regional Management – Increase in efficiency

Peter Garforth, Garforth International LLC/**Rob Kerr**, City of Guelph: “Urban Energy and Emissions Mapping – A Tool to Drive Sustainability”.
Key Words: detailed maps of energy use, new efficiency requirements, district energy networks, distributed supply structures.

Aimee Vosper, Northern Virginia Regional Commission: “Arlington County CEP Implementation Strategies: Making it Happen in an Urban Environment”.
Key Words: Urban Environment, Implementation Strategies.

I. Overview of the Integrated Energy Mapping Process in Canada

Energy Mapping can be used to advance conservation and demand management planning and program implementation. Baseline building energy maps can be used to identify “hot spots” - neighbourhoods or clusters of buildings that consume high amounts of electricity or natural gas. Targeting conservation and demand management programs based on integrated municipal and utility datasets can help to increase program uptake and energy savings. Traditionally, energy and land use planning processes are carried out by separate organizations –utilities and municipalities.

The Integrated Energy Mapping Process in Canada brought together a number of building, transportation and energy data sources as well as energy simulations to visually show where and how much energy is consumed within a community. For the future building and transportation projections three energy efficiency cases were evaluated. These included a Business As Usual case, which assumed no building retrofits, conventional practices for new building construction and no change in transportation efficiency or mode split. High Efficiency and Ultra High Efficiency cases were also evaluated which assumed higher building standards for new building construction, building retrofits, and transportation demand management and efficiency measures are applied across the city. Alternative energy generation technologies were also modeled to evaluate the potential to further reduce citywide energy use. The outputs of the energy mapping analysis including existing energy consumption, energy reduction potential, capital costs, operating costs savings, and potential emissions reductions are intended to help planners and energy conservation program managers understand how energy is currently used across the city and to prioritize investments in efficiencies and based on cost renewable effectiveness.

II. Urban Energy and Emissions Mapping – A Tool to Drive Sustainability in Ontario

Cities in Ontario increasingly understand the value of detailed maps of energy use and greenhouse gas emissions today and in the future. They can be used to prioritize efforts to increase the efficiency of homes and buildings. They can tie the City’s development plans to energy maps which allows the changing shape of the city’s energy needs to be anticipated and replaced with more efficient local systems, including new efficiency requirements, district energy networks and distributed supply structures. Importantly, they provide a means to communicate energy challenges,

issues and opportunities with the wider public and civic leaders with intuitive visualizations of a topic that is too often seen as overly complex and too abstract to understand.

III. The Global Discussion On Climate Change and Spatial And Urban Planning

1. The EU and German Level

The global discussion on climate change brought a lot of activities on all levels of spatial and urban planning. The “urban dimension” in the relevant programmes in Germany is not as strong as in France or UK. The reason for that is that there are (States) Länder with extensive industrialised areas and high density like North-Rhine- Westfalia and Länder with mainly agriculture, forests and low density like Mecklenburg -Vorpommern or Lower Saxonie. Those different Länder (the Federal Republic encompasses 16 States =Länder) should present Operational Plans (OP) defining the qualified Goals to be reached during the term of financing support 2014-2020. These OP’s should contribute a substantial part to reach the realisation of the strategies of EUROPA 2020. OP’s should explain how to reach the reduction of CO₂, how to organize mobility, how to achieve the necessary energy efficiency in construction of new buildings and refurbishment, and how to organise the transformation to renewable energy, consumption and secure supply.

2. Local Level

Municipalities have to follow these OP’s with their projects to get subsidies. Private owners and project developers as well as the local authorities have to follow the same rules. First interest of the municipalities is to get their projects to be accepted in the OP, because then there is a chance of realisation by the EU and the Federal Government. The municipalities are asked to prepare integrated proceeding concepts and take part in a competition process with finally a decision by the relevant Länder ministries in adjustment with other affected ministries (spatial and urban planning, economy, culture, mobility, education, social and health, sports).

3. Strategies

In establishing those plans and programmes the municipalities have developed various participative processes, such as planning workshops, dialogue panels, advocating planning, open and invited competitions, cooperation with universities and other institutions, civil society resolutions in special cases under strict rules against city

council decisions.

4. Criteria

The open society needs in discussions and decision-making processes criteria because of transparency and weighing reasons. Therefore benchmarking as well as certification systems have been developed. The beginning was for due diligence and development processes because of selling reasons to certify the building itself, but reached the dimension not only of quarters and boroughs, but of certifying whole cities and regions.

References:

1. "Building Smart Energy Communities: Implementing Integrated Community Energy Solutions", ICES (Integrated Community Energy Solutions) Literacy Series Paper No. 1 - Introduction to ICES: 2012.
2. "Integrated Energy Mapping for Ontario Communities – Lessons Learned Report", Canadian Urban Institute: 2011.
3. "Integrated Energy Mapping for Ontario Communities (IEMOC)" City of Guelph Energy Density Mapping Strategy Team: 2010.
4. "The Global Discussion on Climate Change: Spatial and Urban Planning", Dr.-Ing. Irene Wiese-v.Ofen: 2014.

Interesting Links:

TU Berlin, Sustainable Constructions <https://www.bauphysik.tuberlin.de/menue/forschung/lfnb/>

Panel IV

Tuesday, February 18th

Attaining Social Business

Talk of **Peter Spiegel**, Genisis-Institut, Berlin and **Dr. Irene Wiese-von Ofen**, Agenda21 Forum Essen

Presentations:

Timo Munzinger, Deutscher Städtetag (German Association of Cities): "Social business relating to urban development – an overview".

Key Words: social business, urban development, best practice, German cities, promotion programs.

Michael Tost, Berliner Stadtreinigungsbetriebe (BSR) – Berlin City Cleaning Company: “BSR’s Contributions Towards Environment Protection and Sustainability”.

Key Words: Waste to Energy, BSR Energy Strategy, E-Mobility, Smart Grid / Energy Revolution, Social Responsibility.

Rainer Knauber, Communication Dept., GASAG (Berlin Gasworks): “GASAG – Berlins partner in climate protection”.

Key Words: Climate Protection; Agreement Between GASAG And The City Of Berlin; Content Of The Forth Agreement 2011-2020; GASAG-Networking For Innovative And Efficient Energy Supply.

Remarks about Social Entrepreneurship and Corporate Social Responsibility

I. Social Entrepreneurship and Corporate Social Responsibility

Social Entrepreneurship and Corporate Social Responsibility are two phenomena that play a central role in the current debate about the overall societal change towards sustainability. Both the concept of the Social Entrepreneurship and the concept of the Corporate Social Responsibility aim to encourage the actors from the business sector to promote the environmentally friendly, sustainable and economically viable societal development.

Recently, both the international and German researchers show a great interest in topics related to the Corporate Social Responsibility and Social Entrepreneurship and willingly participate in the subsequent scientific debates. However, these two seemingly similar areas of research are usually studied separately. The further integration of the two research fields was an initial motivation factor for the three-day Workshop of the TUCD+ in Berlin.

Social Entrepreneurship

The notion of the Social Entrepreneurship contains entrepreneurial initiatives of individuals, organizations and networks. These initiatives not only bring about the innovative solutions to social, environmental and / or economic problems, they also spread the knowledge about how to better deal with such problems in the future. The secondary aim of the entrepreneurial initiatives, which is nevertheless remains important, is the economic gain.

In 2013 the German government has organized a multi-stakeholder conference in order to support and promote Social Entrepreneurship and social innovations. Moreover, the KfW banking group has supported the Social Entrepreneurship through a "program for

the funding of social enterprises ". The program was aimed at the small and medium-sized companies with an annual turnover up to 500 million euro, that aspire to solve social problems in Germany through the innovative business models. However, this program supported the already existing organizations; individuals or networks with the innovative approaches without business model could not benefit from this program. Companies from the private sector are usually committed to their own profit rather than to the socially important issues. Nevertheless, there are several reasons why Social Entrepreneurship can be interesting for the private sector.

Private Sector meets Social Entrepreneurship:

1. Philanthropy: sharing expertise and know-how; giving donations
2. Partnership: creating new markets and finding new customers
3. Ideas: promoting social entrepreneurship in companies

Corporate Social Responsibility

The notion of the Corporate Social Responsibility is mainly directed towards the big corporations and conventional companies. Such companies are expected to take the responsibility for their social and environmental impacts while striving the economic success and profit. The concept of Corporate Social Responsibility focuses on the large, well established business companies. The approach of social responsibility appeals to companies to broaden their business horizons and to include social, ecological and environmental costs and benefits into their decision-making process.

The increasing complexity and uncertainty of the modern society requires flexible and cooperative decisions. The Corporate Social Responsibility mostly relies on the "soft law" because of the lacking "hard law" regulations of the global economic processes (the so-called regulatory gap). Thus, the large companies are encouraged to voluntarily commit to the socially and environmentally friendly production process and services.

II. Corporate Social Responsibility as driver for innovation Societal Transition

In the modern society business corporations and companies are expected to rapidly adapt to the new trends and strategies. However, not all business actors realize the growing importance of the complex mega-trends, such as sustainable development, climate change and energy efficiency, resource scarcity, demographic change and lack of drinking water. These developments require a systematic change of course in order to be economically successful in the future. The question is no longer whether global trends and challenges have an impact on corporations and companies, but how

business actors can adapt to them best. The recent financial crisis has proved how dangerous it is for the business sector to rely on the short-term profit only and to neglect global long-term trends.

New Opportunities

Business actors have to change their strategies and to undertake the necessary adjustments in order to adapt to the new mega trends. In the future, the competitive conditions of the business companies will significantly depend on their transition to the more energy/resource efficient and environmentally/socially sustainable policies. Companies provide the necessary foundation for their future development by strategically applying the concept of the Corporate Social Responsibility (CSR) and establishing an appropriate management. The central functions of the CSR-management concept are the recognition and measurement of the information related to the environmental, social and societal developments. The concept of the CSR goes beyond the risk assessment and hence immensely benefits the corporate strategy. The CSR-management approach enables the companies to internalize the external requirements and expectations at the early stage. The CSR approach also promotes innovations and contributes to the development of the new markets. Thus, by applying the Corporate Social Responsibility approach, the company invests into the future options and creates innovative solutions while making a valuable contribution to society.

References:

Gebauer, Jana; Schirmer, Heike: „Unternehmerisch und verantwortlich wirken?“ Forschung an der Schnittstelle von Corporate Social Responsibility und Social Entrepreneurship. Gefördert durch das Bundesministerium für Bildung und Forschung (BMBF). Schriftenreihe des Instituts für ökologische Wirtschaftsforschung (IÖW), 204/13 Berlin, Juni 2013

Interesting Links:

“Innovation durch CSR”. Die Zukunft nachhaltig gestalten (Januar 2009).

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

www.bmu.de

future e.V. - www.future-ev.de

Borderstep - Institute for Innovation and Sustainability - www.borderstep.de

Institute 4 Sustainability - www.4sustainability.org

Site Visits

Wednesday, February 19th

Freie Universität Berlin, Energy and Environment Unit

Energy and Environmental Management

The Chancellor of the Freie Universität Berlin, as the Chief Environmental Officer, bears the responsibility for the energy and environmental management of the university. The Chair of the Department for Energy & Environment is responsible for coordination of the specific strategic and operational tasks.

The joint stock company “Energy and Environmental Management” as the overarching steering committee, is responsible for the annual management review. The steering committee also includes the environmental management representative and coordinator. Other members are the administration managers and administration heads of departments, the head of the technical department as well as the representatives from the agency for occupational safety and the staff council. The administration leaders and administration managers of the departments also operate as environmental managers of the sites and are therefore responsible for the energy and environmental issues in the respective departments. The university departments, represented by the energy and environmental teams, accomplish the coordination and communication activities. The energy and environmental teams are composed of the representatives of the faculty administration, research and teaching staff, students as well as of the representatives from the energy & environment department, the agency for occupational safety and the technical department. Currently, 120 members of the Freie Universität Berlin participate in 11 environmental teams at the university.

References:

Zentrale Universitätsverwaltung- Technische Abteilung (Abt. III)

http://www.fu-berlin.de/sites/abt-3/energieumwelt/01_ueberuns/20_organisation/index.html

Interesting Links:

FU Berlin -

http://www.fu-berlin.de/sites/abt-3/energieumwelt/02_energieklimaschutz/10_aufbauenergiemanagement/index.html

Environmental Management ISO 14001 at the Freie Universität Berlin

http://www.fu-berlin.de/sites/abt-3/energieumwelt/01_ueberuns/20_organisation/iso14001/index.html

EUREF-Campus

The District of Today

In the middle of Berlin, the vision of an “intelligent city” of tomorrow is being developed at the EUREF-Campus. Ecologically and economically sustainable ideas will make the EUREF-Campus office and science location the only urban district of its kind in Europe in future. Listed brick buildings, sophisticated new office and residential buildings and attractive parks, greenery and open space provide a modern, imposing environment.

The EUREF-Campus at a glance

- Central location in Berlin-Schöneberg
- Around 55,000 square metres of land
- Around 165,000 square metres of floor space
- Mostly underground parking spaces
- Full expansion scheduled for completion in 2018 with around 25 buildings and a residential share of up to 15%
- Investment volume of around €600 million
- Around 5,000 new jobs
- All new buildings to be LEED gold certified as green buildings
- Testing of intelligent load management to optimise the entire energy system (micro smart grid)
- Locally generated renewable energies
- Inspiring, imposing business environment
- Short paths and attractive parks, greenery and open spaces ensure a “campus character”
- Restaurants, car-sharing, meeting and event venues and further facilities for shared use
- Optimal transport links via S-Bahn, ICE, bus and motorway connections; express bus provides direct airport link from Südkreuz station

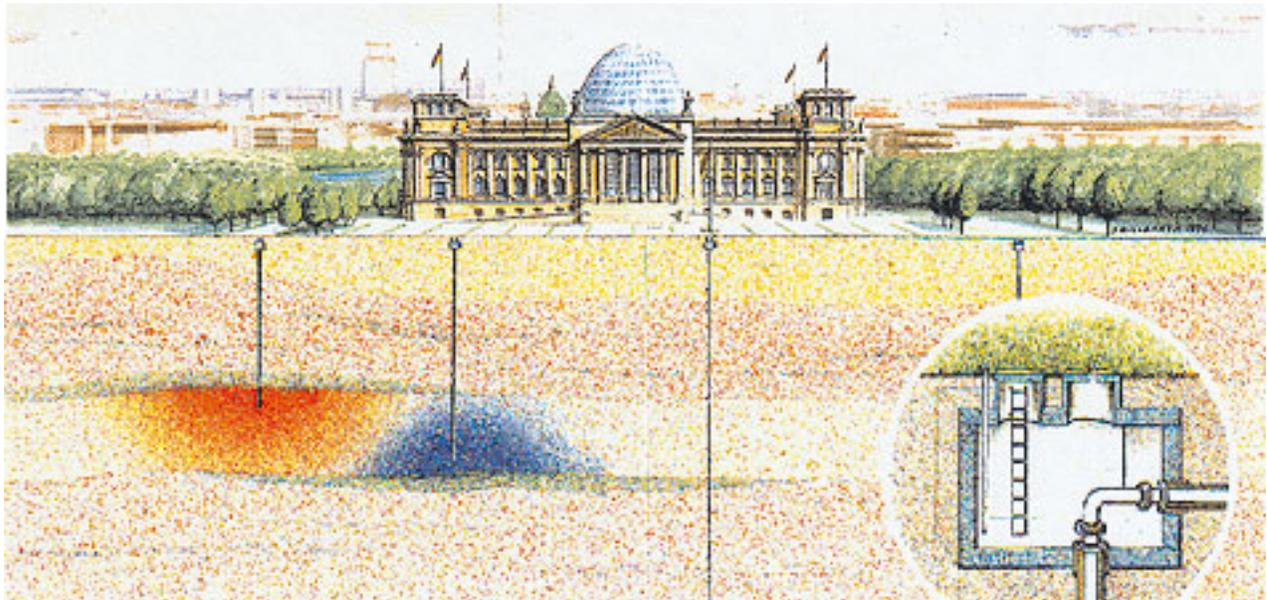
References:

EUREF

<http://www.eurefcampus.de/de/vision>

German Bundestag

Power, heat, cold: the energy concept of the German Bundestag



Heat and cold store © Geothermie Neubrandenburg GmbH

The energy generation and supply concept for the buildings of the German Bundestag provides an example of ecologically and economically combinable machinery, installations and transmission systems for energy generation and energy use.

1. Conceptual specifications for the energy supply of the new buildings of the German Bundestag. Among other things, the specifications for the renovation of the Reichstag Building for the purposes of the German Bundestag included the demand for extensive use of renewable primary energy and for a high level of availability. At the same time, an energy concept was drawn up for the Parliament buildings in Berlin's Spreebogen district that put clear emphasis on decentralized energy generation.

2. Machinery used to implement the energy concept. In both the Reichstag Building and the Paul Löbe Building, these specifications were realized by means of four diesel engines that drive power generators. Since, in accordance with the specifications of the energy concept, renewable primary energy was to be used in the Bundestag buildings, the decision was taken to use biodiesel as the fuel. To this end, standard engines were installed, some components of which had to be converted by the manufacturer to permit

the use of biodiesel. The exhaust gas emitted by the diesel engines is cleaned in a complex emission control system - comprising particulate filters, reduction catalysts and downstream oxidation catalysts - to such an extent that the requirements specified in the German Technical Instructions on Air Quality Control (TA Luft) are significantly exceeded. The power generated in this way is supplemented by power from Berlin's public supply network.

The heat from the engines and their emissions is sufficient for a minimum supply of heat for the buildings of the German Bundestag. To cover the heat requirement during the winter heating period, four hot-water boilers are available that were designed for peak-load supply and to act as a complete redundant system in the event of engine failure. During the summer, the surplus heat resulting from operation of the motor-driven cogeneration plants can be used to drive three absorption-cooling machines. If neither heating nor cooling is needed in spring and autumn, the surplus heat is pumped into a geothermal storage system, from where it can be recovered as and when necessary. A regenerative system utilizing the groundwater is also used with top priority for producing cold. Seven compression-cooling machines are available at distributed locations for peak-load cold supply and as redundant systems.

3. Use of renewable energies and ecological building operation. In keeping with the high ecological standard targeted, great importance is attached to the use of renewable primary energies.

4. Biodiesel All engines and the boiler in the Reichstag Building run on biodiesel (the correct term is RME to DIN EN 14214). It is in keeping with the ecological objectives of the German Bundestag that the raw material is grown and processed in the close vicinity of Berlin. The raw material used is rape, from the seeds of which rape seed oil can be pressed. The biodiesel is produced in a biodiesel factory by adding methanol. All of the glycerol produced at the same time is sold to customers in the chemical industry. Apart from traces of unavoidable pollutants, a major proportion of the carbon dioxide generated by the combustion process of renewable raw materials, e.g. rape, is absorbed again in the region. Moreover, the use of agricultural produce also indirectly contributes to preserving jobs in rural areas.

Photovoltaic. A total of roughly 3,600 m² of photovoltaic elements with different collector designs (some of which are heliotropic) are installed on the roofs of the Reichstag Building, the Paul Löbe Building and the Jakob Kaiser Building. The

equipment was installed in the context of a demonstration program of the Federal Ministry of Building. The power generated by the photovoltaic installations is fed entirely into the in-house network.

Heat generation and storage. Surplus heat that is generated in the motor-driven cogeneration plants as a result of the combined generation of power and heat, and which is not needed either for heating in the buildings or for driving an absorption cooling machine in the prevailing weather conditions, is fed to an aquifer in front of the Reichstag Building via two boreholes reaching to a depth of roughly 300 m. To this end, the water stored in the porous rock of this stratum is pumped up through one borehole at its natural temperature of approx. 20 °C, heated by the surplus heat via heat exchangers in the basement of the Bundestag building, and pumped back down to the same depth through the second borehole, some 280 m away. Water with a maximum temperature of 60 °C is pressed into the rock at a maximum pumping capacity of 100 m³/h and pumped back up during the next heating period at temperatures starting in the region of 55 °C. The feed temperature declines as removal progresses, until economically viable tapping of the heat reaches its limits at approx. 30 °C.

Cold production and storage. The top priority in connection with cold production is to store ambient cold in winter, which is dissipated into the groundwater via heat exchangers. This process is concluded at the end of the cold winter period, after which the cold water is tapped by reversing the direction of flow at the start of early summer, initially being drawn from the respective cold well at approx. 6 °C. Depending on the intensity of use, this temperature rises up to the natural temperature of 11 °C in the course of the summer. If the Bundestag buildings simultaneously require more cold than can be taken from the cold storage wells, this cold is initially generated by conventional cooling machines. If the demand increases even further, and if prolonged demand is expected on the basis of the summer temperatures, the three absorption-cooling machines are operated using the waste heat from the motor-driven cogeneration plants.

5. Technical equipment. It is part of the concept of ecologically oriented and need-based generation of power, heat and cold that these types of energy are used sparingly in the technical equipment of the buildings. For example, ventilation systems equipped with fans requiring little drive power were designed to this end. In many areas, the circuitry is engineered to give priority to natural ventilation, rather than air-conditioning by means of ventilation systems, if the indoor and outdoor temperatures allow. In

addition, passive and active shading, together with thermal insulation of walls and windows, makes a decisive contribution to reducing the input of outside heat into the conference rooms and offices. Lighting is provided by luminaires fitted with high-efficiency lamps, which are switched on and off via a light management system as required.

Optimized use of energies in the energy network. Alongside the resource-conserving use of primary energies, the need-oriented generation of heat, cold and power is also part of the ecological concept. For example, there is the possibility of generating these forms of energy in different areas of the Bundestag buildings and transporting them to other buildings in accordance with requirements. There is a connecting network for 10 kV electricity with transformers in each building for this purpose. Similarly, the generated heat can be pumped in both directions between the buildings at a temperature level of 110 °C. All buildings participate in cold storage, and some can also transport the cold water produced in the cooling machines to the neighboring building as and when needed. This energy network is controlled by a master automation system that permits manual intervention. As the Federal Chancellery also has a motor-driven cogeneration plant, a connecting line to the heat store of the Bundestag energy system has been installed in order to avoid the need for a separate heat storage system. It can absorb surplus heat and also pass it back if necessary.

6. Operating experience. Energy generating operations were constantly improved in the first few years of operation. The cold store works highly satisfactorily. Roughly 60% of the surplus heat resulting from operation of the motor-driven cogeneration plants and saved in the heat store can be recovered. Scientific studies are carried out to monitor the operation of the cold and heat stores.

7. Transferability of the energy concept. The energy generation system described for the Bundestag buildings would appear to be transferable to other buildings and consumers only if similar consumption characteristics are present in terms of the simultaneous demand for heat and power or cold and power. Also, underground storage in front of the Reichstag Building is only possible because of the favorable geological conditions and can therefore not be expected to work so efficiently everywhere in Germany.

Speakers Biographies

Kathrin Bimesdörfer is a Consultant at the IFOK GmbH. IFOK is a leading international strategy and communications consultancy, offering its clients a wide range of services in sustainability, change management, and stakeholder dialogue. Bimesdörfer holds a Degree of Master of Public Policy with a focus on political and economic development. She worked for GTZ in China and Laos in the field of the economic reform and private sector development. Currently works as an independent consultant for a Public Private Dialogue project.

Karen Farbridge was re-elected as Mayor of the City of Guelph in 2006 and returned to office in the 2010 municipal election. She was first elected to Council in 1994 and previously served as Mayor in 2000-2003 and 2006-2010. In the past, Farbridge has served as an Associate Professor at the University of Guelph, teaching courses in political science and environmental policy, and for ten years was the Director of the Ontario Public Interest Research Group. In 2005, she was the recipient of the prestigious Women of Distinction Award from the YMCA-YWCA of Guelph in the business and professions category.

Peter Garforth runs a specialist consultancy based in Toledo, Ohio, and Brussels, Belgium. He advises major U.S. and Canadian companies, communities, colleges and universities, property developers, and policymakers on developing competitive approaches that reduce the economic and environmental impact of energy use. He has held senior management roles around the world at Honeywell, Landis & Gyr (now Siemens) and, most recently, was Vice President of Strategy for Owens Corning, the largest U.S. manufacturer of insulation and other materials. Garforth has long been interested in energy productivity as a profitable business opportunity and has a considerable track record establishing successful businesses and programs in the U.S., Western and Eastern Europe, Indonesia, India, Brazil, and elsewhere. He was the co chairperson of the International Advisory Committee of the Alliance to Save Energy in Washington, D.C., a founding member of the European Business Council for a Sustainable Energy Future, a member of the Steering Committee on Energy Efficiency Financing of the Russian Federation, and Chairman of the International Institute for Energy Conservation. He is also past President of the Board of Trustees of Toledo

Opera and Vice Chairman of Downtown Toledo Inc, a non-profit organization dedicated to the revitalization of Toledo's city center.

Dr. Michael Heidinger is a Mayor of Dinslaken.

He studies economics and since 2000 he holds a degree of Dr. rer. oec.

He worked as a referent of the SPD-parliamentary group for work, health and social affairs. From 2005 to 2009 he worked as a head of the Unit Employment Policy and Vocational Education of the Ministry for Work, Health and Social Affairs of North Rhine-Westphalia.

Klaus Hoppe works in the field of local sustainability for 20 years. Currently, as head of the Energy Department of the City of Freiburg he is responsible for the city's climate change strategy and the integration of energy aspects in city planning. Moreover, he is the city's representative for technical exchange in city networks. Since 2011 he works as a consultant too, providing advice to municipalities and its partners concerning structures, processes and project implementation.

Rob Kerr is the Community Energy Plan Manager for the City of Guelph. Kerr holds a bachelor's degree in physics and environmental studies and has over 25 years of experience working in field of energy management, with a unique mix of private sector experience and a strong background in public service. Kerr's career has evolved in parallel to a rapidly changing energy landscape- from straightforward energy conservation activities to leading edge approaches to energy, climate change and community sustainability. In addition to working for recognizable energy management providers such as Honeywell Ltd, Kerr worked for energy-service subsidiaries of Toronto Hydro and Hydro Quebec. He has worked in energy related program delivery for both the provincial and federal governments. The majority of Kerr's career has focused on local governments and community sustainability initiatives- whether it's as a service to clients from his private sector positions, as the Energy Management Coordinator for the City of Mississauga, or the Director of the Canadian office for the International Council for Local Environmental Initiatives. Kerr has provided policy and program support to the Ontario and federal governments and has officially represented local government interests to international bodies such as the United Nations Framework Convention on Climate Change and its annual climate conferences starting in Kyoto in 1997. In April 2010, Kerr joined the City of Guelph as the Community Energy Plan (CEP) Program Manager. He will represent the City of Guelph as a cornerstone

partner in a community-wide effort to implement Guelph's CEP. Kerr will play a key role in educating the public and keeping stakeholders informed of the goals, progress and successes of the plan.

Thomas Kiwitt is a Managing Director at the Verband Region Stuttgart (Regional planning commission).

Kiwitt is head of the department of regional planning in one of Germany's most densely populated and prosperous regions. He leads the implementation of Stuttgart Region's spatial strategy for mitigation and adaptation, which comprises the enforcement of mandatory guidelines for spatial development, consultancy and support services for local authorities and research activities. Recently he coordinates a pilot project to improve sustainable transportation in Stuttgart Region. Within the European Network of Metropolitan Areas and Regions (METREX) he is a member of the working groups for major infrastructure and urban-rural cooperation. He is a member of the German academy for spatial research and planning study group for regional planning and the Baden-Württemberg committee. He is a lecturer and member of the advisory board at the masters program for city planning at the University of Applied Sciences in Stuttgart. Kiwitt holds a "Diplom-Ingenieur" degree for spatial and environmental planning from the University of Kaiserslautern, Germany. Prior to working for Stuttgart Region, he has been working for cities and regions in Germany as well as for the metropolitan administration of Jakarta, Indonesia.

Rainer Knauber is a head of Corporate Communications at GASAG Group.

Previously he worked as a Press Officer of the SPD Fraction in Saarland, as a Cabinet Spokesman, Saarland and as a Spokesman of the Federal Ministry of Transport, Building and Urban Development. He also worked as a Head of the Staff Department "VEAG Vereinigte Energiewerke AG" and a Head of Konzernbereich Politik und Gesellschaft, Vattenfall Europe AG, Berlin.

Robert W. Lazaro is a Mayor of Purcellville, Virginia.

Lazaro was elected to 17th Mayor of Purcellville in May 2006 and is now serving his 4th term as Mayor. Lazaro represents the Council as Vice-Chairman of the Northern Virginia Regional Commission, as Co-Chairman of the Virginia Municipal League's Legislative Committee and as a member of the League's Environmental Quality Committee. Lazaro is a founding member of the Town Association of Northern Virginia and is Chairman of the Coalition of Loudoun Towns, as well as NVRC.

Timo Munzinger works at the Deutscher Städtetag (German Association of Cities) as a lecturer for Integrated Urban Development, Regional and National Planning, Regional Planning, Urban Planning, Urban Design, Architecture and Urban Design. He studied architecture and architecture management in Karlsruhe and Berlin and then worked as an architect / urban planner in Karlsruhe. From 2004 till 2012 he worked as the Project Manager at the STEG Urban Development GmbH in Stuttgart. Since 2009 he works on his doctorate, Dr.-Ing. at the University of Stuttgart.

Britta Oertel works at the IZT - Institute for Future Studies and Technology Assessment. She holds a degree in Information Science and Geography of the Freie Universität Berlin. She conducts research projects regarding the technology assessment of information, communication and location technologies. The German Parliament, the Federal Ministry of Research, the Federal Ministry of Economic Affairs, and well-known foundations and enterprises count among her clients.

Prof. Dipl.-Ing. Christa Reicher is an architect and urban planner, and a Professor of urban design and land use planning at the Technical University Dortmund. The main focus of Reicher's tenet and research are: International Building exhibition; Planning strategies and management of quality and design; Public space and public design and Urbanism of Ruhr Region.

Professional career:

2010-2012 dean of Faculty of Spatial Planning /TU Dortmund University

2008-2010 vice dean of Faculty of Spatial Planning / TU Dortmund University

Since 2002 head of the department of „Urban design and land use planning“ Faculty of Spatial Planning at the University of Dortmund

Main projects in practice (selection) are: International Competition for the Metropolitan Region Ruhr (2013), International Competition and Masterplan for the University of Aachen (2008-2012), International Competition for the Clinic Development in Bern/Switzerland (2010).

Prof. Dr. Miranda Schreurs is the director of the Environmental Policy Research Centre and Professor of Comparative Politics at the Freie Universität Berlin. Prior to this she was Associate Professor in the Department of Government and Politics, University of Maryland. Schreurs' work focuses on comparative environmental politics and policy in Europe, the US, and East Asia. She was born and raised in the United States and has

also lived for extended periods in Japan and Germany and briefly in the Netherlands. Her PhD is from the University of Michigan and her MA and BA from the University of Washington. She has also spent time researching or teaching at Harvard University, Utrecht University, the Freie Universität Berlin, Keio University, Chuo University, and Rikkyo University and has held fellowships from the SSRC-MacArthur Foundation Program on International Peace and Security Affairs, the Fulbright Foundation, and the National Science Foundation/Japan Society for the Promotion of Science.

In July 2008 Schreurs was appointed to the German Advisory Council on the Environment. Her key research areas are: Environmental governance, climate change policy and politics, energy policy, German, EU, US and East Asian environmental policy.

Peter Spiegel works at the Genisis-Institut, Berlin. Spiegel is an initiator and leader of the Genisis Institute for Social innovation, the vision summit and education donors. He is a senior fellow at the Humboldt-Viadrina School of Governance, CEO of Vision Entrepreneurs, Secretary General of the Global Economic Network and Social Innovation Officer of the Senate of the economy Germany, author and editor of more than 25 books, keynote speaker and workshop leader at 30-50 events per year, a member of the Club of Marrakesh.

Bernd Tischler began his term as Lord Mayor of Bottrop in 2009. He was elected as a technical deputy of the city of Bottrop in 2004. Part of his department is the building agency, the urban planning agency, the survey agency, the cadaster agency, the building inspection agency, the civil engineering agency, the environmental agency, the public green space agency and the department of building stock. Tischler's department also oversees the sports and public pool facilities of Bottrop. Tischler holds a diploma in city and regional planning from the University of Dortmund. After a traineeship with the county government in Cologne, Tischler passed the state examination for higher technical administrative service in 1987 in Frankfurt. He then worked as a deputy chief officer in the agency for city development and economic promotion of the city of Dormagen. In 1989 Tischler transferred to the city of Bottrop where he started working as a department chief for environmental planning. He then worked as a department chief for obligatory area development planning and later became deputy chief officer. In 1995 Tischler was promoted to the post of chief of the city planning agency that was charged with tasks regarding urban renewal and the tasks of the housing office. In 1996 he was appointed to the post of an executive building director. During his time in the

planning office, Tischler played an important role in major building projects, the reactivation of industrial fallow lands, for instance the former “Hüls-Area” (Hüls-Gelände), and in the establishment of Warner Bros. Movie World and the Alpin-Center. Among his special projects as chief of the planning office is the ongoing renewal of the Bottrop downtown area and the renewal of the land-use plan. Tischler represents the interests of Bottrop in meetings, such as those of the Emscher association (Emschergenossenschaft) in Essen. He is also part of several administrative boards. He volunteers as a director of the not-for-profit construction company Bottrop.

Michael Tost works as an Executive Officer for the Energy, Environment and Innovations at the Berliner Stadtreinigungsbetriebe (Berlin City Cleaning Company). Tost is member of the CEO’s office of Berliner Stadtreinigung (BSR) and mainly engaged in the field of innovation. He has a diploma in chemistry and a degree in business administration and project management. Tost has business experience in the fields of environmental analytics, financial controlling, risk management, strategy implementation and project management. Currently he is the leader of the BSR-part of the e-mobility project “Mobility2Grid”.

Henrik Vagt works at the IHK (Chamber of Commerce and Industry) Berlin. He studied Political Science, Economics and Public Law in Heidelberg, Aix-en-Provence (France) and Berlin. From 2006 to 2008 he was a research fellow at the Environmental Policy Research Centre (FFU), Freie Universität Berlin. Since 2011 he is Head of Department of Environment and Energy, CCI Berlin.

Annette Voigt is a Project Manager for the Foreign Economic Relations France, North America in the Ministry for Economic Affairs, Energy, Building, Housing and Transport of the State of North Rhine-Westphalia. She holds a degree from the University of Public Administration in Ludwigsburg. She previously worked at the Regional Government Düsseldorf, at the Ministry for Economic Affairs North Rhine-Westphalia, Economic Development and Financing. Her areas of activity are: Economic relations to the U.S., Canada, France, maintenance and development of commercial contacts; project management and development (new materials, MicroNano, electro mobility, renewable energies, environmental technologies); cooperation with embassies; organisation and realization of delegations of the minister/state secretary, support of delegations at home and abroad; coordination and planning of events, trade fairs; support of company activities abroad.

Aimee Vosper works as a Director of Planning and Environmental Services at the Northern Virginia Regional Commission. Vosper joined NVRC after almost 10 years in local government with the City of Alexandria. A licensed Landscape Architect for nearly 29 years, her role at NVRC is considered essential to the development of partnerships and project facilitation. She has an expertise in environmental and planning programs on the regional level including a depth of knowledge and working experience for the Four Mile Run Watershed and Project Corridor. She has extensive experience as a Project Administrator, and 5 + years in a Principal role as Director of Planning and Environmental services. Vosper coordinates and manages staff with programs that include conservation and land use planning, environmental master planning, heritage and cultural resources, multi-modal transportation including trail coordination and development across the region, climate change adaptation, water quality and water quantity of local streams and major rivers, smart growth and community energy planning, land use planning and “charrette” facilitation. Her responsibilities include development of energy initiatives, coordination and leadership in the Four Mile Run Stream Restoration Master Plan implementation, oversight of regional environmental watershed activities, monitoring of the Commonwealth’s land planning legislation and development and coordination of regional and national trail initiatives, such as the East Coast Greenways and the Potomac Heritage National Scenic Trail.

Dr.-Ing. Irene Wiese-von Ofen works at the Agenda21 Forum Essen. She graduated as Diplom-Ingenieur from the Technical University Aachen (Germany), followed by the postgraduate studies in town-planning, doctor’s degree in urban planning with distinction. Professional career and activities include:
1962 – 1990 City of Essen, office of Town-Planning Research, Spatial Planning and Urban Renewal; 1990 – 1998 Deputy Mayor of the City of Essen, Head of the Department for Housing and Planning, Construction, Building License, Sanitation, Traffic, Real Estate and Heritage Protection; 1985 – 1998 Member of several commissions of the German “Städtetag” (Community of German cities). She is also a Jury member and chair of several national and international urban competitions.

Dr. Hans-Joachim Ziesing works as a Senior Policy Advisor at the Ecologic Institute. Ziesing is a Senior Policy Advisor at Ecologic Institute. Since October 2011 he is a member of the energy expert commission, which supports the monitoring process

"Energy of the Future". Since 2005 Delegate of the Consultative Commission on Industrial Change (CCMI), a body within the European Economic and Social Committee (EESC).

In his scientific career Ziesing has conducted a large number of studies with specific interests in analyses, forecasts and scenarios concerning the energy field, economics of specific energy systems with emphasis on renewable energies and combined heat and power systems, interdependency between economy, energy and environment, analyses of the environmental impacts of different energy strategies, recommendations in the field of energy and environmental policies, climate protection policies, and emissions trading.